The Scottish Naturalist

A Magazine devoted to Zoology

With which is incorporated

"The Annals of Scottish Natural History"

EDITED BY

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

AND

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The Rookeries of Edinburgh and Midlothian.
Remarkable Decrease of the House-Sparrow.
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Instinct and Intelligence in Insects.
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Animal Welfare.
The Menace of the Grey Squirrel.
The Varying Length of Lark Song.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.
(Authors are responsible for nomenclature used.)

The Scottish Naturalist

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PALE HARRIER AT FAIR ISLE: FIRST OCCURRENCE IN BRITAIN.

By Percy H. Grimshaw, F.R.S.E.

A male specimen of the Pale Harrier (*Circus macrourus* Gmelin) was obtained at Fair Isle on the 8th May 1931 by Mr George Stout, and sent to the Royal Scottish Museum a few weeks ago. In a letter addressed to Mrs Stenhouse, who kindly conveyed the bird (and others) to the Museum, Mr Stout presumed, and quite correctly, the name of the species. The bird was carefully examined at the Museum and compared with continental specimens, but in order to leave no doubt as to its identity it was dispatched to Mr N. B. Kinnear of the British Museum (Natural History), who very kindly confirmed Mr Stout's and our opinions, and pronounced the bird to be a second-year male.

Mr Stout states that it was about the island at least two weeks before it was killed, and when skinning it he found the greater part of a Lark and Meadow-Pipit in the stomach. These had been newly eaten, and had been "devoured feathers and all."

The breeding-range of the Pale Harrier extends from the Baltic Provinces to Rumania and Bulgaria and thence through Southern and Central Russia to Central Asia. As a migratory species it occurs in Germany (where it has occasionally nested), and Central Europe generally, rarely visiting Western Europe. In winter it ranges over the

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whole of Africa, India, Ceylon, and Burma. The occurrence of this species at Fair Isle makes an addition to the British avifauna, all four of the European Harriers now finding a place on the list. Two other species of the genus *Circus* occur in the Palaearctic Region, but only eastwards of Turkestan.

From the other three European Harriers the present species is at once distinguishable in the male sex by the fact that the outer webs of only the 2nd, 3rd, and 4th primaries are emarginate (a character shared with Montagu's Harrier), while the underparts are white, with the throat and upper breast only slightly tinged with grey. In Montagu's Harrier, on the other hand, the under surface is whitish or greyish, and always distinctly streaked with rufous. In the other two species (Hen-Harrier and Marsh Harrier) the outer webs of the 2nd, 3rd, 4th and 5th primaries are emarginate, while, of course, the male Marsh-Harrier is, excepting on the head, of a dark-brown colour above, like the females of all the species.

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Great Grey Shrike and Jay in Kirkcudbrightshire.—On the 13th November I saw a Great Grey Shrike (*Lanius excubitor*) at Dallash in the Palnure Valley. It was within 300 yards of the place where I saw one on 10th November 1907. I have also within the last week (November 1931) seen and heard four Jays on this estate. One was shot and the remaining three may have been the same bird, but they were seen on rather widely separated places on the same day. In all the forty-three years I have been at Cairnsmore, I have never seen a Jay here before. I am aware that some were turned out on the far side of Wigtown Bay many years ago. I should be interested to hear whether any have been turned out recently in this district, if the importer is willing to confess! Since the war I have only spent a few weeks at Cairnsmore annually; it is therefore possible that their arrival in the district has long been noted by others.—M. Bedford, Cairnsmore, Newton Stewart.
THE EARLY AUTUMN MIGRATION AT ST KILDA IN 1931.

By John Buchan, T. H. Harrisson, and David Lack.

From 22nd July to 13th August this year a party from Oxford and Cambridge, of which we were members, visited the island group of St Kilda to study the fauna and flora as soon as possible after the evacuation of the inhabitants in September 1930.

During our stay we noted all migrants encountered, since, as Dr W. Eagle Clarke has pointed out (SCOTTISH NATURALIST, 1916, p. 78), all notes are of great interest from "a station whose geographical position renders it unique among the bird observatories to be found in the north-western Atlantic." Further, our stay refers to a period not covered by Dr Clarke in his memorable visits of 1st September to 8th October 1910, and 1st September to 12th October 1911.

It is interesting to compare our results with those obtained by Clarke. We were too early for any considerable migration of Passerines, Skuas, or Shearwaters, but we recorded Arctic Tern and Common and Lesser Black-Backed Gulls, of which no appreciable movement was noted by Clarke. The largest movements were of Waders, and, considering how ill-suited the island is as a halting place for these, our records probably represent a considerable migration. Of the species found to be rare later in the autumn by Clarke we noted Common Sandpiper, Redshank, Sanderling, and Dunlin—the first three on several occasions. On the other hand, Turnstone, Curlew Sandpiper, Knot, and Whimbrel were not present during our stay, though recorded by Clarke on both his visits. The scarcity of high Arctic species on our list is apparent, and it would seem that most of these pass through St Kilda later in the autumn, while the more southerly species have often ceased to do so before September.

For the first ten days of our stay the wind was northerly, reaching gale force at times, and the weather usually fine.
On 1st and 2nd August there was a south-east wind and a noticeable absence of migration, while on the 3rd the first Sanderling came in on an easterly breeze. Thereafter and until our departure the weather was mainly mild, the wind between N.E. and N.W., with fresh migrants daily, especially on 6th August (the first White Wagtail), 8th, and 10th—on all of which the wind was N.W.

The only migrants which stayed any length of time were a Redbreasted Merganser, a Sanderling, and three Ringed Plovers. Except for one White Wagtail all migrants which could be identified proved to be adults.

The following are references relevant to migration on St Kilda, though only the second contains more than one or two records. The greater part of the ornithological literature refers only to June, and therefore is not considered here.


*Milner, W. E.* *Zoologist*, 1848, pp. 2054-2062.

The following is an annotated list of the species observed:

**Meadow Pipit** (*Anthus pratensis*).

One or two seen in the village on 24th July, and from 2nd to 13th August, were probably migrants, though possibly birds which had bred on some part of St Kilda. Clarke found it the commonest of all birds on passage in September and October.

**Rock Pipit** (*Anthus spinoletta petrosus*).

On and after 23rd July, on several days, parties of up to twenty were seen in certain favoured localities. The numbers fluctuated, and though some had perhaps bred locally, others may well have been genuine migrants.
Grey Wagtail (*Motacilla cinerea*).

An adult on 13th August. There are three previous records, all for October, by Clarke.

White Wagtail (*Motacilla alba*).

Two, one male, arrived on 6th August, after which birds were seen in the village area almost daily, as follows:—8th and 9th August, three (one an adult, one a bird of the year, the other uncertain); 10th August, three in the morning, five in the evening; 11th August, one; 12th August, three adults; 13th August, four. Clarke found the species common in September and October.

Wheatear (*Oenanthe oenanthe*).

From 4th August birds were seen in localities some distance from breeding haunts, but these may have bred locally. Two shot proved to be of the typical race.

Swallow (*Hirundo rustica*).

Neil Fergusson, junr., presented us with a stuffed specimen taken about May of 1930. Several have previously been recorded in late spring, but, as yet, none in autumn.

Kestrel (*Falco tinnunculus*).

Single birds were seen on 22nd and 28th July and 6th August (an adult female). The birds showed no signs of breeding. Dixon noted the bird as an occasional visitor in summer, but the reason for these erratic visits is unknown. Clarke recorded two on passage in September, but our birds were probably too early for passage migrants.

Heron (*Ardea cinerea*).

This species is another erratic visitor, whose occurrence is difficult to explain. The island is most unsuitable for the species, and Dixon records that if individuals stay they usually die of starvation. We saw two on 29th and 30th July, two on 6th August, one on the 10th and 13th—all appeared to be in adult plumage.

Red-breasted Merganser (*Mergus serrator*).

A brown-headed bird arrived in Village Bay late on 28th July and stayed until 3rd August.
Oystercatcher (*Hematopus ostralegus*).

From 4th August family groups were noted coalescing and some pairs had left their breeding sites by 10th August. Clarke states that most leave after mid-August, but the bird was still abundant at our departure.

Ringed Plover (*Charadrius hiaticula*).  

One 22nd and 23rd July. On 31st July one came in about 4.15 p.m. and left E.S.E. fifteen minutes later. One 8th to 11th August; on the last date two more arrived towards nightfall and all three stayed till 13th August, when we left. All birds were adults, and all were in the sandy Village Bay. Clarke notes the bird as plentiful in September and October.

Golden Plover (*Charadrius apricarius*).  

Four adults, none in full plumage, on the plateau of Mullach Sgar on 10th August. Clarke found the bird common on the high ground in September and October.

Sanderling (*Crocethia alba*).  

One on the beach 3rd August, another 8th to 13th August. Both were adults in incomplete summer plumage. Clarke has a few records, none after 6th September.

Dunlin (*Calidris alpina*).  

One adult by a small ditch on the cliff top of Ruaival on 23rd and 24th July. Clarke recorded it as scarce.

Common Sandpiper (*Tringa hypoleucos*).  

One on Dun 30th July, another in Village Bay at dusk 6th August. Clarke had only two records for 1910 and 1911, both in the first week of September. The only other records are one by Milner, on 14th June 1847, two by the Duchess of Bedford, 23rd August 1910 and 23rd May 1914, and one, 2nd September 1911, by Clarke.

Redshank (*Tringa totanus*).  

Adults were seen on the beach as follows: one on 22nd July, two 23rd July, and one 24th July, 29th July, and
10th August, also one on Boreray 31st July. The only previous record is one seen by Clarke on 10th September 1911.

[Whimbrel (Numenius phaeopus).

It is curious that we saw no Whimbrel, although the species is believed to have bred in 1905 and other years.]

Curlew (Numenius arquata).

The bird perhaps breeds on St Kilda and single birds on 27th and 29th July may have bred locally. The others seen were certainly fresh arrivals, namely, three 30th July, three, which left the island E.S.E., 2nd August, two 3rd August, at least seven 4th August, and single birds 5th, 8th, 10th, and 13th August. Clarke recorded it as common.

Common Snipe (Capella gallinago).

Several pairs nest but are confined to the peat bogs, and single birds noted on the drier ground and cliffs on 23rd July, 6th and 11th August, were probably passage migrants. Clarke notes it as common on passage.

Arctic Tern (Sterna marcraura).

On 27th July a single adult flew down the Great Glen and out to sea against a northerly gale. There are two previous records, both by the Duchess of Bedford, for 23rd August 1910 and 23rd May 1914.

Common Gull (Larus canus).

Single adults were recorded on 29th July over the village, 7th August off Carn Mor, and 8th August on the beach; four adults on the beach 10th August. Clarke saw only one, on 7th October 1911.

Lesser Black-backed Gull (Larus fuscus affinis).

One pair nested. Apart from these a single adult was seen on Dun 30th July, Oiseval 31st July, and Ruaival 1st August. Clarke had only two records, for 1st September 1910 and 10th September 1911.

Great Black-backed Gull (Larus marinus).

On our arrival flocks of this species, nearly all adults, were present in the village and Glen Bays. These may
have been non-breeding birds which had stayed all the summer. Their numbers fluctuated to a considerable extent, perhaps swelled by birds on migration.

**Kittiwake (Rissa tridactyla).**

Flocks, mainly of adults, were in Village Bay from 24th July onward and in Glen Bay from 25th July. The numbers increased and Tarrocks began to join them on 3rd August. By 11th August the latter were much commoner. Some were quite probably migrants, though many were undoubtedly local birds.

**White-tailed Eagle in Mull.—**On the 15th of October this year the writer, when on the hills which surround Benmore in the Isle of Mull, saw a full-grown White-tailed Eagle. The bird was flying very low and hunting along the slopes, and it was only the fact that the deer were watching something that made the writer aware that it was within a very short distance behind his back. As with the Golden Eagle under similar circumstances and about the same place, the bird was quite unalarmed and unafraid, and indeed it is thought he was curious as to what the writer, lying on the bank, really was. The bird was watched as far as possible through glasses, and there was no doubt as to the identity of the species, there being no signs of a golden head, and the tail being entirely pure white. There are inaccessible sea cliffs within a few miles of the place where the bird was seen, but it was lost sight of against the hillside in the bad light. It was seen in almost exactly the same place as the Golden Eagles had been seen before, and hunting in very much the same way. It was not being followed by any bird or attacked by anything. The writer would judge that it was rather larger than the figures generally given for the measurements of this bird.—J. A. Yeaman, Edinburgh.

**Velvet Scoter off Islay in Summer.—**On 17th July 1931, about a mile off Portaskaid in Islay, I had close views from a boat of a female Velvet Scoter. I noted the square white wing-bar and two pale head patches on an otherwise dark brown bird, the greenish beak, etc. I may add that I am extremely familiar with the species on the east coast of England. It is a remarkable time of year at which to see the bird, but three were reported off the Irish coast this summer (J. B. Watson, *British Birds*, vol. xxv., p. 103).—David Lack, Cambridge.
GREGARIOUS BRITISH CATERPILLARS
AND THEIR WEBS.

By ANN V. BORTHWICK, B.Sc.

Many Lepidopterous larvae are capable of spinning silk webs, but comparatively few of them share the protection of a common tent. The webs of these gregarious forms are of many kinds, ranging from the thin net spun by the larvae of *Pieris brassicae* to the well-constructed felt-like nest of *Anaphe*, a Eupterotid found in African forests.

In some groups the species form a complete series, showing all grades of habit from solitary to colonial, the former being the primitive condition from which the latter has been evolved. Such a series can be traced in the British Pierids. The female of *Pieris napi*, the Green-veined White, lays her eggs singly, and hence the caterpillar is always solitary. The eggs of *Pieris rapae*, the Small White, are deposited in small batches and the larvae are rarely quite solitary, even in their young stages, while a loose social condition is sometimes noticeable in the mature larvae. In *Pieris brassicae*, the Large White, the gregarious habit is strongly developed and maintained throughout the larval life. The eggs are laid in large clusters, and the larvae spin a slight web in order to gain a secure footing on the slippery leaves of their food-plant, the cabbage. In all these species the winter is passed in the pupal stage.

In the allied species, *Aporia crataegi,* the Black-veined White, the eggs are deposited in batches of 100 to 200 on the leaves of hawthorn, blackthorn, or plum. On hatching, the larvae spin a thin web over the leaf and all feed on the same part of it. After about twelve days they spin a denser web and retire within it for their first moult. After this they feed only in relays, numbering one or two dozen individuals at a time. They march out of the nest together and feed in a row side by side, eating the cuticle of the leaf, which is covered with a thin web. After a meal they return in a body to the densely-spun nest.
They hibernate as second stage larvae, in batches in separate compartments, varying in size and often woven side by side in the interior of the nest, which is a tough, dense, silken mass of greyish colour, spun over the remaining parts of the leaves upon which they fed, and around the branches, generally between a small fork.

On emerging next March their habits remain much the same. They rest together in compact parties, dispersing to feed. They strip the twigs, leaving only the midribs of the leaves, beginning first on those at the ends of the branches and feeding downwards, returning to the tips to rest. Webs are spun by the caterpillars on each journey backwards and forwards, and so a carpet of silk is formed over the branch along which they travel. On approaching maturity they gradually disperse and give up their gregarious mode of life.

A much more advanced form of colonial life is reached by some foreign Pierids. Delias harpalyce, an Australian species, is similarly gregarious, but the larvae continue to spin silk until they are fully fed, when they attach themselves to their web for pupation.

Eucheira socialis, a Mexican form, carries this gregarious habit to its furthest limit, forming a retreat for times of danger, for rest, and finally, when fully fed, pupating therein, the pupae hanging, Nymphalid-like, from the inside of the nest by their tails, and without the aid of the girth found in other Pierid groups. There are many other foreign examples of gregarious Pierids.

A similar series can be traced among the British Nymphalids of the tribe Vanessa. The larvae of Pyrameis atalanta, the Red Admiral, live solitary lives. The female of Polygonia c-album, the Comma butterfly, usually lays several eggs on a plant, and the larvae, at least when young, live in close proximity. In the genus Vanessa, the eggs are laid in batches on the food-plants and immediately on hatching the larvae spin a web over the leaves. Under this protection, they feed and congregate into dense masses for moulting. In Vanessa urticae, the small Tortoiseshell, large broods break up on hatching, or, at a later stage, into
separate companies, each of which constructs a common web among the terminal leaves of their food-plant, the nettle. When the surrounding foliage has been devoured, the whole company move off to the upper leaves of an adjacent plant. After the fourth and last moult, the whole colony is scattered, each individual seeking its own refuge for pupation, although two or three pupae may often be found on neighbouring leaves. The habits of Vanessa io, the Peacock, are similar and the food-plant is also the nettle.

According to Frohawk, the larvae of the rare Camberwell Beauty, Vanessa antiopa, behave in their early instars like those of V. urticae. The female lays her eggs in large batches encircling a stem or twig of willow. The newly-hatched larvae at once climb up to the extremity of the branch on which they find themselves, each spinning a trail of silk as it goes. They congregate on the last cluster of leaves, covering their bases with a web in which they live and feed in company, at first eating the lower portions of the enclosed leaves and by their weight causing these to hang down until their ends rest on the leaves below; they feed on these in turn and continue in this manner to work their way downwards, feeding as they go, eating all the leaves and covering everything with a web. When one branch is denuded of leaves, they all descend until they reach another, which they ascend to the top, and again cluster together in a mass and feed downwards as before. When moving, they are extremely active and feed rapidly. When fully-fed, each larva seeks a place for pupation, but frequently many pupae are found close together.

The silk-spinning habits of the larvae of V. polychloros, the Large Tortoiseshell, are almost identical with those of V. antiopa, both being tree-feeding species, and differ from those of V. urticae and V. io, which feed on low plants, in that their silken habitations are much more extensive and permanent than in the case of the last two species. These more extensive webs give a greater degree of safety on trees and are used for a longer time, as the larvae of V. antiopa and V. polychloros remain gregarious throughout the whole larval life, while those of V. urticae and V. io separate after
the last moult—sometimes even before that, as these habits vary slightly in different broods.

The dispersal of the larvæ in the last instar is, probably, an important factor in the survival rate of these and other species, as a single pupa hidden in a crevice or among leaves is less liable to attack than one hanging passively in a web surrounded by many others, forming a tempting meal for an insectivorous bird. The active larvæ are quite safe in the web, for, according to Frohawk,\(^4\) they are very sensitive to any disturbance. Any sudden noise sufficient to produce concussion of the air causes a whole brood of *antiopa* larvæ to give a violent jerk. This instantaneous movement of several hundred larvæ in a dense mass would be somewhat alarming to any bird that might approach them too closely. This habit exists through all the larval stages, and the larvæ themselves, especially in the last two instars, have long, sharp spines that would probably act as very efficient weapons of defence if they were actually attacked.

Examples of gregarious larvæ can be found in a second tribe of the Nymphalidæ, the Argynnidi, but no true series can be traced among the British forms, as only two genera occur, and in each of these the larvæ exhibit remarkably similar habits. In the first genus, *Argynnis*, all the larvæ are solitary, and in the second, *Melitea*, they pass through their early stages in a common web, which serves as a carpet to lead from one part of the food plant to another. There are slight variations in the feeding habits of the three British species. For example, the larvæ of *Melitea athalia*, the Heath Fritillary, feed in little parties, and after a meal return to rest with the company, while those of *M. aurinia*,\(^5,6\) the Marsh Fritillary, on exhausting their immediate food supply, move in company to another part of their food plant, scabious or honeysuckle, and construct a new web, each successive one being better built, the first being comparatively thin and transparent and the last the very resistant hibernaculum. Sometimes the larvæ of this species do not complete their transformation until the following year.

In all species hibernation takes place after the third
moult. For the winter each brood constructs a close, compact nest of grass and other stems woven together with silk, so that the inside of the structure remains dry even in the worst weather. In the spring the larvae of *M. cinxia*, the Glanville Fritillary, spin another large, loose feeding web under which they live, and sometimes in this species they remain more or less gregarious even up to the time of pupation. On one occasion Tutt found three pupae in a common web. Usually the *Melitaea* larvae distribute themselves directly after the first moult following hibernation, and then become lethargic in their movements, trusting rather to their cryptic effects in relation to their surroundings than to hiding away. This trait does not imply the inability of the larvae to travel rapidly, which they can do if necessity arises.

Among the moths, the only British families showing a sequence from solitary to colonial web-spinning forms are the Lymantriidae and the Lasiocampidae, both of which contain many solitary species and only a few gregarious ones.

In the former family, the least highly-evolved tent-spinning species are *Lymantria dispar*, the destructive Gypsy Moth, and *Dasychira fascelina*, the Dark Tussock. The larvae of the first only collect together when the weather is cold or wet, and construct, in the higher branches of the tree on which they live, a slight common web that serves as a temporary shelter.

The young larvae of *Dasychira fascelina* hibernate in a thin silk web placed in a fork of a branch of their food plant (heather, hawthorn, or willow), three or four commonly occupying the same nest, which they protect by drawing a few dead leaves closely around it. In spring they feed openly on the leaves of their food plant.

The larvae of *Lymantria monacha*, the Nun Moth or Black Arches as it is sometimes called, are able to spin protective webs until they are half grown and then this power ceases. This voracious species has caused serious losses in many continental forests by completely defoliating the trees, starting from the top, which is covered with silk, and working
downwards. In Britain it only occurs in the south, where it is not sufficiently numerous to do much damage.

The larvae of *Euproctis chrysorrhaea*, the Brown-Tail, hatch in the autumn, spin small feeding webs, and then construct a hibernaculum consisting of leaves and twigs held together with silk. In this the second stage larvae pass the winter, and occasionally several broods which have hatched from adjacent egg-masses occupy the same hibernaculum. In the spring the larvae, according to Barrett, construct other nests as they grow, for security while moulting. They remain together till they are well grown.

The series formed by the British Lasiocampidae is parallel to that found among the Pierids. *Lasiocampa trifolii*, the Grass Eggar, and many others are always solitary, while *Macrothylacia rubi*, the Fox Moth, lays its eggs in batches and the young larvae are found in groups, as in the case of *Pieris rapae*.

The eggs of *Malacosoma castrensis*, the Ground Lackey, are laid in masses, and the young larvae spin a silken tent low down among the marsh plants upon which they feed. Here they live gregariously when the weather is dull or cool, but whenever the sun shines they are to be found basking on their food plants.

The newly-hatched larvae of *Malacosoma neustria*, the Tree Lackey, also construct a tent in which they live gregariously until they are well grown, but leave it in order to cast their skins. If necessary, they abandon their original habitation and construct others successively on the tree, so as always to have plenty of food near at hand. The first nest consists of two or three leaves spun together, but as they grow they build larger tents by spinning up twigs and branches in a thick web of silk. A numerous colony may require a nest a foot long and six inches wide and this is a conspicuous object in a tree when most of the foliage has been devoured. As they attack fruit trees, among others, they are of considerable economic importance, and one of the standard methods of control for this species and *Euproctis chrysorrhaea* lies in the destruction of the nests.
In fine weather, when a shelter is unnecessary, the larvae rest on the bark of a branch or on the nest, crowding together in scores of hundreds and covering a considerable area. Usually, when they are nearly full grown, they abandon the web and scatter as far as possible from one another, sometimes travelling rapidly for considerable distances. Occasionally they remain together and pupate in a web of the carpet type.

According to Balfour-Browne,¹ the nest of Eriogaster lanestris, the Small Eggar, is usually commenced round the egg-mass, which, as a rule, is formed round one or more buds upon a twig of hawthorn or blackthorn. These develop and provide supports for the construction of the nest, which is typically more or less globular. The web is added to as the caterpillars grow, fresh layers being spun outside the older ones. The family is always to be found either in or on the nest or on the feeding grounds near at hand, until within the last fortnight of the larval life, when the individuals tend to wander away, often to distances of more than fifty yards from the nest.

Among the Notodontidæ there is one example of a colonial web being constructed by larvae—those of Phalera bucephala,¹² the Buff-tip, spinning a tent for moulting purposes. The female of this species lays her eggs in clusters on various deciduous trees, and the young larvae remain together, feeding side by side, so as to devour leaf after leaf. When the higher portion of the branch is cleared, the whole company suddenly leave it and take possession of another branch, usually higher up the tree, stripping it in a similar manner. Each company seems to shift its position in this way, at least three times. When not feeding, the larvae crowd together into a solid bunch on one of the twigs, their extremities protruding from the cluster and giving it a ragged look, very like a leaf which has been eaten, leaving the principal ribs, so that the bunch is not at all conspicuous. When about to moult, a common silken carpet is constructed by them, conjointly, under which they cast their skins. As they grow the parties become smaller, but even large caterpillars which have
become isolated will reassemble in twos or threes if opportunity offers. Thus the social life of the species endures vaguely throughout the life of the larva.

The Emperor Moth, *Saturnia pavonia,*\(^1\) lays its eggs in batches and the newly-hatched larvæ cover the leaves of their food-plant with a fine carpet web. After a week or two the gregarious habit tends to disappear, although, when reared under artificial conditions, the individuals sometimes continue to show a liking for one another's company until quite large.

Among the Noctuids, only one doubtful example of a colonial web is mentioned by Barrett.\(^2\) He writes that the larvæ of *Monima munda,* the Twin-spotted Quaker, are *said* when young to be sociable, sometimes spinning a common web under which a dozen or more will lie, side by side, during the day, coming out at night to feed. Apart from this and one or two even more doubtful examples, few of the remaining Macrolepidoptera are ever found under a common web.

Among the Microlepidoptera, the most outstanding instances of gregariousness are found among the Small Ermine Moths of the genus *Hyponomenta.*\(^3\) In all species colonies of larvæ, which hatch from large egg-masses in the spring, spin together groups of twigs by means of very fine whitish silk, with which they form a fairly dense tent. Usually they add to this as they require more food, until the web may reach an immense size. Balfour-Browne\(^1\) found, near Cambridge, almost a hundred yards of spindle hedge covered with webs. In such a case more than one family is concerned, as the moths after emerging from the pupal cocoons are so sluggish that many of them oviposit more or less close together, so that vast numbers of caterpillars emerge and the families join up. In this case, also, many members of the brood pupate in clusters, though each individual is enclosed in a separate spindle-shaped cocoon of closely-spun silk. There are, however, a number of species in which, after the leaves enclosed in the web have been eaten out, the caterpillars, instead of extending their tent, desert it and construct a similar structure elsewhere.
According to Sich, another variation of the feeding habits is found in *Hyponomeuta plumbellus*, where the very young larvae mine in the shoots of spindle, quite separately, and when older, in some way find each other and form a social dwelling. If this is so, their habits differ entirely from all other gregarious caterpillars, where their colonial life starts from the egg-stage. Colonies of *H. evonymellus*, which rarely occurs in Scotland, were found this summer at Temple, feeding in a small wood of gean trees, on which they had constructed tents up to a foot in length, as already recorded in the *Scottish Naturalist*.

Many Microlepidoptera spin silk trails as they move about, but few are really gregarious, and if a colonial web is formed it is, in many cases, merely due to the limitations of the habitat. For example, the larvae of the Pyralid, *Ephestia kuhniella*, the Mediterranean Flour Moth, form thick mats of webbing on the surface of the flour on which they live and over which they are continually wandering about, spinning as they go. But if each larva had been able to pursue its own path uninterrupted by a sack or other obstruction, it would not have had to repeatedly retrace its steps and hence no matted web would have been formed. Its apparently colonial habits are solely due to the artificial conditions of its environment.

Tutt asserts that the primary object, which all these gregarious web-spinning larvae have in common, is the economy of silk. He accounts for the further evolution of these habits on five separate grounds, based upon the uses of the webs:

1. To make a safe carpet for travels—e.g., the webs of *Pieris brassicae* give it an invaluable footing for crawling over slippery cabbage leaves.
2. To afford a safe hiding-place when not feeding, as shown by *Aporia crataegi*, where the larvae emerge from the web in relays in order to feed.
3. To make a safe retreat for moulting; e.g., the larvae of *Phalera bucephala* specially construct a shelter for moulting. In some forms a carpet web is laid down on the eve of an ecdysis, so that the old
skin may be firmly attached by the proleg-hooks while the caterpillar is escaping from it. Most of the higher colonial forms cast their skins in their nests, but the larvæ of *Malacosoma neustria* prefer to moult outside it.

(4) To make an adequate hibernaculum, e.g., the nest of the *Meliteas* and *Dasychira faselina* already mentioned.

(5) To make themselves conspicuous as a warning device. This is shown by the *Vanessa* larvæ, and, according to Sich,⁵ the nests of *Hyponometa cognutellus* on spindle are carefully avoided by ants, although they will crawl everywhere else over the bushes.

I should like to add a sixth reason for the formation of a common web, namely:

(6) To make a shelter against adverse weather conditions, as illustrated by the larvæ of *Malacosoma castreensis*, which spin a web in their young stages, but afterwards only use it in wet or cold weather. Under similar circumstances the larvæ of *Lyantria dispar* spin a common tent.

Balfour-Browne¹ thinks that the evolution of these habits took place in three stages. First, the construction of a common carpet web over the food-plant, which, he suggests, may assist in digestion, as the silk is really solidified saliva. Secondly, the construction of a feeding-web, spread over the food material, within which the larvæ feed, the web being extended as the food enclosed is devoured. Finally, the construction of a home-web, from which the caterpillars go out to feed and to which they return to rest.

In his paper on "The Evolution of Social Life among Caterpillars" he emphasises one point of great interest, namely, that unlike other groups of social insects, where the gregarious habits commence with, and are based upon, the longevity of the adult, these larval habits are in no way dependent upon the imago, although it may ultimately become involved.
REFERENCES.

5 Sich, A., see discussion on Balfour-Browne's paper.
7 Ministry of Agriculture and Fisheries Leaflet No. 69 on "The Lackey Moth" (Clisiocampa neustria, Linn.).

Hedgehog in Argyll.—As the Hedgehog is considered somewhat rare in Argyllshire, and especially Ardnamurchan, it may be of interest to record that I saw one at Kilchoan in June of this year (1931).—George Waterston, Edinburgh.

Large Otter in Mull.—In the spring of this year (1931) a dog Otter, measuring 5 feet 3 inches (63 inches) from nose to tip of tail, was killed. Unfortunately he was not weighed at the time, but everything pointed to his being an animal of unusual size, with a particularly long tail. He had what is described as his heavy summer coat, and its colouring might be described as from black to beige, there being very little suggestion of yellow about its colour in any part. Another Otter, seen in the autumn, also seemed a very great size, but was at a considerable distance and did not give one much time for examination. The tail in this case was again remarkable for its length. There are many sea caves round the coast, which are probably the haunt of these large old Otters.—J. A. Yeaman, Edinburgh.

Speckled-Wood Butterfly in Mull.—The following note may be of interest to your correspondent Kenneth J. Morton, who wrote on the Speckled-Wood in West Inverness (Scottish Naturalist, Nov.-Dec. 1931, p. 187). Mr Morton mentions the Argyllshire localities for the Speckled-Wood (Pararge egeria), including Skye. During my visits to the isle of Mull in 1930 and 1931 I have found it to be numerous at one locality on the east coast, a wooded spot between the coast and the moors. I do not doubt that it is to be found in other parts of the island, as there are many similar spots along the coast. During both years I saw it in July, in 1931 on 9th July.—W. B. R. Laidlaw, Aberdeen.
A SCOTTISH RECORD OF A RARE SPRINGTAIL
(Sminthurinus cingulatus, Bagn.)

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

In June 1909 whilst collecting in Southern Norway I found a pretty and very distinctive little Sminthurid at the roots and base of the Lousewort (Pedicularis palustris). It occurred in some numbers in marshy spots near Fevig and Arendal and proved to be a new species. I accordingly searched for it in England, and ultimately found a single example in the neighbourhood of Langdon Beck, in Upper Teesdale, in August 1910, and another example in the same district in August 1920. In both cases they were beaten from Lousewort, and in both cases torrential rain made it impossible to continue the search. The following is the first Scottish Record:

Sminthurinus cingulatus (Bagnall).

"Contributions towards a Knowledge of the Collembola" — I. "Some New or Little Known Sminthuride" (The Vascularum, pp. 1-4 (p. 3, fig. 1), February 1921).

A small species, about 0.5 mm. long; not strongly convex dorsally; pale creamy-white or lemon-yellow; body with a heavily pigmented belt of greenish-black (fresh specimens) to purple or purplish black, which reaches and runs into the head laterally. This minute form may be readily recognised in the field by its distinctive type of coloration.

Aberdeenshire: a few specimens only by beating Lousewort at the mouth of the Don, near Aberdeen, and Kincardineshire at Maryculter, June 1924.

I have, at one time or another, taken a number of species of Collembola not yet known as British, including some particularly interesting boreal forms from Scotland, and will endeavour to put some of them on record in the near future.
ON THE SCOTTISH SPECIES OF GALL-WASPS
THAT AFFECT THE COMPOSITÆ.

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

At the time that Prof. J. W. H. Harrison, F.R.S., and the writer commenced their cecidological researches only four species of Cynipids, Aylax hieraci, Aylax hypochoeridis, Aylax scabiosa, and Aylax fitchi, were known from British Compositæ. The most common species, Aylax hieraci, is now included in the genus Aulacidea, a genus containing several species concentrated upon Compositæ of the sub-family Liguli-floræ, whilst the species found on Centaurea and Serratula (excepting Phanacis) would seem to form a natural group which we here record under the generic name Isocolus. We now know at least fifteen species from our Compositæ, of which the writer is able to record ten from Scotland, all but one being additions to the Scottish fauna.

Aylax hypochoeridis Kieffler.

The gall takes the form of a characteristic swelling in the stems of Hypochoeris and though the plant is common enough in Scotland the insect appears to be very local and was not known from Scotland to either Cameron or Trail.

AYRSHIRE. On the coast near Dunure, October 1922, and KINCARDINESHIRE on the coast near Stonehaven, September, 1931.

Isocolus scabiosa Gir.
This is the type of the genus Isocolus to which rogenhoferi, fitchi, and, I think, jaceae can be referred.

BERWICKSHIRE, near Cockburnspath on Centaurea scabiosa.

Isocolus jaceae Först.

Bagnall, 1918, Notes and Records; Cynipidae—Gall Wasps (The Vascularum, iv., pp. 51-52 (p. 52)).

The first British examples were discovered by Harrison galling the achenes of Centaurea scabiosa at Billingham,
Co. Durham, and has since been found by us in various English localities on both *C. scabiosa* and *C. nigra*.

Probably not rare but requires close search; Aberdeenshire and Kincardineshire on the Don and the Dee; Fife on the coast near Kirkcaldy, and Berwickshire near Cockburnspath on *Centaurea nigra* only.

*Isocolus rogenhoferi* Wachtl.


Originally discovered as British on the Durham coast but now known to be widely distributed. The gall requires to be searched for carefully and generally takes the form of a swelling on the inner side of an involucral bract of *Centaurea scabiosa*, though more rarely it galls the achene, in which cases the achene is substantially larger than when galled by *I. jacea*.

**Perthshire.** On the Carse of Gowrie, October 1929.

*Phanacis centaurea* Först.


Found in the stem of *Centaurea scabiosa* and more rarely *C. nigra* causing a scarcely perceptible swelling, the larvae occupy separate longitudinal cells near the outer layer of the stem which becomes discoloured and brittle. Apparently widely distributed but difficult to detect.

**Perthshire.** In the Carse of Gowrie, October 1929, and near Lochearnhead, September 1931.

*Gilletea taraxaci* Ashmead.


Strong swellings on the mid-rib of the Dandelion leaf rare and very local. Fife—links at St Andrews; and East Lothian—North Berwick, September 1922.
ON THE SCOTTISH SPECIES OF GALL-WASPS

Aulacidea hieracii (Bouché).
Our most common species; Loch Rannoch, near Edinburgh, Clydebank, and Ayrshire Coast. Recorded by Trail as common in Scotland.

Aulacidea pigeoti Kieffer and
Aulacidea tragopogonis (Th.)
Bagnall and Harrison, 1930, Preliminary Records of two new British Gall-Wasps (Cynipidae) affecting the common Goat’s Beard (Tragopogon pratensis) (Ent. Mo. Mag., xvi., p. 225).

In September 1930, shortly after discovering these species in England, Harrison and the writer unsuccessfully searched several plants of Tragopogon on the roadside about four miles south of Dalkeith, but in October 1931 the writer found that a few plants at the same spot were heavily galled by A. pigeoti, and a little distant from there he secured a stem with three galls of A. tragopogonis. In November the writer again found a plant in the neighbourhood of Dundee the roots of which were heavily galled by A. pigeoti which in our experience is the commoner of the two species.

Aulacidea pilosella (Kieffer).
Bagnall, 1916, Talks about Plant-Galls—III: Gall-Wasps other than those affecting Oak (The Vascular, II, pp. 9-12 (p. 12)).

First recorded as British from specimens taken by Harrison and the writer in several Durham localities and since taken in Northumberland, Yorkshire, Shropshire, Staffordshire, Surrey, etc. The insect causes a fusiform swelling in the mid-rib of the leaf of Hieracium Pilosella, whilst another species of Aulacidea not yet described has been bred from pea-like root galls of this plant found by the writer in Staffordshire.

AYRSHIRE. Coast near Dunure, rare, September 1922.
BOOK NOTICE

Beasts and Birds as Farm Pests. By James Ritchie, M.A., D.Sc., F.R.S.E. London and Edinburgh: Oliver and Boyd, 8vo, pp. 270 and 87 text-figures. Price 12s. 6d. net. Agriculturists owe a debt of gratitude to Professor Ritchie, who has published in book form the series of articles which appeared not long ago in The Scottish Journal of Agriculture. The number of illustrations, most of which are excellent and familiar to us, has also been usefully increased. The various pests considered in this useful work are not dealt with in zoological sequence, but are grouped according to their relationship to the farm. The mammals and birds are treated in different sections, but after this primary division each chapter is devoted to the creatures which are more or less harmful to a particular section of the farm or estate. Thus the beasts which damage woodland form the subject of a separate chapter; the birds which destroy crops of grain another; and so on. The case for and against each species is fairly and carefully argued, and both sides of the argument supported by a well-selected series of established data. It is interesting and pleasing to note that Professor Ritchie succeeds in showing how and why the harm popularly attributed to a species is often exaggerated. An ingenious argument for a better estimation of the balance between benefit and injury is given on pp. 99-100. Where, say, four wire-worms are destroyed by the Rook, the benefit to the crop can only be fairly estimated by multiplying this figure by one representing the potentialities for destruction possessed by these insects, which live in the soil for two or three years. It is not fair to balance a certain number of wire-worms against an equal bulk of grain. Calculating the probable damage by these insects, the author constructs an imaginary table for possible future use, where 1 wire-worm = 350 grains of cereals. By these and similar arguments Professor Ritchie pleads throughout the volume, and pleads fairly, for a more careful consideration of the facts. Like all true naturalists, his sympathies are with the creatures of which he writes, at the same time showing the farmer how to deal with those pests, and they are many, which must be kept under control. The book is well printed, and, as we have said, the illustrations are excellent. We should like to see a summarised and cheaper edition of this useful work; the price of the present issue may, we fear, in these hard times, limit the circulation of a book which should be in every agriculturist's and naturalist's library.

P. H. G.
A GYMANDROMORPHIC FORM OF BOMBUS, WITH OTHER NOTES ON BEES AND WASPS IN SCOTLAND.

By W. B. R. Laidlaw, B.Sc.

I TOOK a gynandromorphic male of Bombus agrorum, Fab. at Colinton, Midlothian, in August. The gynandromorphic characters were confined to the head, the left half being that of a typical worker, while the right half and remainder of the insect were male. The armature was normal. The unequal antennæ render it conspicuous, and a closer examination shows differences in the two compound eyes, the one on the left worker half being slightly smaller. Dr Richards, to whom I referred it, gives me the only other record he knows of, recorded by Stöckert (Zeits. wiss. Ins. Biol., xvi. 1920-21 (1921) p. 732.) This was a German specimen of B. lapidarius which was half and half, back and fore, not bilaterally symmetrical.

I have found the following variations:—

1. Psithyrus bohemicus, Seidl. (distinctus, Perez) variety corax, Hoffer. In September I took one male on Ragwort on the Pentland Hills, near Colinton. The specimen was completely black, with the exception of a few white hairs at the sides of the apical abdominal segments. Dr Richards refers this to the above named variety, corax, Hoffer.

2. Ps. bohemicus, Seidl., variety flavidus, Bleithgen. One was taken near Balerno, Midlothian, another at Dirleton, East Lothian, and two at Aberdeen. In this case the variety seems to be as well distributed as the type. It varies from the type in the greater amount of yellow, having a distinct metathoracic band of that colour, a very bright one at the base of the abdomen, and distinctly between the black and white on the abdomen.
3. *Ps. sylvestris*, Lep. (syn. *quadricolor*, Lep.). I took two males on Ragwort near Aberdeen, which were the yellow-tailed variety, the white abdominal hairs being replaced by yellow. A male specimen I saw taken in Germany this year was also of this variety.

4. *B. hortorum*, Linn. One male on *Aconitum*, Edinburgh, with tail yellow.

5. *B. hortorum*, Linn. One male with rust-coloured tibial hairs.

6. *B. terrestris*, Linn. One queen on Privet, Edinburgh. Prothoracic band buff, abdominal band pale yellow (as in *lucorum*), tail red, almost pink. This is a beautiful variety, the colours giving it a most unusual appearance. It is possible that this is a hybrid *terrestris* × *lucorum*.

7. Vespidae—*Vespa rufa*, Linn. I took several workers at Colinton, Midlothian, with an additional pair of yellow spots on the metanotum. The size of the spots was variable but always distinct.

Other records, all during August, are:

1. *Psithyrus rupestris*, Fab. Male. I took two on *Centaurea nigra* at Dirleton, East Lothian. This coast has been noted several times in the SCOTTISH NATURALIST as a good locality for this species.


7. Vespidae—*Vespa austriaca*, Panz. I took one male on Aphid-infested plum leaves at Colinton, Edinburgh, in August. This specimen shows a minute second pair of spots on the metathorax.
The very pale male specimens of *B. agrorum*, Fab. previously mentioned (SCOTTISH NATURALIST, 1931, p. 182) Dr Richards believes may possibly correspond to the female described as race *septentrionalis* by Vogt.

I wish to express my indebtedness to Dr O. W. Richards for his kindness in identifying the different races of *Ps. bohemicus* and for the information on the gynandromorphic and pale forms of *agrorum*, on which I have quoted freely from his letters.

The gynandromorph has been placed in the Royal Scottish Museum.

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NOTES

**Lesser Ling in the North Sea.**—The Lesser Ling (*Molva dipterygia*) is a deep-water fish found along the Norwegian Coast in depths of over 100 fathoms. Sometimes it extends south into the Skagerack to shallower water. At times it is landed at British ports by trawlers fishing the northern and Faroe grounds. It does not seem to have been recorded from the North Sea in depths of less than 100 fathoms, and therefore the locality of capture of one of these fishes is of interest. This specimen, which was presented to the Museum by Mr M'Pherson, was almost 41 inches in length (102.5 cm.) and was taken in the last week of August 1931, 120 miles N.E. ½ N. from Buchan Ness in Aberdeenshire (approx. Lat. 58° 55' N. Long. 0° 53' E.) in 65 fathoms. This locality is well within the northern North Sea.—A. C. STEPHEN, Edinburgh.

**Late nesting of the Blackbird in Renfrewshire.**—On 20th October 1931 my attention was called to a nest with young of the Blackbird. It was built high up in a thorn hedge by the side of a very busy thoroughfare in the village of Kilmacolm, Renfrewshire. I think there will be very few records of a Blackbird's nest so late as this.—T. THORNTON MACKEITH, Kilmacolm.
CURRENT LITERATURE

The Health and Parasites of a Wild Mouse Population.—An important paper on this interesting subject is printed in the Proceedings of the Zoological Society of London for 1931, Part III. (September 1931), pp. 657-721. The chief author is Charles Elton, in collaboration with E. B. Ford and John R. Baker. A Bacteriological Note by A. D. Gardner is included. Research upon the Wood-Mouse, *Apodemus sylvaticus*, was carried on for two and a half years. The main results of the investigation are given in a summary, from which we learn that the normal health of the mice examined was good, that an epidemic was predicted and actually occurred near the expected time, that the mortality affected mice brought into the laboratory, and that these showed a decrease in number which was not normal. No organism was discovered which would account for this, and it was impossible to say whether or not an epidemic had occurred. The parasites were thoroughly investigated, and it was found that in the case of common external parasites such as fleas a complete system of contacts existed between mice and other small mammals. Many other points of interest were elucidated which cannot be referred to here.

**Megastigmus in Scotland; with an Addition to the Scottish List.**—By W. B. R. Laidlaw, B.Sc. *The Scottish Forestry Journal*, vol. xlv., Part II. (October 1931), pp. 177-193, with one double-sided plate and two text-figures. Four species of the genus are described, contrasted, and recorded as Scottish, and a reference given to a possible fifth. All the known species are also listed, with their host and native country. This is a paper of much practical interest to foresters.

**Insects and Climate.**—Part I. of vol. lxxix. of the Transactions of the Entomological Society of London (published 24th April 1931) is entirely devoted to a very important paper by B. P. Uvarov, of the Imperial Institute of Entomology, on the relation between Insects and Climate. This memoir, running to 247 pages, is far too long to notice in detail here. In the Introduction we learn that over 1150 papers and books, in eleven languages, served as the basis for this exhaustive work, and the author is to be congratulated on the successful completion of this immense and laborious task. The paper is divided into two parts, dealing respectively with the Physical Factors of Insect Life, and Weather, Climate and Insects. An exhaustive Bibliography, a List of Authors, and a Subject Index conclude this masterly piece of literary research.
THE BIRDS OF EIGG—SOME NOTES ON THEIR STATUS.

By A. G. S. Bryson and G. Waterston.

In June 1930, the island was visited by A. G. S. Bryson; and G. Waterston visited it in June 1931. Our combined notes show little change in the status of the birds, but there are one or two points which may be of interest:—

JACKDAW.—The Jackdaw seems to be the only bird new to the island. One was seen in 1930, and at least half a dozen in 1931.

GREENFINCH.—The Greenfinch appears to have been first noted five years ago. A single bird was seen in 1931, indicating that it is still present, but has not increased.

LINNET.—The Linnet does not seem to have been noted for over forty years. It was not seen in 1930, but in 1931 it was considered that it was probably present, although its identification was not definitely proved.

CORN-BUNTING.—The Corn-Bunting has obviously decreased. One only was seen in 1930, and none in 1931. It used to be one of the commonest birds—even more abundant than the Yellow Bunting, which is now fairly numerous.

GREY WAGTAIL.—The Grey Wagtail was seen in 1930. It does not appear to have been recorded before, during this century.

RING OUSEL.—The Ring Ousel was seen in 1931. Previously, it does not seem to have been noted for over twenty years.

CORMORANT and SHAG.—The Shag is fairly common, while the Cormorant is almost rare. Previous observers do not seem to have all agreed on this point.

MANX SHEARWATER.—The Manx Shearwater continues to breed in good numbers. In 1931 it was considered that they were breeding farther up the cliffs than formerly.
RINGED PLOVER.—The Ringed Plover was not seen, although it was noted by almost all the previous observers.

LAPWING.—The Lapwing has apparently increased somewhat. In 1931 it was estimated that there were about fourteen pairs.

It is pleasing to see that the large birds of prey are holding their own—if not increasing.

GOLDEN EAGLE.—Three were seen in 1931, but do not appear to have been recorded before, during this century. It might be termed a rare visitor—possibly from Rum.

BUZZARD, RAVEN, and PEREGRINE.—These seem to be in no danger of extermination and might be almost said to be increasing slightly.

WOOD PIGEON.—The Wood Pigeon was seen in 1930. It does not appear to have been recorded before, during this century.

PARTRIDGE.—The Partridge was seen in 1931. Previously it does not seem to have been noted for over forty years.

In conclusion, it may be noted that no Tits, Goldcrests, or Owls were seen. The Heronry also seems to have disappeared.
CURRENT LITERATURE


**Black Guillemots in Kirkcudbrightshire.**—By W. B. Alexander and J. D. Wood, *British Birds*, November 1931, pp. 167-168. Many seen on Ross Head, near Kirkcudbright, on 28th June 1931. The authors regard it as probable that these were breeding birds.

**The Spiders of the Orkney and Shetland Islands.**—By W. S. Bristowe, B.A., F.Z.S., *Proc. Zool. Soc. London*, 1913, Part III, pp. 951-956. Prior to the author's visit to these islands 19 spiders and 6 phalangids were recorded from Orkney, and 3 spiders from Shetland. He now records 40 spiders and 6 phalangids from Orkney, and 32 spiders and 3 phalangids from Shetland.


**The Bionomics and Comparative Morphology of the Early Stages of certain Chrysomelidae.**—By Nellie F. Paterson, M.Sc., Ph.D., *Proc. Zool. Soc. London*, 1913, Part III, pp. 879-949. This is an important study of the larval and pupal morphology of certain British Phytophagous Beetles. Three excellent plates and many text-figures are given, together with a Bibliography of papers dealing with the life-history of these and related insects.
BOOK NOTICES

Paradise Quest: A Naturalist's Experiences in New Guinea. By Lee S. Crandall. New York and London: Charles Scribner's Sons, 1931, 8vo, 226 pages, 52 photographic illustrations. Price 10s. 6d. Few people realise the amount of trouble, danger and expense incurred in procuring zoological specimens, particularly living examples for a zoo. The volume before us is full of exciting adventure, written in a racy style and embellished with numerous beautiful photographs. The story tells of a quest for living specimens of birds of paradise, those beautiful creatures which are mostly confined to the Papuan forests. It had hitherto been deemed an almost impossible task to hunt, capture and convey alive over thousands of miles of ocean these magnificent birds, and consequently they have been seldom seen in the European or American zoological parks. According to the author's "Introduction" no living bird of paradise was seen in America until 1910, and since that date only occasional examples have been exhibited. By Crandall's determination and courage, sometimes at the risk of his own life, some 40 specimens, with a couple of hundred birds of lesser note, were captured and ultimately safely landed at New York. Apart from its interest to the naturalist, this book is well worth reading as a record of adventure and for the light thrown incidentally on the habits of the various savage tribes encountered in these hazardous travels.

The Grey Squirrel. By A. D. Middleton. London: Sidgwick & Jackson, Ltd. 107 pp., 8 plates. Price 4s. 6d. net. This is an excellent little book on an important subject. The author may be regarded as the leading authority in the British Isles on the destructive little animal whose habits he so graphically and fully describes. The book is virtually an expansion of a paper he contributed to a recent issue of the Proceedings of the Zoological Society of London. This memoir, which we have already summarised in our pages (Scottish Naturalist, 1931, pp. 33-35), is not very accessible to the general public, hence we are glad to have the opportunity of recommending to the notice of our readers this useful, entertaining, and low-priced volume. The dangerous possibilities associated with the spread of the Grey Squirrel in the British Isles, including Scotland, where it has established itself in three areas, must not be ignored, and it is gratifying to note that the Board of Agriculture, in England at any rate, is fully awake on the matter. Apart from the importance of the subject, this account of the little pest's activities is so well written, with many touches of humour, that it is well worth reading for its own sake. The six chapters of the book deal respectively with (1) General Description and Natural Relationships; (2) Introduction and Spread in the British Isles (with map); (3) Food and Damage; (4) Habits; (5) Relations with the Red Squirrel and other Animals; and (6) Economic Aspects.
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## PUBLISHERS' NOTE.

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EVERY NATURALIST SHOULD READ

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

Studies of Lanarkshire Birds.
A Remarkable Whale Invasion.
The Natural History of Floods.
List of Birds of the Forth Area.
Scarcity of the Corncrake.
The Rookeries of Edinburgh and Midlothian.
Remarkable Decrease of the House-Sparrow.
Natural History as a Profession.
The History of the Whale and Seal Fisheries of the Port of Aberdeen.
Instinct and Intelligence in Insects.
The Gannets of the Bass Rock—Estimated Numbers and a Count.
Annual Reports on Scottish Ornithology, including Migration.
Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.
Animal Welfare.
The Menace of the Grey Squirrel.
The Varying Length of Lark Song.

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

No. 194] 1932 [March-April

THE INTRODUCTION OF THE RABBIT TO THE ISLE OF VALLAY, NORTH UIST.

By George Beveridge.

My first recollections of Vallay were in 1901. At that time there was not a single rabbit on the island. Some time in 1905 a pair of rabbits was discovered at the extreme east end, and from then onwards they increased rapidly till they reached the westmost end of the island. In the season of 1906-7, 138 rabbits were shot. In 1916, 949 were trapped and shot. In 1917, 1215 rabbits were shot and trapped, and so on, always increasing, till, in 1927, 2262 were trapped.

The heaviest rabbit which I have handled, not cleaned, was 3½ lbs. On the whole they are very healthy animals and are supposed generally to be the best and sweetest of any to be found in North Uist. However, from time to time, disease attacks even these rabbits; the tape-worm seems to annoy them most, and they also suffer from "sturdy," and even the most healthy are seldom free from fleas.

The sheep seem to suffer more from fluke or liver-rot since their introduction, and there can be little doubt that the sheep stock do not thrive so well as they did before this invasion.

The crops also are not immune from their rapacity, but the greatest damage they have done is by their burrowing in the loose sandy soil and thereby allowing the high winds which obtain to the Outer Islands to lay bare large pieces of "machair" ground.

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It is easy enough for the rabbit to dig out his little hole, but it is a different matter for the human to patch up the devastation he has made. It is practically impossible to exterminate this pest from an island (though a tidal one), as however much he is harried by trapping or shooting, there is always a sanctuary close at hand, in other words the rocks along the shores.

In the winter and early spring, when the place is bare, they move to the shore and live on seaweed, and often I have found rabbits with their teeth filed away owing presumably to the contact with the rocks when in search of their food. When put to it (say, if a dog is after them) they will take to the water and are quite fair swimmers.

There is one peculiar point I have noticed and that is, when ferreting, I have repeatedly bolted rabbits and rats out of the same hole. It may seem inconceivable that this should be so, but it is perfectly true. The rabbits here are more red and darker in colour than those on the mainland and, if anything, I think a little larger. Occasionally one sees a couple of bucks fighting. It is a most amusing sight. I remember once when accompanied by my dog seeing a couple engaged in a terrific conflict on the shore. They were so busily employed that they did not notice our approach, and my dog with one word from me speedily collected the pair of them.

How the rabbit ever came to Vallay is a mystery. As I have already stated, the island is tidal and is separated from the main island of North Uist by a strand of 1½ to 2 miles long and is practically dry at low water; it is possible that they may have found their way across by this ford.

On the other hand, someone may have brought a pair across to Vallay in a misguided moment. There is no difficulty in introducing rabbits to new pastures, but it is quite another thing to exterminate them once they get a foothold; even though they are trapped regularly now, they do not seem to be decreasing. They seem to be a steady population without either decrease or increase.
NOTES ON THE STATUS OF BIRDS IN SCOTLAND IN 1931.

By Evelyn V. Baxter and Leonora Jeffrey Rintoul.

We are glad to be able to make, from work done in 1931, so many interesting changes and additions to The Geographical Distribution and Status of Birds in Scotland. The alterations made to this book each year show that much good work is being done in Scotland, and gradually we are coming nearer to the elucidation of the status of Scottish Birds. The effects on birds of the physical changes in the country are exemplified, as, for example, that of planting in Caithness. One new bird has been added to the Scottish list, and two others, which formerly were relegated to the Appendices, should now be included in the body of the work. The distribution of breeding birds is of very great importance, and here we have some notable additions in 1931.

The records show the spread of a new breeding species, the return of an old one, and the increase and spread of regular breeding birds.

The occurrence of the Fulmar on the cliffs at the Mull of Galloway in summer and that of the Black Guillemots at Ross Head near Kirkcudbright, also in summer, are well worth further investigation. In neither case was breeding actually established, and so far we cannot alter their status in our book. But it seems probable that they did breed, and in either case a definite breeding record would be valuable.

Three new pages have to be added to The Geographical Distribution and Status of Birds in Scotland. The first is The Red-Headed Bunting, Emberiza icterica, Eversmann, which occurred on North Ronaldshay on 19th June 1931. The page should be headed as above; the correct Scottish status is "A very rare visitor," and "O xvii. xxv. 66" should be added to Orkney. The other two have hitherto had to remain in the Appendices, but thanks to this year's records must now come into the body of the work. All previous
records of Flamingos have been considered "escapes," but this year's record from Port Ellon, Aberdeen, appears to have been a truly wild bird. A page should therefore be headed "The Flamingo, Phoenicopterus ruber antiquorum, Temm. A very rare visitor," and "O xii. 1931, 141," inserted for Aberdeen, "O?" for East Inverness, and "O probably escapes" for Lanark, Dumbarton, and Renfrew. The evidence for the admission of The Harlequin Duck has hitherto been insufficient, but there seems no doubt that the bird seen by Captain Howard and Mr Freme off Bernera was correctly identified. A page should be headed, "The Harlequin Duck, Histrionicus histrionicus histrionicus (L.), a very rare visitor." "O xvii. xxiv. 370" should be added to the Outer Hebrides, and "O?" to Aberdeen, Banff and Orkney. Both these birds should, of course, be deleted from the Appendices.

British Goldfinch, add "R a few" to Berwickshire.
Mealy Redpoll, add "O W" to Caithness.
Lesser Redpoll, delete "O," add "R" to Caithness.
Common Crossbill, add "O" to Kinross. This is an old record we have just found in the New Statistical Account of Scotland, ix. p. 56, of the occurrence of a Crossbill in Orwell, Kinross, in 1831. There was an immigration in that year.

British Great Titmouse, delete "O" and insert "R" to Caithness.
British Blue Titmouse, delete "O" and insert "R" to Caithness.
British Coal Titmouse, delete "O" and insert "R" to Caithness.
British Long-tailed Titmouse, delete "O" and add "R a few" to Caithness.

Chiffchaff: Mr Seton Gordon's record of the Chiffchaff in Mull (contained in an article in the Glasgow Herald, 8/5/31) is interesting. We should be glad to have more information as to the status and numbers of this bird on the island and, indeed, in any part of Scotland.
Reed-warbler, add "O" for the Isle of May.
British Song Thrush, add "S" to Caithness.
Blackbird, add "W" to Berwickshire and Caithness.
British Tawny Owl, delete "rare" in Caithness.
Golden Eagle, add "Has bred" to Caithness.
Common Buzzard, add "Breeds in South Uist" to the Outer Hebrides.

Heron, add "S" to N. Perth.
Bittern, add "O" to S. Fife. We are indebted to Mr Fred Beveridge, Dunfermline, for sending us a record of a Bittern got at Kinneddar, near Dunfermline, 1906-7.

Grey-lag Goose, add "P" to N. Fife.
White-fronted Goose: the correct status of this Goose is "O W and P" in N. Fife.
Bean Goose, add "P" to N. Fife.
Pink-footed Goose: add "P" to N. Fife. For the above information re Geese we are indebted to Mr. John Berry.
Shelduck, delete "O, Has bred" and insert "R" to Caithness.
Teal, add "W" to the Inner Hebrides and E. Inverness.
Shoveler, add "Has bred" to Caithness.
Eider, add "W, probably breeds" to Caithness. The finding of a freshly sucked Eider's egg near John o' Groats is strong presumptive evidence of nesting, though we cannot as yet claim an actual breeding record for Caithness.
Black Scoter, delete "Has bred" and substitute "S, a few" for Shetland. From information kindly sent to us by Mr. Holte Macpherson, it is obvious that a few pairs of Black Scoter breed regularly in Shetland.
Red-breasted Merganser, add "W" to E. Inverness.
Smew, add "O" to W. Stirling.
Fulmar, correct status in East Lothian is now "S,"
Black-necked Grebe, add "Has bred" to Tay.
Black-throated Diver, add "S" to S. Argyll.
Red-throated Diver, delete "O" and insert "S" to S. Argyll.
Lapwing, add "O W" to the Isle of May, and "S" to S. Argyll.
Green Sandpiper, add "O W" to Dumfries.
Redshank, add "S" to N. Fife.
Spotted Redshank, add "O" to N. Perth.
Whimbrel, add "Has bred" to W. and N. Sutherland.
Snipe, add "W" to W. Lothian.
Woodcock, add "S" to the Inner Hebrides.
Sandwich Tern, add "Has bred" to the Outer Hebrides.
Roseate Tern, add "Bred Forth, 1931," to the Forth Area.
Little Tern, add "O" to Skye.
Arctic Skua, add "Has bred Argyllshire, locality not stated."
Coot, add "R" to Caithness.

[Earlier additions to the volume appeared in Scot. Nat., 1929, pp. 11-13; 1930, pp. 23-25; and 1931, pp. 11-12.—Eds.]

Rough-legged Buzzard and Water Rail in North Uist.—
It may be of interest to record that I recently saw a pair of Rough-legged Buzzards at Newton, Lochmaddy, and that my dog picked up a Water Rail in a Snipe bog.—J. M. St. John Yates, Newton Lodge, Lochmaddy, North Uist.

[The Rough-legged Buzzard, according to our records, has only visited the Outer Hebrides on three previous occasions. The Water Rail is a rare species in these islands.—Eds.]
BIRD NOTES FROM FAIR ISLE, 1931.

By George Stout.

We did not have many birds on Fair Isle this autumn, owing to too much westerly wind, but I observed a few unusual visitors. On 6th August, when we had a large migration of Swallows, Martins and Swifts, I observed at close range a Needle-tailed Swift. I was first struck by the large size of the bird in relation to the other Swifts; then later he came closer and once or twice passed within 20 yards of where I was standing and I had a clear view of all the characteristics of the bird. I observed two Petchora Pipits, one late in August and one towards the end of September.

On 7th November some Woodcock came in, and next day there was on the Island a Rock Thrush, *Monticola saxatilis* (new to Fair Isle). Three Waxwings (also new to the Island list), two Richard's Pipits, two Scarlet Grosbeaks, an Ortolan, a few Chaffinches, Chiff-chaffs and Robins, thousands of Blackbirds, and enormous numbers of Redwings and Fieldfares appeared on 9th November. This was practically the only big migration we had; the birds were on the move all week and there was a considerable number of Woodcock. There was also a Harrier that week—I would say a Hen Harrier by its colouring.

These, with a Red-throated Pipit, an Eversmann's Warbler, two Bluethroats, a few Barred Warblers and a Golden Oriole were about all the uncommon visitors we saw.

[The Needle-tailed Swift has not hitherto been satisfactorily recorded from Scotland, but when so good an observer as Mr Stout had the opportunity of watching it at such close quarters we feel there can be no reasonable doubt as to the identity of the bird.—Eds.]
BIRDS SEEN IN WESTERN CAITHNESS, AUTUMN 1931

BIRDS SEEN IN WESTERN CAITHNESS, AUTUMN 1931.

(Being a supplementary note to the recent paper by the Misses E. V. Baxter and L. J. Rintoul.*)

By John Berry, B.A.

In the course of some recent work on the local trout, I spent six weeks from October to December in the Altnabreac district of Caithness; and since of necessity I had to be out on the moors from dawn till dark every day, I had an excellent opportunity for observing most of the birds which visited that neighbourhood.

Species were, however, disappointingly few, but since the country is extremely wild and bleak at that time of year, being unprotected by high hills and of course entirely devoid of trees, most migrants would avoid it altogether, preferring to follow such comparatively sheltered routes as the Straths of the Halladale and Helmsdale Rivers.

Weather, when I first arrived towards the middle of October, was very unpleasant, with terrific gales accompanied by storms of sleet and hail. These cleared out practically all the remaining summer migrants, especially geese and ducks which had still been in numbers on the high lochs until the 15th of the month, and by the 24th the only resident birds were Grouse, Dippers, and Starlings, which are permanent inhabitants, and occasional Ravens and Herons.

Several inches of snow fell over the week-end 24th to 26th, and no birds were to be seen on the high ground, although down on Loch Calder I saw enormous flocks of duck, chiefly Wigeon and Teal, and several gaggles of Greylag as well as large numbers of Green and Golden Plover.

The rest of the month was calm and frosty, and the only birds seen, in addition to the ubiquitous Greater Black-backed Gulls, were a few Golden-Eye, several small parties of Snow Bunting, and a very large flock of Brambling

* Scottish Naturalist, 1931, pp. 133-139.
which arrived on the 28th, and had all disappeared three days later.

The first few days of November were characterised by a considerable rise in temperature, but with terrific gales from the south-east, and no birds were seen; on the 5th, however, there was a return to quieter conditions with frost at night, and another influx of Brambling and Snow Bunting was noticeable. When driving past Loch More towards midnight under the most stupendous aurora I have ever seen, a Snowy Owl flew up the road in front of the car for a couple of hundred yards, finally swinging back over the bonnet and narrowly missing the wind-screen; another had been caught in a trap near that spot only a short time previously, so it is possible that this was its mate.

Sunday, the 8th, was a fine calm day after a north-easterly gale, when one of the largest movements of birds was noticed. Redwings had appeared overnight in hundreds and were everywhere in abundance, and Fieldfares and Snow Buntings were also extremely numerous; Stonechats had increased in numbers and from this date were always to be seen in small parties wherever there was shelter from the wind. On the following day almost all the Redwings had gone, but their place had been taken by almost greater flocks of Fieldfares which predominated for several days; Blackbirds, too, which were usually very scarce, were plentiful at this time, but it was of interest that they were almost exclusively males.

Whooper Swans first made their appearance on the 13th, and from this date were usually to be seen on any of the larger lochs. Greylag I found to be fairly plentiful on the lochs and bogs round Loch More where they roost; the geese bred locally do not seem to migrate at all, but in winter leave the small lochs where they nest, and congregate on the larger pieces of water, from which they are only driven by exceptionally hard weather.

A day or two of very hard frost followed by a blizzard brought in large packs of duck on the 19th; the largest flocks were all Wigeon, with Golden-Eye a good second in point of numbers although in smaller flocks; small bunches
Snow Buntings, Strathy Point, 30th November 1931.
of Teal and pairs of Mallard were common up the larger
burns, but were almost impossible to approach as Dippers
or a Heron always gave the alarm.

I had to be at Scrabster on the 21st, a perfectly glorious
day of frost and bright sun, and spent a couple of hours
at Holborn Head, where I saw eleven Great Northern Divers
in one inlet as well as half a dozen Red-Throated and one
Black-Throated for certain, while there were many more
further out which it was impossible to identify. Cormorants,
Oystercatchers, and Redshank were in surprising numbers,
but there were no duck of any kind visible. I watched a
very large migration of small birds arriving from Orkney,
but even when some settled quite near me I could not
recognise them at all.

The rest of the month was cold and quiet, and Snow
Buntings, Stonechats, and numbers of Golden Plover were
met with all over the moor. Small flocks of geese and
swans were to be seen daily flying from loch to loch especially
about dawn; geese were exclusively Greylag as far as one
could tell, but although the majority of the swans were
almost certainly Whoopers, Bewick’s were also common and
eight came several times to Loch Dhu, generally arriving
while it was still dark and staying until disturbed.

More Snow Buntings arrived on the 27th, and while
having lunch at Lochan Beul-na-Faire I identified without
any doubt three adult male Lapland Buntings which were
with the Snow Buntings feeding within a few yards of me;
although the females and immatures of this species are
too like various plumage phases of the Snow Bunting for
identification with certainty to be possible for any but the
experts, there were at least a dozen birds which I felt
convinced were also Laplands, and it is probable that there
were many more which escaped my notice.

On Monday the 30th I had the good fortune to witness
the largest migration of Snow Buntings I have ever seen,
which took place shortly after midday at Strathy Point.
There was a strong north-westerly breeze and heavy banks
of mist driving in low off the sea, and on emerging from
one of these wreaths I found the car in the middle of a
stupendous flock of Snow Buntings, many of which actually struck it. The mist in the vicinity opened up, but a dense bank lay half a mile out from the shore, and from this came a ceaseless stream of Snow Buntings which went streaming on inland out of sight. The light was very poor, but I took several photographs of the flock, which continued to pour on to the mainland for over half an hour, and when at last I had to leave, stragglers were still arriving in twos and threes at short intervals; the numbers entirely defied computation, but even in that one half-hour there must have been a great many thousands, and the migration might well have been going on for several hours.

The birds were in every phase of plumage, and a turf wall at the road-side on which some hundreds were sitting resting looked as if it was covered with snow mixed with sand; but the migrants did not appear unduly tired, and although enormous numbers were feeding busily all over the place, the majority never paused in their southward journey.

Iceland Gull and Red-breasted Merganser in Granton Harbour.—On 10th January 1932, at the end of the West Pier at Granton with Mr W. Watson, when feeding the gulls there, an immature Iceland Gull swooped down after some of the food. Whilst the Herring and Black-headed Gulls picked the food from the water without alighting, the Iceland Gull settled below where we were standing. It was quite fearless, and we got a splendid look at it. Mottled all over with very light brown markings, it looked rather a handsome bird among the dingy-coloured immature Herring Gulls. We had it under observation for over an hour, and could easily pick it out by its long wings and buoyant flight. A dozen Red-breasted Mergansers were fishing inside the harbour, as also were a pair of Little Grebes. When both these species appeared on the surface, the Herring and Black-headed Gulls attempted to deprive them of their catches.—David Hamilton, Edinburgh.
NOTES ON HIGHLAND DIPTERA, WITH DESCRIPTIONS OF SIX NEW SPECIES.

By F. W. Edwards, M.A., Sc.D.

The following notes are based on collections made during a holiday in Perthshire and Inverness in June 1931, and are contributed at the suggestion of my friend, Mr P. H. Grimshaw. Only the more interesting captures are noted.

MYCETOPHILIDÆ.

_Bolitophila disjuncta_, Lw., was common in the woods at the lower end of Glen Roy, and was also taken at Aviemore.

_Bolitophila spinigera_, Edw. One female of this little-known species was taken at Rannoch.

_Gnoriste trilineata_, Zett. This was recorded as British by the late Mr F. Jenkinson, from a specimen collected by Dr C. G. Lamb at Nethy Bridge in 1905, and no additional captures have been made in this country since that date. On the last day of our stay at Rannoch I succeeded in obtaining three specimens in a small ravine in Dunalastair Park; the following day Messrs W. H. T. Tams and R. B. Benson revisited the same spot and obtained fifteen additional specimens. In confirmation of the supposition that _G. bilineata_, Zett. is a synonym of _G. trilineata_, it may be mentioned that the median thoracic stripe is sometimes faintly marked in the female sex. It may further be noted that there is a sexual difference in the wings, the males nearly all having a distinct darkening of the wing-tip which is not present in any of the females; in this respect they resemble _G. apicalis_, Mg., but have a longer rostrum.

_Boletina grænlandica_, Staeg. A pair on Ben Alder. This is an addition to the British list; it is a large species without pleurotergal hairs, differing from all the other British species of the genus in the completely black hind coxae.
Boletina pectinunguis, sp.n. $\delta$. A rather large black species, without yellow on shoulders or abdomen; antennae with second scapal and first flagellar segments mainly yellowish, former darkened above, latter at tip, second and following flagellar segments all black; all coxae and femora entirely yellow, as well as palpi, halteres, and tibial spurs. Shoulders slightly greyish. Pleurotergites with numerous hairs. All claws alike, broad, blunt-tipped, and finely pectinate beneath (as in B. basalis and B. winnertzi, but somewhat less enlarged). Hypopygium (fig. 1) resembling that of B. basalis, but differing in detail; three pairs of anal combs. Wings with normal venation; Sc 2 present; costa moderately produced. Wing-length 4 mm.

Loch Ericht, 1 $\delta$. This new species is so evidently nearly related to B. basalis that it is obvious that the presence of pleurotergal hairs cannot be regarded as a subgeneric character in Boletina. Another species with a very similar hypopygium is B. digitata, Lundst.; this, however, has unmodified claws as well as bare pleurotergites.
NOTES ON HIGHLAND DIPTERA

CHIRONOMICÆ.

*Protanypus morio* (Zett.). Fairly common by Loch a Bhealaich Beithe (Ben Alder), also by Loch Erichart. *Syndiamesa pilosa*, Kieff. One male on Ben Alder.

*Diamesa arctica* (Boh.), Edw. Loch Einich and Loch Laidon. This differs from the common *D. culicoides* in the shape of the pruinescent areas in front of the scutellum; in my revision of the British Chironomidae it was recorded as *D. waltli*, Mg.; but according to Goetghebuer (in letter) Meigen's species is different. Whether it is correctly determined as *D. arctica* is uncertain.

*Diamesa incallida* (Walk). Rothiemurchus Forest; two pairs taken *in copula* on tent roof. Previously only recorded from the Cornish coast.

*Diamesa latitarsis* (Goet.), Edw. Rothiemurchus Forest and Loch Laidon. This again differs from the related *D. incallida* in the form of the pruinescent markings of the scutum.

*Diamesa parva*, sp.n. A small species of Group C, but with the wings less conspicuously milky-white than in the other species of this group. Body and legs all black in both sexes, also antennæ (including plume) and palpi. Antennæ in ♀ 8-segmented, last segment not longer than preceding two; A.R. in ♂ only 0·9-1·1. Thorax scarcely shining, with slight pruinescence not forming definite stripes; dorso-central hairs uniserial throughout, very few in front of scutellum. Hypopygium (fig. 2) somewhat resembling that of *D. montium*, Edw. and *D. campestris*, Edw., but with rather differently-shaped style and fine, bare, anal point. Front tarsi of ♂ without beard; fourth tarsal segment in both sexes very little constricted beyond middle, broadest at tip. Wings with normal venation. Halteres yellow. Wing-length 2·7-3 mm.

Loch Einich, 1 ♂ (type). Also near summit of Pen-y-Ghent, Yorkshire, vii., 1930, 4 ♂ 1 ♀ (F.W.E.). This is the smallest British species, and also differs from the other bare-eyed species (Groups B and C) in the low antennal ratio.
Cricotopus laricomalis,\(^1\) sp.n. Belongs to Group A (i.e., with milky wings and small pulvilli present), but differs from the other British species of the group in its much smaller size. Palpi of normal length, not shortened.

♂. Body entirely black, including shoulders, pleuræ and hypopygium; even halteres darkened; abdomen slightly and uniformly shining. A.R. nearly 2. Legs black, tibial rings indistinct or absent; in one specimen the mid-tibial ring is fairly distinct but narrow. Hypopygium (fig. 4) somewhat as in C. bicinctus, Mg. Costa not produced; An ending opposite \(f \text{Cu}\), or not much beyond.

♀. Ground-colour of scutum yellow, stripes separate; scutellum yellow. Abdomen dark, unbanded, cerci whitish. Tibial rings all distinct, white, occupying rather over half length of tibia. Halteres yellow. Wing length 2 mm.

Loch Kinardochy (north of Glen Lyon), \(3 \delta 1 \varphi\). This is closely related to C. glacialis, Edw. of Spitzbergen and Iceland, but differs somewhat in the hypopygium.

Spaniotoma (Smittia) submontana, sp.n. Belongs to Group C (i.e., with bare eyes, small pulvilli, costa ending at tip of \(R_5\), \(An\) long and curved down apically); superficially resembling S. stercorearia, but differing in its pale halteres and form of \(\delta\) hypopygium and \(\varphi\) antenna. Body dull black, shoulders and pleural membrane yellowish in \(\delta\). Antennæ in \(\delta\) with whitish plume, A.R. about 1.5, tip blunt and finely pubescent; in \(\varphi\) with segments 1 and 6 black, 2-5 whitish, 6 as long as 2-5 together, densely pubescent for its whole length, without longer apical hair, sense-bristles of 3-5 hair-like. Hypopygium (fig. 3) with tergite produced into a broad point. Femora dark, tibiae and tarsi mainly pale; L.R. in \(\delta\) 0.65, in \(\varphi\) 0.5; last two tarsal segments subequal in \(\delta\), fourth somewhat shorter than fifth in \(\varphi\); pulvilli not much shorter than claws, empodium longer. Wings very strongly milky, all veins white, stem-vein scarcely darkened even in \(\delta\), squama white, bare as usual. \(R_2+3\) very faint, only indicated in \(\delta\) by a groove; costa ending abruptly at tip of \(R_5\) in \(\delta\), very

\(^1\) Larus, sea-gull; comes, associate. Loch Kinardochy is a breeding place of gulls.
slightly produced in ♀, in both sexes ending above or just beyond level of tip of Cu 1; Cu 2 strongly bent beyond middle; An reaching far beyond f Cu (but not reaching margin), somewhat bent down apically; lobe somewhat produced. Halteres yellowish, somewhat darker in ♂.

Wing-length 2 mm.

Ben Nevis, by shore of Lochan Meall an t' Suidhe, 1 ♂ 1 ♀. The species was moderately common, flying in company with S. (Psectrocladius) limbatellus, Holmgren; it was mistaken at the time of observation for S. stercoraria, but as the locality seemed an unusual one for this latter species a pair was preserved and proved to be new. On account of the evanescent vein, R 2 + 3 S. submontana might almost equally well be placed in the subgenus Eukiefferiella.

Chironomus (Microtendipes) caledonicus, sp.n. Body entirely shining black in both sexes, except that the scutellum is brownish in ♀; femora and tibiae all black, the former narrowly pale at base; tarsi with first segment mainly whitish, rest dark. A.R. under 1.5; antenna of ♀ 6-segmented (2 not completely divided). Hypopygium (fig. 5) of very distinctive form, with style sinuous and appendage 1 long and beaked; appendage 2a absent. L.R. under 1.5; tibial spurs and pulvilli normal for the subgenus. Wings faintly milky; R 2 + 3 running parallel with R 1 throughout, not more approximated to R 1 at tip as in most of the other species. Halteres yellowish. Wing-length 3.5 mm. (♂)—4.5 mm. (♀).

Loch Pityoulish, Aviemore, 3 ♂ 2 ♀. A very distinct species, though with much superficial resemblance to C. (Paratendipes) albimanus, Mg., from which it differs in the presence of pulvilli and the single tibial spur, as well as in the hypopygium.

Ceratopogonidae.

Stilobezzia sharpi, Edw. One male in Glen Nevis.

Bezzia (Probezzia) decincta, sp.n. ♀ Allied to B. bicolor, Pz., which it resembles in the short antennæ, absence of femoral spines, and general scheme of colouring, but differs as follows:—Thorax as seen from in front less extensively
grey; median stripe distinctly divided by a narrow but continuous pale line. Abdomen less clear white, with a faintly indicated dark median stripe. Hind femora entirely blackish, without any trace of the yellow subapical ring which is conspicuous in *B. bicolor*. Wings rather less milky.

Loch Morlich, 7 ♀♀, among herbage by western shore, in company with *B. bicolor*, Panz., *B. nobilis*, Winn., and two or three other species of the genus. It is possible that this may be merely a colour variety of *B. bicolor*, but it appears very distinct.

**Simuliidae.**

*Simulium hirtipes* Fries. This seems to be very local in its occurrence in the Aviemore district. We did not meet with it in Glen Einich, but it was abundant at the edge of the forest by the north end of the Lairig Ghru. At this place we succeeded in obtaining a number of pupæ and a few larvæ among moss on stones and also on blades of grass at the sides of the stream. The pupæ agree with the typical Norwegian form described by Puri in having 16 branches to the respiratory organs, not 50-60 as in the American species which was determined by Malloch as *S. hirtipes*. Enderlein’s *S. nigripes*, based partly on Scottish specimens, is a synonym of *S. hirtipes*.

**Tipulidae.**

*Tipula macrocera*, Zett. There are few British records of this species, and it was therefore surprising to find it occurring in great abundance on Ben Alder at a height of about 2500 ft. to 3000 ft. Near the lower limit of its range it was flying in company with the rather similar *T. subnodicornis*, Zett. A single specimen was also taken in the black wood at Rannoch.

*Tipula excisa*, Schum. Common on the western side of Ben Nevis between 2000 and 3000 ft., but not seen lower or higher, and not found on any of the other mountains climbed. All the specimens examined (at least fifty) were males; a special search was made for females because, so far as I am aware, none have yet been found in this country.
This raises the suspicion that in Britain *T. excisa* may have a sub-apterous female, though in Scandinavia the female is normally winged; in collections from Finland and Sweden both sexes are equally well represented.

*Tipula rubripes*, Schum. Two males by Loch Rannoch.

*Dicranota guerini*, Zett. A male on Ben Alder.

*Tricyphona immaculata*, Mg. This species is usually less subject to venational anomalies than are some others of the genus, in proof of which it will be sufficient to note that the 23 specimens in the British Museum show only normal slight variation, not one of them possessing any anomalous feature such as a broken vein or extra cross-vein. It was therefore not a little surprising to find that, out of 14 specimens of *T. immaculata* taken at Ben Alder as prey of *Empis lucida*, no fewer than 12 were in one way or another abnormal in venation. Seven have a closed discal cell on one or both wings, thus showing more or less resemblance to the allied *T. unicolor*, Schum.; according to Yorkshire specimens in the British Museum, *T. unicolor* differs definitely in the male hypopygium, whereas throughout the present series of specimens (7♂) this organ has the normal form of *T. immaculata*. Three of the Ben Alder specimens have vein *M3* broken; one has an adventitious cross-vein in the marginal cell (as in the allied genus *Dicranota*); one has the transverse vein *R2* unusually near the tip of *R1*; one has *R2* absent on one wing; several have short stumps in different positions. The various peculiarities are shown in the accompanying figures; fig. 6 depicts the normal venation of one of the specimens; where both wings of a specimen are shown, this is indicated by the letters *a* and *b*.

*Tricyphona claripennis*, Verr. A female taken near Aviemore shows several interesting peculiarities of venation (fig. 19). On both wings the normal cross-vein *R2* ends in the costa instead of in *R1*; on one wing an additional cross-vein is present in the marginal cell, and on the other wing *R4* and *R5* are fused for half their length, and even on the distal half are approximated and connected by two irregular cross-veins.
Pedicia rivosa, L. All the specimens seen at Rannoch, Aviemore, and Nethy Bridge were of the form with the dark streak along vein Cu continued to the wing-margin. Last year I noted the occurrence of this form on the top of Penyghent; perhaps it is mainly a northern or mountain form.

Limonia dilutior, Edw. Common among broom by Loch Pityoulish, also in Glen Nevis. This species seems to be definitely associated with broom.

Lipsothrix errans, Walk., and L. remota, Walk. These two species (which have only recently been re-distinguished) occurred together in the ravine in Dunalastair Park, Kinloch Rannoch.

Leptidæ.

Ptiolina atra, Zett. One male in a swampy place by Loch Rannoch.

Empididæ.

Empis lucida, Zett. A number of males were taken on Ben Alder carrying prey; they were flying in a small swarm and taken together in the net, the captors being allowed to escape and the dead prey retained and determined as follows: 7 ♂ 7 ♀ Tricyphona immaculata, Mg. (the Tipulid noted above); 2 ♂ Hormomyia sp. (Cecidomyiid); 2 ♀ Sciara sp. (Mycetophilid); 2 ♂ 1 ♀ Empis verralli, Collin (Empid); 1 ♂ Melanostoma mellinum, black var. (Syrphid); 1 small moth (Tortricid).

Hydrodromia wesmæli, Mcq. One male on Ben Alder. This is only the second British record, the first specimen having been taken by Dr J. H. Wood in Herefordshire.

Hydrodromia nivalis, Zett. One male and two females on patches of snow near the summit of Ben Nevis. Another interesting addition to the British list, for the determination of which I am indebted to Mr J. E. Collin.

Anthomyiidæ.

Limnophora triangulifera, Zett. A series of specimens (1 ♂ 8 ♀) were taken on patches of snow near the summit of Ben Nevis. The flies attracted attention by taking short hopping flights; their activity was most noticeable as almost
all the other insects on the snow were torpid,* while the Anthomyiids seemed quite at home. Mr J. E. Collin has kindly determined the species and confirmed my suspicion that it is an addition to the British list.

_Rhynchosyrichops subrostratus_, Zett. One male in company with the last.

**Œstridæ.**

The deer-bots, *Hypoderma diana* and _Cephenomyia auribarbis_, were both taken in fair numbers around Loch Rannoch by Mr W. H. T. Tams. The flies were found singly, sitting or hovering over moist places on rough roads.

* Large numbers of insects were observed on the snow, mostly Diptera of the following species: _Hormomyia_ sp., _Bibio nigriventris_, Hal., _Boletina_ spp., _Dicranomyia affinis_, Schum., _Linnophila meigeni_, Verr., _Tipula subnodicornis_, Zett., and some Empids; also some Ichneumonids and Staphylinid beetles. The weather was fine and warm, with very little wind even on the summit; many insects, mostly of the same species as those found on the snow, were rising on the warm air and passing over the top of the mountain. No Œstrids or Tabanids were present.

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**Wood-Pigeon infested with Cestodes.**—When out shooting on the afternoon of the 16th October, at Drumnagair Farm, in the Parish of Marykirk, Kincardineshire, the writer observed a Wood-Pigeon feeding at the edge of a stubble field in close proximity to a young spruce wood. As it made no attempt to fly off on approaching, it was naturally concluded to be wounded. However, when about 25 yards distant, the Wood-Pigeon attempted to fly and at this point it was shot.

The bird, an adult specimen, appeared to be suffering from some internal trouble as it had been scouring badly and the vent and tail feathers were matted with thin excrement. It was also in poor condition and very emaciated.

As a result of a post-mortem examination made on the 19th October, the intestine proved to be heavily infested with cestodes, _Skrjabinia columba_ (Fuhrmann, 1909), the symptoms being enteritis, inflammation of the intestinal wall, and blood effusions.—D. Robertson, 20th October 1931.
AN APHID NEW TO THE FORTH AREA

AN APHID (*NEOCHMOSIS VANDUZEI*, Swain) NEW TO THE FORTH AREA.

By M. Y. Orr, Royal Botanic Garden, Edinburgh.

A NOTEWORTHY addition to the insect fauna of the Lothians was reported from Hopetoun, South Queensferry, in the early autumn of 1931. The immigrant was first observed by Mr C. K. M'Laggan, the Forester at Hopetoun, who found great clusters of a dark-coloured, aphid-like creature feeding on the foliage of young trees of Sitka Spruce, with disfiguring effect. Specimens of this unwelcome intruder were sent to Mr Frederick Laing of the British Museum, who identified the insect as *Neochmosis vanduzei*, Swain, a member of the sub-tribe Lachnina of the Aphididae. In Theobald's Monograph of Plant Lice of Great Britain it has been given the name of *Panimerus vanduzei*, but it is pointed out, in a footnote, that *Panimerus* is rendered invalid by its employment in another group, and therefore the new generic name of *Neochmosis* has been proposed by Laing, and is used here in the new combination.

*Neochmosis vanduzei* is remarkable for its size: it is one of the largest of European aphides, the females attaining a length of over 6 mm., while its dark-brown or black colouring renders it all the more conspicuous.

Since the visitation constitutes a new record for this district, it will be of interest to examine the present distribution of this particular species. In Great Britain it occurs in the south of England, but, according to Laing, it is found more frequently in the north and west, its range extending from Westmoreland into Scotland, to as far north as Aberfeldy. It has been recorded also from two localities in the Irish Free State, and on the Continent of Europe it is known from Scandinavia to the Alps. It is said to have been introduced recently into western North America.

The food plants of *Neochmosis vanduzei* include several species of Spruce and Silver Firs, but its depredations are effectively checked by the use of appropriate insecticides.
Goldfinch in Aberdeen.—On 30th October 1931 I was attracted by a brightly-coloured bird flying past me. As it settled I walked back to within a hundred yards of it and confirmed my suspicion that it was a Goldfinch. In view of the recent correspondence in this Journal on the increase of the Goldfinch in Scotland, this northern record may be of interest to Scottish ornithologists. I saw it on the north boundary of the town, close to the Botanic Garden.—W. B. R. Laidlaw, Aberdeen University.

Common Dolphin in Orkney.—Two common Dolphins, Delphinus delphis, respectively 6 ft. and 6 ft. 4 ins. in length, were driven ashore early in January at Quoyburray Post Office, seven miles from Kirkwall. Despite its name, this animal is not very frequently driven ashore in Scotland, but is much commoner in England and Ireland. It arrives on our shores from the Atlantic, being recorded on the southern, western and northern coasts, but not hitherto from the North Sea between the Firth of Forth and the English Channel. The Scottish strandings have occurred from December till April.—A. C. Stephen, Edinburgh.

Pine Marten in Wigtownshire.—During the first week of October 1930, an old male Pine Marten was caught in a rabbit trap at House of Knock, half a mile north of Killantringan Lighthouse, and close to the cliff, three miles north of Portpatrick, Wigtownshire. — (Major) M. Portal, Holywell, Swanmore, Southampton.

Badgers in Wigtownshire. — Badgers are now rather numerous on the coast near Portpatrick, Wigtownshire. They appeared suddenly in the House of Knock rockery garden and made a big earth just over the fence in a plantation. I also heard of them near Portpatrick and at Lochnaw. Sir Herbert Maxwell appears to have turned some out a good many years ago at Monreith, but in our twenty years of shooting tenancy—under Lord Stair—we never saw any until 1929.—(Major) M. Portal, Holywell, Swanmore, Southampton.

Jay extending its Range.—From Cairnsmore to the East Coast is a far flight, yet it may interest the Duchess of Bedford, or some other readers, to know that for some years past Garrulus glandarius has been creeping northward through Northumberland, and has within the last decade or so begun to reappear in several places in Berwickshire as well as in some of the adjoining counties.
I have lately noticed it in some numbers in north Northumberland, in localities from which it had long been estranged, but where it is probably once more a resident. Towards the close of last century there was quite an irruption of Jays on Tweedside—so many of them that it was thought possible that they might be immigrants from overseas. None of those handled, however, could be referred to the Continental race, but the difference is, of course, so slight as to be indistinguishable "in the field," and to be very easily overlooked. The capacity of the bird to accomplish extended flights, such as those demanded by migration, will never be doubted by any one who has chanced to see a Jay (as I have more than once done) travelling high in air from one valley to another. Its flight is then distinctly corvine, more easy than that of a Magpie, than which it appears to carry far more sail in comparison to hull, and a more effective though shorter rudder.—GEORGE BOLAM, Alston, Cumberland.

Jays in Wigtownshire.—Isolated Jays are now in this area—I suppose spread from Dumfriesshire, a county which protects the bird and its eggs! In Wigtownshire the Jay is the worst killer of young birds in nests we have, as well as egg stealer and destroyer of peas, beans and fruit. Every fruit grower's and keeper's hand is against it.—(Major) M. Portal, Holywell, Swanmore, Southampton.

Hedgehog in Argyll.—In the SCOTTISH NATURALIST for 1912 there appeared some notes on the scarcity of the Hedgehog in Argyll. It may therefore be of interest to record that one was seen by us at Kilchoan, Ardamurchan.—GEORGE WATERSTON, Edinburgh.

Game Shot at Lochinch, Wigtownshire.—The following list of game shot by five guns at Lochinch, Wigtownshire, on 3rd December 1931, seems worth recording: 1 Grey-lag Goose, 4 Grouse, 2 Blackcocks, 1 Partridge, 6 Cock Pheasants, 4 Woodcocks, 4 Snipe, 2 Golden Plovers, 88 Wood Pigeons, 2 Stock Doves, 1 Water-hen, 2 Carrion Crows, 1 Sparrow-Hawk, 1 Mallard, 1 Wigeon, 3 Teal, 1 Shoveler, 1 Pochard, 1 Tufted Duck, 4 Golden-eye, 3 Roe-deer, 3 Brown Hares, 1 Blue Hare, and 11 Rabbits. The Tufted Duck and the Golden-eye are not usually shot, as they are not good for cooking; but these were shot among other wild fowl flying overhead, so that the species could not be distinguished.—HERBERT MAXWELL, Monreith.

Waxwings in Kirkcudbrightshire.—It may be of interest to record that I have information of three Waxwings having been
caught in Kirkcudbrightshire, not far from Dumfries, at the end of October 1931. — Hugh S. Gladstone, Capenoch, Thornhill, Dumfriesshire.

Immigration of Waxwings (Bombycilla garrulus) in the Autumn of 1931.—During the present autumn there has occurred a fairly extensive immigration of Waxwings into Scotland. The first arrivals must have reached our shores not later than 8th November, for two days after that I received a dead specimen on which blow-fly larvae had already hatched. This bird, sent for identification by Miss Jean Bruce of Auchmeddan School, was found dead at Pennan, on the Moray Firth coast of Aberdeenshire. About the time when the specimen arrived at Pennan, a flock of eight to ten Waxwings appeared in Aberdeen. For almost three weeks they frequented a garden in Great Western Road, well within the bounds of the city, and could be seen there at a bird-bath in which they bathed and drank daily. On 25th November one struck a window-pane and was killed. Thereafter the flock disappeared. During the same period, in a different part of Aberdeen, beyond the built area on the Skene Road, one of my students saw, on 15th and 20th November, a small flock estimated to contain about a dozen birds.

At the same time that these birds were appearing at Aberdeen others were apparently arriving in other parts of Scotland over a wide front. They were first seen at Berwick on 10th November, in a small party, and apparently loitered in the district, reinforced by other parties. On 23rd November fifteen were seen in Tower Dean, in the neighbourhood of Cockburnspath. But by the 26th November they had taken their departure.

The whole immigration is associated with the continued and severe south-easterly winds, which checked the southward movement of the birds from their Scandinavian territories, and at the same time drove them out of their course westwards across the North Sea to our shores.—James Ritchie.

Waxwings in St Andrews.—Three Waxwings visited my garden here on 12th November 1931. I noticed them first soon after 1 p.m. on my rock garden. The top of this rock garden is enclosed with tall bushes of Rosa rugosa and Veronica traversi, while there are numbers of varied Berberis lower down. The Waxwings seemed to be feeding mostly on the latter, but what they were actually getting I had no opportunity of seeing; they only remained a very short time. The following morning at nine o'clock, I saw a single bird from my dressing-room window,
but when I got downstairs he had gone. I have never seen these birds before, but the crest and yellow-barred tail were unmistakable.—(Major) C. H. M. Cheape, St Andrews.

**Eagle-Owl in North Uist.**—I am the shooting tenant of Newton Lodge, Lochmaddy, North Uist, and on 26th November, whilst out shooting, I flushed an Eagle-Owl. My only knowledge of this bird in Scotland is one that was shot (unfortunately) upon my uncle's estate in Kincardineshire about forty years ago, and which is still in the house. Mr George Beveridge of Vallay informs me that the Eagle-Owl has never been recorded here before. I have been an observer of birds for over forty years, and from a distance of six yards I am sure an Eagle-Owl could not be mistaken for anything else—it is much too distinctive a bird, and its size precludes it from being any other variety of Owl. I visited the *locus in quo* on several other occasions, but did not see the bird again, nor could I find any traces. I am quite familiar with the Long-eared Owl—in fact I saw four at Newton, and I cannot well mistake a bird which weighs about 7 lbs. for one that weighs less than a pound; the flight, too, is quite different.—J. M. St John Yates, Newton Lodge, Lochmaddy, North Uist.

[We cannot doubt the identification of this bird. The record is of much interest and a new one for the Outer Hebrides. Previous occurrences in Scotland are from Orkney, Shetland, and Argyll.—Eds.]

**Brent Goose in Midlothian.**—As a winter visitor the Brent Goose is fairly familiar in the Firth of Forth, especially on the East Lothian coast, but it has rarely been observed in Midlothian. Its appearance on Lochend this winter is therefore worthy of record. Park Officer M'Gregor informs me that the bird arrived about the middle of October. It was in a very exhausted condition and at once began to feed voraciously on the grassy bank. Domestic water-fowl on this loch are regularly fed with grain and other food, and during the winter months Pochard and Tufted Ducks frequent the loch in considerable numbers and exhibit remarkable tameness, coming close to the water's edge when food is supplied. Their presence quickly encouraged the Goose to show an equal confidence, so much so, that Mr M'Gregor was able to entice it close to his feet when supplying the grain. He captured and pinioned it, and the public have now an excellent opportunity of viewing this rare visitor at close quarters. It is in beautiful plumage and is apparently a young bird; the white on the neck, scarcely showing when it first arrived, has now become more conspicuous. This winter I have also been much interested to see Scaup on this loch for the first
time. Two came under notice on the 7th and 17th December, and three on 4th January, all females.—J. Kirke Nash, Edinburgh.

**Birds on the Bass Rock.**—Until 2nd September there were no very marked movements noticed on the Bass in 1931, although on 31st August a group of seven Herons passed going north. I don't think I have ever seen seven Herons flying together before. A Pied Flycatcher or two and a few Greater Wheatears had been seen, but nothing remarkable, till on the morning of 2nd September I noticed signs of an arrival, and although rather disappointing as to numbers there were several rarities. I saw one Barred Warbler, one Bluethroat and one Lesser Whitethroat, three Garden Warblers, four Willow-Warblers, three Pied Flycatchers, and two Tree Pipits. Next day there were about twelve Wheatears, one Whinchat, seven Redstarts, two Pied Flycatchers, two Willow-Warblers, one Garden-Warbler, and two Tree Pipits. By the 4th September all had passed on. Birds don't seem to stay on the Bass; it would appear to be only a stopping place when they are storm-stayed or fog-bound.—John Bain, Bass Rock Lighthouse.

**White-eyed or Ferruginous Duck (Nyroca nyroca) in Aberdeenshire.**—On 22nd November 1931, 11.30 a.m., a still, sunny, cloudless forenoon, with field-glasses I observed a drake of this species close to the north bank of the Don, near Donmouth, not far east of the bridge (Aberdeen-Ellon Road). At first the bird, which sometimes dived, looked like a Tufted Duck. When nearer to it I could make out clearly (1) chestnut brown head and neck; (2) white iris which was quite conspicuous; (3) a white bar on its dark wing. The under parts were not visible as the bird remained in the water. It was alone. Out in midstream was a Merganser and nearer the mouth of the river were eight or nine Golden-Eye Ducks and some Gulls.

There is little to add to the description. The sunshine brought out the colour of head and neck and the white iris vividly. I was on the path on the north bank of the river and got a fine view as the Duck slowly moved towards midstream.—(Dr) C. H. Usher, Aberdeen.

[This rare wanderer from southern or eastern Europe, or even further afield, has been so seldom recorded from Scotland (four records) in contrast with over fifty records from England and eight or nine from Ireland (Witherby's *Practical Handbook*), that northern latitude is evidently connected with the scarcity. Therefore this "furthest north" Scottish record marks the limit of recorded wandering of the species in this country.—Eds.]
CURRENT LITERATURE

Are British Butterflies extending their Range?—Under this title Harold J. Burkill, M.A., F.R.G.S., contributed a paper to The Naturalist for October 1931, pp. 293-296. His remarks were based on the observations of friends for some years past, chiefly in the south of England. The “Clouded Yellow” and the “Painted Lady” are ignored, since their distribution is too spasmodic, but in the case of the “Comma” (Polygonia c-album), the “White Admiral” (Limenitis sibylla), and the “Silver-washed Fritillary” (Argynnis paphia), a definite extension of range is apparently taking place. This, at any rate, is the conclusion of the author, and we hope that his ideas will prove correct.

Grey Squirrel in East Lothian.—In a letter to The Field, 16th January 1932, p. 81, Sir John Buchan-Hepburn writes as follows: “My keeper on this estate [Prestonkirk, East Lothian] shot an American grey squirrel—a male. As I have never heard of one being found in this county before, I thought it might be worthy of record if only to put other people on their guard against this noxious foreigner. My forester saw it first and, never having seen one before, thought it was a stoat, as it was running on the ground under some bushes. Luckily the keeper was nearby, so that it was shot. The male (?) was supposed to have been seen about a week afterwards, but as it was getting dark it may have been a red squirrel and, at any rate, it has never been seen since. This note may serve to forewarn others in this part of the country.”

St Kilda House Mouse.—In Nature, for 23rd January 1932, T. H. Harrisson and J. A. Moy-Thomas give some interesting information about Mus musculus muralis Barrett-Hamilton, which we quote for the benefit of our readers. “A visit to St Kilda this summer proved to us that the mouse has become extremely rare and at present only inhabits two houses in which food was left behind. It is particularly interesting to note that neither of these houses is the Post Office, and the evidence of the inhabitants, and of previous visitors, confirms the view that the mouse was never confined to one building” [as had been stated by some previous writers]. “Waterston (Ann. Scot. Nat. Hist., 1905) described a number of house mice from Lochmaddy, N. Uist, which in every way resembled the light-bellied Mus musculus muralis, and were found living with the normal Mus musculus, but apparently without hybrids. This discovery seems to have
been overlooked by subsequent investigators, and points to the mouse not having such a confined geographical distribution as is generally credited to it.”

Proceedings of the South London Entomological and Natural History Society, 1931-32.—Comprising xx + 94 pages, and containing 5 plates, this report shows the Society to be in a state of praiseworthy activity. The papers published are as follows: “The Ova of British Lepidoptera” (with 3 plates), “The British Species of Nonagria,” and the Annual Address by C. N. Hawkins, F.E.S., on the Objects of the Society and “Numerical Variation in the Ecdyses of Lepidopterous Larvae.”

On the Normal Flight Speeds of Birds.—By T. H. Harrisson, British Birds, September 1931, pp. 86-96. Based upon observations of many species taken either from a motor car or a motor cycle.


Movements of Ringed Birds.—In British Birds, October 1931, pp. 110-128, is printed the first instalment of a complete list of “all birds ringed in the British Islands and reported abroad, as well as of those ringed abroad and reported in our country.” Scottish records are of course numerous, and several maps are given to show recovery positions abroad and origin of winter visitors to Britain. The authors are H. F. Witherby and E. P. Leach.

Fulmar Petrels Breeding in Ross-shire.—By F. W. Dewhurst, British Birds, October 1931, p. 134. On the South Sutor Cliffs, Cromarty, three pairs had nest sites and other pairs were seen; on the North Sutor about ten pairs were estimated.

Field Habits and Nesting of the Hobby.—By Desmond Nethersole-Thompson, British Birds, November 1931, pp. 142-150.


Fulmar Petrels in Wigtownshire.—By W. B. Alexander, British Birds, November 1931, p. 166. Two birds seen on a ledge of the cliffs near the Mull of Galloway lighthouse were regarded from their behaviour as a breeding pair, and apparently the first to reach the western mainland of Scotland.

Part II, pp. 169-175) has dealt with the crustacean fauna of many of the intertidal areas on the Scottish Coast. Amphipods predominate, and there is a strong tendency for the prevalent species to inhabit definite zones and to have their maximum concentration at some particular level. There seems to be a need for a re-investigation of the species of Bathyporeia.

**Scottish Marine Biological Association.**—The Annual Report of this Association for 1930-31 contains interesting and useful summaries of the research work in progress at the station at Millport, carried out by the staff of the station and by voluntary workers. The chief items are:—“Plankton” (chiefly Calanus finmarchicus), by Mr Orr and Miss Marshall; “Sea Muds,” by Mr H. B. Moore; “Marine Bacteria,” by Dr J. A. Cranston and Dr Lloyd; “Molluscan Ecology,” by Mr A. C. Stephen; and “Shore Ecology,” by the Superintendent, Mr R. Elmhirst.

**Clyde Sea Muds.**—Mr H. B. Moore (The Muds of the Clyde Sea Area: iii. Chemical and Physical Conditions; Rate and Nature of Sedimentation; and Fauna, Jour. Mar. Biol. Assoc., vol. xvii., No. 2), writes of the Physical Conditions and Fauna of the Clyde Muds. The surface of the mud is added to by the deposition of fine material from the Plankton of the overlying water and by faecal pellets of bottom-dwelling animals. There is a complete absence of oxygen even in the surface layers. The depth to which organisms burrow seems to be regulated by their need for free oxygen and their means of obtaining it.

**The Specific Identification of Faecal Pellets.**—Mr H. B. Moore (Jour. Mar. Biol. Assoc., vol. xvii., No. 2) found that the Faecal Pellets of various bottom-dwelling species often formed a large part of the surface layers of the mud in parts of the Clyde estuary, and in order to ascertain the contribution of each species he made a study of the Faecal Pellets. In Nucula, for example, the forms made by each species are quite distinctive in shape. This study has had an interesting sequel. Moore showed that the pellets of Nucula nitida were quite distinct from those of its variety radiata, and this form has now been raised to specific rank under the name Nucula moorei (Journal of Conchology, vol. xix., No. 6, p. 187).

**Spotted Redshank in Sutherland.**—An example of the Spotted Redshank (Tringa erythropus) was seen in November 1929 at very close quarters at a loch about a mile from the sea at Durness, by F. Spencer, and is recorded by him in British Birds, Feb. 1932, p. 274.
Migration of Red Admiral Butterfly.—The sudden appearance of large numbers of *Pyrameis atalanta*, the Red Admiral Butterfly, in Orkney and Shetland, in July 1930, is related by W. S. Bristowe, B.A., F.Z.S., in the *Ent. Mo. Mag.* for September 1931 (pp. 205-206). The insects disappeared equally suddenly after three days.

A Census of Insects.—A short paper of much interest to entomologists is printed in *The Entomologist* for November 1931, pp. 241-242. It is by Major E. E. Austen, D.S.O., Keeper of Entomology, British Museum (Natural History), and is entitled "The Present State of the National Collection of Insects." The task of computing and estimating the number of known species and the number of these represented in the great collection at South Kensington must have been a laborious one, but the results are useful and interesting. A table is given, in which is stated for each of the 21 modern Orders the number of known species, number of specimens arranged in the collection, number of specimens not yet incorporated, the total number of specimens, the number of species represented, and the percentage of the known species which this last number represents. At the foot of each column is given the grand total. As one would expect, the Beetles (*Coleoptera*), Butterflies and Moths (*Lepidoptera*) far outnumber the other Orders, the number of specimens of Beetles reaching the amazing total of 3,877,564 and of Butterflies and Moths 2,234,628. The percentages referred to are 54 and 62 respectively; that is to say, there are at present housed at South Kensington 130,620 species of Beetles and 62,170 species of Lepidoptera, all satisfactorily identified and systematically arranged!

The Greenland Shark.—An interesting article on this fish appeared in *The Naturalist*, for January 1932 (pp. 10-14), by R. W. Gray, F.Z.S. After quoting Scoresby's original description of the Shark, the author discusses two questions: firstly, is the Greenland Shark normally a bottom or a surface fish? and secondly, does it feed on living as well as dead whales? Seven paragraphs are given in support of the author's contention that this Shark is a bottom fish, and a like number are printed which throw doubt on Scoresby's statement that it attacks living whales. This paper is based not only upon quotations from reliable authors, but also upon Mr Gray's own personal observations.
British Fresh-Water Copepods, vol. i. By Robert Gurney, M.A., D.Sc., F.L.S. Ray Society, 1931. Price 25s. Scotland has been fortunate in having several notable students of her fresh-water life. Amongst others the late Sir John Murray, who was responsible for the well-known survey of Scottish Lochs, T. Scott who worked intensively on the Crustacea, and the author of the above volume who revised a large number of the plankton collections of the Lake Survey in the Royal Scottish Museum, may be mentioned.

So far as the Copepods are concerned our knowledge of the species found in Scottish waters is reasonably thorough, although of course there still remains a vast amount of experimental and biological work to be done.

In the present volume the author deals with the fresh-water Calanoidea of Britain, and it should prove of great assistance to students of our fauna, since adequate descriptions and keys for all species are given. Under each species sections, dealing with bionomics and distribution, both in Britain and abroad, are also included.

The mass of literature which has accumulated on the subject is immense. For example the author gives over forty pages of references to literature, yet that includes none of those published in 1896 by Schmeil in his bibliography, except such as are actually quoted in the text.

The earlier part of the volume is devoted to general questions and to morphology.

Altogether it is an extremely useful volume and one on which the author is to be congratulated. It should prove a great stimulus to a further study of the group.

The Art of Bird-Watching: A Practical Guide to Field Observation. By E. M. Nicholson. London: H. F. and G. Witherby, 8vo, 218 pp., 6 plates and 14 text-figures. Price 10s. 6d. net. This is an inspiring book, full of useful information and suggestions for work. The amateur bird-lover is taught what phase of bird-watching is worth taking up, and how to do it. The first chapter deals with equipment, instruments, notebooks and note-taking, hides, trapping and ringing, and in it the technique of bird-watching is stated to be still imperfect and fragmentary. “How Bird-Watching is Done” is the subject of Chapter ii., and among the points discussed we note with interest that the author stresses the importance of training the ear as well as the eye, since “almost every species can reliably be distinguished through its call or song by the trained ear.” In the choice of subjects for investigation the problem of the life and mind of the individual bird is regarded as the most fundamental of all. Bird-census work, observation of nests, altitude and speed of flight, and many other interesting topics are discussed in the third and fourth chapters. Altogether the book is one which can be strongly recommended as of the utmost value to students of bird-life, especially those who still enjoy the advantages of youth.
**Fishes.** By E. G. Boulenger. With drawings by L. R. Brightwell, and 8 plates. London: Chapman & Hall, Ltd., 174 pages. Price 7s. 6d. net. It is somewhat unfortunate that this work was preceded so recently by the excellent "History of Fishes" noticed in our issue of November-December last. Nevertheless, its much lower price and more elementary style will probably appeal to a different class of reader, and thus serve a useful purpose. It is admittedly "not in any way presented as a scientific work," and it appears to us to serve as an excellent guide-book to the aquarium. The style of writing, with such a large proportion of the sentences beginning with the definite article, seems weak and monotonous. As a simple guide to the classification of Fishes, however, it may be recommended.

**Butterfly and Moth Book.** By Ellen Robertson-Miller, New York: Charles Scribner's Sons, 1931, 285 pages and numerous illustrations. Price 10s. 6d. net. This is a new edition of a book which proved very popular in North America, where the personal observations were made which serve as the basis for the various chapters. Six new chapters and ten new illustrations appear in the present edition, while the nomenclature has been brought up to date. Although all the insects described are natives of North America the book is of considerable interest to the British entomologist, for there are many excellent accounts and beautiful illustrations of well-known species in all stages of their life-history. A few misspellings and other discrepancies have come to our notice. On p. viii., l. 8, "virginiensis" should read "virginiensis"; p. 107, l. 3, "was" should be "were"; p. 132, "Appendix A" referred to in footnote we have failed to find; p. 139, legend to figure "Pronubia" should be "Pronuba"; p. 144, l. 19, "pollenate" should be "pollinate." These are minor blemishes, however, which more careful proof-reading would have prevented.

**More Zoo Ways.** By T. H. Gillespie. London: Herbert Jenkins, Ltd., 1931, 212 pages, 16 illustrations. Price 3s. 6d. net. The lover of animals will welcome another series of fascinating chapters penned by the Director of the Zoological Park, Edinburgh. The book is written in the author's usual chatty style, and illustrated with an interesting series of photographic plates. Although the general natural history of animals kept in a zoo is more or less familiar yet certain aspects of their behaviour, as related by Mr Gillespie, will prove new to most of us. It is surprising for instance to learn that a certain Ostrich never sleeps in the house provided for him, but that he prefers to spend the night in the open, even during a hard frost. Other animals which do not seem to mind the cold are Malay Porcupines. The Polar Bear revels in the hottest sunshine, while the Chimpanzees, on the contrary, "are more inclined to shun the sun than seek it," and like to "go out and sit in the rain." Like its predecessor, Zoo Ways and Whys, the present volume is an admirable gift book for boys and girls.
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EVERY NATURALIST SHOULD READ

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

Studies of Lanarkshire Birds.
A Remarkable Whale Invasion.
The Natural History of Floods.
List of Birds of the Forth Area.
Scarce of the Corn-rack.
The Rookeries of Edinburgh and Midlothian.
Remarkable Decrease of the House-Sparrow.
Natural History as a Profession.
The History of the Whale and Seal Fisheries of the Port of Aberdeen.
Instinct and Intelligence in Insects.
The Gannets of the Bass Rock—Estimated Numbers and a Count.
Annual Reports on Scottish Ornithology, including Migration.
Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.
Animal Welfare.
The Menace of the Grey Squirrel.
The Varying Length of Lark Song.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.
A SCHEME FOR RECORDING IMMIGRANT INSECTS IN GREAT BRITAIN.

We have pleasure in directing the attention of our readers to a scheme proposed by the Hastings and St Leonards Natural History Society to start a regular series of observations on immigrant butterflies. A circular has been issued, appealing for the assistance of anyone who observes the occurrence of any of the commoner migrants, such as the Painted Lady Butterfly (*Vanessa cardui*), the Clouded Yellow (*Colias edusa*), the Pale Clouded Yellow (*Colias hyale*), the Silver Y Moth (*Plusia gamma*), or the Diamond-back Moth (*Plutella maculipennis*). From this circular we extract the following: Any person who knows the commoner butterflies and moths can help by sending in their records, and every additional observer will make the results more likely to be of value. Cards of the standard arrangement to be filled in with the type of information required, have been prepared, and a dozen or so of these will be sent free of charge to anyone who wishes to co-operate, if he or she will send his name and address, and 1½d. in stamps to cover postage, to Dr Norman Ticehurst, 24 Pevensey Road, St Leonards, Sussex. Filled-in cards should be returned at intervals to the same address, when further record cards will be sent if required.
NOTES

Common Buzzard in the Outer Hebrides.—A bird was trapped (I am sorry to say) by one of the keepers at Lewis Castle a few days ago. I sent it to the Royal Scottish Museum for identification, and have been informed that it is a Common Buzzard (*Buteo buteo*) and that this species only occasionally visits the Outer Hebrides.—John Morrison, Assynt House, Stornoway, 23rd January 1932.

[Mr Morrison has kindly presented this specimen to the Museum, where it has been preserved. Three nests of the Common Buzzard were recorded from South Uist in *British Birds*, August 1931.—Eds.]

Early Arrival of White Wagtails in Ayrshire.—On 16th February, when accompanied by a friend who is an experienced ornithologist, I was surprised to observe a small party of six white Wagtails, five cock birds and a hen, feeding in a newly-ploughed field, the male birds being in beautiful plumage. The occurrence at so early a date is, I should think, almost unique.

On the shores of the Clyde Estuary we are accustomed to see these migrants each spring, but generally in the latter part of April. Last year I first observed them on 25th April. It will be interesting to note whether these are isolated birds or whether their arrival is part of a larger and earlier movement towards their northern breeding grounds.—C. Cairnie, Largs.

Polecat-Ferrets in Mull.—For the last two or three years what appear to be Polecat-Ferrets of extraordinary size have been occasionally trapped in Mull. In markings and coat they seem in all respects to resemble the ordinary Polecat-Ferret used for ferreting purposes, but they are very much larger, some of them being fully double the bulk of an ordinary Polecat-Ferret. Their numbers are very considerable and form a menace to all game and poultry, and their size is such as to make them pretty well immune from attack by any of the ordinary enemies of stoats, weasels, etc. Whether these are the progeny of ordinary polecat-ferrets which have escaped and bred in a wild state, or whether they are the progeny of ordinary white ferrets crossed with the original wild polecat, is a question which has not yet been settled, but what is believed to be a specimen with an entirely brown head like an ordinary wild polecat was seen about two years ago at an altitude of about 1500 feet. They would seem to be almost entirely nocturnal in their habits.—J. A. Yeaman, Edinburgh.
CHANGES IN THE DISTRIBUTION OF BRITISH GEESE.

By Fred W. Smalley, F.Z.S., M.B.O.U.

For some considerable time I have been contemplating making an attempt to take a census of the different species of "Grey" Geese frequenting Great Britain during each winter. The idea was first of all suggested to me by Dr William Eagle Clarke, and latterly has again been urged upon me by Dr C. B. Ticehurst and Mr Leyborne Popham. To be in a position to draw up any very exact census is not easy, but it has been suggested that the most suitable medium for broaching the subject is the SCOTTISH NATURALIST, and I trust therefore that its pages will be thrown open for discussion.

Others besides myself who have been "following" the Grey Geese for the last thirty-five years or more in different parts of Scotland and England have been struck by the fact that the goose population of those haunts best known to each of us has materially altered during this period, not only regarding the numbers of any particular species but actually, in some cases, as regards the species themselves. That Grey Lags have, within the last few years, sought new quarters on the north-west coast of Lancashire and changed their feeding ground from one large Solway marsh to an adjacent one, is to mention but two instances of the alterations that are undoubtedly taking place.

Unfortunately my own activities have been cut short through ill health and I shall never be able to follow the geese again, therefore I must rely on the reports of those more fortunate than myself who are still able to pursue the fascinating sport of shooting Grey Geese.

My difficulty of course lies in getting into touch with reliable observers and receiving authentic reports from them. Those who can tell us most are probably those who never see any such publication as the SCOTTISH NATURALIST, or any other magazine dealing with ornithology in general and
wildfowling in particular, but I am hoping that any who do read the SCOTTISH NATURALIST may be sufficiently interested in the subject to collect reliable data and submit them for publication.

My own experience of "Greys" has been confined to Aberlady Bay on the Firth of Forth; both shores of the Solway Firth but chiefly on the English side; north Suffolk and to a less degree south Norfolk and the north-west coast of Lancashire from the Lune estuary to the Westmorland border. It is thirty years since I last followed the Grey Geese frequenting Aberlady Bay; at that time the geese were all Pink-foots. On only one occasion did I ever note any other species there, namely a small family party of Bean, which always kept to themselves, never mixing with the Pink-foots and never coming within gun-shot of me. What species of "Grey" now favours Aberlady Bay and the Haddington cornfields I do not know. I do not even know if any geese haunt there now at all.* Periodically, sometimes for a fortnight at a time, the Aberlady Pink-foots used to desert the bay, going, I was told, to above Stirling Bridge. I cannot vouch for this, but after a fortnight or so they would all return. On the Scottish side of Solway Firth, in 1910, at the beginning of April, when driving in an open conveyance along the road bordering the Nith marshes, I had the unique experience of watching Grey Geese grazing within twenty yards of the road and not taking the slightest notice of anybody; these were all White-fronted, possibly passing migrants. On the other hand they may have been some of the resident winter geese population on that estuary.

On the English side of the Solway, where I have shot Grey Geese both before and since the War, changes have certainly taken place during the last forty-five years. I am told by one whose word can be relied upon (Jim Storey, senr., of Anthorn) that he recalls the time, some forty-odd years ago, when the "Greys" shot at Anthorn, Greenspot, etc., were all Bean Geese; this I think is proved by the isolated stuffed specimens of Grey Geese which I have examined in the

* Fortunately Grey Geese still haunt Aberlady Bay during the winter months, and they are practically all Pink-footed Geese.—EDS.
locality, shot round about that time. Storey distinctly recalls the first arrival of Grey Lags on Anthorn marsh, a small flock, followed in the succeeding year by a larger flock, and so on until the Grey Lag increased in numbers till it was, and I believe is still, the Grey Goose on Solway, numbering many thousands. During the years I have shot Grey Geese on Anthorn marsh I have only once or twice noted a small flock of Bean which, as was the case with the Aberlady Bay Beans, never associated with the Grey Lags.

Coming farther south to the north Lancashire and Westmorland coast lines fringing the top end of Morecambe Bay and extending south to the Lune and Ribble estuaries, an interesting change in the goose population has taken place. Up to comparatively recent times (1914) Grey Geese were never numerous on these coasts and those shot were chiefly White-fronted, with an occasional Pink-foot. During the last few years one particular part of the coast near Silverdale has been much frequented by yearly increasing numbers of Grey Lags, now estimated to number somewhere about 300 or more. These Greys are very possibly an instance of extended range of the Solway Greys, but I shall return to this matter of extended range later on.

Forty or more years ago the Grey Geese chiefly killed on the Ribble estuary were Bean, and those frequenting the Dee estuary at Barton Point were Pink-foots; but it is over thirty years since I shot on the Dee estuary.

Turning to the eastern coast line of England, my personal experiences are confined to the north Suffolk coast: Yarmouth, Breydon Water and adjacent marshes from 1917 to 1927. I have occasional records of Bean and Grey Lag, more of White-fronted, but only recently of Pink-foots. I believe the Holkham Greys are all Pink-foots and have been so for generations, and the Pink-foots recently noted on the Bure marshes may possibly represent an extension of range southwards of the Holkham Pink-foots. Dr B. B. Riviere in his excellent and recently published book on The History of the Birds of Norfolk bears out what I say regarding the extension of the range of the Pink-foot on the Norfolk-Suffolk borders thus:—"Until recently this species appears
to have been confined to the western side of the county and was but rarely seen in the eastern districts. During the winter of 1913-14, however, a flock of between thirty and forty began to use the extensive tract of grazing marshes lying between the rivers Bure and Yare to the west of Breydon. Each subsequent winter more and more geese have frequented these marshes until, at the present time (1930), their numbers are little short of those at Holkham. These geese seldom alight on Breydon but regularly pass over the town of Yarmouth as they come in from the sea in the early morning and return at night. Amongst them a few Bean, and a considerable number of White-fronted Geese have been shot during the past few years. The third principal haunt of the Norfolk "Grey" Geese is within the area of the Wash. Here their numbers appear to have increased largely in recent years, and during the exceptionally hard winter of February 1929 Mr M. C. W. Dilke estimated the numbers feeding daily on the Snettisham fresh marshes at over two thousand, a considerable proportion of these being White-fronted" (B. B. Riviere, History of the Birds of Norfolk, pp. 143-144).

That the distribution of the Grey Geese in Great Britain is altering rapidly is certain; it is equally certain there must be a cause for this, and I venture to suggest the following to be as near to the truth as we are likely to get. On the north-west coast of England the changes are probably entirely due to the altering local conditions which are taking place in the different habitats along the entire coast line from the north shores of Solway Firth south to the Cheshire Dee. To give examples: Forty or more years ago Anthorn marsh, on Solway, was chiefly suited to the needs of Barnacle Geese, which species haunted there in their thousands where to-day they are much reduced in numbers. At that time there was little or no "high marsh" - on the shores of the Wampool and Waver, i.e., green grass marsh such as the "Greys" feed on. Jim Storey can recall the first Grey Lags coming to Anthorn marsh some forty-five years ago. Very gradually the high marsh grassed over, and as the grass area increased so did the number of Grey
Lags which came there to feed. For the very same reason this grassing over of the estuary gradually reduced the feeding area frequented by the Barnacles, hence the decrease in their numbers during recent years.

Coming farther south to the higher reaches of Morecambe Bay, at Silverdale some years ago, owing partly to the sea wall being broken and the consequent flooding of the low lands with salt water, but chiefly to the cessation of pumping surface water off the land due to a private quarrel between the landowners interested, a vast area of moss (i.e., black soil) land went out of cultivation and became water-logged and reed-covered to a considerable extent. This area became a paradise for duck, and in the autumn of 1920 the first flocks of Grey Lag Geese made their appearance and have yearly increased in numbers.

Here then are but two concrete cases which I think point to the cause of changes in the status of the Grey Geese, and doubtless were it possible to shift the available evidence from other districts we should find the cause of alteration to be due to altered conditions of the food supply.

Mr Leyborne Popham's experiences of Grey Geese on his fowling grounds at Veere, Walcheren, Holland, where he is at present punting, bears me out in the conclusions I draw, and I cannot do better than quote from a letter received recently from him: "There certainly is a great difference in my part of Holland during the same period (the last thirty years). Formerly Pink-feet with a sprinkling of White-fronts largely predominated; now these have become quite scarce. There always were a certain number of Bean which frequented the salt marshes (and not the sand-banks as the Pink-footed and White-fronted always did), but these have rather increased in numbers if anything. A possible explanation is that the sand-banks in the mouth of the estuary have become lower. They used to be covered only at spring tides, whereas now they are smaller and covered at all high-water tides. As the geese have been very little molested in latter years this cannot be the only reason that they were inaccessible to the punt at neap-tides. They used to flight out from the grass banks at sunset in
thousands during some part of the winter, but now a small flock is all there is to be seen and that seldom. Grey Lags are migratory in Holland, turning up in October and March."

It would appear from this that the lowering of the grass banks, with possibly an alteration in the nature of the grass growing on them, has been the cause of the Grey Geese decreasing in numbers at Walcheren during the last thirty years.

Green Woodpecker in Inverness-shire.—Last year on two occasions I saw a Green Woodpecker on a tree in the woods on the east side of Loch Ness between Foyers and Inverness. The first glimpse was a very fleeting one but I got a good view of it the second time. I knew the Green Woodpecker well in the south of England.—(Mrs) F. E. Skelton.

Bird Notes from North Uist and Sutherland.—I was interested in Mr St John Yates' notes from Newton Lodge, North Uist, in the March-April number of the Scottish Naturalist.

I gave up my lease of Newton last February (1931) having had the winter shooting there for ten years, during which time I had ample opportunity of studying the birds on that estate.

I would suggest that the Rough-legged Buzzards which Mr Yates report on page 37 were Common Buzzards, which came across the Minch from Skye, where they are very numerous. We saw two pairs during the last two seasons, and I would also suggest that the four Long-Eared Owls which Mr Yates reports being seen at Newton were of course Short-Eared Owls, which nest there, and which we constantly saw amongst long heather which the crofters had not burnt. Our dog on several occasions brought Water Rails to us, which they had caught in the Snipe bogs.

On 20th August 1931 our shooting party at Eriboll, Sutherland, killed a common Quail (a young bird, I think). This may be of interest to your readers.—E. J. Fergusson, Lt.-Com. R.N. (retired).
THE GALL-MIDGES OF THE ASPEN IN SCOTLAND

THE GALL-MIDGES \((\text{CECIDOMYIDAE})\) OF THE ASPEN \((\text{POPULUS TREMULA})\) IN SCOTLAND, WITH DESCRIPTION OF A NEW \text{HARMANDIA} GALL.

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

The insect concentrations of the Salicaceae are of more than usual interest to the cecidologist and are of such a character as to indicate something of the past history of the two genera \((\text{Populus} \text{ and } \text{Salix})\) that comprise the plant order.

The Poplars \((\text{Populus} \text{ spp.})\) are at once distinguished by a series of characteristic "Pemphigus" (Aphid) galls and (in the \text{Cecidomyidæ}) a distinctive group of "Harmandia" galls, these latter for the most part taking the form of more or less globular excrescences on the upper or lower surface of the leaf. Neither of these concentrations is represented in the Willows and Sallows \((\text{Salix} \text{ spp.})\) which, however, are equally strongly characterised by a longish series of Saw-fly \((\text{Tenthredinidae})\) galls of the genera \text{Pontania} and \text{Euura} \((\text{Cryptocampus})\), and a still longer series of Salix gall-midges comprising the somewhat extensive genus \text{Rhabdophaga} \text{Euura populi} and \text{Rhabdophaga giraudiana} are representatives of these two concentrations that are found on \text{Populus} and, whilst this indicates the genetic relationship of the two plant genera the connection is so slight that one is tempted to suggest an almost complete isolation in time for the evolution and fixation of the two genera, and the possible advisability of indicating the same by according to these plant genera something more than generic rank.

The Midge-galls of the Aspen in Scotland are not well known and will repay research. Indeed, to the best of my knowledge only the petiole-gall \((\text{Syndiplosis petioli})\) has so far been recorded, having been observed by Trail as hereafter detailed. Until recently the English species were also little known, only \text{Contarinia sp.}, \text{Harmandia} (now \text{Syndiplosis} \text{petioli} and \text{H. tremula} being recorded in Swanton's book.¹ Harrison and I have from time to time added other species, and in our Catalogue of the British \text{Cecidomyidæ}² we
record *Perrisia populeti* K., *Syndiplosis petioli* K., *Contarinia tremulae* K. (= sp. of Houard and Swanton), *Harmandia tremulae* Winn. and *H. pustulans* K., since when have been discovered *Lasioptera populnea* Wachtl, *Harmandia globuli* Rübs., and *H. cavernosa* Rübs. We have also found galls of *Rhabdophaga giraudiana* K. on Aspen as well as on *Populus alba*, from which tree we record it in our catalogue, whilst Burkill has described an apparently new form of Aspen leaf-gall from Shropshire.

Having already made one or two isolated observations of Aspen galls in Scotland, I was tempted to pay special attention to this tree with the object of adding to our forthcoming list of Scottish Midge-galls. An opportunity occurred on a recent motor trip to Forres and Nairn via Crieff, Pitlochry, Newtonmore, Kingussie and Grantown-on-Spey, when I had the good fortune to find three species new to the Scottish fauna, one of which was a strongly characterised and apparently undescribed *Harmandia*-gall.

The British Midge-galls of the Aspen may be classified as follows:—

**A. Affecting the twig or petiole.**

1. Elongated fusiform swelling on a young twig, containing a Cecidomyid larva. *Rhabdophaga giraudiana* K.

2. Unilateral, uni- or plurilocular rounded swelling on the twig or globular swelling on the petiole. Each cell containing an orange larva. *Syndiplosis petioli* K.

**B. Affecting the leaf.**

1. Marginal leaf-roll rolled upwards.
   
   (a) Surface glabrous; larvae leaping. *Contarinia tremulae* K.
   
   (b) Surface of rolled part strongly pilose; larvae non-leaping, white. *Perrisia populeti* Rübs.

2. Spherical or ovoid gall visible on one side of the leaf only, except in most cases for a more or less lipped opening on the opposite side of the leaf.
   
   (a) Globular galls often gregarious on the upper surface with a lipped opening ventrally.

   (i) Diameter 3-4 mm., walls thicker, usually bright red or purple; larvae yellowish. *Harmandia tremulae* Winn.
(ii) Diameter 2.5 mm., walls thinner, colour dull reddish carmine; larvae reddish yellow.

Harmandia globuli Rübs.

(b) Upended, chestnut brown, ovoid, thin-shelled gall on the upper surface, 2-3 mm. high and about one-half as broad as long, not opening ventrally, the imago emerging at or near the apex. Harmandia sp.

(c) Globular gall on the lower surface, partly extending to and visible on the upper surface in the form of a heavily lipped opening, diameter 4.5 mm., green or reddish, walls thick. Harmandia cavernosa Rübs.*

3. Galls of a pustular form visible equally on both surfaces.

(a) Simple Cystiphora-type pustule described by Burkill as follows: "Circular gall in the lamina of the leaf. Thinner and softer than Lasioptera populnea."

Cecidomyidarum sp.

(b) Pustule with centre faintly conical on the upper and faintly hemispherical and less high on the lower surface. Lasioptera populnea Wachtl.

(c) Circular pustule of 3 mm. in diameter and about as deep as broad. Harmandia pustulans K.

The following are my Scottish records:—

Lasioptera populnea Wachtl. Neighbourhood of Grantown-on-Spey and at Aviemore, ix. 31.

Perrisia populeti Rübs. From near Montrose, viii. 29, and Aviemore, ix. 31.

Syndipsis petioli K. Trail records this species as not uncommon at various places along Deeside. Common between Newtonmore and Kingussie, and in the neighbourhood of Aviemore and Grantown-on-Spey, ix. 31.

Contarinia tremulae K. Near Aberfeldy, viii. 28.

Harmandia tremulae Winn. Kingussie, Aviemore and Grantown-on-Spey, ix. 31.

H. globuli Rübs. Sma’ Glen near Amulree, viii. 27, and again, ix. 30.

Harmandia sp. Two examples from near Aviemore, ix. 31.

It should be noted that Felt⁶ has shown a somewhat similar concentration of Midge-galls on the American

* Other smaller thin-walled forms are known on the Continent, but the producers have not yet been described.
poplars, but at the time his book was published their classification was in some chaos, and he adds in a footnote on p. 38, "There are a series of these globose or conical galls on poplar leaves which are apparently produced by several species of Gall-midges."


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**Edinburgh Natural History Society.**—At the Monthly Meeting of the Edinburgh Natural History Society, held on 23rd March, Mr Henry Johnston, M.A., in the Chair, Professor Sir Thomas Hudson Beare delivered a communication on the "Beetle Fauna of the Upper Spey Valley." After mentioning that the number of species of Beetles in the British Isles listed in the Catalogue he published at the end of 1930 amounted to 3586, the lecturer described briefly the scenic and geological features of the Upper Spey Valley. He mentioned that during the past twenty-five years 11 species new to the British Fauna had been discovered in this area by himself and other coleopterists, and so far only one of these had been found outside this area in Great Britain. Five of these species were attached to trees or to fungoid growths on trees.

He then gave a brief account of the most interesting species found in this area, in addition to the above 11 species, and dealt with the economic importance of some of them, especially from the point of view of afforestation.

The lecturer exhibited some 100 specimens of the most typical species dealt with in the lecture.—**ALLAN A. PINKERTON, Hon. Sec., Edinburgh.**
A PRELIMINARY ACCOUNT OF THE SCOTTISH GALL-MIDGES.

(Diptera—Cecidomyidae).

By Richard S. Bagnall, D.Sc., F.R.S.E., and Prof. J. W. Heslop Harrison, D.Sc., F.R.S.

The Dipterous family Cecidomyidae is a large one, and its members are of wide distribution. Although they are familiarly known as Gall-midges, their feeding habits as larvae exhibit great diversity, large numbers of species playing no part as gall-makers. Some are commensals and others predators in the galls of Gall-wasps (Cynipidae), other Gall-midges, Gall-flies (Trypetidae), Gall-mites (Eriophyidae) and of certain Hemiptera. Several species prey on phytophagous mites or Aphididae, whilst a few are internal feeders on insects belonging to widely separated families of Hemiptera. Not a few feed on epiphytic fungi such as the rusts and mildews, or gain a living in the ovaries of grasses, the seeds or seed-pods of various plants, and in the cones of conifers. Still others are to be found in the leaf sheaths of grasses, sedges and rushes, and finally, many forms occur under the bark of trees, in sap, in fungi, etc. Amongst the latter are genera like Miastor which reproduce themselves pædogenetically, i.e., the larvae have the power of producing further larvae.

We are more particularly interested in the true Gall-midges, though we have also made notes of inquilines, predators and endo-parasites, and of the occurrence of Cecidomyid larvae feeding on mildews, rusts, etc. In the course of our researches we have constantly been struck by the extraordinarily minute or obscure nature of many Cecidomyid galls such as those we described in 1922 from Lime, Sycamore and Senecio spp. (micro-pustular leaf-galls) and from Helianthemum; this last consisting of a most minute bright red bud-gall containing several full-grown larvae.

Another feature of considerable interest lies in the many instances of important generic concentrations such as
Oligotrophus (sensu stricto) on Juniperus; Clinorrhyncha, Cystiphora, Rhopalomyia, Misopatha and Diarthromyia each on limited groups of the Compositae; Harmandia on Populus and Rhabdophaga and Iteomyia on Salix; Mayetiola, Chortomyia, etc., on grasses and Hormomyia and allied genera on Carex. One of us (R. S. B.) is publishing a preliminary though somewhat lengthy memoir on this subject in an attempt to show the phylogenetic significance of these concentrations and associations.

In the latter half of last century some attention was drawn to the study of our British galls by Cameron, Hardy, Mueller, Inchbald, Meade, Fitch, Trail and Binnie. Of these workers Mueller received material from Scotland, whilst Hardy and Trail were resident in Berwickshire and Aberdeen respectively, and Cameron and Binnie in the west of Scotland, so that considerable attention was paid to the Scottish galls by these pioneers. Most prominent of all these was the late Prof. J. W. H. Trail, F.R.S., who began to study galls in 1870, and "in the absence of any comprehensive records of the galls of Scotland" published a series of articles entitled "Scottish Galls" in the pages of the SCOTTISH NATURALIST, vols i.-vi. (1871-1882) and new series, vols. i.-iii. (1883-1887). We are only concerned with the Gall-midges, and it is unnecessary to refer to this earlier literature, as in 1888 (SCOTTISH NATURALIST, pp. 281-288, 309-328 and 373-382) Trail published "The Gall-making Diptera of Scotland" which incorporated the records of Hardy, Binnie, etc., and thus forms a suitable basis upon which to build. Since then comparatively little has been written upon the Scottish galls; in 1890 Trail made further records of ten gall-midges already recorded by him; in 1892 he described three galls (Ann. Scot. Nat. Hist., pp. 264-266) the causers of which we now know to be Jaapiella thalictri, Syndiplosis lonicerarum and Stictodiplosis scrophulariae; in 1897 he published a general article on the subject; in 1902 a request for material and two minor papers; in 1904 (loc. cit., p. 30) a description of a supposed dipterous gall on Sagina ciliata, and lastly in 1906 (loc. cit., p. 244) records of the above mentioned S. lonicerarum and of
Mayetiola destructor. Altogether Trail gave indications of 85 or 86 gall-midges (including those that were then confused with other species) of the 89 marked with asterisks herein. Other records consist of references to species of greater or less economic importance.

We first turned our attention to Scottish galls in the case of one of us (J. W. H. H.) on a visit to Stirlingshire in 1914, and in the other (R. S. B.) some fourteen to fifteen years ago when visiting North Berwick (June 1917). The latter expedition was rendered noteworthy by the detection of the galls which we now know to be those of Perrisia rossi and Jaapiella thalictri. Other visits to Scotland enabled us to add to our observations, but it was only in 1922 that we made a serious attempt to draw up a list. In that year the British Association meeting in Edinburgh brought us together, and we individually collected—the one of us (J. W. H. H.) chiefly in the Edinburgh area, Birnam and Dunkeld and the other at Crieff, Lochs Tay and Earn, Edinburgh district (more especially for grass species), Bavelaw Moss (for sedge and sallow species) and Kelso. Our knowledge of the Scottish species increased slowly but surely, until finally we made special drives in the autumn of 1931, the one of us (J. W. H. H.) at Forres (Culbin Sands etc.) and the other in the neighbourhood of Edinburgh, and in a motoring trip up Speyside (to Forres and Nairn) and visits to Kinloch-Rannoch (which we had visited together in 1930), Loch Tay and Loch Earn. Our individual opportunities for collecting may be briefly summarised as follows:

R. S. Bagnall.—Occasional visits to North Berwick, Crieff, Perth, Pitlochry, Dundee and St Andrews; Aberdeen and Banchory; Fort William and Glen Nevis; a longish visit to Ayr in 1922 with collecting in Dumfriesshire and on the Ayrshire coast at Dunure and Maybole; a few years’ broken residence in Edinburgh with casual collecting in the neighbourhood (Dalmeny, Cramond, Balerno, Juniper Green, the Braid Hills, Port Seton and the coast as far as Gullane), and also the Fife coast at Kirkcaldy and Kinghorn. Also Berwickshire and the borders, whilst motoring to and from
England and motoring trips in Kincardineshire, Perthshire, etc., and around a number of lochs, etc.

J. W. H. Harrison.—Short visits to Berwickshire and Roxburgh with longer stays in the counties of Stirling, Dumbarton, Argyll, Ross-shire, Fife (Tentsmuir, Kinghorn and coast generally), Perth, Angus, Elgin, Nairn and Inverness.

In Europe considerable attention has been paid to the study of galls by many cecidologists (and systematists) including von Schlechtendal, Kieffer, Mik, Thomas, Mayr, Fockeu, the Loews, Nalepa, Giard, Giraud, Marchal, von Frauenfeld, Rübsaamen, Massalongo, Houard, von Dalla Torre, Corti, Cecconi, Trotter, Tavares, Ross, Hedicke, de Stefani-Perez, to mention some names as they come to the mind. Many monographs of importance have been published, whilst the periodicals Marcellia and Broteria are devoted to cecidology. Houard's Les Zoocécidies des Plantes d'Europe et du Bassin de la Méditerranée (Paris, 2 vols., 1908 and 1909 with Supplement 1913) is essential to students of the British Galls as Connold's books and Swanton's British Plant-Galls (which is an excellent guide to the beginner), whilst important and interesting, are sadly out of date in view of the results of our researches. This may be realised from reference to our "Preliminary Catalogue of the British Cecidomyiidae" (1918, Trans. Ent. Soc. for 1917, pp. 346-426) in which 430 species are indicated, and to our catalogue of the British Eriophyidae (1928, Ann. Mag. Nat. Hist., ser. 10, vol. ii., pp. 428-445) in which 199 named species of gall-mites are catalogued. We should here note that much of Trail's work has been overlooked by Houard, Swanton and others, and that we therefore propose to publish a review of his cecidological publications before completing our forthcoming monograph.

It will be recognised that cecidologists claim to be able to name the causer of the gall from the form and structure of the gall upon its particular host-plant provided that it is a known species, and we see no reason that such a claim should not be recognised in principle. To modify slightly an analogy we used in the preface of our Catalogue of the
British *Eriophyde* (p. 429), just as in measuring the expansion of metals, use is made of an exaggerated transmission of the expansion to a recording pointer, so we recognise in a gall a magnified result, registered in the tissues of the host-plant, of the chemical interactions between the causer and its food-plant. If the differences between these minute gall-causers are ultimately chemical in their nature then in this interaction we have a measure, and a very tangible one, of these differences, not distinct in its origin, if in degree, from those extracted from the morphological features of the creatures themselves.

We are very far from suggesting that the mites (in the case of Eriophyid galls) or the larvæ of gall-midges should not be examined, and in the latter case bred out for study. There are many new species yet to be described, but in the case of known species in which the gall has been carefully described, we are satisfied that such can be identified by careful and competent cecidologists within a very small margin of error. It is, however, gratifying to know that Dr H. F. Barnes has taken up the study of the Cecidomyiidae and has already published several important memoirs; and, now that we have a British specialist of the family we hope that many of the as yet unknown gall-causers in this group will be bred out and handed to him for description.

The present memoir seems desirable if only as a stepping-stone towards a fuller knowledge of the Scottish Midge-galls and Gall-midges. We regard it as preliminary and have not attempted to bring the nomenclature up to date nor have we made an exhaustive search of the literature for Scottish records. The classification is that adopted by Kieffer in his *Genera Insectorum* volume and by ourselves in the above-named catalogue, the number preceding the name of each species being a direct reference to our catalogue. Since this catalogue was published, however, many additions have been made and are (or are being) recorded in our "New British Cecidomyiæ" of which 6 parts have been published (*Ent. Rec.*, 1921, xxxiii., pp. 151-155, 166-169; 1922, xxxiv., pp. 61-66, 149-154; 1924, xxxvi., pp. 53-55 and 99-102) and part vii. is in the Press.
Well over 600 British species of Gall-midges are now known and 311 species are herein recorded for Scotland of which 222 are additions, or recent additions, to the Scottish fauna. An asterisk or double asterisk denotes the 89 older known Scottish species, the double asterisk referring especially to species that are named herein but of which the causers were not known to Trail and/or others, or had been confused with other species or otherwise erroneously determined. Of the total 311 species, 48 are unnamed and 83 are additional to our catalogue, whilst 12 of the named species were unnamed in our catalogue.

Sub-family Cecidomyiinae.

Group Lasiopterariae.

1. Clinorrhyncha chrysanthemi H. Loew. Galling the achenes of Matricaria, rare; Braid Hills, Edinburgh, viii.18; Kelso, viii.22.

2. C. millefolii Wachtl. Galling the achenes of Achillea millefolium and probably of wide distribution; Kelso; Belhaven Bay, near Dunbar; banks of Loch Tay, near Lawers; Amulree, Pitlochry, Forres and (on A. Ptarmica) at Aberfeldy.

3. C. leucanthemi K. Galling the achenes of Chrysanthemum leucanthemum, rare; Edinburgh district, viii.18; near North Berwick, ix.22; and on Speyside at Newtonmore, ix.31.

4. Trotteria galii Rübs. On Galium verum, terminal gall; widely distributed though rare.

5. T. sarothamni K. Galling seed-pods of Sarothamnus (larvae orange-red, gregarious) Aberdeen and Kincardine; Perth, Crieff, Juniper Green and Doonfoot, Ayr; Dunbar district; Angus; Fife. See remarks under 233, Asphondylia mayeri.


— *L. populnea* Wachtl. A characteristic gall on Aspen leaves, neighbourhood of Grantown-on-Spey and at Aviemore, ix.31.

**Group Oligotropharidæ.**

14. *Rhopalomyia millefolii* H. Loew. Gall on *Achillea millefolium*, usually local; Lawers, ix.22; Findhorn, ix.31. Trail found this gall in autumn near Aberdeen and elsewhere on Deeside, and also in Perthshire, whilst Binnie recorded it from near Glasgow.

— *R. palearum* K. On *Achillea ptarmica* in a marshy field near Aberfeldy, ix.21, and at Tigh-na-Loan on Loch Tay, ix.31.


18. *M. ptarmica* Vall. With *R. palearum*, near Aberfeldy, ix.21; Pitlochry, viii.28; Deeside, 1925; and on Loch Tay and Culbin Sands, viii.31. Recorded by Trail as common in autumn in Aberdeenshire and Kincardineshire (where we have also seen it) and by Binnie as common near Glasgow.


20. *Arceuthomyia valerii* Tav. Gall on *Juniperus*, Birnam, ix.22; Pitlochry, viii.28; uncommon on Speyside and Deeside; and in Altyre Woods, near Forres, vii.-ix.31.

21. *Oligotrophus juniperinus* L. With above, Birnam, ix.22. Recorded by Trail and Binnie but probably confused with other species.

22. *O. panteli* K. With above, Birnam, ix.22; Pitlochry, viii.28; Speyside and Altyre Woods, near Forres, vii.-ix.31. It should be noted that species other than those found on Juniper now recorded as belonging to this genus are only conditionally so included.

[24. *O. alopecuri* Reut. See *Perrisia alopecuri.*]

25. *O. bursarius* Bremi. On leaves of *Glechoma hederacea*, probably common; found by Trail at Dunkeld and recorded by Binnie from the Glasgow district. We have seen it in Perthshire, Angus, Ayrshire, Lothian, and the Borders.
26. O. fagineus K. Leaf pustule on Fagus; rare; Birnam, Juniper Green, Crieff, etc.
28. O. hartigi Liebel. Leaf pustule on Tilia; common wherever we have searched; Lothian, Borders, Trossachs, Tayside, Deeside and Forres.
30. O. tympanifer K. Leaf pustule on Corylus; Abbotsford and St Fillans only.
31. O. ulmi K. Leaf pustule on elm; common wherever we have searched for it.
— Phegomyia fagicolus K. On beech (Fagus). Leaf hypertrophied and folded between secondary veins with a few reddish larvae. Crieff, ix.21; the first and only British record.
— Schmidtiella gemmarum Rébs. A small gall on Juniperus, Birnam, ix.22.
33. Mikomyia coryli K. Obscure leaf-gall on Corylus, St Fillans and Jedburgh.
*34. Semudobia betule Winn. In catkins of Betula, Bavelaw Moss, Deeside, Speyside, Strathpeffer, Sma' Glen near Crieff and Glen Nevis near Fort William. Known to Trail and Binnie from Aberdeen and Glasgow respectively.
*35. Itemyia caprea Winn. and
**36. J. major K. Leaf galls on Salices of the Caprea group, common.
*38. J. thymi K. Terminal gall on Thymus; Dunkeld, Forres and Kinghorn. Recorded by Trail as not rare on Aberdeen Links in July.
*39. J. thymicola K. Similar but pilose gall on Thymus, common.
40. J. tuberculi R. Affecting stems of Sarothamnus; usually rare. Several examples Crieff, 1922 and again in 1930, but it was too late in the season to observe the usual broom species, especially those galling the pod. Doonfoot, Ayr; Tayport; Tullybaccart, Tealing and Strathmartine, Angus.
*44. Phegobia tornatella Bremi. On leaves of Fagus, usually common. Known to Trail and Binnie.
*47. Mayetiola destructor Say (Hessian Fly). This wheat pest is recorded from Cromarty to the Moray Firth, in Lothian, Perthshire, Haddington and Berwickshire. Trail records it (in 1906) from near Crieff and Inverness (1886) on barley, and abundant, Banffshire, Dee and Don, 1906.

49. *M. joannis* K. Stem gall on *Poa*, Strathmartine, Angus, x.31.


55. *C. poae* Bosc. Stem gall on *Poa nemoralis*, near Edinburgh, viii.22; Cramond, xii.31.


57. *Cystiphora hieraci* F. Loew. Leaf pustule on *Hieracium*; Birnam, ix.22.

58. *C. taraxaci* K. Leaf pustule on *Taraxacum*, locally common and widely distributed.


60. *C. pilosella* K. Leaf pustule on *Hieracium pilosella*; coast near Dunure, Kinghorn and Strathmartine, Angus.

61. *C. sonchi* F. Loew. Leaf pustule on *Sonchus arvensis*, common at Kippen, Stirling, Forres and Muchalls. Trail found the species in August 1886, near Gamrie in Banffshire, and at Muchalls the following year.


— *M. martellii* K. Gall ing *Hypericum perforatum*, Juniper Green, ix.22.


67. *M. pilosella* Binnie. Originally described by Binnie from midges reared from the characteristic galls found near Glasgow; it is a very local species in England.

69. *Arnoldi quercicola* K. On Oak (*Quercus*), Roslin and Crieff, ix.22.

*70. A. quercus* Binnie. Midges reared in September from twisted bud galls commonly found near Glasgow on Oak were originally described by Binnie. Other species cause very similar pseudo-galls on Oak.


— *A. sambuci* K. Flower gall on *Sambucus niger* found near Greenlaws, viii.31.


74. *R. clavifex* K. Clavate, pilose terminal twig-gall on *Salix* spp. of the *Caprea* group, Aviemore and Grantown-on-Spey, ix.31.


— *Rhabdophaga* sp. (= Houard S. 40). Unilocular stem gall on *Salix repens*, Culbin Sands, Tayport, Pitlochry.

— *R. exsiccans* Rübs. Twig gall on *Salix pentandra*, Bavelaw Moss, ix.22.

— *R. gemmicola* K. In swollen *Salix aurita* bud, Birnam, ix.22.

*77. R. heterobia* H. Loew. On *Salix* spp., Berwickshire (Hardy) and near Perth (Buchanan White), Lothian and Culbin Sands.


— *R. jaapi* Rübs. A somewhat small elongated leaf-rosette gall found on *Salix repens*; neighbourhood of Blair Atholl and Pitlochry, ix.28.


*80. R. marginemtorquens* Winn. On *Salix* spp. North Berwick, Kelso, Edinburgh district, Loch Earn, banks of Findhorn, etc. Recorded by Trail from near Old Aberdeen and by Binnie from near Glasgow.


*85. *R. salicitis* Schr. The common twig-gall on *Salix* spp., widely distributed.


*94. *P. affinis* K. On *Viola* spp., Crieff, Forres and Tentsmuir, Fife. Recorded by Trail as common on the links near Aberdeen, in Strathdon and also from Rannoch.

— *P. (Dasyneura) alopecuri* (Reut.) = *Oligotrophus alopecuri*. Brick-red to orange-coloured larva in flower-heads of *Alopecurus pratensis*, Dunbar, Aberdeen district, Moray, Speyside and Lothian; Probably everywhere. Barnes bred over 1500 examples, the sexes being almost equally balanced, from larvae sent him from Aberdeen, vii.28, and also records it from Newburgh.

**97. *P. anglica* K. Terminal gall on *Vaccinium Vitis-idea*; described by Trail from Braemar.

*98. *P. aparines* K. On *Galium aparine*, Juniper Green, Carse of Gowrie and Forres; locally plentiful near Aberdeen and Banchory (Trail).

[99. *P. aucuparia* K. See *Contarinia floriperda*.]

— *P. auricomi* K. Gallling head of *Ranunculus auricomus*, river near Ayr, x.22. The galls contained yellow larvae of an inquiline.

— *P. aurite* Rübs. Marginal leaf rolling on *Salix aurita*, Birnam, rare, ix.23; Speyside, ix.31.

**— *P. angelicæ* Rübs (= B. & H. 365). Gallling fruit of *Angelica sylvestris*, common and widely distributed. This is the species recorded by Binnie from near Glasgow as probably *A. pimpinellae*.

— *P. berberidis* K. On *Berberis vulgaris*, Abbotsford, ix.21 and Dalmeny, ix.22.

— *P. bistorta* K. On *Polygonum* sp., larva white, Belhaven Bay, near Dunbar, ix.22. The same species as recorded by us from Budle Bay, Northumberland.
*108. *P. cardamines* Winn. Recorded by Trail as not uncommon though local near Aberdeen; in May, and reported by Dr Buchanan White from Perthshire, Tayport, Fife.


113. *P. (Jaapiella) compositarum* K., and


*116. *P. cratagi* Winn. Galls common on top shoots of *Crataegus*. Trail says that they are "common in Perthshire, but I have not seen them further north." We have found them as far north as in a lane near Moy, Elgin.

— *P. (Jaapiella) dittrichi* Rübs. Galling leaves of *Silais pratensis*, Kirkcaldy, ix.30; Dalkeith, ix.31.


119. *P. harrisoni* Bagnall 1922. (= *Perrisia* sp., B. & H. 119, and *Jaapiana* Rübs 1917 nec 1914). On *Spirea ulmaria*, St Fillans and Juniper Green, ix.22. This is apparently the species that causes an *engstfeldi*-like gall, but always adjacent to mid-rib or secondary nerve which swells in such a manner as to become a shelter to the larva.


— *P. excavans* Rübs. On *Lonicera*, St Fillans. Recently brought forward as British on records from South Devon and Nottinghamshire.

*121a. *P. filicina* K. On *Pteris aquilina*, common and widely distributed. Trail notes that the galls were very plentiful wherever he looked for them. Glasgow (Binnie).


**124. *P. fraxinea* K. Leaf-pustule on *Fraxinus*, common. Trail records the gall from near Banff and near Aberdeen, viii.86.

(To be continued.)
The Late Mr T. G. Laidlaw.—It is with much regret that we record the death, which took place suddenly on the 5th April, of Mr T. G. Laidlaw, an enthusiastic naturalist and sportsman. He was a skilled ornithologist and frequently contributed interesting notes on birds to the pages of the Scottish Naturalist.

Daffodil-Clump as Season-Recorder.—An extremely interesting series of photographs showing the effect of weather conditions on plant growth is published in the Illustrated London News (p. 445) for 19th March. These photographs show the same clump of daffodils on 1st March for each year from 1917 to 1932.

The photographs were taken in connection with work at a meteorological station in Norfolk and the variations in the size of the clump is quite remarkable. An analysis of the mean temperatures for the station shows that “they indicate that the conditions of the preceding summer have little influence on the date of the spring flower; that the mean temperature of the winter materially affects it; but that the main determining influence is the mean temperature through February.”

Heligoland to Aberdeenshire—a curious autumn migration of a Blackbird (Turdus merula).—On 11th November I received from Mr Alex. Smith, Forgue, the headless and neckless body of a young Blackbird with a curious history. A cattleman in the Forgue district, near Huntly, Aberdeenshire, walking in the open country on 10th November, was struck on the shoulder by the headless body, which fell mutilated from a clear sky. The condition of the bird was clearly due to an attack by a hawk, but the interesting point was that its leg bore a ring with the mark of the Heligoland Bird Station, and the number 720324. A communication since received from Dr R. Drost states that the bird was ringed in Heligoland on 11th September 1931.

In a recent number of British Birds (October 1931, p. 124), Messrs H. F. Witherby and E. P. Leach record the recovery in the British Isles during the winter months of eight Blackbirds ringed upon the coasts of Denmark, Holland and Heligoland. This westerly movement during the autumn seems to land the birds as a rule on the east coast of England, and the outward records, like the Orkney arrival from Denmark and the present Aberdeenshire record from Heligoland, may be due to unusually strong south-easterly winds, such as certainly occurred about the period when the latter bird was recovered.—James Ritchie.
Mountain Hares in the Western Islands.—In certain parts of the Western Islands where the flying vermin has increased to an enormous extent of recent years, and where the life of hares living in the open has become decidedly precarious, it has been noticed that they are taking to making runs, principally driven through the sides of peat hags and having an entrance and an exit usually at an angle to each other. The hares in question are mountain hares, some of which seem to have been crossed with the Irish hare, and it has been the common experience of the writer to see a hare disappear into a hole and appear again some twenty or thirty yards further on, at a considerable angle to the direction in which it was originally running. It would seem as if Nature were gradually in these parts driving the hares underground, and possibly in a few generations they will have followed the rabbits to a large extent in this respect. The matter is interesting as showing how Nature accommodates itself to a new or increasing danger.—J. A. Yeaman, Edinburgh.

Killer Whale (*Orcinus Orca*) landed at Alloa.—A very unusual capture was recently reported from Alloa in the Firth of Forth. This was a female Killer Whale which was killed by local fishermen on the 19th of March. The animal was 12 feet 6 inches in length and beautifully marked.

The Killer is not common as a stranded species, probably on account of its wary habits, and certainly visits our shores oftener than the records of stranded specimens would suggest. This animal, for example, would almost certainly have escaped if left to its own devices.

The Killer readily attacks Whales, Seals, Porpoises, and fish, its large and powerful teeth making it a formidable opponent. The fishermen who secured the present example were of the opinion that the animal was chasing salmon in the estuary and, although not actually stranded, had got into fairly shallow water—a circumstance which led to its being seen and captured.

The species is remarkable for the difference in the size of the sexes, an old male measuring about 30 feet in length, while an adult female rarely exceeds half that size.—A. C. Stephen, Royal Scottish Museum.

The Fledging-Period of the Barn-Owl.—W. Wilson, British Birds, Feb. 1932, pp. 244 and Plate 5. Eggs found on 11th June 1931. The first hatched on the 12th and the fourth on the 24th. On the 27th four young were out and there was little difference between them except in size. By the ninth week they were completely feathered, with no trace of down, and could fly strongly.

Dragon-flies in the Outer Hebrides.—A. A. Dalman, in The North Western Naturalist, vol. vi., No. 4, p. 229 (Dec. 1931), states that while staying in the Isle of Lewis in August he was impressed by the abundance of Odonata (Dragon-flies). The following species were collected: Sympetrum striolatum Charp., S. scoticum Don., Aeschna juncea L., and Agrion puella L. The second and fourth of these are new records for the Outer Hebrides.

Early Stages and Bionomics of Trichocera maculipennis Mg.—Students of Diptera should not omit to read a paper by K. R. Karandikar, published in the Trans. Ent. Soc. London, vol. lxxix., pp. 249-260 (July 1931). The insect in question is one of the “Winter Midgey’s,” which has not hitherto been recorded outside the Lowlands of Scotland and the English Lake District. The midge is described in detail in all stages of its life-history, and the paper is illustrated by four plates.

Bird Ecology of Field and Hedgerow.—A suggestive paper bearing this title appeared in The North Western Naturalist, vol. vi., No. 3, September 1931, pp. 139-155. The author is M. Longbottom, and the observations, made some years ago, are well worth reading.

The Garden Pebble Moth, Pionea forficalis L. The habits and life-history of this Moth, which is an important pest of cabbage, cauliflower and other cruciferous plants, are fully dealt with by Dr Herbert W. Miles, of Victoria University, Manchester, in The North Western Naturalist, vol. vi., No. 4, December 1931, pp. 200-207. Two full-page plates are given, showing the Moth at rest and the Caterpillars on a leaf of autumn cabbage.
Spitting as a means of capturing Prey by Spiders.—
Under this title, W. S. Bristowe, B.A., F.Z.S., records an interesting series of observations in the Annals and Mag. Nat. Hist. for November 1931 (pp. 469-471). From this paper we learn that in certain Oriental countries spiders of the family Sicariidæ capture their prey by spitting at them a gummy and poisonous secretion. It has also been noticed that in one species the male spits at the female before mating! On several occasions the insect prey was observed to die shortly after contact with the ejected fluid. The author concludes his paper with the following remarks: "The Sicariids are nocturnal in habits, their movements are slow, and their jaws small, so that arachnologists have wondered how they ever managed to catch or overpower anything. Now we know." One species of this family (Scytodes thoracica) is found, though rarely, in the south of England.

Astynomus ædillis, a Longicorn Beetle, in Morayshire.—
In The Entomologist for December 1931 (p. 267), J. H. Harrison records the capture of a fine male example of this species under the bark of a pine stump in Altyre Woods, Forres. When caught it stridulated violently.

Cloantha solidaginis in Arran.—Garth D. Haggart records (Entomologist, December 1931, p. 271), the local abundance of this Moth during the last fortnight of August last in a certain locality in Arran. The resemblance of the insect, when at rest, to a splinter of wood is commented upon.

Iceland Redwings in Ross-shire.—In British Birds, January 1932, p. 223, Hugh Whistler reports that he received two Redwings in the flesh which he refers to the Icelandic race (Turdus musicus coburni). They were killed on 18th October 1931 at the light at Tarbatness Lighthouse.

Hoopoe, Stonechat and late Swallow in Orkney.—A Hoopoe was found in Sandwick on 10th September 1931; a pair of Stonechats frequented a garden during October and November 1931; and a Swallow was seen on 8th November 1931.—A. Wood, in British Birds, January 1932, p. 227.

Nest of Ptarmigan in Long Heather.—In British Birds, March 1932, pp. 305-306, Seton Gordon records the finding of a nest of this species, which usually breeds above the limits of heather growth, in the Garbh Choire of Brae Riach, a corrie in the Cairngorms. This nest was in really long heather, as shown in
the photograph illustrating the note, and was about 2,900 feet above sea-level.

**Movements of Ringed Birds.**—The list of birds "ringed in the British Islands and reported abroad, as well of those ringed abroad and reported in our country" commenced in the October number of *British Birds* has now been completed by the instalment published in the February number of that periodical. The whole of this important paper, occupying some sixty-two pages, is now available for students of migration, who must feel indebted to the authors, Messrs H. F. Witherby and E. P. Leach, for their care in classifying and arranging in convenient form a huge mass of detailed records dealing with the movements of no fewer than fifty-eight species and races of British Birds. The thirty-two maps illustrating this paper are excellent and informative. "A cross indicates that a bird has been recovered at the point marked and that it was ringed in the British Islands, and a dot or circle marks the place where a bird was ringed, and all the birds so marked have been recovered in the British Islands."

**Fulmar Petrels in Wigtownshire.**—In *British Birds* for November 1931 (p. 166) W. B. Alexander reports the occurrence of two birds of this species, probably a breeding pair, on the cliffs near the Mull of Galloway Lighthouse, on 5th July 1931. If these birds were actually breeding they were "apparently the first to reach the western mainland of Scotland."

**Turtle-Dove in Skye.**—An example of this species was seen in Skye on 5th September 1931 and two others a few days before this date.—Audrey Seton Gordon in *British Birds*, November 1931, p. 166.

**Black Guillemots in Kirkcudbrightshire.**—W. B. Alexander and J. D. Wood, in *British Birds*, November 1931, pp. 167-168, report many birds of this species on the water below the cliffs at Ross Head, near Kirkcudbright, on 28th June 1931.

**Helix aspersa in Orkney.**—Robert Rendall, in the *Journal of Conchology*, December 1931, p. 163, records the presence of this snail in Orkney, stating that it occurs abundantly in gardens in Kirkwall, and has been established there for more than twenty years. It is unknown in Sutherland, Ross and Caithness.

The Coleoptera of St Kilda.—An important paper, by David Lack, on the beetles of St Kilda is printed in the *Ent. Mo. Mag.* for December 1931. Following some interesting general remarks a list is given of 63 species, 21 of which are new to this group of islands. One hundred and twelve species have been previously recorded, so that the total coleopterous fauna of St Kilda now numbers 133 species.

Insect Photography.—A paper on this subject of considerable interest to amateurs appears in the February number of the *Ent. Mo. Mag.*, pp. 28-31. It is by Miss E. K. Pearce, who published a useful series of illustrations of British Diptera under the title "Typical Flies" (University of Cambridge Press). At least 700 negatives were successfully prepared by the simple and inexpensive apparatus described.

Aquatic Coleoptera of Perthshire.—Under the title "A few days among the Water-Beetles of Mid-Perthshire," the Rev. Charles E. Tottenham, M.A., F.E.S., publishes in the *Ent. Mo. Mag.* for February and March last (pp. 45-50) an interesting account of a fortnight's work in the lochs, pools, rivers and streams mostly within two miles from the road leading from Loch-na-Craig via Aberfeldy, Kenmore, Loch Kinardochy and Loch Rannoch to Rannoch Station. Thirty-eight species are recorded and summarised.

British Plecoptera.—A list of the British members of this Order of Insects, known as Stone-Flies (Perlidae), by the late W. J. Lucas, B.A., is printed on p. 41 of the February number of *The Entomologist*.

BOOK NOTICES

A Practical Handbook of British Beetles. By Norman H. Joy, M.R.C.S., L.R.C.P., F.E.S., M.B.O.U. London: H. F. & G. Witherby, 2 vols, 4to, 622 and 194 pages, 169 plates and 1 map. Price, £3, 3s. net. Students of our native Coleoptera will welcome the appearance of Dr Joy's long-expected volumes, and they will not be disappointed. The tabulation of the numerous species so as to offer a real practical help towards their identification must have been a difficult and lengthy task, and the author must be congratulated upon the success of his enterprise. The two handsome volumes comprising the result of his patient labour are a real help to both professional and amateur Coleopterists; the volume of plates in particular, comprising thousands
of well-drawn figures, is a real boon, and will enable the collector to name with a tolerable degree of confidence many of the specimens about which he previously felt considerable doubt.

This important work commences with a short Introduction on "Where" and "How" to catch Beetles, how to set them, the task of naming, an explanation of the various types of sculpture, colouration, and localities alluded to, with a useful glossary of technical terms and a list of abbreviations of authors' names. The systematic and essential part of the text-volume does not follow the orthodox arrangement, but commences with the large and difficult group of Brachelytra, for the simple reason that their general character is so obvious that they can be readily recognised. This arrangement furnishes the text for the whole book, viz., the use, primarily, of characters which are the most practical and obvious. The value of the whole work must be judged by the experience of those using it, and only time will show whether or not the effort has been worth while. We imagine that it has, and that it will prove a tremendous help to the student, and an incentive to many young people to take up the study of a fascinating group of insects. The volumes are somewhat large and heavy, far too bulky in fact to take away on holiday. If the type had been smaller, the margins of the page narrower, and the paper thinner, the work would have been a still greater practical help. For the library, however, the two volumes are a noble addition, and we wish the work every success.

The Biology of Spiders, with Especial Reference to the Danish Fauna. By E. NIELSEN. Copenhagen: Levin & Munksgaard (London: Williams and Norgate Ltd.). Two volumes, 248 + 723 pages, 32 photographic plates containing 89 figures, 5 coloured plates, 10 + 462 text-figures. Price 30s. net. This is one of the finest works on Spiders that has appeared of recent years. The great wealth of illustrations will amply compensate the British reader for the drawback that the second volume has, for economical reasons, had to be published in the original Danish language. For the general naturalist the first volume, in the English tongue, is of much importance. It includes a general account of the biology of spiders, including the construction of the various types of webs and snares, copulation, egg-laying, spider-venom, gossamer and the spider as a weather-prophet. All the groups, and many genera and species, of Danish spiders, of which a large proportion are also British, are dealt with in systematic order, while a section on the parasites of spiders follows. The second volume, with its unusual wealth of illustrations mostly from photographs taken by the author, is, in spite of being in a foreign language, quite indispensable. The work as a whole is a fitting European counterpart of McCook's great book American Spiders and their Spinning Work, published nearly thirty years ago. Side by side in the arachnologist's library these two contributions afford him a splendid account of the natural history of one of the most interesting groups of invertebrate animals inhabiting Europe and the New World.
The Botany of Iceland. Vol. II., Part III., Fungi. By Poul Larsen. Copenhagen: J. Frimodts Forlag, and London: Humphrey Milford, Oxford University Press, 1932, pp. 452-607, 1 plate and 19 text-figures. Price 7s. net. This useful summary of the fungus-flora of Iceland forms a valuable part of the comprehensive work on the Botany of this interesting island which is appearing under the able editorship of Drs. L. Kolderup Rosenvinge and Eug. Warming. The work commences with a concise historical account of previous investigations on the subject with which it deals, a short section on the localities investigated, an essay on the special environmental conditions to which Icelandic fungi are subject, and a brief account of the immigration of fungi into Iceland. The main portion of the volume which follows is a systematic enumeration of the species occurring in the island. No fewer than 802 species are included in this summary, a number which may surprise dwellers in warmer climes, and which is at least a tribute to the thoroughness with which mycologists have investigated such an apparently forbidding area. Most of the Agaricaceae are not only listed but described, with an indication of their colour by means of a reference to the colour-plate at the end of the volume. This is a useful device, which might be adopted in other floras with advantage.

International Address Book of Botanists. Being a Directory of Individuals and Scientific Institutions, Universities, Societies, etc., in all parts of the world interested in the Study of Botany. London: Baillière, Tindall & Cox, 1931, 605 pages. Price 12s. 6d. net. This work is indispensable to the professional Botanist and to all Scientific Institutions. It contains the postal addresses of all Societies and Institutions interested in Botany, and the surnames, initials, postal addresses, official positions, professional qualifications, and special lines of study of all Botanists, professional and amateur, from whom it has been possible to obtain the necessary information. After a Preface in English, French, and German there follows an Index of Countries in the same three languages, next a list of Abbreviations, and then the International Address Book itself, arranged alphabetically under countries from "Alaska" to "Zanzibar." Finally comes an equally useful and indispensable Index of Persons, by the aid of which it is easy to trace any Botanist of standing in any part of the world. This moderately priced volume is excellently printed on a thin, strong paper, so that its size and weight are exceptionally convenient.
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The Varying Length of Lark Song.

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

By R. I. Pocock, F.R.S.

Most zoological students of domesticated animals have been impressed by the inexactness of our knowledge of the wild species from which many of them were derived. The Ferret is a case in point.

In the last century this animal, named *Martes furo* by Linnaeus, was generally regarded as a domesticated variety of the European Polecat (*Mustela putorius*), which was formerly plentiful in many parts of Great Britain. But in 1912 Mr G. S. Miller* upset this view by stating that "The ferret, though usually assumed to be a domesticated variety of *Mustela putorius*, appears to be related to the Asiatic *Mustela eversmanni* Lesson." Mr Miller examined only a few skulls of Ferrets, but he declared them to resemble the skulls of Eversmann's Polecat and to differ from those of the Western European Polecat in certain characters to which I shall refer later. The suggestion conveyed by Miller's paragraph that the ancestor of our Ferret came from the East has made its way into scientific and popular literature, and was quoted by Dr J. Ritchie in 1920† as if the matter were settled. My attention was drawn to the subject by the following incident.

A few months ago my colleague Mr N. B. Kinnear brought to me for identification a couple of skins and a skull of a Polecat-like creature which had been sent to him by Mr Percy H. Grimshaw. The animals had been killed in Mull and were referred to, with others, on p. 66 of the

* Cat. Mamm. of Western Europe, p. 423.
last number of the *Scottish Naturalist* by Mr J. A. Yeaman, who wrote of them as Polecat-Ferrets of extraordinary size which have been occasionally trapped in Mull in the past two or three years.

The specimens submitted to me were interesting for two reasons. The skull appeared to be that of a typical wild Polecat; but the skins were not quite like those of that animal, showing albinistic features observable, at all events usually, in Polecat-Ferrets. They were considerably whiter on the head and belly than ordinary Polecats and also showed a good deal of white on the paws and, what was curious, a clean white spot on the "knee." The two specimens were not quite alike, but no great importance could be attached to the differences, because wild Polecats vary a good deal individually in the amount of grey on the face, in the brown or greyish-yellow tint of the belly and in the whitish or buffish tint of the underwool. Nevertheless, the coloration of the skins from Mull showed that they could not be identified as pure Polecats, thus confirming the conclusion that this species of *Mustela* never succeeded in reaching the western islands of Scotland. If, however, the skull alone had been found in Mull, it would have been quoted as evidence of the occurrence of the Polecat in that island. This brings me to the cranial differences between the skulls of Polecats and Ferrets.

Miller stated that the skulls of the Ferrets he examined differed from those of European Polecats "by the deeply constricted postorbital region, the less triangular, more inflated auditory bullæ and the smaller size of the carnassial teeth above and below . . . characters which render them practically identical with those of the Eastern form,"* Eversmann's Polecat. Knowing the skull of the European Polecat, I saw at once that the skull from Mull resembled it in the absence of the constriction in the postorbital region, the area frequently called the "waist." But my attempt to compare it with the skulls of Ferrets was at the time

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* I have failed to substantiate the difference in the variable auditory bullæ and find that the carnassial teeth are, on the average, rather larger in Eversmann's Polecat than in the Western Polecat and Ferrets.
frustrated by there being no Ferret skulls in the British Museum. Mr N. B. Kinnear, however, kindly interested himself in the matter and procured for me the loan of several Ferret skulls from Miss Pitt and the presentation to the Museum of a pair of full-grown Ferrets by Mr Hugh S. Gladstone. *

The skulls bear out Miller's statement regarding the constriction or "pinching" of the "waist." The feature varies a little, no doubt with age, and probably with the nature of the food throwing more or less work during life on the great temporal muscles, the main factors in mastication. Admittedly these skulls differ from those of the Western European Polecat in the particular named. But upon comparing them with the skulls of Eversmann's Polecat from the Altai and Semiretschenk in Central Asia I noticed a marked difference. In these skulls, as in the Ferret skulls, the waist, it is true, is constricted. The constriction, however, is not only deeper but set forwards close behind the post-orbital processes, not a considerable distance behind as in the Ferrets. Further investigation led to some other results of sufficient importance to publish. †

The first was the discovery that Gray had anticipated me in noticing the difference in the constriction of the waist above alluded to. He said that the skulls of the common Polecat and of the Ferret, regarded as a variety of it, vary considerably but are never contracted in front behind the orbits as in Eversmann's Polecat (Proc. Zool. Soc., 1865, p. 109). The skulls of *M. eversmanni* Gray had for examination were those referred to above from the Altai. The other results are concerned with some interesting variations exhibited by the Polecats in the British Museum identified by my predecessors as *M. eversmanni*.

This Polecat was described in 1827 by Lesson from material collected between "Orembourg and Bukkara," no

* To the expression of my obligations to Mr Gladstone and Miss Pitt, I should like to add an appeal to my readers for dead Ferrets and Polecat Ferrets for preservation in the British Museum.

† To keep this paper of reasonable length, I have restricted my remarks to my own observations, without consulting recent literature relating to Eversmann's Polecat.
doubt somewhere in Turkestan. He suggested that it might be nothing but a "variety" of the Common Polecat, which it tolerably closely resembles in size and colour. With the substitution of "local race" or "subspecies" for variety I quite agree with him. The nearest locality to the area mentioned by Lesson, whence the museum has a specimen, is Djarkent in Semiretschenk, to the east of Lake Balkash. This specimen, a male, collected on 22nd December, is in full winter coat. The underwool is white and all over the dorsal surface is visible everywhere, beneath the long distally black hairs overlying it. These hairs are slightly brown towards the wool and give a faint brownish tinge to the colour of the back. On the forepart of the back, the shoulders and nape, the overlying hairs are shorter and browner. The basal half of the tail is like the back, so also are the flanks and belly, except that the pigmentation of the long hairs becomes gradually less in extent and intensity from above downwards, so that the belly is nearly white, apart from a darkish median line. The face is white except for a brown patch in front of each ear and a brown band crossing the muzzle and encircling the eyes. The limbs, breast, hinderpart of the throat, and the terminal half of the tail are black.

A specimen from Ubinskoje in the Altai, collected on 29th June, is a totally different looking animal. The coat is comparatively short and the general colour of the upper side is rather rich ochreous buff, obscured by brown on the hind-back and passing into a greyer tinge on the belly. There is a good deal more brown on the crown of the head and forepart of the throat than in the Djarkent specimen, but otherwise the distribution of the black pigment is much the same. Two undated specimens from Zmyeinogorsk, south of Tomsk in Western Siberia, are almost exactly like the last but somewhat richer in hue; and of the two old specimens from the Altai, to which the skulls referred to belong, one looks like a faded example of the ochreous specimens, except that the entire crown of the head is white, the other, also with a white head, is longer coated and comes nearer the Djarkent specimen, although the dark-
tipped hairs are everywhere less in evidence and the underwool is decidedly cream and not white.

So far as this material is concerned it shows that Eversmann's Polecat differs from the Western form in exhibiting a marked seasonal change of colour from rich ochreous,* obscured somewhat by brown above, in the summer to white, obscured by black in the winter. For the rest Eversmann's Polecat differs in having the pale under-wool less obscured by the black of the overlying hairs; the belly and the base of the tail on the whole paler and rather more white on the face.

Another interesting specimen is the skin of a male from Kazan in Central Russia in the ochreous phase, but a little more intensely coloured than in Asiatic specimens. It is associated, however, with a "long-waisted" instead of a "short-waisted" skull, that is to say with a skull showing a very manifest constriction set far back on the postorbital area, some 10 mm. behind the postorbital processes at the point where this area is narrowest in *M. putorius*. In the development of this constriction this skull differs from that of *M. putorius*; in the position of the constriction it differs from that of *M. eversmanni*; in both these features it resembles the skulls of the Ferret. There is, however, something suspicious about the texture of the bone of this skull, suggesting that it may be that of a menagerie specimen. At that I must leave it.

Of exceptional interest is a series of five specimens, three males and two females, collected at Malcoci in Dobrudscha, a province of Eastern Rumania. They resemble typical *M. eversmanni* in exhibiting marked seasonal dimorphism in colour. Two (a male and a female) collected in the Steppe in May and June are very like the specimen of *M. eversmanni*, collected in June in the Altai, in shortness of coat and general ochreous coloration of the hind body and the basal half of the tail, the top of the head

* The ochreous summer phase, with the brownish tinge, recalls the "erythristic" mutant of the Common Polecat which crops up at Aberystwyth; but in the latter there is no contrast in colour between the limbs, chest and tail-end, and the rest of the body.
being mostly greyish brown. Of the others, collected in February and March, in winter coat, two males were captured in a barn, a female in the Steppe. The female has the underwool white as in the Djarkent example of *M. eversmanni* which it closely resembles, although the head is not nearly so white. The two males, which have a decidedly yellowish tinge in the underwool, are on the average markedly paler than examples of *M. putorius* captured at the same time of the year, although very like a few specimens, notably two from Ingelheim in Rhineland, although the top of the head is greyer, the face whiter and the underwool of the back less obscured by the black of the overlying hairs.*

I was surprised to find these skins, all from the same locality, identified as representatives of *M. putorius* and *M. eversmanni*. A glance at the skulls explained this unusual modern view that two closely allied forms live side by side in the same place. The two females were named *M. eversmanni* because their skulls exhibit the deep forwardly placed constriction of the postorbital area characteristic of the Eastern Polecat. The male, collected in June, was associated with them, although the constriction is quite shallow owing to the immaturity of the skull. The two adult males, captured in a barn, were named *M. putorius* because there is no noticeable constriction of the area in question. Since these two skulls and those of the two females are adult, it is clear the difference between them is not a matter of age; and, assuming that there is only one kind of Polecat found at Malcoci, it follows that the sexes differ remarkably in the cranial feature referred to, and that at this locality there is a race of Polecats intermediate between the Western and the Eastern forms, a conclusion which might perhaps be expected from the geographical situation of Rumania.

Whether my conclusion be right or wrong, I propose to draw attention to the facts on which it is based by describing these Rumanian specimens as representing a

* In British examples the tint of the underwool varies from white, greyish white or yellow to almost rusty buff.
new race of Polecat, naming it after the late the Hon. N. C. Rothschild, to whom the British Museum is indebted, not only for these Rumanian specimens but for large numbers from Wales and other parts of Great Britain.

*Mustela putorius rothschildi*, subsp. nov.

Differing from *M. p. putorius* and resembling *M. p. eversmanni* in exhibiting marked seasonal dimorphism in colour, the summer pelage being rich ochreous on the hinder part of the body above and on the basal half of the tail, with the top of the head greyish brown. The winter pelage much paler on the average than in *M. p. putorius*, with apparently always more white on the face; but not quite so pale apparently as in *M. p. eversmanni* and with less white on the face. Skull of the male like that of *M. p. putorius*, of the female like that of *M. p. eversmanni*. For skull measurements see the table below. Type: male (B. M. No. 12.5.23.7) from Malcoci in Dobrudsha. Dimensions of male (type): head and body 16½ inches, tail 6½ inches; of largest female: head and body 15½ inches, tail 5 inches.

In his note on the Polecat-Ferrets of Mull, above referred to, Mr Yeaman commented on their extraordinary size, "some of them being fully double the bulk of an ordinary Polecat-Ferret." Mr Grimshaw subsequently sent me the weights and measurements in English inches of three specimens Mr Yeaman had forwarded for identification to the Royal Scottish Museum, Edinburgh. They are reproduced in the following table, together with the dimensions of the pair of typical albino Ferrets presented to the British Museum by Mr Gladstone.

<table>
<thead>
<tr>
<th></th>
<th>Head and Body</th>
<th>Tail</th>
<th>Weight</th>
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<tr>
<td>Yeaman (Mull)</td>
<td>16½ in.</td>
<td>6 in.</td>
<td>2 lbs., 13 oz.</td>
</tr>
<tr>
<td>Gladstone</td>
<td>16¼ in.</td>
<td>5½ in.</td>
<td>2 lb.</td>
</tr>
<tr>
<td>Yeaman (Mull)</td>
<td>13½ in.</td>
<td>4½ in.</td>
<td>1 lb., 9½ oz.</td>
</tr>
<tr>
<td>Gladstone</td>
<td>12½ in.</td>
<td>4 in.</td>
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From this table it may be seen that the Mull specimens are considerably larger, the female from Mull being about the size of Gladstone's male, which struck me as a good average sized "dog." The dimensions of the Mull specimens agree very closely with those of a number of Welsh and Continental Polecats in the British Museum. Full-grown male Welsh specimens range from about 16 to 17 inches in length of head and body, the largest, from Newbridge-on-Wye (Colonel Llewellyn), in the British Museum, being 17½ inches. Continental specimens are not larger.

The equality in size between the Mull examples and ordinary Polecats is also borne out by the following table of cranial dimensions. But this table also shows considerable variation in the size of apparently adult Ferret skulls, some of those lent to me by Miss Pitt being approximately as long as the Mull specimen and as Polecat skulls. Other dimensions vary with age after the closure of the sutures has arrested increase in length. The zygomatic arches expand, the constriction of the "waist" deepens and the bifurcation of the sagittal crest shifts forwards on the frontals. That at least is my conclusion from a comparison of many skulls.1

This table shows the upper carnassial tooth to be approximately the same size in Ferrets and Western European Polecats and slightly smaller in both than in Eversmann's Polecat. This suggests closer affinity between the two former than between Ferrets and the Eastern race.

Under the Ferrets is shown the equality of the waist-width of the wild-reared Mull specimen with that of the

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1 The following note explains the table of cranial measurements given in millimetres:—Cond. bas. length = the length from the hinder edge of the occipital condyle to the edge of the muzzle above the incisor teeth. Zygom. width = the greatest width across the zygomatic arches (cheek bones). Mastoid width = the width across the prominences behind the ears. Waist width and int. orb. width = the narrowest points of the postorbital and interorbital areas. Max. width = the greatest width of the muzzle just above the insertion of the canine teeth. Upper carnal = the length of the upper sectorial tooth along its outer margin.
In the table of the Common Polecats (*M. putorius putorius*) the dimensions of the male specimens from Newbridge-on-Wye and Aberystwyth attest marked individual variation in size between adults from Wales. The dimensions of the skull from Albacete, Spain, are inserted because the width of the waist is intermediate between those of the Polecats from Ingelheim and of the largest Ferret skull belonging to Miss Pitt, there being no great difference between the measurements of the three skulls in other particulars.

In the Rumanian Polecats (*M. putorius rothschildi*) the waist-width of the male, although much greater than in the largest European Polecat and its superiority to that of the hutch-reared Ferrets.
the female, is small as compared with that of typical Polecats of the same size; but its narrowness is not due to localised constriction as in the female.

![Fig. 1.](image)

A. Skull of Ferret, $\delta$ (H. S. Gladstone).
B. "", $\delta$ (Miss Pitt). An older specimen as shown by the obliteration of the nasal sutures.
C. Skull of the wild killed Mull Ferret, $\delta$, showing the wide unconstricted "waist."
D. Skull of Polecat (*Mustela putorius putorius*) $\delta$, "red" variety, from Aberystwyth, showing similarity to the Ferret from Mull in the unconstricted waist.

Under Eversmann's Polecat (*M. putorius eversmanni*) I have guessed the approximate condylobasal length of the first Altai example from the total length taken from the occipital crest, the condyles being cut away. It is not a long skull, but has unusually wide zygomatics. The specimen from Ubinskoje shows the wide waist of an imperfectly
developed male. The skull from Djarkent is smaller in every respect, although older.

CONCLUSION.—In my opinion the discovery by Mr Yeaman of these Polecat-Ferrets in Mull has an important bearing upon the origin of the Ferret. It has been shown in this paper that the view on this point that has steadily been gaining ground during the past twenty years, namely, that we must look to the Asiatic Polecat (\textit{M. putorius evers-}
manni) as the ancestral form, must be abandoned because the skulls of Ferrets, at least those I have seen, do not resemble the skulls of Eversmann's Polecat in the particular likeness that has been claimed, but differ from them in a noticeable character pointed out more than sixty years ago. Nevertheless the skulls of ordinary Ferrets are admittedly distinguishable from skulls of the European Polecat, as Miller pointed out. This applies to hutch-reared Ferrets only, so far as is known. At all events the skull of the specimen born and reared in the wilds of Mull and probably the descendant, immediate or remote, of an escaped pregnant female does not exhibit the distinctive feature of ordinary Ferrets' skulls but is like that of the Common European Polecat.

The explanation of this fact, I suggest, is that the skull developing under natural conditions, acquired the cranial characters of its ancestor, the European Polecat. If it had developed on the lines of Eversmann's Polecat, the conclusion which has been drawn from Miller's observation would have been strengthened. This leaves the modification of the skull in hutch-reared Ferrets unexplained. I feel tolerably sure it is due to the artificial conditions imposed by domestication. It has been known for years that the skulls of many menagerie-reared mammals, especially carnivorous species, alter profoundly, along tolerably definite lines, on areas to which the masticatory or other muscles are attached. It would be surprising if the skulls of Ferrets, artificially fed * and deprived of freedom, were unaffected by those conditions.

* Mr Gladstone tells me that his Ferrets are fed on raw meat, usually rabbits, in the morning, and porridge and milk at night.
A PRELIMINARY ACCOUNT OF THE SCOTTISH GALL-MIDGES.

(Diptera—Cecidomyiidae).

By Richard S. Bagnall, D.Sc., F.R.S.E., and Prof. J. W. Heslop Harrison, D.Sc., F.R.S.

(Concluded from p. 88.)

**125. P. fraxini K.** Galling midrib of leaf on Fraxinus, common. Recorded by earlier authors under the name of its inquiline, Diplosis botularia. See No. 334.


*128. P. galii H. Loew.** Galling Galium verum, etc., common.

*130. P. gallicola F. Loew.** Terminal gall on Galium spp., common and widely distributed, chiefly affecting G. verum.

**133. P. gentianae K.** Banks of Findhorn, ix.31. This is the species that causes the gall on Gentiana campestris found by Trail in Braemar, in August 1882, and which we have also found in the North of England.

134. P. gerani K. In seed-pods of Geranium sylvaticum, Juniper Green, ix.22.

*136. P. onobrychidis Br. (?glyciphylli Rübs., B. & H. 136).** On Astragalus hypoglotis, leaflets longitudinally rolled or folded, sometimes discoloured yellowish to purple and slightly thickened. Larvae pale salmon-yellow. Links at North Berwick and Tantallon Castle, Broughty Ferry, rare. Trail records it (1888) from the Kincardineshire and Angus coasts and later (1890) from the top of Kincraig cliffs; but see Barnes, 1927.


*138. P. hygrophila Mik.** This is doubtless the terminal gall recorded by Trail on Galium palustre as common at Banchory on Deeside in September. We have records from Loch Tay, Loch Earn, Aberfeldy, Buckie Loch, Forres, etc.

*140. P. hyperici Br. (serotina Winn.).** On Hypericum pulchrum and humifusum, Carse of Gowrie, Dunkeld and Forres. Previously found by Dr Buchanan White at Dunkeld and Braemar on H. pulchrum (Trail). Probably not uncommon.


146. *P. kiefferiana* Rübs. Leaf rolling on *Epilobium augustifolium*, Roslin, Dalmeny, Kinghorn and near Crief.


148. *P. laricis* F. Loew. On Larix, Birnam, Crief, St Fillans and Lochearnhead; Maybole.

149. *P. lathyri* K. and


*151. Perrisia* sp. (Houard 3776). On *Lathyrus pratensis*, near Crief. This is evidently the species recorded by Trail from Aberdeenshire, Kincardineshire and Glasgow.

153. *P. libera* K. On *Quercus*, Crief and Aberfeldy, locally plentiful; Maybole, Ayr district, Melrose, etc.


**156. P. loticola* R. (*Jaapiella*). On *Lotus major*, not uncommon, but confused by the older British authors with *Contarinia loti*.


159. *P. lychnidis* Heyd. On *Lychnis alba*, East Fortune, Juniper Green, Dunure, Longforgan, Findhorn banks. The gall, regarded as perhaps the work of this species by Trail, is referable to *Contarinia steini*.

161. *P. malpighi* K. On *Quercus*. Plentiful on some trees, Edinburgh, Crief, St Fillans and Aberfeldy; Ayr and Maybole; Forres.


162. *P. miki* K. In flower heads of *Centaurea nigra*, common.

— *P. oxyacantha* Rübs. In unopened flower of hawthorn; larvae brick-red; Crief, vi.28.


*171. P. persicariae* Linne. Conspicuous by coloured fleshy leaf-rollings on *Polygonum* spp., local but often abundant.

173. *P. polygalae* K. In flower of *Polygala*, Ben-y-Vrachie, Pitlochry, viii.28; Sma’ Glen, ix.31.


— *P. pratensis* K. Flowers of *Lathyrus pratensis* showing chloranthia and containing numerous white larvæ. Fort William, 1927; Stonehaven, ix.29; and Forres ix.31.


*181. P. ranunculi* Brem. Leaf gall on *Ranunculus repens*, near Aberdeen (Trail); Carfrae Mill. Generally regarded as a common species.


186. *P. rostrupiana* K. On *Spirea ulmaria*, Birnam, rare; St Fillans, Aberfeldy, Balerno, Juniper Green.


187. *P. rubsameni* K. Leaf pustule on hornbeam, Maybole, x4.x.32.


[193. *P. serotina* Winn (see 140 *P. hyperici* Br.).]


*195. P. similis* F. Loew. On *Veronica chamaedrys* and *scutellata*, Amulree, Kelso, Yetholm, Balerno and Forres. Known to Trail from Corbie Loch on *V. scutellata*.


*200. P. strobi* Winn. Mr Evans records this species from Perthshire (Ent. Mo. Mag., 1909, p. 17). It is probably common throughout Scotland, the larvae living in the cones of *Picea excelsa*.


203. *P. thomiasiana* K. On *Tilia*, Crieff and Dunkeld, Kelso, Juniper Green, Ayr, Aberdeen, Forres, etc.

*205. P. tiliamvolvens* R. On *Tilia*, Kelso, rare, viii.22. Common on one or two trees in Old Aberdeen (Trail).

*207. P. tracheli* Wacht. Recorded from Moray, Aberdeen, Kincardine, Forfar, Perthshire and Glasgow district (see Trail). In our experience its occurrence varies widely from year to year.

**208. P. traili** K. On *Ranunculus acris* and *repens*, probably of wide distribution. Dalmeny, ix.22; Aberdeen and Maryculter, vi.25. This is undoubtedly the species recorded by Trail from the flower of *R. repens* from one or two localities near Aberdeen, vii.1887.


*212. P. tubicola* K. On *Sarothamnus*, common and widely distributed.

213. *P. ulcīs* K. On *Ulex*, Braid Hills, Edinburgh, viii.22; Prestwick, x.22; Tayport, Fife, xii.31.


216. *P. ulmicola* K. On *Ulmus*, Kelso, Crieff, St Fillans, Edinburgh district, Balerno, Juniper Green, Ayr.


— *P. vallisumbrosae* K. On *Sarothamnus*, leaflets folded; near Crieff, ix.21. The first and only British record.


*220. P. vicicæ* K. On *Vicia cracca* and *sepium*, common.

— *Perrisia* sp. Similar gall on *Vicia hirsuta* (H. 3753); near Altyre Woods, Forres, viii.31.

222. *P. virgo-aureæ* Lieb. Leaf gall on *Solidago virga-aurea*, river near Ayr, x.22; Kinloch-Rannoch, ix.30; and Pitlochry, ix.31.


— *Jaapiella sarothamni* Rubs. Flower of broom remaining unopened and undeveloped, containing pale red larvæ; near Perth, 18.vi.28.


**Group Asphondyliarìæ.**


*229. Kiefferia pimpinellae* F. Loew. Enlarged fruits of *Pimpinella Saxifraga*. Frequent in August and September along the Dee and also at Braes of Gight, Perth, vicinity of Glasgow (Trail), and again recorded by him from Kincraig Point in 1890.

**233. Asphondyliia mayeri** Liebel. Common. Regarded by Trail as a form of *A. sarothamni*, the species causing a pod gall on *Sarothamnus*. In recording gregarious larvæ it is evident that Trail also met with the gall of *Trotteria sarothamni*.


*238. A. sarothamni* H. Loew. Axillary bud gall on *Sarothamnus*, common and widely distributed.

*240. A. ulicis* Verrall. Bud gall on *Ulex*, common.

**Group Cecidomyiariæ (Diplosarìæ).**

246. *Hormomyia frieni* K. On *Carex* sp., Bavelaw Moss, ix.22. Previously known from County Durham on *C. binervis* and *C. flava*.

248. *H. kneckeri* K. Gall on *Carex* sp., Bavelaw Moss, ix. 22. Second British record; previously only known from County Durham on *C. stellulata*. 

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248. *H. rosenhaueri* Rübs. An elongated plurilocular *Carex* gall which we also know from County Durham and Surrey; Bavelaw Moss, ix.22.

249. *Dishormomyia cornifex* K. A horn-shaped gall on *Carex* sp., Bavelaw Moss, ix.22 and Culbin Sands, viii.31. We have found this species on *C. stricta*, *C. goodenovii*, and *C. flava* in the North of England.


— _Stenospatha eriophori_ K. On *Eriophorum*, submerged; Bavelaw Moss, ix.22.


*264. Syndiplosis lonicarum* F. Loew. Flower gall of *Sambucus nigra* described by Trail from Aberdeenshire 1905 and 1906.

*265. S. petioli* K. Galling leaf petioles of Aspen and more rarely the twigs. Trail records the gall as not uncommon at various places along Deeside. Common between Newtonmore and Kingussie and in the neighbourhood of Aviemore and Grantown-on-Spey, ix.31.


*269. C. betulicola* K. Terminal bud gall on *Betula alba* containing white larvæ. Altyre Woods and Culbin Sands, Crieff, Aberfeldy, Glen Nevis, Loch Tummel, Loch Lomond and Loch Earn. Known to Trail from Aberdeenshire, Sutherland, Kincardine and Perth. Another very similar gall containing gregarious yellow to yellow-orange larvæ is known to us.

*270. C. betulina* K. Leaf pustule on *Betula alba*, not uncommon and widely distributed. Known to Trail from Aberdeenshire, Sutherland, Kincardine and Perth.


— *C. fagi* Rübs. Young terminal leaves of *Fagus* deformed; near Abbotsford, Greenlaw, Muthill, Crieff district, etc.

— *C. geicola* Rübs. Crinkled leaf gall on *Geum rivale* and *G. urbanum*, Dalmeny, ix.1922; Carse of Gowrie, 1931.


*280. C. loti* Deg. Swollen flower gall on *Lotus*. Recorded by Trail from near Aberdeen in August; Ayrshire coast, local; Aberdeen, Kincardine, Fife and Forfar coast, also at Findhorn and Tentsmuir.

— *C. marchali* K. In seeds of *Praxinus excelsior*, rare. Bred by Dr R. Stewart MacDougall from various localities; also at Doonfoot, Ayr, x.22, and Tigh-na-Loan on Loch Tay, ix.31.

281. *C. medicaginis* K. Galling flowers of *Medicago* sp., Dunure, ix.22, Deeside, vi.25. Barnes notes that Trail (1878) records it from near Aberdeen, but the latter does not refer to it in his synopsis (1888).

— *C. merceri* Barnes 1930. A single ♀, bred from heads of *Alopecurus pratensis*, collected by Morison from near Aberdeen. The golden-yellow larva is not uncommon in Perthshire and Lothian.

284. *C. nicolayi* Rübs. In flowers of *Heracleum*; local but often in profusion, Braid Hills, Edinburgh, Balerno, Dalmeny, Juniper Green, Maybole, Kinghorn, Aberdeen, Newtonmore and Forres.

285. *C. pulchripes* K. (=B. & H. 5 in part). Galling seed-pod of *Sarothamnus*, larvae white. Specimens from Kincardine O’Neill and Potarch, vi.25, are the only known British examples, our previous records being in error.

288. *C. rubicola* K. In flowers of *Rubus caesius*, Dalmeny, ix.22.


292. *C. sorbi* K. In twisted leaves of *Pyrus aucuparia*, Crieff, Loch Tummel, St Fillans and Balerno.

**293. C. steini** Karsch. Flower gall on *Lychnis alba* and dioica, locally abundant, Juniper Green, Ayr, Dumfries, Loch Earn, Carse of Gowrie, Deeside and Banks of Findhorn. This is the gall described by Binnie from near Glasgow and regarded as possibly the work of *Perrisia lychnidis*.

*294. C. tiliarum* K. On *Tilia*, common. Recorded by Trail from Perthshire (Buchanan White) and in Berwickshire (Hardy).


297. *C. tremula* K. Rolled aspen leaf, glabrous, near Aberfeldy, viii.28.

*— C. tritici* (Kirkby). This pest was recorded by Curtis from Scotland in 1883 and was reported from Ross-shire in 1907-1908.


301. *Contarinia* sp. (Houard 5288). Galling *Galium verum*, North Berwick, vi.17.


309. *Thecodiplosis brachyntera* Schwaegr. Needles of *Pinus* short, swollen and discoloured, containing each a red larva in the sheath; apparently widely distributed.
314. *Antichiridium striatum* Rübs. In leaf-sheaths of large and coarse grasses and sedges. We have seen what we believe to be this species in the Borders and Lothian districts.


*322.** *Macrodiplosis dryobia* F. Loew. Galling leaf of oak, common.

327. *M. volvens* K. A somewhat similar gall but apparently less common; Ayr, Abbotsford, Auchenblae, Cockburnspath, Crieff, Forres. Unknown to either Binnie or Trail.


— *Tricholaba trifolii* Rübs. Inquiline in galls of *Perrisia trifolii* and probably common, Lothian, Crieff and Aberdeen.

— *T. similis* Rübs. Yellowish white to pale orange-red larvae in galls of *P. vicieae*; not rare.


— *H. globuli* Rübs. Similar to gall of *H. tremula* but smaller; Sma’ Glen, near Amulree, viii.27, and ix.30.

— *Harmandia* sp. n. (see Bagnall, 1932, Scot. Nat., p. 75). Chestnut-brown, ovoid, thin-shelled gall on upper surface of Aspen leaf without opening below; two examples, near Aviemore, ix.31.

*334.** *Clinodiplosis botularia* Winn. Inquiline in galls of *Perrisia fraxini*, and for many years regarded as the causer of the gall; common.

— *C. gallicola* Rübs. Inquiline in gall of the Oak-wasp *Andricus fecundator*; larvae yellowish red; Cockburnspath, Crieff and Carse of Gowrie.
334. *C. rhynchiton* Rübs. In leaf rollings of the weevil *Rhynchites betuleti* on birch, Crieff, ix.21; Culbin Sands, viii.31.
   — *C. urticae* K. Inquiline in galls of the *Perrisia urticae*; larva pale orange-yellow; Crieff, Ayr and Juniper Green.

339. *Mycodiplosis* sp. Crimson larvae feeding on *Puccinia suavolens* on *Cirsium arvense*; widely distributed.
   — *Mycodiplosis* sp. Red larva on *Puccinia andersoni* on *Carduus heterophyllus*, Forres, viii.31.
   — *Mycodiplosis* sp. Larva on *Puccinia millefolii* on *Achillea millefolium*, Forres, viii.31.
   — *Mycodiplosis* sp. Larvae feeding on *Puccinia arenariae* on *Stellaria nemorum*, Edinburgh, ix.21.

397. *Mycodiplosis* sp. Yellowish larvae feeding on mildew on oak, common.
   — *Mycodiplosis*, sp. Yellowish orange larvae feeding on a mildew (Podosphaera *canthae*) on stem of *Spiraea ulmaria*, Balerno and Dalmeny, ix.22, and Carse, ix.31.

398. *Mycodiplosis* sp. Yellowish larvae feeding on mildew on rose, not known to Hardy.
   — *Mycodiplosis* sp. Salmon-red larva feeding on a *Phragmidium* on *Rubus*, Doonfoot, Ayr, ix.22.
   — *Mycodiplosis* sp. Larva on rust on *Salix caprea*, Forres, viii.31.
   — *Mycodiplosis* sp. Largish, reddish to brick-red larvae feeding on *Puccinia lampsanae* on *Lampsana communis*; not uncommon.
   — *Mycodiplosis* sp. Yellow to orange-yellow larvae feeding on mildew on *Heracleum*, Balerno, Dalmeny, Lothian.
   — *Massalongia* (?) *aceris* Rübs. (= *Drisina glutinosa* Giard nom. nud.). In slight hollows on underside of Sycamore leaves, Balerno, ix.22.

*341. Massalongia rubra* K. Galling midribs of *Betula* leaves; common and widely spread. Recorded by Trail from Strathnaver in Sutherland, in Aberdeenshire, and at Dunkeld, and reported by Binnie from Glasgow.

**342. Ameterodiplosis thalictricola** Rübs. This is the species recorded by Trail from *Thalictrum minus* v. *montanum* at Kinloch-Rannoch and from *T. major* v. *flexuosum* found by Dr Power in Fife.

343. *Monodiplosis liebli* K. Inquiline in galls of *Macrodiplosis* spp., probably common but only noted from Crieff and Cockburnspath.
*344. Atylodiplosis rumicis H. Loew. In flower of Rumex acetosella and common in the vicinity of Aberdeen (Trail); Braid Hills, ix. 29.

Group Porricondylariae.

*345. Dirhiza rhodophila Hardy. Described by Hardy from Penmanshiel. Either this, or Macrolabis luetic or both = B. & H. 185, and further investigation is necessary.

Sub-family Lestreminae.

Group Campylomyzariae.

*353. Amblyspatha ormerodi K. A pest of red clover (Trifolium pratense) originally described from the neighbourhood of Edinburgh.

Some Undescribed Species.

*363. Cecidomyidarum sp. Gallling flowers of Anthyllus vulneraria; not rare, sandhills on the Aberdeenshire coast (Trail), where we have seen it; Kinghorn also. Recorded by Trail as Contarinia (Diplosis) loti.

*364. Cecidomyidarum sp. Gallling isolated leaflets of Vicia sylvatica, Kincardineshire. Referred to Perrisia (Dasyneura) onobrychidis by Barnes (see 136).

[365. See Perrisia angelica Riibs.]

— Cecidomyidarum sp. Creamish yellow larvae in the flower and amongst the seeds of Erodium cicutarium, Gullane, 1931.

*367. Cecidomyidarum sp. Terminal or axillary leaf-bud gall on Galium boreale found commonly in the Dee Valley by Trail; Perthshire (Dr Buchanan White).

*368. Cecidomyidarum sp. On Galium aparine, locally plentiful near Aberdeen and at Banchory (Trail).

— Cecidomyidarum sp. Dull orange-red larvae in Ulex pods affected by lepidopterous larvae. Lothian and Berwickshire.

— Cecidomyidarum sp. In decaying flower of foxglove, small reddish-grey or orange larvae, gregarious on top of seedcase; Cockburnspath.


— Cecidomyidarum sp. Minute leaf-pustule on Senecio spp., irregular in shape and each containing a minute white larvae; Dalmeny, Dalkeith, Gullane, and Kelso.
*371. Cecidomyidarum sp. On Rhinanthus Crista-galli; common on a moor near Aberdeen in June (Trail).

*373. Cecidomyidarum sp. Galling stems of Rosa spinosissima; larvæ orange, Greenan, Ayr, ix.22; Forth coast between Queensferry and Crumond, xii.31, and common on the coast between Port Seton and Aberlady. Recorded from the Ayrshire coast by Cameron.

— Cecidomyidarum sp. Swelling in stems of Rosa glauca at Potarch, Kincardineshire, vi.25; Forres, viii.31.

*— Cecidomyidarum sp. Hypertrophied leaf-gall on Valeriana officinalis containing white larvæ as recorded by Trail from near Aberdeen and near Stonehaven at the end of June.

[374. See Contarinia gei.]
[379. See Perrisia squamosa in part.]
[386. See Perrisia hedickei.]
[394. See Perrisia francoisetta.]
[399. See Arnoldia gemmea.]

— Cecidomyidarum sp. Inquiline deforming gall of Perrisia ulmariae, larva red; not uncommon.

— Cecidomyidarum sp. White larva in gall of Perrisia similis on Veronica chamadrys, Kelso, viii.23.

— Cecidomyidarum sp. Inquiline with Perrisia trailii, larva, honey-yellow, Aberdeen, 1925.

— Cecidomyidarum sp. Inquiline with Arceuthomyia valerii, larva yellow; Speyside.

— Cecidomyidarum sp. Inquiline with Perrisia auricomi, larva yellow; Ayr, ix.22.

— Cecidomyidarum sp. Gregarious yellow larvæ living free in normal seed-pods of Sarothamnus, Potarch, vi.25.

— Cecidomyidarum sp. Large pale pink larvæ at the roots of Carex stellulata, Bavelaw Moss, ix.22.

— Cecidomyidarum sp. Small white larva at base of leaf-sheath of Carex stellulata, Bavelaw Moss, ix.22.

— Cecidomyidarum sp. On Betula leaves, pustule as in Contarinia betulina but neither hypertrophied nor discoloured; Crieff, Lothian.

*403. Cecidomyidarum sp. Thornlike stem-gall on Galium verum, locally common. Though attributed to Cotte in Houard's supplement, the gall was actually described by Trail, who reports it as common in Orkney, Sutherland, Moray, Aberdeen, Forfar, Perth, and Glasgow.

[404. See Jaapiella thalictri.]
[405. See Perrisia rossi.]
[406. See *Perrisia onobrychidis*, B. & H. 136.]

*409. Cecidomyidarum* sp. Axillary fusiform gall on *Achillea ptarmica*. We described this gall from Leeds, but it is apparently the same as one known to Trail from Aberdeenshire and Kincardineshire. We have it from Loch Tay, Kinloch-Rannoch, and from near Coldstream.

— *Cecidomyidarum* sp. Pustule leaf-gall (like that of *Cystiphora* spp.) on *Scabiosa succisa*; Black Woods, Loch Rannoch.

421. *Cecidomyidarum* sp. Similar leaf-pustule on *Scabiosa arvensis*, Dunure, ix.22.

*— *Cecidomyidarum* sp. Axillary gall on *Scabiosa succisa* found by Cameron at Cadder near Glasgow and reported by him to Binnie.

— *Cecidomyidarum* sp. On *Astragalus hypoglottis*; flowers (sometimes dwarfed) remaining closed, somewhat swollen; larvae white with creamy or sometimes pinkish tinge; North Berwick, vi.-vii. 17.

**Quail in North-East Fife.**—Since 1905 when I sent the late Mr Harvie Brown for inclusion in his then forthcoming book on the *Fauna of Tay and Strathmore* a note of the appearances of the Quail in this part of Scotland, so far as known to me, I have not heard of any further occurrences. But on 6th June this year there was brought to me for identification a female Quail which had been picked up that morning on the edge of the Leuchars Golf Links by Mr Crockett, Lord Balneil’s gamekeeper. The bird had apparently been dead for a day or two, and had no doubt killed itself on the telegraph wires, for one wing was shorn clean off. On dissection at the Royal Scottish Museum it was found that the ovaries showed signs of having functioned; the bird, moreover, showed the nearly bare abdominal patch which is commonly associated with incubating, and may therefore have been nesting. Its death is therefore the more to be regretted.

By a somewhat curious coincidence I met that afternoon Mr S. S. Elliott, of the Indian Railway Service, resident in the Madras Presidency, where Quails are very numerous, who had been spending a few days of his leave at Blairgowrie at a distance from this of about 20 miles. He informed me that on his way to Dundee by road that morning he had heard the call of a Quail in a field not far from Blairgowrie. As the call is very familiar to him, there is no reason to doubt his identification of the note, and there may therefore have been a small migratory movement to this part of the country. It may be accordingly reasonable to hope for news of other occurrences in the area.—William Berry, M.B.O.U., Tayfield, Newport, Fife.
Ospreys in the Lowlands.—It may be of interest to note that my keeper and the keeper on the adjoining estate of Drumelziers saw a large Hawk which they thought was an Osprey on 21st May. Being shown illustrations they at once stated that there was no doubt of the identification. The bird was also seen on 26th May by an under-keeper.

On Saturday, 4th June, one was seen at Bourhouse, Dunbar, fishing on the reservoir, while a third bird was shot near Corstorphine. It is probable that these were birds which were released not long ago by Captain Knight, and that they were not wanderers to this area.—F. R. S. BALFOUR, Dawyck, Peeblesshire.

Introduction of Capercaillie to Peeblesshire.—In August I introduced one pair of Capercaillie from Dee-side to Dawyck, near Melrose, in Peeblesshire, and in the following year I got two cocks and six hens from Finland, but one cock and one hen died. In 1931 I got other two cocks and one hen also from Finland. Last month my keeper found a nest on Dawyck with seven eggs, and he has heard of other two pairs which are apparently breeding on adjoining estates. So far as I am aware this is the first time that the Capercaillie has bred in this area, although several nestings have taken place (see Editorial note).—F. R. S. BALFOUR, Dawyck, Peeblesshire.

[So far as we can ascertain, the only previous record of the nesting of this species in Peeblesshire is that given by H. B. Marshall (Ann. Scot. Nat. Hist., 1904, p. 244). The nests were found on more than one occasion, in the Netherurd Woods, near Dolphinton, and in 1896 one hen was found sitting on eggs.—Eds.]

CURRENT LITERATURE

The Hymenopterous Family Cynipidae.—In the June number of The Entomologist (pp. 130-133), Claude Morley concludes his useful Synopsis of British Gall-flies of the Family Cynipidae. The literature of this group is scanty, and entomologists should be grateful to Mr Morley for bringing together in concise form the results of his experience of a family of great economic importance but difficult to study. The total number of British species is stated to be 180. A good deal of work remains to be done in Scotland in this and other groups of small and inconspicuous insects, and it is to be hoped that papers like this of Mr Morley's will induce students to pay more attention to them.
British Species of Verrallia.—The genus *Verrallia*, belonging to the Family Pipunculidae and the Order Diptera, includes four British species, which are tabulated and described by J. E. Collin, F.E.S., in the *Ent. Mo. Mag.* for October 1931 (pp. 234-236). It is interesting to note that all the four species have been taken in the county of Inverness, and one of them (*V. setosa*) also in Sutherland.

*Mesophylax impunctatus*, M‘Lach., in the Isle of Skye.—A note by Kenneth J. Morton, F.E.S., on this species of Caddis-fly appeared in the November issue of the *Ent. Mo. Mag.* (pp. 250-251). The first British example was taken in Dumfries-shire in 1883. It is also recorded from Loch Tay, Loch Awe, Shetland, and the Isle of Skye.

Insects at Sea.—A long and interesting paper on this subject, from the pen of Commander J. J. Walker, appears in the *Ent. Mo. Mag.* for September, October and November 1931 (pp. 211-232 and 254-264). The information is grouped under the various oceans, and is based upon personal observations and published records.

*Megalomus hirtus*, Linn., at Edinburgh.—In the October number of the *Ent. Mo. Mag.* (pp. 233-234) Kenneth J. Morton, F.E.S., records the capture of a female specimen of this very rare Neuropterous insect in Holyrood Park, near the base of “Samson's Ribs,” on 29th August last. Very few specimens of this species are in existence, and it is interesting to note that an example was taken at Duddingston so long ago as 1825. The only other known Scottish locality is Muchalls, in Kincardineshire.

Breeding Places of the Saddle or Harp Seal.—An interesting article on this subject, by R. W. Gray, F.Z.S., appears in the June number of *The Naturalist*, pp. 183-186. This species of Seal, known as *Phoca groenlandica*, is confined to the Arctic Seas and, as regards the Greenland Sea, brings forth its single young “in about latitude 73 north-east of Jan Mayen, a lofty volcanic island in latitude 71.” It lives on small crustaceans which apparently exist in great abundance at this latitude, and the position of the breeding animals depends upon the state of the ice which, if close, restricts the feeding area and leads to a great concentration of individuals, but when drifting and opening out leads to distribution over a wider area.
BOOK NOTICES

The Journal of Animal Ecology: edited for the British Ecological Society by Charles Elton and A. D. Middleton. Cambridge: University Press; London: Fetter Lane, E.C.4, vol. 1., No. 1, May 1932, 100 pages, 5 plates and several text-figures. Price 22s. 6d. net. The modern science or branch of science, known as Ecology, which deals alike with the phenomena of plant and animal life, has grown to such dimensions that it has been found necessary to establish a separate journal to contain the papers which have reference to animals alone, leaving the original Journal of Ecology to take in hand the publication of memoirs which have for their subject biological surveys comprising both plants and animals, papers on biotic communities, and those dealing exclusively with plants. We welcome the appearance of this new venture and wish it every kind of success. The nature of the contents of this first number may be gathered from the following titles: (1) The Rookeries of the Wirral Peninsula (a district in Cheshire), 9 pages, with map; (2) Studies of Fluctuations in Insect Populations, 20 pages, with 6 text-figures; (3) Notes on the Fruit Bats (Pteropus spp.) of Australia, 26 pages and 4 plates; (4) The Bird Population on an Oxfordshire Farm, 7 pages and 1 text-figure; (5) Notes on the Relationship of some Common Birds of N.E. Marajó (N. Brazil) to their Environment, 4 pages and 1 text-figure; (6) Territory among Wood Ants at Picket Hill (New Forest), 8 pages, with 1 plate and 1 text-figure; and (7) A Study of the Prey of Dioctria rufipes De G. (Diptera, Asilidae) in an Oxford Community, 6 pages.

The papers (1), (2), (4), (6), and (7) will appeal especially to the readers of the SCOTTISH NATURALIST. If the number before us prove to be a fair and average sample of what we may expect to find in future issues we can only wish the journal a long and useful career. We trust the price, which is somewhat high for the amateur, will not interfere with the sale of such an important publication, which, in any case, is bound to find a worthy place on the shelves of all University and Institutional libraries.

A Dictionary of Greek and Latin Combining Forms used in Zoological Names. By Edmund C. Jaeger. London: Baillière, Tindall & Cox, size 4½ in. × 7½ in., 157 pages. Price 8s. 6d. net. This little book is likely to be very useful to the amateur naturalist, especially one who has had no classical training. To know a caddis-worm as Phryganea is a certain achievement, but to learn from this book that the Greek word means a bundle of brush-wood leads one immediately to reflect upon the remarkable habit of this larva, building up as it does a protective case or tube of tiny fragments of stick. This is only one example selected at random from the two thousand and odd terms which are defined, with instances of their use, in the pages of this moderately priced and handy volume.
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EVERY NATURALIST SHOULD READ

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

Studies of Lanarkshire Birds.
A Remarkable Whale Invasion.
The Natural History of Floods.
List of Birds of the Forth Area.
Scarcity of the Corn-crake.
The Rookeries of Edinburgh and Midlothian.
Remarkable Decrease of the House-Sparrow.
Natural History as a Profession.
The History of the Whale and Seal Fisheries of the Port of Aberdeen.
Instinct and Intelligence in Insects.
The Gannets of the Bass Rock—Estimated Numbers and a Count.
Annual Reports on Scottish Ornithology, including Migration.
Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.
Animal Welfare.
The Menace of the Grey Squirrel.
The Varying Length of Lark Song.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.
A DARK RACE OF THE COMMON HOUSE-_MOUSE
(MUS MUSCULUS) IN THE NORTH-WEST OF ENGLAND.

By Fred W. Smalley, F.Z.S., M.B.O.U.

I believe, were one to ask a native of Lancashire or Westmorland what shade of colour he or she understood by the term "mouse-colour," the reply would be "black or almost black." Until I left my native county of Lancashire in 1918 and went to reside in Suffolk I certainly considered "mouse-colour," i.e., the colour of the common House-mouse, to be nearly black, so much so that when I began catching House-mice in Suffolk and discovered they were of a distinctly sandy-brown colour I looked upon them as something new, and as they were caught on what is virtually an "island" (that part of north Suffolk lying between Lowestoft and Yarmouth being completely surrounded by water-ways) I at first jumped to the conclusion that here was a case of an "island" form of a very much lighter shade of colour, possibly due to the sandy, dry nature of the soil, than the typical House-mouse as known to me at that time. It was only after further research that I learned that the House-mice I had taken in Suffolk were really the normal colour and that the resident House-mouse of Lancashire was the variant.

All examples of Mus musculus which I have ever seen from a line at Kendal in Westmorland in the north to Bowden in Cheshire in the south are of this "black" form,
and it would appear that the colour is constant. When a large series, representing all stages of growth from juveniles of a few weeks old to fully adult breeding mice, is laid out on a table, it is noticeable that as the north Cheshire end of the line is reached the black colour is not quite so pronounced, from which I infer that Bowden, in Cheshire, is a point nearing the border line where *Mus musculus* becomes of a normal colour again.

Owing to the difficulty of persuading friends to send me mice (freshly killed) from different localities I have found it hard to continue the research. I therefore cannot say whether this "black" race extends much, if any, further north than the Kendal area (it certainly does not reach the Solway area) nor how far eastward towards or over the Yorkshire border. It would be interesting to examine a series of mice from the Isle of Man.

It has occurred to me that this "black" race inhabiting the western coasts of Westmorland, Lancashire and north Cheshire may be analogous to the "Black" rat of Northern Ireland, which has now been proved to be a melanic form of the Brown Rat (*M. decumanus*) and not the Old English Black Rat (*M. rattus*) as was at first supposed.

It has also occurred to me that the cause of the dark pellage might be due to the distinctly humid atmosphere in the districts under review. It is a well-established fact that all animals and birds inhabiting damp areas are distinctly darker in colour, as also are all island forms, than the same species from large continents, for instance the British and Continental races of the Robin and Song Thrush. Further, it is interesting to note that in the case of the dark and light forms of the northern and southern races of the Egyptian Desert Mouse (*Meriones crassus*), Bonhote proved that the difference in the shade of the coat was entirely dependent on environment, by taking a pair of the light coloured *Meriones* from the dry desert area and moulting them in the damp humid atmosphere of an incubator when their new coats were indistinguishable from those of the dark race.

Should anyone who may read these remarks be
sufficiently interested in the subject to send me examples of House-mice from their particular area I would request them to send the bodies away as quickly after death as possible, and also before sending to open them along the belly and remove the intestines, as all mice and voles (especially the latter) being wholly vegetable feeders, begin to decompose very soon after death (within an hour in the case of voles should the weather be hot), and once decomposition sets in the fur along the belly and sides begins to "slip," and it becomes impossible to make decent cabinet specimens of them.

Uppleby House, Parkstone, Dorset.

Corrections to Notes on Ospreys and Capercaillie.—In preparing Mr Balfour's notes (antea p. 122) for publication we regret that certain discrepancies crept in, which must be corrected. Mr Balfour states that the third Osprey "shot at Corstorphine" was, he understands, killed last year and not this year as the note implies. He also informs us that he got a cock and hen Capercaillie from Deeside in August 1930, and draws our attention to the fact that Dawyck is not near Melrose, and that Melrose is not in Peeblesshire. As to the nest containing seven eggs which he saw in his larch woods it was found, when examined three weeks later, that all the eggs had hatched.—[Eds.]

Green Sandpiper in Dumfriesshire.—On 14th July 1932 I flushed a Green Sandpiper from a tiny puddle on Penfillan Moor, Keir, Dumfriesshire, where, on 13th August 1927, I shot a bird of this species. It is surely curious that such an uncommon bird should have occurred twice at so tiny a puddle which offers no apparent special attraction.—Hugh S. Gladstone, Capenoch, Thornhill.

[This is an early date. In Eagle Clarke's Studies in Bird Migration the dates of passage of this species in the autumn are given as "27th July to 3rd November, chiefly late August and early September."—Eds.]
BOOK NOTICES

Bees, Wasps, Ants and Allied Insects. By Edward Step, F.L.S. London and New York: Frederick Warne and Co., Ltd. With 238 pages, over 500 figures in colour, and over 100 photographic reproductions. Price 10s. 6d. We should like to congratulate the publishers of this volume on the excellent series of handbooks which they have issued in their "Wayside and Woodland Series." That now before us is one of the best, and may be described as a wonderful little book. The author, who unfortunately did not live to see the publication of his labours, was a well-known writer who has produced many helpful handbooks. This, the last of his efforts, is, in our opinion, one of the best works on Hymenoptera that has appeared in this country. The descriptions of the numerous species are adequate, without being too technical, while the accounts of their habits surpass anything we have hitherto come across. The illustrations are beyond praise and judiciously chosen. Published at an exceedingly moderate price, this book can only be described as a marvel.

Biology: An Introduction to the Study of Life. By H. Munro Fox. Cambridge: at the University Press, 1932, 344 pages, 152 figures and frontispiece. Price 6s. net. The concluding words of this delightful little volume will indicate the purpose for which it has been written: "a knowledge of the main facts of biology is an essential part of the culture of every educated man and woman." In a series of twenty chapters, written in a simple and attractive style, the reader is furnished with a most readable outline of the structure and life-processes of the main types of plants and animals. Each chapter is divided up by attractive headings which, by the aid of a good index, enable the reader to turn at once to any particular point of interest. The subject-matter is thoroughly up to date and the illustrations of great excellence. At the end of each chapter a number of practical experiments are suggested, each of which illustrates some important point mentioned in the text. Although this book is essentially for young people it will be read with considerable interest, and certainly with much advantage, by those of maturer years.
PETERHEAD SEALERS AND WHALERS: A CONTRIBUTION TO THE HISTORY OF THE WHALING INDUSTRY.

By Dr Robert W. Gray.

I.—THE WHALE-FISHERY OF THE GREENLAND SEA.*

Peterhead first sent a whaling vessel to the Greenland Sea in 1788. The Robert, the pioneer vessel, was but two-masted and measured only 169 tons. She was only about half the usual size and hardly big enough to carry the necessary number of boats. In deep water, a fully grown Greenland Whale, owing to the depth it descends, requires for its capture five or six whale-boats, each carrying 600 fathoms of whale-line and each manned by six men. Not only was the Robert small, but she may have been of the old-fashioned type that Scoresby speaks of, one not "fortified" or very substantially built, that prosecuted the fishing outside the ice.

The size of the Robert was doubtless determined by the state of the Peterhead harbours. At that time they were probably little better than tidal creeks dry or nearly so at low tide. Even at a much later date after they were improved the whalers were only able to sail at high-water spring tides, and even then only when the sea at the harbour mouth was smooth.

A few words may be said about the whale fishing of the Greenland Sea as conducted in 1788, when Peterhead first entered the trade. According to the recently published log-books of the elder Scoresby the whales were still very numerous and fleets of ships, British and foreign, were still engaged in their capture. The "Greenland" or Spitsbergen Sea (i.e., the ocean between Greenland and Spitsbergen)—the scene of the fishing—is the chief outlet of the Arctic Ocean. Through this sea, owing to the direction of the current, an immense amount of ice, many

* The "Greenland" of the old sealers and whalers.
feet thick, drifts south-west in the course of a season leaving, it may be supposed, open water in its place farther north. This ice, which is at first in the form of very extensive sheets termed "fields" and "f loes," as it drifts south into lower latitudes, is exposed sooner or later to the swell of the ocean and converted into "pack" or broken ice. Finally, as it continues to drift south it melts and disappears. Besides ice, areas of water green in colour and rich in the creatures on which the whales feed drift south-west through the Greenland Sea. These areas of green or "dark" water, termed "feeding banks" by the whalers, have a powerful attraction for the whales; they come up from the south-west in the spring, doubtless to meet them, and after accompanying them for considerable distances they resume, sooner or later, their northward migrations to meet other "feeding banks" drifting, it is supposed, from higher latitudes towards the Greenland Sea. Some of the whales follow the drifting food banks farther south-west than others; the first to turn and resume their northward migrations are the females, accompanied by calves and the immature whales of either sex; the last the old males. The first were seldom found south of about lat. 78° and seldom after about the middle of June; the latter on the other hand were sometimes found as far to the south as lat. 71° and as late as the middle of August. The fishing was usually conducted amongst or in the immediate vicinity of the heavy polar ice; in bays or "bights" in the margin of the ice; amongst the "pack" or broken ice; amongst the "f loes" or unbroken ice and often between the two. The ships usually commenced the fishing in April, in lat. 80°, in east longitude, near Hakluyt's Headland; prosecuting it in a lower latitude and less easterly longitude as the season advanced, and giving it up in June or July in west longitude in lat. 76° or 77°. The whales were usually caught in May and June, seldom in April or July. Amongst the ice different latitudes afforded different sized whales. As my father, the late Captain David Gray, says, "the largest whales are taken between lat. 70° and 75° N.; between lat. 75° 30' and lat. 77° the sea is usually
barren of whales; 77° to 78° 40' produces 'second sized whales,' averaging from 10 to 12 tons of oil; whilst from 79° to 80° 20' are only found 'nursery whales,' averaging 5 or 10 tons of oil each." The number of whales caught seems to have been connected with the state of the ice farther north; in seasons in which the ice was drifting rapidly south-west, and in which presumably much open water was left in its place farther north, the breeding females and the young whales of either sex deserted the latitude of Spitsbergen earlier than usual and few of them were caught. On the other hand, when the reverse was the case, they remained longer than usual and more of them were caught. Usually the ships had no difficulty in reaching lat. 80°, but exceptionally in "close seasons" they had to force their way northward through a barrier of light ice termed a "south-east pack" situated in lat. 76°. In seasons of this sort some of the ships, instead of persevering to the northward through the ice and commencing the fishing in the usual situation, preferred to remain behind and prosecute what Scoresby in his Arctic Regions calls the "south fishing" in lat. 75½° and 76°.

Commencing with 1817 the ships began to remain longer out and prosecute the fishing off the Greenland Coast south of lat. 75° and west of about longitude 10° west.

The little Robert was at first very unsuccessful; in 1788 under the command of Peacock (a Hull man) she returned with only one ton* of oil, the produce of what must have been a very small whale.† In 1789, and again in 1790, she returned "clean" (i.e., with nothing), but in 1791, under a new commander named Geary (a local man) she did better, returning with 47 tons—the produce of one whale and of an unknown number of seals. The same year, owing to unfavourable circumstances of ice and weather the Henrietta of Whitby, commanded by Scoresby senior, lost two large whales; one on 29th April in lat. 78°, and one on 22nd June in lat. 76°. The Robert, which is frequently mentioned by Scoresby in his log-books, probably also lost

* A ton of oil in 1788 (252 gallons wine measure) weighed only about 17½ cwt.; after about 1830 an imperial ton weighed 20 cwts.
† Probably a sucking fish or calf.
one or two. The Robert's catches compare very unfavourably with those of the Henrietta. For instance, in 1794 she returned with only 9½ tons—the produce of one whale—whereas the Henrietta returned with 120 tons—the produce of six large whales. The Henrietta made two of her captures (one accompanied by a calf) in April near Hakluyt's Headland; one on 25th May in lat. 78° and three a few days later farther south.

Again in the “close season” 1796, the Robert returned with only 37 tons—the produce of three whales; whereas the Henrietta returned with 113 tons—the produce of nine whales. According to her log-book the Henrietta made her captures in lat. 77° mostly in May; and the Robert may have done the same. The fishing seems to have commenced in east longitude, amongst “bay ice” outside the proper ice. Owing to the “bay ice” its prosecution was attended with difficulty; five of those struck by the Henrietta's men escaped, to die perhaps of their wounds, and another that died under the ice was only retrieved with very great difficulty. In seasons of this sort ships that persevered to the northward got through the bay ice and enjoyed a great advantage over those that remained behind.

In 1799 the Robert, notwithstanding her small size, returned with 96 tons—the produce of eight whales—and the following year with 77 tons—the produce of nine whales. These successes, following a series of very poor catches, suggest that her owners “fortified” her, or converted her into an “ice fisher” capable like the Henrietta and other ships of prosecuting the fishing amongst the heavy polar ice.

In 1802 the Robert was replaced by the Hope (240 tons), probably carrying more boats and men, and probably more strongly “fortified” against contact with the ice. In 1804 the Hope was joined by the Enterprise (290 tons), a still larger and probably still better equipped ship. Geary was transferred to the Hope, and in 1804 Volum his mate got command of the new ship.

An important change in the method of conducting the fishing appears to have taken place about this date. According to Scoresby, “two or three of the captains of
the whale-fishing ships commenced a system of activity and perseverence which was followed by the most brilliant results. Instead of being contented with two or three large fish and instead of considering five or six a large number they set the example of doubling or trebling the latter quantity.” This increased success appears to have been achieved by using fortified ships and by sailing into a high latitude early in the season. Unfortunately this was gained at the expense of the young whales and much harm done to the fishery. Before this time the young whales appear to have escaped.

In subsequent years the number of ships sailing out of Peterhead continued to increase until they formed quite a small fleet. In 1857 the Peterhead fleet numbered some thirty ships, but after that date it quickly declined, and after a few years again numbered only a few ships. A Greenland whaling ship sailed out of Peterhead for the last time in 1893.

(To be continued.)

Sowerby’s Whale (*Mesoplodon bidens*) at Inverness.—Early in July a female of this species was stranded near Inverness. The animal measured 15 ft. 6 in. in length and weighed 1 ton 6 cwt. This species appears only occasionally in the records of whales stranded on our shores, and the last record from Inverness was as far back as August 1915.—A. C. Stephen, Edinburgh.

Lesser Rorqual (*Balaenoptera acutorostrata*) ashore in Fife.—A female of this species was stranded at Kinshaldy, near St Andrews, on the 7th August. This species immigrates into the North Sea from the Atlantic and appears on our eastern coasts most frequently in August and September.—D. Wotherspoon, Edinburgh.
Cramond Island Notes.—With the exception of Dr Eagle Clarke's record of the Ringed Plover breeding at Harperrig Reservoir during 1919 and 1920, I am unaware of any other occurrence in Midlothian until this year, when two nests were found on Cramond Island, one in early April and the other in July. On the second occasion the nest only contained two eggs, which were hatched on the 10th of the month. After some patient watching on the 15th I succeeded in finding one of the chicks on the beach, which ran with considerable activity when set at liberty.

I also feel sure that a pair of Redshanks nested on the island this year, though neither the nest nor the young were discovered. The behaviour of the birds, however, clearly indicated that they had young when I paid a visit there on the 11th June.

Another occurrence of much interest was the discovery of a male and two female Eider Ducks resting on a rock at the north-east corner of the island (11th June). There are few records of the Eider in the Forth, off Midlothian. Mr William Evans had only two Midlothian notes on the Eider. One is dated 6th February 1905, when he mentions that he saw a beautiful adult male outside the long line of Scaup, east of Leith Docks. His second note states:—"8th October 1886, T. Hope, bird-stuffer, tells me he knew a man who used to take Eider's eggs on Inchmickery twenty or thirty years ago."

In the Scottish Naturalist (March-April 1930) I recorded the occurrence of an immature male Eider in Granton Harbour, 1st December 1929, and Mr P. W. G. Gunn informs me that he has recently seen Eiders on the Forth east of Cramond Island.

The presence of these birds so far up the estuary and the old Inchmickery record encourages the hope that the Eider may be found in the near future as a breeding species either there or on Cramond Island, the more so as I learned a few years ago that the bird had nested on the Carr Craig, off Aberdour, on the Fife shore.—J. Kirke Nash, Edinburgh.

Wild Duck's Eggs in Nest of Grouse.—The following note, contained in a letter I received in July last from Mr A. McQuarrie, of Middlequarter, Sollas, North Uist, may interest the readers of the Scottish Naturalist: "One day recently, when some young men from Middlequarter were out on the hill gathering sheep for fang they came across the nest of a grouse with eight eggs in it, and in addition four eggs of a wild duck." I had already heard of this strange occurrence during the last week of June.—George Beveridge, Vallay, Lochmaddy, North Uist.
UNUSUAL SITUATION OF A DIPPER'S NEST.

By Robert J. Younger.

The accompanying photograph represents the nest of a Dipper which I found in Perthshire on the 16th May of this year. As may be seen it is in the fork of a tree, 11 feet from the ground. The nest contained three eggs, which had evidently been laid some time but had not been sat on, so I fear the bird had deserted. I have seen many Dippers' nests but never one in such a position, and the curious thing is that there are plenty of suitable nesting places at that part of the river. I cannot find any record of a Dipper's
nest in a tree. Seebohm (1883) says, "never in a tree or bush." I also turned up Yarrell's History of British Birds (1839) in which he says, "never having seen the bird alive" and goes on to give Macgillivray's account of the bird, which ends up with a vignette of a Dipper's nest, for which he was "indebted to the kindness of Mr J. D. Salmon, of Thetford, who received it from Yorkshire." It is a good engraving, but appears to me to have been printed upside down! Otherwise it gives quite a good idea of a Dipper's nest.

Ruddy Shelduck in Orkney.—A beautiful example of this species was caught in the island of Sanday, Orkney, on the 30th April 1932. It seemed in excellent plumage, but upon examination I found that the tip of the left wing was damaged, which fact may account for the bird being caught ashore on that island. Sanday is one of the northern isles of Orkney. I believe there is a record of the Sheldrake from Sule Skerry.—James G. Marwick, Stromness.

[The Ruddy Shelduck is an uncommon visitor to Scotland, but has been recorded from Berwickshire, Midlothian, N. Perth, Forfar, Aberdeen, Morayshire, E. Inverness, N. Sutherland, Caithness, Orkney and, as our correspondent states, Sule Skerry. —Eds.]

Gannet in Unusual Plumage. —While showing two gentlemen round the rookeries on the 21st April, I observed a Gannet in very unusual plumage. It was in perfect adult feather, except the secondaries, which were a uniform black seen from above, and in flight the bird looked extremely odd among the hundreds of others flying about. If this happens to be but a phase of plumage, it certainly is the most evenly marked I have ever seen; the young birds when nearing maturity are always mottled. I intend to keep this bird under observation as much as possible to see if any change takes place.

Another item of some interest is that the first Gannet's egg was seen on the 23rd March, a week earlier that any previous record. Puffins also were earlier, both in arriving on the rock and in laying their eggs, which were first seen on the 2nd May, about nine days ahead of the usual date.—John Bain, Bass Rock Lighthouse.
TUFTED DUCK NESTING AT LINLITHGOW LOCH.

By David Hamilton. 16th June 1932

In a list of the birds seen at Linlithgow Loch which appeared in the *Scottish Naturalist* for January-February 1931 (pp. 7-10), I mentioned that the Tufted Duck would probably be found nesting there soon. This event has now occurred, as during the present season Mr W. Watson, Royal College of Physicians, and I found several clutches of eggs.

The space on the small island where the Tufted Duck and also numerous Mallard were breeding being rather restricted, there seemed to be a competition for nesting sites. Several nests were found practically side by side, and in a few cases the birds had been laying indiscriminately. A Mallard was found sitting on seven eggs of her own and also an equal number of those of a Tufted Duck. One or two other clutches were equally mixed up, and others with sitting birds we did not disturb. It will be interesting to observe later, when they hatch out, if the Mallard will attend to a mixed family of surface feeders and diving ducks.

17th July 1932

Visiting the loch again a month later we found a good number of Tufted Duck chicks on the water. All were very young and mere sooty brown balls, nevertheless they were extremely active and continually diving below the surface. As we had surmised, most of the Tufted Duck chicks were under the care of Mallard. The Tufted Duck had evidently in most cases only been able to lay their eggs, but owing to the more aggressive Mallard had not been allowed to sit. One Mallard seen to-day had charge of an entire brood of nine Tufted Duck and not a single one of her own. A second Mallard had eight of her own chicks and also a single Tufted, whilst another had four Mallard and two Tufted.
The Mallard with the entire brood of Tufted chicks was observed close to the water's edge. Approaching under cover we suddenly surprised her, but owing to the fact that there were never more than two or three on the surface at once, she was unable to lead them away. Although we stood only a few feet away she refused to go, making no demonstration whatever, but seemed rather bewildered. When she ultimately got them under control they were led across the loch, passing quite close to a number of adult Tufted Duck, both male and female, among which would certainly be the parents of the brood.

The Mallard with the four of her own and two Tufted had her mixed family feeding near a reed bed; whilst the Mallard chicks kept dabbling in the shallow water, the Tufted chicks continually dived further out. When disturbed on three occasions this Mallard led the lot into the reeds.

A few other Tufted chicks were seen and did not seem to be with any adult bird, and at this date no Tufted Duck was seen with chicks.

7th August 1932

Returning again on this date we were pleased to see a female Tufted Duck with a brood of eleven and another with four. These must have been later nests, as the chicks were quite young and evidently only a few days old.

The Mallard seen on our last visit with the entire brood of Tufted chicks was seen again to-day with her adopted family. As these are now nearly full grown they seem to have thriven quite well under the care of a foster parent. The Mallard seemed to have them under better control now, as when I threw a stone near her to see what would happen, she gave a loud quack and the brood at once ceased diving and gathered round her and were led away. Another female Mallard which happened to be near at the time flew away at once. All these young Tufted Duck showed a whitish patch on the base of the bill and were now about five weeks old.

It would have been interesting to see Tufted Duck with Mallard chicks, but though every bird was watched we were disappointed so far.
I read with great interest my friend Mr F. W. Smalley's article on the above-mentioned subject in The Scottish Naturalist. I cannot agree with him, however, when he says that, up to comparatively recent times (1914), the common Grey Geese of Lancashire were White-fronted and Pink-feets. Pink-feets decidedly so, but not White-fronted, except one winter, that of 1908-9, when they replaced Pink-feets. The late Mr R. J. Howard made a point of going to see every Grey Goose he heard of shot in Lancashire, and found them, without exception, to be Pink-feets, except during the winter of 1908-9, when he agreed with me that the White-fronted predominated. I got an immature White-fronted of the year in the Lune estuary on 3rd December 1902, and two were shot in the Ribble estuary in 1913. In these bygone days wild geese were not plentiful in Lancashire, but a fair number frequented the Ribble estuary, and without exception all those identified by both Mr Howard and myself were Pink-feets, except in the winter 1908-9, as mentioned above. Mr Howard said that prior to the winter of 1920-21 there was no authentic record of the Grey Lag in Lancashire. In the 2nd edition of Mitchell's Birds of Lancashire, he says: "I have not yet succeeded in getting a sight of a Grey Lag killed in the country." Mr Howard was no doubt the leading ornithologist of his day in Lancashire, and before he died I had the pleasure of taking him to see the Grey Lags at Silverdale.

Mr H. P. Hornby certainly, in January 1891, got a Grey Lag in a Preston game-shop, but it was not known where it came from. I think that I was the first to see Grey Lag in Lancashire when, on 27th November 1920, I saw a skein of forty-six passing down the Lune valley whose cries showed them to be Grey Lag, which was confirmed when, on 6th December, the late Brigadier-General R. G.
Parker and myself located a gaggle of sixty to seventy on Leighton Moss, Silverdale. There was also one Pink-foot on the marsh by himself. With regard to the Bean Goose the late General Parker and I saw a small lot of seven there on 1st January 1923, and on 29th February this year there were five close to the road. All were *arvensis* or the yellow-billed form. I was interested to read Mr Berry's fascinating articles in last year's volume of the *Scottish Naturalist*, for all the Bean Geese he saw were *arvensis*. In my early days the few Bean Geese I saw were the orange-banded race (*segetum*) as I pointed out in *The Zoologist* (July 1903). When did they change? Was it about eleven years ago, when I received the head of a "yellow-bill" retrieved from a dust-bin and shot in Wigtownshire with several others like it?

Mr Smalley's statement that he considers the Bean was once common on Solway by the fact that long ago set-up birds he saw in cottages there belonged to that species, is most interesting, for I always put down the statement in old-time books that the Bean was very common, to the fact that the Pink-foot had not then been recognised as a distinct species. Mr Smalley's discovery puts a new light altogether on the subject. Although the Grey Lag is now the common species in North Lancashire, as well as on Solway, and in Dumfriesshire and Wigtownshire, odd White-fronted and Pink-footed have been shot at Silverdale of recent years. On Cockerham Marsh, south of Lancaster, during the past three winters there were both Grey Lag and Pink-foots, with possibly a small gaggle of White-fronted during the winter of 1929-30. One was shot in this and the following winter. The Grey Lags never get as far as Lytham St Anne's, for Mr Murray informs me that he has never seen them there, but that they are practically all Pink-foots, with White-fronted and Bean as pretty regular visitors.

I quite agree that change of grass is responsible for change of species. The Grey Lag likes rough grass which he tears up but the Pink-foot likes fine grass, *i.e.* pasture, which he nibbles like a sheep. Mr Murray says that
on Solway Burgh Marsh is rough grass and all the Grey Geese there now are Grey Lag. On the other hand, Rockcliffe Marsh is fine grass and the haunt of Pink-footed. Rothwell and Caerlaverock marshes are rough and there are no Pink-footed there, but all are Grey Lag with Bernacle, according to Mr Murray. Newtown Marsh on Solway is rough and the haunt of Grey Lag. It is now being mown with machines with the object of making it suitable for golf turf. It will be interesting to see whether the Grey Lags will desert it and their place be taken by Pink-footed.*

One day in late February this year there must have been nearly a thousand Grey Lags at Silverdale, for they were coming in all day and the marsh was full of them. It could hardly be a migration, as they do not leave there until the end of April.

With regard to Ireland, the White-fronted is of course the predominant species, but here also Grey Lag have increased of recent years. Mr W. S. Williams writes in *The Irish Naturalist*, vol. xi., No. 8 (1929) as follows: “One of the most striking absentees among our winter visitants is the Pink-footed Goose. In the winter enormous flocks of wild geese visit Ireland; they seem to take different districts, for on Wexford slob the only goose is the Grey Lag, whilst outside the harbour thousands of Brent congregate but do not come on the land; in the midland counties the White-fronted is abundant, and in the south both Bean and Grey Lag are common. In all the thousands of geese you would expect a Pink-footed to get mixed up in the battalions on migration, but in my time I have only seen one Irish example and that an immature bird. I have examined the bag on the slob at Wexford, where as many as sixty have been shot on one evening’s flight. They were all Grey Lags, of every age and plumage.”

In *The Practical Handbook of British Birds*, only two records of the Pink-foot in Ireland are mentioned viz., Co.*

* “It must be borne in mind that many Grey Geese, especially Pink-footed, feed far inland, the latter being especially fond of sprouting corn, and that often the sea marshes are merely their resting, not their feeding haunts.”
Donegal, October 1891, and Co. Roscommon, February 1908. During the past winter two more have occurred which I recorded in *British Birds* for July. Possibly these have been crowded out of England or Scotland by Grey Lags. It will be interesting to see whether they increase.

At the present day the Grey Lag is very common on the Wexford slob, where it has quite recently been joined by the White-fronted species. The Bean is found mostly on the Shannon near Limerick, but has not yet got anywhere near Dublin. The White-fronted is still the commonest species, inhabiting the Midlands or the Great Bog of Allen.

The local habitat of Geese is well seen on the adjoining islands of Tiree and Coll in the Inner Hebrides. During the three winters I spent on Tiree I only saw the White-fronted species, yet the Bernacle was *the* species on Coll. I never saw White-fronted on Coll until the third winter.

I was informed that although Grey Lags bred on both islands they were never seen there in winter. This is many years ago and conditions may have altered since then. During the several winters I spent in Orkney I never saw Grey Geese until early spring, when those passing through all appeared to be Grey Lag. In Shetland Grey Geese were hardly known in these days, whatever may be the conditions at present.

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**Shag's Nest with Five Eggs.**—On the 8th May, after an unsuccessful spell at fishing, we shoved the boat into the east cave and I jumped ashore to have a look at the Shags' nests. There were twenty-two of them, all with eggs. One had two eggs and a chick, another four eggs, but there was a nest with *five* eggs, which is such an unusual thing that I thought it worth recording. Howard Saunders says three or four is the number of eggs laid, but of the hundreds of Shags' nests I have seen, only on one previous occasion have I come across a nest with four.—**John Bain**, Bass Rock Lighthouse.

[In the last edition of Saunders' *Manual* (p. 411) the number of eggs of the Shag is stated to be "3 to 4 (sometimes 6)."—Eds.]
ADDITONS AND CORRECTIONS TO THE BIRDS OF AYRSHIRE.

By E. Richmond Paton, B.A., M.B.O.U.

It is now three years since the publication of The Birds of Ayrshire. With the exception of a letter to this magazine reporting a Glaucaus Gull and a pair of Pintail, under the above heading in No. 191, p. 132, nothing has been added and the time seems now due to bring the records up to date.

In April of this year Mr S. P. B. Mais, in a wireless talk on "An Unknown Island," spoke of seeing two Golden Eagles circling over the Merrick—or Kirriereoch I think it would be—in that month. I wrote to Mr Mais for further verification, and he replied that as he had lived amongst Buzzards all his life and had recently seen Eagles in a Highland Glen, he had no doubt about the identification.

On page 167 it is stated that there is no record of the Oystercatcher breeding on Ailsa Craig. I can now record that both the Oystercatcher and the Twite (p. 18) bred there in 1930. Again, on p. 174, the Ruff is mentioned as a bird that is likely to be missed on its autumn passage; one was seen by me on the reservoir at Hareshawmuir on 18th August 1929.

Regarding other Waders, I saw a single Knot (p. 175) on two occasions on the shore at Barassie; they were 15th September 1929 and 4th November 1930. On the 3rd May 1930, Mr J. W. Cutmore and I were fortunate to see and identify at very close range a Lapland Dunlin (Calidris a. alpina, Linn.) on the lochs at Hareshawmuir. The Southern Dunlin which were there at the time seemed to resent its appearance and chased it about to prevent it settling (p. 176): the brackets may now be removed. On the 4th November 1930 I saw three Greenshanks on the shore at Barassie, and at the same place, 10th June 1931, a Bar-tailed Godwit; while on the 6th July 1929 I clearly saw and heard a single Whimbel passing south here over Hareshawmuir: this is in all probability the earliest recorded date for the return of this species. As an inland record,
the appearance of a Ringed Plover on the lochs at Hareshawmuir may be added, 1st August 1929.

This spring I made a rough census of the Lapwing over an area of 5000 acres, of which 4000 are moorland, and estimated that there were about 250 pairs; this species is keeping its numbers up well in the county.

The Magpie is becoming scarcer in these parts, but it is interesting to be able to record the presence of a pair of Jays (p. 11) at Cessnock during the months of February and March of this year. Unfortunately they have been missed since the middle of April.

I noted a Grasshopper Warbler on the 9th May this year (1932) at the same spot that a bird was seen and heard in 1921. This is a young Spruce wood at Hareshawmuir planted in 1923, and it is interesting to note that the last time the bird was heard here the ground was grown up with scrub after a previous felling: I think they were passage birds in each case. It is more difficult to understand the presence of five Lesser Redpolls flying around an aviary here on the 8th June 1932. The existence of caged Redpolls has accounted for the presence of wild Redpolls at times of local passage, but in a district where the Redpoll does not breed, the month of June is an unexpected month to receive a visit. Redpolls have been recorded at Hareshawmuir in October 1929 and September 1931, while I noted a small party at Martnaham in November 1930. I think it may be safely said that both the Redpoll and the Linnet (p. 21) have increased their range during the last three years. The Linnet, at any rate, now breeds at Hareshawmuir, where up till last year I never knew of its existence; this year there are several nests in the young plantations. Conversely, the Greenfinch this year is distinctly scarce as a breeding species, while the Yellow Wagtail is fast becoming a vanishing species, at any rate, in Cunningham: I only saw one passage cock this year at Hareshawmuir. On the other hand, Yellowhammers and Whinchats increase in numbers each season.

On the 10th June 1932 I observed a pair of White Wagtails (p. 44) on the sands near Barassie. This species can always be seen on the coast of Cunningham on the
spring migration; they are more easily overlooked and difficult to identify in the autumn.

On the 4th and 5th of June this year (1932) a Turtle Dove was seen and heard in the woods at Hareshawmuir, another having been seen last summer in the month of May; it remained here for some time. Shortly after the Turtle Dove's appearance last year, I heard that one was frequenting a garden not far from Ayr (p. 165).

Inland records of Sheld-Duck are not common, so that it may be worth recording that I had a good view of a duck of this species circling over the reservoir here on the 2nd May 1930 (p. 130). An adult Bean Goose that was sent to me on 10th March 1932, weighed 9 lbs.—an exceptional weight. This bird was shot at Windyhill, Fenwick.

Another interesting stranger was sent to me by Mr William Mair on the 22nd November 1931; it proved to be an immature female Eared Grebe and was obtained at Mochrum Loch, Maybole. It is now in the Dick Institute Kilmarnock. In this connection three were reported from Ayr Bay, 1st January 1929 (p. 156).

Arctic Tern nesting in Bute. — Late in June 1932 I discovered a colony of about fifteen pairs of Arctic Terns nesting beside the sea on the west side of Bute. On higher ground in the neighbourhood there were common Terns nesting by themselves in a place where they have nested regularly in the past. I examined the Arctic Terns very carefully within twenty yards with a telescope, as this is the first record of their breeding in Bute. Twice these Terns struck us on the hand with their bills, drawing blood each time, while we were photographing them. Two or three years ago I identified two Arctic Terns nesting amongst the Common Terns on one of the Burnt Islands in the Kyles of Bute, and Lord Dumfries told me that he has identified rather more Arctic Terns at that spot. These islands, however, are counted as in Argyllshire. —(Rev.) J. M. McWilliam, Glasgow.
CURRENT LITERATURE

The Pollen Analysis of Peat.—The microscopical examination of peat deposits in order to throw light upon the “post arctic” history of the forests of Europe is a modern investigation of much interest and importance. A useful paper on the subject appears in The Naturalist for June 1932 (pp. 177-182) by A. Raistrick, Ph.D., F.G.S., in which practical information is given as to the preparation of material for the analysis of the pollen which can always be found in these deposits, and hints are given regarding the best method of plotting the results. Work of this kind has been and is still being carried on in the North of England, and the Scottish moors offer a good opportunity to students to carry out research on the same fascinating subject.

Additions and Alterations to the List of British Birds.—H. F. Witherby, in British Birds for June 1932 (pp. 8-16) gives a complete account of the additions and alterations which have to be made to the systematic list of British Birds published at the end of the Practical Hand-Book and in the Check-List, supplemented in British Birds, vols. xxii. (pp. 101 and 102) and xxiv. (pp. 22-25). The only additional species is the Pallid Harrier, Circus macrourus (Gm.), first recorded in the Scottish Naturalist, 1932, pp. 1 and 2, which in the present article is described in detail, with an illustration of the rump and tail of the adult male and an outline drawing of the primaries of Montagu’s, the Pallid and the Hen-Harrier showing the differences in the wing-formula and emarginations. The British form of Oyster-Catcher has received the new name Hamatopus ostralegus occidentalis Neumann, and is also described, with figures of the bills showing a marked difference in shape between individuals of the species from Sweden, Wales and the Shetlands. The other changes of name are as follows: The Mealy Redpoll—Carduelis flammea flammea (L.); the Greenland Redpoll—Carduelis flammea rostrata (Coues); the Lesser Redpoll—Carduelis flammea cabaret (P. L. S. Müll.); the Snowy Owl—Nyctea scandiaca (L.). The following birds, hitherto known under a binomial name, must now bear the following trinomial designations, since subspecific forms have been described: The Chough—Pyrrhocorax pyrrhocorax pyrrhocorax (L.); the Cirl Bunting—Emberiza cirlus cirlus (L.); the Redwing—Turdus musicus musicus (L.); the White-tailed Eagle—Haliaetus albicilla albicilla (L.) and the Little Auk—Alle alle alle (L.). The author assigned to Oenanthe isabellina, the Isabelline Wheatear, should be Temminck instead of Cretzschmar.
RECOVERED MARKED BIRDS RINGED OR FOUND IN SCOTLAND.

In accordance with our custom we again extract from British Birds a list of birds ringed or recovered in Scotland. This list is compiled from the April number of our contemporary (pp. 319-331), and is given for the benefit of those of our readers who are interested in following the details of bird-movement to and from Scotland. In copying these details we must express our indebtedness to the Editors of British Birds, who have taken such pains to record the details so fully and carefully.

**Raven (Corvus c. corax).**

RINGED. RECOVERED.

Dumfriesshire, 10.4.30, young . . . Kirkcudbrightshire, May 1931.

**Jackdaw (Coloeus m. spermologus).**


**Starling (Sturnus v. vulgaris).**

Broughty Ferry (Angus), 17.12.27, adult. Dundee, 30.7.31.
Do. 16.5.28 . . . Tay Bridge, 15.2.32.
Scone (Perths.), 29.11.29, ad. . . . Where ringed, 1.11.30; 26.10.31.
Do. 17.5.29, young . . . Perth, 20.1.31.
Do. 2.3.30, ad. . . . Glenfarg (Perths.), Feb. 1932.
Do. 23.11.29, ad . . . Callander (Perths.), 14.5.31.

**Skylark (Alauda a. arvensis).**

Kilmacolm (Renfrew), 27.5.29, young . . Forgandenny (Perths.), 12.1.32.

**Song-Thrush (Turdus ph. clarkei).**

Near Dundee, 10.5.31, young . . . Wigtown, 15.11.31.
Kilmacolm (Renfrew.), 31.5.29, young . . Avonbridge (Stirling), July 1931.
Kirkmaheo (Dumfries), 3.5.27, young . . Near where ringed, 16.8.31.

**Blackbird (Turdus m. merula).**

Near Dundee, 30.4.30, young . . . Near where ringed, 29.11.31.
Do. 22.6.31, young . . . Do. January 1932.
Upper Largo (Fife), 8.1.31, ad . . . Do. 19.5.31.
Kilmacolm (Renfrew.), 17.9.24, ad . . . Do. 17.7.31.
Martin (*Delichon u. urbica*).


Kingfisher (*Alcedo a. ispida*).

Crookston (Renfrew.), 22.5.31, young. Busby (Renfrew.), 17.1.32.

Long-Eared Owl (*Asio o. otus*).

Altnaharra (Suth.), 17.5.29, young. Culrain (Ross.), June 1931.

Tawny Owl (*Strix a. sylvatica*).

Near Aberfoyle (Perths.), 28.5.30, young. Callander (Perths.), 23.10.31.

Sheld-Duck (*Tadorna tadorna*).

Loch Fleet (Suth.), 1.7.31, young. Tain (Ross.), Oct. 1931.

Mallard (*Anas p. platyrhyncha*).

Leswalt (Wigtown.), 12.3.30, ad. Where ringed, 14.10.31.

Do. 27.3.31. Do. Dec. 1931.

Do. 11.3.30. Willmanstrand, S.E. Finland, 15.8.31.

Do. 6.3.29. Veitl, W. Finland, May 1929.

Do. 27.3.31, ad. Lyck, East Prussia, 12.9.31.


Teal (*Anas c. crecca*).

Leswalt (Wigtown.), 18.3.30, ad. Loch Awe (Argyll.), 9.9.31.

Do. 19.3.31. Where ringed, 26.1.32.

Do. 28.2.28. Near Wigan (Lancs.), 23.10.31.

Wigeon (*Anas penelope*).

Loch Leven (Kinross), 12.6.30, young. Near Youghal (Cork), 18.8.31.

Common Eider (*Somateria m. mollissima*).

Collieston (Aberdeen), 2.6.30, ad. Where ringed, 5.6.31.

Do. 2.6.30. Firth of Tay, 28.11.31.

Cormorant (*Phalacrocorax c. carbo*).

The Ord (Caithness), 14.7.31 young. Brora (Suth.), 17.9.31.

Mochrum (Wigtown.), 18.7.31, young. Loch Leven (Kinross), 1.2.32.

Do. 18.7.31. Loch Lomond (Dumbarton.), 5.11.31.

Do. 18.7.31. Solway Firth, 23.9.31.

Do. 25.6.29. St Pabu (Finistère), France, 6.11.31.

Do. 18.7.31. Lorient (Morbihan), France, Oct. 1931.

Do. 25.6.29. Near C. Ortegal (Galicia), Spain, 27.12.31.
RECOVERED MARKED BIRDS RINGED OR FOUND

SHAG (*Phalacrocorax a. aristotelis*).

**RINGED.**

- Handa I. (Suth.), 6.7.31, young
- Do. 6.7.31
- Do. 6.7.31
- Edrachillis Bay (Suth.), 6.7.27, young

**RECOVERED.**

- Near Kirkwall (Orkney), 4.12.31.
- Summer Is. (Ross.), 14.9.31.
- Loch Torridon (Ross.), 15.9.31.
- Irvine (Ayr.), 8.2.32.

GANNET (*Sula bassana*).

- Bass Rock, 10.8.31, young
- Glenorchard (Stirling), 16.5.30, young
- Eynhallow (Orkney), 24.6.31, young
- Dornoch (Suth.), 2.7.31
- Tain (Ross.), 15.11.31.

WOOD-PIGEON (*Columba p. palumbus*).

- Glenorchard (Stirling), 16.5.30, young
- Lytham (Lancs.), 15.9.31.

OYSTER-CATCHER (*Haematopus o. ostralegus*).

- Lytham (Lancs.), 15.9.31.

RINGED PLOVER (*Charadrius h. hiaticula*).

- Dornoch (Suth.), 2.7.31, young
- Tain (Ross.), 15.11.31.

LAPWING (*Vanellus vanellus*).

- Glen Clova (Angus), 4.6.30, young
- Near Dundee, 24.5.31, young
- Scone Estate, Perth, 15.5.31, young
- Glenorchard (Stirling), 21.5.30, young
- Glenorchard (Stirling), 21.5.30, young
- Arnprior (Stirling), 8.6.26, young
- Kilmacolm (Renfrew.), 28.11.31
- Arnprior (Stirling), 8.6.26, young
- Glenorchard (Stirling), 21.5.30, young
- Scone Estate, 15.5.31, young
- Glenfarg (Perths.), 18.6.30, young
- Lincluden (Kirkcudbr.), 18.6.30, young
- Lincluden (Kirkcudbr.), 18.6.30, young
- Lincluden (Kirkcudbr.), 18.6.30, young
- Lincluden (Kirkcudbr.), 18.6.30, young
- Bowhill (Selkirk.), 10.7.27, young
- Port of Menteith (Perths.), 4.8.31, young

CURLEW (*Numenius a. arquata*).

- Kirkconnel (Dumfries.), 4.6.31, young
- Lairdmanoch (Kirkcudbr.), 1.6.31, young
- Lairdmanoch (Kirkcudbr.), 31.5.31
- Dernacranna (Longford), 30.8.31
- Seascle (Cumb.), 16.9.31.

SNIPE (*Capella g. gallinago*).

- Tiree (Inner Heb.), 25.5.27, young
- Glenorchard (Stirling), 10.6.27, young
- Lincluden (Kirkcudbr.), 18.6.30, young

WOODCOCK (*Scolopax r. rustico*).

- Kirriemuir (Angus), 4.7.30, young
- Almondbank (Perths.), 21.5.31, young
- Scone (Perths.), 14.5.31, young
- Glenfarg (Perths.), 22.5.26, young
- Dunblane (Perths.), 12.6.28, young
- Bowhill (Selkirk.), 10.7.27, young
- Port of Menteith (Perths.), 4.8.31, young

- Kilgarvan (Kerry), 25.1.32
- Woodstock (Oxon.), 27.11.31.
- Cappoquin (Waterford), Jan. 1932
- Near Galashiels ( Roxburgh.), 8.11.30
Census of Black-headed Gulls nesting in Bute.—On 22nd May 1932 I went with my wife to the little loch at the Plan, where the Black-headed Gulls have bred since 1922. I estimated the number of nesting birds this year at about six hundred. In order to get a definite record of the number we took several photographs from the top of a little cliff, quite close to the island on which the birds nest, and on one photograph about five hundred and forty birds can be counted with the aid of a lens. About a hundred and eighty are shown as minute white specks on the hillside beyond the loch, and these with the birds sitting on the island and those flying over it make up roughly the number that I give. An enlarged photograph shows the birds rather more clearly. This nesting-colony is well adapted for a “count” of this kind, as the birds can be photographed from a slight elevation at a suitable distance. In counting from these photographs the possible margin of error on either side may be about twenty or thirty birds, as the island on which the birds nest is quite small, and estimates have to be made of little bunches of birds; but there can be no doubt that under such conditions this method of counting by the aid of photography gives valuable results. It seems possible that in a few years this place may be abandoned by the Gulls. The loch is shallow, and the islands on which the birds have nested are gradually being linked up with the mainland, according to my recollection of what the place was like a few years ago. For obvious reasons increased vegetation will tend to come on the edges of such islands, and the actual nesting material carried there over a period of years will help to make the islands larger and firmer.—(Rev.) J. M. McWilliam, Glasgow.
NOTES

Kittiwakes nesting in Midlothian.—I have to report the discovery of a colony of Kittiwakes nesting in a part of the Forth area where, so far as I am aware, the birds have not been known to nest before and where, certainly, one would never suspect their presence as a nesting species. The Midlothian coast-line possesses no rocks or cliffs of any kind and is so much built upon and frequented that one hardly expects to find as a resident a bird so devoted for its home to inaccessible cliffs and haunts remote from men. It came, therefore, as a great surprise to me to find recently no less than three of its nests occupying an artificial site on the coast-line mentioned.

The nests are on a ledge on the top of a vertical sea-wall. This ledge is less than a foot wide and about twenty feet above high-tide mark. The nests are not easily seen from the land and, fortunately, are somewhat difficult of access. As I do not wish to encourage egg-collectors, I refrain from giving any further particulars regarding the nests, though I am glad to think that, should the birds return next year, the difficulty of getting at the nests is likely to be their best protection.

Not only have the birds made use of an artificial site, but the nesting material has been taken from artificial supplies near by. Although I observed the nests some time ago, I was only able to get to fairly close range of them on the 18th of July, when I found that only one nest was then occupied. This contained two young, and these, with one parent (presumably the mother) all standing on the nest, made a very charming picture indeed. The bird standing beside her young allowed an extremely close approach, and Mr P. W. G. Gunn, who accompanied me on my visit to the nests, was able to get a photograph of the birds with little difficulty. Shortly after the photograph was taken, the other parent approached the nest with food for his offspring in his bill, showing himself to be as tame almost as his mate at the nest.—W. M. McIntyre, Edinburgh.

The Kittiwake’s propensity for nesting on the rocky ledges of high precipitous cliffs—such as are found on the Bass Rock and the Isle of May—distinguishes it from other members of the gull family. After the breeding season is over, birds occasionally visit the various harbours and river mouths of the Forth. In the Royal Scottish Museum there is a young male which was got in December
1872 as far up the estuary as Kincardine-on-Forth, but no one would have looked for the Kittiwake as a breeding species on such an unsuitable coast-line as the Midlothian shore.

I congratulate Mr McIntyre on his interesting discovery, and I have to thank him and Mr Gunn for giving me an opportunity of visiting the nesting site, where I had the pleasure of seeing the birds on the nests and over a dozen adult Kittiwakes standing on an adjoining ledge.—J. Kirke Nash, Edinburgh.

Rose-coloured Starling in Iona.—On 11th July last I had the pleasure of watching a Rosy Pastor associating with a small flock of Starlings in the grounds of the Columba Hotel, Iona. Its shape, flight and actions were almost identical with those of its companions. The colour of the bird was greyish mixed slightly with pink, instead of the rosy pink of the adult male. The suggestion of a crest was shown in some elongation of the occipital feathers; the legs were yellowish and the bill yellow at the tip.—C. Cairnie, Seafield, Largs.

Summer Golden-Eye in Midlothian.—On 28th June we were interested to see a pair of Golden-Eyes on a loch in Midlothian. The drake, which was in fine plumage, was subsequently seen two days later by Mr Mark Kerr. This is surely an unusual date for the south of Scotland.—George Waterston and Ronald Rankine, Edinburgh.

[The Golden-Eye usually arrives in Britain from the middle of September to the middle of November. Records exist, however, of its presence in all months of the year.—Eds.]

Manx Shearwaters in the Firth of Forth.—On 8th July, while in a boat off Royston, near Granton, we saw eight Manx Shearwaters. This is surely an early date for these birds, as they are not generally seen until August, off North Berwick.—C. G. Connell, P. W. G. Gunn, and George Waterston, Edinburgh.
The Great Crested Grebe Enquiry, 1931.—The greater part of the August number of *British Birds* (August 1932, pp. 64-92) is occupied by a Report on the Enquiry instituted in 1931 by the authors, T. H. Harrisson and P. A. D. Hollom, which had for its main object the compilation of a census of breeding Great Crested Grebes in England and Wales (see *Scot. Nat.*, 1931, pp. 41-43). The result appears to have been eminently satisfactory. The number of persons who responded to the appeal was no less than 1300, and the information obtained from them has been supplemented by an examination of the whole literature of the subject. About one thousand lakes were visited and reported upon during the summer, and in the Report these are carefully listed and arranged alphabetically under counties, with the number of pairs on each and the year of colonisation. The information for Scotland is merely summarised in the present Report, but a separate article is promised later, when the Scottish data will be given in detail.

Whooper Swan in Moray Area.—F. C. R. Jourdain, in *British Birds* for August 1932 (p. 98), reports the occurrence of this species, one bird being seen close to the shore along the road which runs from Dingwall to Alness. The date was 3rd June 1932, and the bird was proved to fly, after being disturbed, at just over 30 miles per hour.

Goosander Breeding in Selkirkshire.—A female Goosander was seen swimming on St Mary's Loch on 25th May 1932, accompanied by six young a few days old.—N. Tracy, *British Birds*, August 1932, p. 99.

Grey Plover in Sutherland.—In *British Birds* (August 1932, p. 99) it is reported that a party of five birds of this species was seen by E. Cohen at Dornoch on 8th July 1932. “Four were in winter dress and one had the black of the summer plumage.”

A Great Cheshire Starling Roost in 1930.—Ornithologists interested in the habits of the Starling should consult a paper bearing this title in the *North Western Naturalist*, vol. vii., No. 1 (March 1932), pp. 10-18. The author is A. W. Boyd, M.C., M.A. A map is given, showing the position of the various roosts and the area occupied by the flocks during the day.
Sex-limited Inheritance in Butterflies.—By E. A. Cockayne, D.M., F.R.C.P., Entomologist, August 1932, pp. 169-176. This paper, the full title of which is "A New Explanation of the Genetics of Sex-limited Inheritance in Butterflies," should not be overlooked by students of heredity.


Food of the Sea Trout.—A memoir of considerable importance, bearing the title "A Second Investigation of the Food of the Sea Trout (Salmo trutta)," has recently been published by the Fishery Board for Scotland. The authors are Chas. H. O’Donoghue, D.Sc., and Elizabeth M. Boyd, B.Sc., both of the Department of Zoology, University of Edinburgh. The report forming this memoir is based upon the examination of the contents of the alimentary canals of some 239 individuals. The material was supplied from four localities, viz., the Firth of Tay below Perth, two localities in the Solway Firth, and the River Bellart in the Isle of Mull. The results are tabulated in detail, giving particulars of the distribution of three parasitic worms, the colour of tract contents, and the food content and position. A graph shows that there is no relationship between the length of the fish or its weight and the number of pyloric caeca, in the case of Sea Trout from Carlisle.

Age and Sex in the Winter Distribution of Birds.—That there is a relation between age and sex and the winter distribution of birds is the theme of a short paper by Noble Rollin in The Naturalist for June (pp. 195-196). The conclusion arrived at by the author is that "there is a tendency for the females to winter further from the breeding grounds than the males, and for the young to winter further from the breeding range than the old birds." This paper is suggestive, but a much larger mass of records is needed before a safe conclusion can be reached.

Incubation-Periods of Gulls.—From a paper in British Birds by R. M. Lockley (April 1932, pp. 310-313) we learn that the incubation-period of the British Lesser Black-backed Gull is "not less than, and probably constant at, 26 days." The Great Black-backed Gull has a period of "26-27 days," while the average period of the Herring-Gull is stated to be 26.4 days.
A New British Beetle found in Midlothian.—In the Ent. Mo. Mag. for June 1932 (p. 128) H. Donisthorpe describes a new British species of Staphylinid Beetle from specimens taken on 27th November 1904 in frozen moss at Cobinshaw Reservoir, Midlothian. The beetle is Oxypoda procerula Mann., belongs to the subgenus Disochara, and has for a synonym obscura Kr.

Further Notes on Insects from St Kilda in 1931.—David Lack, in the June number of the Ent. Mo. Mag. (pp. 139-144) continues his interesting notes on the insect-fauna of St Kilda. The present instalment includes an account of the Thysanura, Hemiptera, Trichoptera, Lepidoptera, Hymenoptera, and a supplement to the Coleoptera.

Barnacle-Geese in N.W. Sutherland.—In British Birds for June 1932 (pp. 25-26) R. J. Buxton records a remarkable visitation of Barnacle-Geese to the Scourie district in N.W. Sutherland in January last. They arrived in hundreds on the Badcall and Handa Islands and spread over parts of the mainland, leaving again about the middle of February, except for a few stragglers which remained until the end of March. Mr Ross, a correspondent of the author's and a resident in Scourie, stated that he had known this species to come to the Badcall Islands during winter and spring for about twelve years.

Habits of Clothes- and House-Moths.—An interesting article by Frederick Laing, F.E.S., of the British Museum, appears in the Ent. Mo. Mag. for April 1932 (pp. 77-80). It deals with certain species of small moths which occur regularly in houses, and summarises what is known of their feeding habits and certain points in their life-histories. Borkhausenia pseudospretella receives the most attention in this important paper, and information is requested from other entomologists regarding the habits of Trichophaga tapetzella and Endrosis lactella, two other well-known inmates of houses.

The Dale Collection of British Coleoptera.—Our northern Coleopterists should not overlook the long paper by Commander J. J. Walker which was concluded in the May number of the Ent. Mo. Mag. The Dale collection contained a certain amount of Scottish material, and the various species are here recorded in detail.
BOOK NOTICES

Plants: What they are and what they do. By A. C. Seward, F.R.S., Sc.D., D.Sc., LL.D. Cambridge: the University Press, 141 pages, 31 text-figures and frontispiece. Price 4s. 6d. net. In a series of a dozen chapters Professor Seward has cleverly contrived to give a complete up-to-date account of the phenomena associated with the life of plants in their various phases. It is inevitable that in a book of limited dimensions the subject of vegetable physiology must be dealt with very concisely, but in spite of this restriction the author has managed to keep his pages very readable. The language is as simple as possible, free from technical terms, and yet most instructive. The type is clear, the illustrations simple and apt, while the price is well within the reach of the layman for whom the book is intended.

Wild Flowers through the Seasons. By Shirley Hibberd. New and Revised Edition, edited by A. J. Macself. London: W. H. and L. Collingridge Ltd., 1931, 132 pages, 15 full-page plates and 18 text illustrations. Price 2s. 6d. net. This is a readable and attractive little volume, divided into ten chapters, in which the wild flowers are described month by month in non-technical language. The illustrations are, on the whole, good, but some are rather crude. The allocation of the various species to their respective months may be correct enough for the south of England, but for Scottish readers we should be inclined to move the chapter-headings one month back, to accord with our later seasons. Many of the plants alluded to are of extreme rarity and not likely to be found by the untrained nature lover. If the space taken up in describing these rarities had been devoted to a little more scientific detail applied to our commoner plants, we venture to think the book would have been more useful. But the volume is charmingly written and published at a price within the reach of all. It is, as it professes to be, “a companionable book for the wayside and woodland.”
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**PUBLISHERS’ NOTE.**

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EVERY NATURALIST SHOULD READ

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

Studies of Lanarkshire Birds.
A Remarkable Whale Invasion.
The Natural History of Floods.
List of Birds of the Forth Area.
Scarcity of the Corncrake.
The Rookeries of Edinburgh and Midlothian.
Remarkable Decrease of the House-Sparrow.
Natural History as a Profession.
The History of the Whale and Seal Fisheries of the Port of Aberdeen.
Instinct and Intelligence in Insects.
The Gannets of the Bass Rock—Estimated Numbers and a Count.
Annual Reports on Scottish Ornithology, including Migration.
Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.
Animal Welfare.
The Menace of the Grey Squirrel.
The Varying Length of Lark Song.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.
We now come to a number of seasons concerning which, thanks to Scoresby, it is possible to quote a few facts.

The season of 1803 was an open or ordinary one. "So early as the middle of April, there was no obstruction to navigation to the 81st degree of north latitude, on a meridian of about 5 east. The weather was tempestuous; the most prevailing winds from the north-east . . . the fishery on the whole was unsuccessful." Scoresby does not say so, but there seems to have been a strong south-westerly drift: the Henrietta, while beset, drifted with the ice 420 miles S.S.W. $\frac{1}{2}$ W. in the course of seven weeks. The edge of the ice probably lay far west; at the same time, owing to the prevalence of swell, much of the ice was probably in the form of pack. In seasons of this sort few whales were usually caught. The late Captain Robertson says: "When there is good [i.e. unbroken] ice in east longitude we have the best chance of making a [good] fishing; and when we cannot see Spitsbergen from the edge of the ice in lat. 79° in May it is a poor look-out"; and again he
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says: "When we get a tight pack all the way from lat. 77° to lat. 80° very few whales are caught, and when (in lat. 79°) the margin of the ice is in west longitude it is nearly always hopeless."* In this unfavourable season, however, the Hope returned with 84 tons—the produce of seven whales.

The season of 1806 was a close one: "The barrier of ice was so uncommonly extensive, and continued so long, that not more than three or four ships accomplished a passage through it. This barrier extended from lat. 75° 20' to lat. 79° 30', being 250 miles across. Beyond it (and between it and the heavy polar ice) was 'an open sea' (or 'water') 30 to 50 miles north and south." As in 1881 (see infra) there was probably, at any rate for a time, little or no south-westerly drift. The Resolution (Scoresby senior), one of the few ships to get through the "south-east pack" and reach the heavy or "whaling ice," returned with 216 tons—the produce of twenty-four whales. The Hope, presumably not one of those that proceeded northward, but one of those that remained behind, returned on 30th June with 85 tons—the produce of six whales. The Enterprise, which probably got beset trying to force her way north, returned with only 18 tons—the produce of half a whale (shared doubtless with another ship) and 760 seals.

The season of 1807 was another close one. "The margin of the ice was, however, pervious to a considerable extent, wherein many large whales being seen some ships made a successful fishing in lat. 75° or 76°; other ships which persevered to the northward, and passed the barrier, likewise succeeded tolerably well." The Resolution, Scoresby senior, one of the former, returned with 213 tons—the produce of thirteen large whales; the Hope, presumably another, returned on 11th June with 159 tons—the produce of nine large whales; while the Enterprise, presumably one of the latter, returned on 6th July with 172 tons—the produce of thirty-four small whales.

Scoresby unfortunately says very little about the whale

fishery of lat. 76°; the whales caught were mostly of large size and the fishery, which commenced in April, seems to have been confined to close seasons, and to have been often prosecuted in east longitude, outside the proper ice in a swell. Perhaps in lat. 76°, in close seasons, the sea is very rich in the creatures on which the whales feed, and perhaps as the season advances, this rich water drifts west? In the eighteen seventies and eighties, according to my father's and uncle's log-books, Greenland whales were never seen in lat. 76°. What became of them? Were they scared away, or had this tribe or section of them become extinct?

The season of 1811 was still another close one.* "Though the most arduous efforts were made by the fishers for four or five weeks few ships passed the barrier before the 26th of May. Whales occurred in great plenty (in lat. 78° and 79°) and the fishery was generally good. All the four Peterhead ships appeared to have forced their way north through the pack and taken toll of the young whales. They returned in July with 752 tons—the produce of 112 whales. How many of them were "sucking fish" or calves and how many were under "size," i.e., with "whale-bone" less than 6 feet in length, the statistics in my possession unfortunately do not say.

The season of 1813 was, like that of 1803, an open one. "So early as the beginning or middle of April, many ships advanced beyond the 80th degree of latitude. The weather was uncommonly tempestuous. In consequence of the prevalence of easterly winds (and swell) the ice was generally packed and the fishery bad. Scarcely more than three or four ships obtained full cargoes and several returned without a single whale." Notwithstanding what Scoresby says the six Peterhead ships at the fishing returned with 722 tons—the produce of sixty whales.

An open season followed in 1814, when the ice was not packed, as in the preceding year, but was generally open and navigable. Whales occurred in great numbers in the open water (? outside the ice); the weather was favourable and

* Scoresby's 1811 log-book is preserved in the Whitby Museum.
the fishery proved very successful. After the middle of May, the wind prevailed from the southern and western quarters, whereby the main western ice was still more opened and drifted up to the very shores of Spitsbergen. Among this ice many whales were seen and caught at a very late season. The year 1814 was a disastrous one for the whales; hundreds of the adolescent animals were killed and much harm done to the species and to the fishery. The seventy-six British ships at the fishing returned with 12,132 tons of oil—the produce of 1437 whales, while the seven Peterhead ships at it returned with 1390 tons—the produce of 163 whales. The Resolution headed the list with 299 tons—the produce of forty-four whales. Her record catch is stated to have consisted mostly of small whales below "size," i.e., with whale-bone less than 6 feet in length, caught in latitude 79°. She was back at Peterhead on 11th July.

Another open season occurred in 1817; there was a strong south-westerly drift, and the edge of the ice lay unusually far west. "From the too great extent of the sea open to the whales and the wide dispersion of them, the fishery was in general very bad."* "The only general indication this season," says Scoresby, "of the least use to the fisher (to assist him in the choice of a situation in which to look for whales), was the colour of the sea. In places where the water was transparent and blue or greenish blue, it was in vain to look for whales; but on the other hand all the whales which were seen throughout the season, or at least nine-tenths of them occurred in a certain stream of cloudy water of a deep olive green colour, which extended, with some interruption, from lat. 80° N. long. 2° or 3° east to lat. 74° long. 5° or 10° west. In 1817 the ten Peterhead

* In 1817 four Greenland whalers, the Leviathan, Dauntless, Fortitude and Lion, were wrecked in the Arctic ice in lat. 78° long. 3° W. during a severe storm on 5th May. One of these vessels, the Dauntless, after filling with water, was floated in an upright position and was drifted along with the ice towards the south-west. On the 18th of May this vessel was discovered still floating in lat. 75° 28' long. 10° W. and before the end of May she was seen in lat. 73° 30' (i and proportionately far west).
ships at the fishing returned with 717 tons—the produce of sixty-four whales."

Some of the whales killed outside the ice in 1817 may have been Atlantic, not Greenland whales. Scoresby says: "The general conduct of whales, after being struck, was in this season peculiar. Instead of immediately descending to the depth of near a mile (like Greenland whales) they frequently never went down at all, and those which did descend after receiving the harpoon, seldom proceeded more than 200 or 300 yards below the surface." In his 1817 log-book, under date 1st June (lat. 77°), Scoresby senior says: "The fish we have seen this last week was all in the open water and not inclined to approach the ice when chased; they ran first one way (and then another), and like a fox returned to the same ground, which water was very dark and abounded in shrimps, animalcules, etc." Concerning one of 9-feet bone killed the following day he made the unusual remark, "whale-bone light and small at the ends." A whale struck by the Royal Bounty of Leith on 28th May in lat. 77° took, for a Greenland whale, an unusual length of time to kill. At the end of thirty-six hours it was still able to tow the Royal Bounty with her sails aback and all her boats against a "moderately brisk breeze" with the velocity "of at least 1 1/2 to 2 knots." Neither ice nor land was in sight at the time.

Before continuing it is necessary to refer to the important fact that in the Greenland Sea, about 1820, the once numerous whales were becoming scarce and the once productive fishery very precarious. As my father, at a later date, says:* "The scarcity of whales now is not so much owing to the numbers killed in Greenland and Davis Straits, although there has no doubt been a vast number of them killed from first to last. It is more owing to the way the earlier whale fishers conducted their business in killing off the young whales before they were old enough to reproduce. In this way a large number of the old ones died out and no young ones were left to [grow up] and take their place."

The following figures show how the whale fishing of the Greenland Sea declined:

*Average Number of Whales per Ship per Voyage.*

<table>
<thead>
<tr>
<th>Voyages.</th>
<th>Whales.</th>
<th>Tons of Oil.</th>
</tr>
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<tbody>
<tr>
<td>1800-1809</td>
<td>. .</td>
<td>16-8</td>
</tr>
<tr>
<td>1810-1819</td>
<td>. .</td>
<td>11-3</td>
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<tr>
<td>1820-1829</td>
<td>. .</td>
<td>7-2</td>
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<tr>
<td>1807-1818</td>
<td>. .</td>
<td>68</td>
</tr>
<tr>
<td>1840-1851</td>
<td>. .</td>
<td>92</td>
</tr>
</tbody>
</table>

* Average per ship per voyage.

It is also necessary to refer to the important changes that were taking place about the same time in the manner of prosecuting the fishing. In Scoresby’s time, in close seasons, whales were often killed in April and May in lat. 75½° and 76°, but not at a later date. Again, in his time in open seasons, whales were sometimes killed in the open sea between the ice and the land, but at a later date the fishing was confined to the ice or to the immediate vicinity of the ice. At a still earlier date, as is well known, the whales were captured in the bays of Spitsbergen and Jan Mayen, but long before Scoresby’s time their pursuit in these situations was abandoned. Thus it appears that part after part of the Greenland Sea, in which their food is probably as abundant as ever, were permanently deserted by the whales. Were they driven to seek shelter amongst the ice; or were there originally tribes of them, some of which were exterminated as Dr Nansen suggests †; or was more than one species involved, and were the whales killed in the deserted places Atlantic whales not Greenland whales?

† Nansen, *Hunting and Adventure in the Arctic*, p. 226.

*(To be continued.)*
NOTES ON SOME WHALES RECENTLY STRANDED ON THE SCOTTISH COAST.

By A. C. Stephen, B.Sc.

While it is perhaps unwise to lay too much stress on the yearly incidence of stranded whales as an indication of the annual abundance of these animals in our waters, they seem to have been about in unusual numbers during the present year, if one may judge by the numbers of stranded specimens reported to the Royal Scottish Museum during the past few years. In 1929, for example, only three specimens were reported as stranded; in 1930 none; in 1931 four; while up to mid-October of the present year ten specimens referable to eight species have already been reported.

The species so far reported during 1932 are:

<table>
<thead>
<tr>
<th>Species</th>
<th>Month</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Dolphin (2)</td>
<td>January</td>
<td>Orkney</td>
</tr>
<tr>
<td>Killer Whale</td>
<td>March</td>
<td>Alloa</td>
</tr>
<tr>
<td>Sowerby's Whale</td>
<td>July</td>
<td>Inverness</td>
</tr>
<tr>
<td>Lesser Rorqual</td>
<td>August</td>
<td>St Andrews</td>
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<tr>
<td>Bottle-nosed Whale</td>
<td>&quot;</td>
<td>Prestonpans</td>
</tr>
<tr>
<td>Lesser Rorqual</td>
<td>&quot;</td>
<td>Peterhead</td>
</tr>
<tr>
<td>Cuvier's Whale</td>
<td>&quot;</td>
<td>Shetland</td>
</tr>
<tr>
<td>White-beaked Dolphin</td>
<td>September</td>
<td>Dumfries</td>
</tr>
<tr>
<td>White Whale</td>
<td>October</td>
<td>Stirling</td>
</tr>
</tbody>
</table>

Particulars of the first five specimens have already been published in the Scottish Naturalist for the current year. The particulars of the other five specimens are as follows:

LESSEER RORQUAL (*Balaenoptera acutorostrata*).

A male, 19 feet in length, was caught in the herring-nets about twelve miles north-east from Peterhead on the 7th August 1932 and landed at Peterhead, where it was exhibited for a time.

WHITE-BEAKED DOLPHIN (*Lagenorhynchus albirostris*).

On the 1st of September a specially large specimen, 10 feet in length, was washed ashore at Ruthwell near
Dumfries. There were twenty-six teeth in the right jaw and twenty-seven in the left, the three front teeth, as is usually the case, being small and concealed below the gum.

**BOTTLE-NOSED WHALE** (*Hyperoodon rostratus*).

Fig. 1 (Teeth).

This animal was stranded at Prestonpans in the Firth of Forth on the 16th of August. The males of this species attain a length of about 30 feet, and the females 24 feet. The length of the above specimen was only 17 feet so that it was a young animal. As a rule the teeth are concealed
NOTES ON WHALES STRANDED ON SCOTTISH COAST

below the gum in females and young males. In this specimen the teeth were concealed below the gum, and as no observations were made on the carcase the sex must be left in doubt.

The jaws were secured for the Museum and, when cleaned, showed, as is usually the case, a pair of teeth at the tip of each jaw. On the right side the first tooth had a length of 29 mm. (about \( \frac{13}{8} \) inches) with a diameter of 7 mm. in the middle of the tooth and 8 mm. at the base. The second tooth was only 8 mm. in length and had a diameter of only 1 mm. On the left side the first tooth had a length of 26 mm. (about \( \frac{17}{16} \) inches) with a diameter of 7 mm. in the middle of the tooth and 8 mm. at the base. The second tooth was much larger than the corresponding right one, having a length of 15 mm. and a diameter of 3 mm.

Both the large teeth were open at the base and had a large pulp cavity.Towards the points they were fairly solid, but at the base were thin and had irregular edges. In both cases there was a slight tendency to spread at the base. There was no sign of a pulp cavity in the small right tooth, but there was quite a large and distinct one in the left small tooth.

Cuvier's Whale (\textit{Ziphius cavirostris}). Fig. 2 (Teeth).

A very interesting specimen of this whale was stranded on the reefs about one mile east of Huxter, Sandness, on the west coast of Shetland on the 27th August. The specimen measured 28 feet in length, which is rather above the usual size. The lower jaws were secured for the Museum, and contained as usual the single pair of teeth at the tip of each jaw. These teeth were somewhat peculiar. The right tooth had a length of 34 mm. (about \( \frac{5}{16} \) inches). The diameter in the line of the jaw measured 13 mm. and across the jaws 12 mm. The left tooth had a length of 35 mm. (\( \frac{13}{8} \) inches). The diameter in the line of the jaw was 15 mm. and across the jaw 13 mm.

In both teeth the pulp cavity was completely filled up and the teeth appeared quite solid to outward appearance. The surface was rough with a number of longitudinal
grooves. In shape they resemble the teeth figured by True.* The tips are slightly worn and thus had projected slightly above the gum. As the animal was undoubtedly a female, this is unusual, since in this sex the teeth are concealed below the gum. Judging by the size, however, the animal was very old and this peculiarity in the teeth is possibly a character due to age.

No special interest is attached to the stranding of any of the specimens since all the above species have been already commonly recorded from our waters. The Lesser Rorqual and the White-beaked Dolphin are amongst the commonest of the stranded species and have occurred all round our shores. Cuvier's Whale is also not uncommonly stranded but is an Atlantic species, the records of stranding being confined to the west coast or to the Orkney and Shetland Islands. The Bottle-nosed Whale has occurred evenly round the coast, and in Scotland appears during the summer months, May to August.

**White Whale (Delphinapterus leucas).**

An unusual capture was made at Stirling on the 13th October, when an animal, which had frequented the River Forth near the Cruive Dykes, Kildean, during the previous week, was shot and brought ashore. This proved to be a young male White Whale 8 feet 6 1/2 inches in length. The colour all over was a uniform mouse-grey, and the tips of some of the teeth could just be felt above the gum.

The adult length is said to be from 16 to 20 feet. When young, the colour is dark brown-grey, becoming mottled later, then yellow, before the pure white adult condition is reached at an age of four or five years.

The White Whale is an arctic species which only rarely visits British waters. Millais, in his book on the Mammals of Great Britain and Ireland, gives only seven Scottish records ranging from 1793 to 1884, since when there seems

to be no other, although one specimen was taken off the Tyne in 1903 and another off Scarborough in 1905. Only once previously has the animal been recorded from the Firth of Forth, where a specimen, still to be seen on exhibition in the Royal Scottish Museum, was taken in 1815.

Bell, in his *History of British Quadrupeds*, states that, in its native haunts, the animal is in the habit of ascending large rivers. This probably accounts for the unusual situation in which the animal was found, since the river at Kildean, although tidal, is freshwater.

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**NOTES**

_Iceland Gull in Fife in Summer._—At the East Neuk of Fife on 7th July 1932 I saw an immature Iceland Gull standing on a rock among some Herring Gulls. In view of the unusual time of year for the occurrence of this species, it seems worth recording.—_Evelyn V. Baxter, Largo._

_Occurrences of Basking Sharks._—When we were at Rodel, Harris, on the 1st and 2nd June 1932 we watched Basking Sharks, a not uncommon species in the Sound of Harris at that season of the year. On 10th September we again saw the species, but this time in the Firth of Forth just east of the Isle of May. On both occasions we saw the sharks very well. At Rodel we watched one in a calm sea quite close below us as we sat on the rocks, and made the following notes on the spot. It was, we estimated, 12 to 14 feet long; one of the hotel boatmen said 20 feet. The creature itself was usually awash, when its very large, wobbly, dorsal fin was always out of the water as was the top part of the tail fin. It seldom dived, and when it did remained only a short time under the water. It propelled itself with very strong tail beats from side to side and sometimes went straight through the water, at other times twisting itself in the most curious way. This is the first time we have seen the Basking Shark in the Firth of Forth. Porpoises have been very numerous round the Isle of May during our stay this autumn and we have several times seen Dolphins.—_Leonora Jeffrey Rintoul and Evelyn V. Baxter, Largo._
The Black-necked Grebe in Scotland.—A record of the Black-necked Grebe (*Podiceps nigricollis*) from the north is of interest in view of its recent introduction to the list of breeding species in Scotland. A friend of mine, who had previous acquaintance with the birds, and whom I know to be a first-rate ornithologist, observed three pairs of these grebes on Loch Lochy, Inverness-shire, in June 1931. In June of this year he again visited the locality but failed to see any sign of the birds. Since the Black-necked Grebe settled down on a Reservoir in Midlothian, comparatively few young birds have been reared. On 4th June of this year I found one of the nests containing two eggs. Both these eggs had been pierced and sucked. There was a Carrion Crow's nest containing five fully-fledged young not far away, but I have no doubt the blame was to be attached to the Black-headed Gulls, for within a radius of twenty yards from the Grebe's nest there would be a dozen nests of the gulls. Such a discovery suggests other tragedies of a like nature. The birds, so far as I know, have not been interfered with by egg-collectors.—William Serle, Junr., Duddingston.

Food of young Eider and (?) Gull.—It was suggested that I might send in for examination a young Eider which seems to be in quite an interesting plumage. From what one can feel, the crop should repay investigation. The bird was shot on Loch Sunart on 17th September.

I also enclose a pellet picked up on a hill above Loch Sunart: its two main constituents are so intriguing that I hope analysis may reveal some more. The hill is frequented by Gulls and also by Hooded Crows at all times.—Bruce Campbell, Edinburgh.

[The young Eider has been preserved as a skin for the Royal Scottish Museum collection. Its gullet was found to contain no fewer than ten specimens of the Common Whelk, *Buccinum undatum*, weighing three ounces in the aggregate, and measuring from 1\(\frac{1}{4}\) to 2\(\frac{1}{2}\) inches in length.

The pellet, probably that of a Gull, consisted of a large number of fruits of the Rowan (or Mountain Ash), together with a few "opercula" of some undetermined species of Mollusc.—Eds.]

Hoopoe in Orkney.—I send you the remains of a Hoopoe which was caught by a cat in Birsay, Orkney, on the 23rd September. It is a rare straggler to these parts and this record might be worth a note in your publication.—James G. Marwick, Stromness.

[The skeleton of this interesting bird, though somewhat damaged, has been preserved for the Royal Scottish Museum.—Eds.]
The articles on the "Changes in the Distribution of British Geese" in recent issues of the Scottish Naturalist are most interesting to me. During the last thirty years there has been a considerable change, numerically at any rate, in both Grey and Black Geese in North Uist. My experience has been confined to the district of Vallay on the north side of the island for the most part, but I have a general idea of the distribution of geese in other parts of the mainland of North Uist. From 1900 on till a year or two after the War, Grey Lag were as numerous as ever they were, both the resident population and the migratory geese. Bernicle Geese also arrived in their usual numbers in November and remained till the first day in May; White-Fronted were seen now and again in small numbers; and Brent Geese were winter visitors but never plentiful. Ten years ago this all changed. In my small district the home population decreased from say about 200 Grey Lag to 40 birds, and what arrived and stayed during migration were negligible.* The Bernicle have almost ceased visiting my district. This last winter I think I saw only three lots on three occasions, varying from 15 to 25 geese. In former years it was no uncommon thing to see as many as 500 Bernicle feeding together in Vallay in the winter and early spring. There is no doubt that both these geese are scarcer all over the island, and this district is not the exception. However, I have another and better tale to tell.

In August of this year (1932) I counted over a hundred Grey Lag in one flock, and this flock is still in the vicinity of Vallay and paying periodical visits to the corn there.

* Another 200 Grey Lag used to arrive near the end of September and join forces with the native geese.
This flock represents home birds and not migrants and is about three times the size of those seen in recent years. It will be interesting to note what the migration brings forth. What is the reason for this fluctuation in numbers? It may be that poaching has had something to do with it. It may also be due to the increase of vermin such as Hoodie Crows and Great Black-Backed Gulls. There is no doubt that hoodies and gulls of all descriptions are far too numerous here at present. In the nesting season again eggs may be stolen as well as geese themselves, as I understand at the moulting time there is a period when they cannot fly. Be this as it may, the fact is then that a very distinct decrease in numbers had occurred until this year. Is it possible that fresh breeding ground has been discovered and that at no great distance? We all know that St Kilda has been evacuated—from where I write it lies only 38 miles distant. The island is suitable for nesting purposes and is not too far away from feeding grounds such as the Uists provide. Grey Lag prefer oats to barley and duck prefer barley to oats. If my supposition is correct there would be no more suitable sanctuary than St Kilda—and let us hope that the wily birds have discovered this fact for themselves.

The Bernicle, as already stated, have become comparatively scarce in the last ten years. It would be interesting to know how they compare in other resorts in the British Isles. One factor which may be of possible account here is the disturbance in the winter owing to the trapping of rabbits. On my own ground this may be the case, as since trapping has been resorted to geese have been much more scarce.

I remember some years ago we had a considerable spell of frost here; it lasted for about ten days. The Grey Lag did not seem to be disturbed much by it, but the Bernicle felt it badly. There were then some 500 of them about and they became very thin and emaciated. They could fly only a short distance and were not fair game for the shooter. The Grey Lag, on the other hand, could take care of themselves. There is less cropping done in the islands
now, considerably less corn grown than before the War, and during the War years. This should be taken into account, and also the fact that there is hardly any out-feeding of cattle in the winter, as when we had a pedigree herd of Highland cattle here. In hard weather some straw was fed to them out on the "machair," which of course attracted the geese. A few years ago Mr E. C. Hitchcock of the Lochmaddy Hotel shot two Bean Geese. I had previously seen small parties of these birds but had never managed to procure a specimen. In 1919 I shot one Pink-footed Goose out of a small bunch of twelve. This bird I sent to an Edinburgh bird-stuffer to have made into a skin, but it reached him in too bad a condition for skinning purposes. It is a pity that the head and legs at least had not been preserved, for this is the only specimen to my knowledge obtained in the islands, or at least in this one.

NOTES

White-winged Black Tern in Scotland.—Writing in the Nature Column of The Scotsman in July under the initials D. G. H., the writer stated that he saw among a large number of Common Terns, a specimen of the White-winged Black Tern (Chlidonias leucopterus = Sterna leucoptera), which he rightly stated to be the first record of the species for Scotland.

I wrote to him for locality to receive a letter from his sister to the effect that her brother was found dead at his desk on 29th July, with my letter, which he was just about to answer, before him. The late Mr Douglas Gordon Hunter evidently saw the bird in mid-July near Arbroath, and I have little doubt but that his identification was correct. The Terns were on passage and not on a breeding colony. In The Practical Handbook, it is given as a rare vagrant, mostly April and May, sometimes in small flocks, three in autumn.

Although there are a number of records from the south and south-eastern counties of England, there are only three from the north, viz., one from Durham and two from Yorkshire. There are also six records of the species in Ireland, but no record for Scotland.—H. W. Robinson, M.B.O.U., A.M.A.O.U., etc., Lancaster.
Unusual Situation of a Dipper's Nest.—I read with interest the article by Mr Robert J. Younger under this heading, in the September-October number of the Scottish Naturalist. Mr Younger mentions that he is unable to find any record of a nest in a similar position; if, however, page 41 of the book Our Bird Friends, by the late Richard Kearton, F.Z.S., M.B.O.U., is turned up, a photograph of a Dipper's nest in a similar situation will be found, accompanied by a description on page 46.

I myself have seen the remains of a Dipper's nest in a tree overhanging a small stream near Penicuik, so the situation might not be so unusual, in spite of the proximity of more suitable nesting places. Apropos of this subject, the accompanying photograph illustrates a Dipper's nest which we found last year in an even more curious situation, namely, underneath Flotterstone Bridge on the West Linton road. In spite of the constant traffic of heavy buses and motor cars overhead, this bird evidently preferred to nest in this extraordinary position; more than that, the pair had nested here for two years, as on the right of the completed nest will be seen the remains of the previous year's nest. Unfortunately the new nest was robbed before incubation was much advanced, and we were unable to obtain a series of photographs of the birds feeding their young.—Vernon D. van Someren, Edinburgh.

[We regret that we cannot reproduce the photograph.—Eds.]

Dipper Nesting in Tree.—I know a tree which overhangs a stream here in a hole in which there is a Dipper's nest almost every year. The hole is about seven feet above the water. Here, too, the banks of the stream abound with suitable nesting sites.—T. Thornton Mackeith, Kilmacolm.

Icterine Warbler in Forth.—During our fortnight on the Isle of May this autumn, migrants were not very plentiful. The most interesting was an Icterine Warbler which appeared on 9th September after a few hours of east wind and fog. This is the first record of this species for the area.

A Black Redstart turned up on 8th September and stayed till the 11th September.

Song-Thrushes bred on the island this year, apparently one pair which had had two broods. The youngest brood was only just beginning to fly, the older one was busy grappling with the Helix aspersa which are common on the island. We found many heaps of smashed shells. On the way up the Forth on 15th September we watched for some time a Great Shearwater.—Evelyn V. Baxter and Leonora Jeffrey Rintoul, Largo.
CHANGES IN THE DISTRIBUTION OF BRITISH GREY GEESE.

By John Berry.

The recent papers on Grey Goose distribution in the SCOTTISH NATURALIST have been of the greatest fascination both to the ornithologist and to the wild-fowler, and personally I await any further information on this subject with much interest.

While I agree with Mr Smalley that changes in local conditions of crop and resting ground may have a very great bearing upon the species of goose frequenting any particular district, I think that the whole question of the colonisation of a new area by a particular species is a far wider and deeper problem than can ever be solved by a detailed topographical survey of a single neighbourhood.

Certainly geese have particular preferences in the matter of food, but my own experience is that they are far more inclined to change their diet than their district, and they may even acquire a predilection for some entirely new diet, as is shown by the Pink-footed for a potato field. During the last few seasons in my own district, near the mouth of the Tay, large areas of arable land have been turned into rough pasture for stock, but the Pink-footed were, last winter, more numerous than ever, and fed almost exclusively on the rough grass along with the cattle, a proceeding of which, only a few years ago, I should have heard with incredulity.

I had a surprising example of geese taking a new food this spring. While visiting the Lake of Menteith I saw every evening a cart drive through a bare field scattering turnips for the sheep; no sooner was the cart well away than a flock of geese which had been waiting out on the Lake, whence they could see the whole field well, came into the field and began to devour the turnips. On my return home I tried my flock of tame geese with turnip, but at first they would not touch it; however, I chopped it up with potatoes, so that they should get used to the taste without
noticing what they were eating, and now they are as keen for turnip as they are for potato.

Pink-footed Geese are moving their resting and feeding grounds from the estuary of the Fifeshire Eden to the upper banks in the Firth of Tay, but I think this is entirely due to the large aerodrome at Leuchars. A bombing range has been made out on the foreshore near the old goose-resting-ground, and the constant presence of aeroplanes over the feeding area has reduced the hours at which geese are to be found there to the early mornings and late evenings, when flying is not in progress; but the drone of an aeroplane anywhere near is the signal for the immediate departure of the geese, although the duck in that neighbourhood seem to pay little attention to the machines as long as they do not fly too low.

The large scale changes in the distribution of the geese is, I think, a vastly bigger problem than can ever be settled in this country, or in any of their other winter quarters alone; for if they are altering their winter haunts in Britain by a few hundred miles, they are altering their breeding grounds in the North by thousands.

This summer I was fortunately able to follow the Grey Lag to several of their breeding-grounds, first to Caithness and Sutherland, where they were regrettably scarce, then to the Färöres, and finally to the Westmann Islands and Iceland, where they were in unbelievable numbers on every suitable marsh.

As I mentioned in a note on Caithness birds in a previous issue (Scot. Nat., 1932, p. 40) the Grey Lag bred in that part of the country do not appear to migrate at all, and while owing to an exceptional gosling mortality this season, due apparently to sun-stroke, I was not able to test this by ringing them as I had hoped, there seems strong evidence that the goose population right along the north coast is to a great extent resident throughout the year.

In Iceland, where the Grey Lag has always been common, it is now increasing, helped, no doubt, by a strictly enforced close-time, the increase of grazing-land, and an intensified war on Arctic foxes; the remarkable climatic
changes of recent years being also presumably not without effect.

That Iceland is the source of most of the Grey Lag which winter in Britain is almost certain, and their increase in that country naturally results in an extension of area in this. For example, when shooting this spring on the County Down marshes in Ireland, I found that Grey Lag were abundant and true Bean very scarce, although last century Grey Lag were unknown there; yet I was told that there has been absolutely no alteration in local conditions to account for their amazingly rapid increase.

With regard to the puzzling question of the Bean Geese, I agree with Mr H. W. Robinson that the Yellow-bill is now probably the commonest form in this country, but he is mistaken in saying that all the Bean Geese seen by me on the Tay in 1931 were Yellow-bills, for I only saw 30 Yellow-bills for certain, and 8 true Bean, and while I thought that two other big packs of “Bean” were Yellow-bills, I was far from sure. The Bean Geese which spent the summer in Fife a year ago were all Yellow-bills, and one caught in full moult and given to me has the bill completely yellow except for the nail, while the difference in voice, plumage, and bearing from the true Bean is very marked. But all facts about Bean Goose distribution are hopelessly vague. Is the Yellow-bill common in Holland? All I have seen from there, including those in my own collection, have been typical “true” Bean.

To me the Pink-footed present the greatest puzzle of all the grey geese, and their future movements should be of the greatest interest. While the confusion between Pink-footed and Bean Geese doubtless accounts to a considerable extent for the lack of records in the bags of a century ago, it seems almost incredible that wild-fowlers, among whom were many famous naturalists who had no difficulty in recognising other closely similar species, should not have sooner drawn attention to the complete difference of the Pink-footed had these birds in fact been here at that time in any appreciable numbers.

One of my chief reasons for visiting Iceland was to try
to collect as much accurate information as possible as to the breeding of Pink-footed Geese in that country, and to hear at first hand the results of the excellent research work on Grey Geese which is now being done by the Natural History Museum of Reykjavik under the expert guidance of Mr Magnus Björnsson.

A quarter of a century ago Pink-footed Geese were scarcely known in Iceland, and not only was there no evidence of a breeding-ground, but owing to the thorough way in which the island had been surveyed and explored it is possible to say with fair certainty that until comparatively recent times they did not spend summer there, at least in any appreciable numbers. When, however, they began to be reported, a search was at once made for a breeding-ground, and one was soon discovered in a remote district of the north. The colonisation of Iceland has, since then, been quite amazing; for not only has the Northern Skjálfandafljot area been greatly extended, but only this summer two entirely new colonies have been found in Central Iceland, and two more have been discovered in the Southern Highlands.

Unfortunately, I could not wait to study the autumn migration, but Mr Björnsson, in a recent letter, tells me that there was "... a great passing migration of brachyrhynchus from North-East Greenland and elsewhere taking place over the whole country, but mainly across the highlands, following the great rivers from the North Coast up to the high plateau and down again along the River Thjórsá to the South Coast."

Whether the Pink-footed Geese are extending their range in Greenland as well as elsewhere, or whether the western breeding-grounds are being colonised by birds which are forsaking the old north-eastern grounds of Spitsbergen and Franz-Josef Land, it is still impossible to say; but this year has seen the preliminary ringing of wild geese in Iceland, and next season the ringing of the Pink-footed especially, is going to be carried out on a large scale which should provide invaluable data as to the exact localities to which these Iceland-bred birds migrate.

Where did the Pink-footed Goose come from? Was it
an Eastern bird changing first its winter and now its summer quarters to the West? And some day will Britain suddenly be invaded by yet more species of geese: the little-known Buturlin’s Goose, Anser carneirostris, or the amazing Sushkin’s Goose, Anser neglectus, which for several years was observed in enormous numbers in the neighbourhood of Tashkend, wintered in countless thousands at Hortobagy-Puszta in Hungary about the year 1911, but has since then once more largely disappeared who knows where!

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**Dragonflies in the Islands of Skye and Eigg.**—So far as I have been able to learn there appear to be very few references to the occurrence of dragonflies in the Isle of Skye. When my father published in the *Annals* (1911, pp. 14-25) a paper on the distribution of Scottish Dragonflies, only two species—Cordulegaster annulatus and Pyrrhosoma nymphula—were known to him from the Vice-county Ebudes North (Skye, etc.). Since then *Sympetrum striolatum* has been recorded from Raasay (Scot. Nat., 1916, p. 300). I am not sure whether any more additions have been published.

During a short stay in Skye at the end of August and beginning of September 1931, a good many dragonflies were observed by me at different parts of the island. In the north, *Sympetrum scoticum* occurred in some numbers at a lochan near the Quirang, and a ♀ was secured on 3rd September. This species was noticed at other localities, particularly in Glen Sligachan, where a larger and heavier insect was also seen which from its size was probably *Libellula quadrimaculata*, although it was late for this species. At two separate localities within a few miles of Broadford I watched *Aeschna juncea* both on the wing and at rest, in one case basking on the sunny wall of a bridge over a little stream, and in the other “asleep” in the evening among rushes in a ditch; in the latter instance the insect was handled so that there is no doubt of the identification.

I find among my father’s MS. notes two further records for Ebudes North, which so far as I know have not been published. On 22nd June 1913 Messrs Hamilton and Nash caught *Libellula quadrimaculata* and *Enallagma cyathigerum* (♀ and ♂) in the island of Eigg, specimens being subsequently given to my father. They also saw “small red dragonflies”—probably *Pyrrhosoma nymphula*—but none was kept.—C. Ethel Evans, Edinburgh.
Great Spotted Woodpecker in Renfrewshire.—Since the list of "Birds of Renfrewshire" appeared in the SCOTTISH NATURALIST in 1915, many reports have reached me of the presence of the Great Spotted Woodpecker in the county. On 24th February 1931 a local gamekeeper sent me word of a hen bird which had been about his place for some time. Later it disappeared. It returned in December and again remained for some weeks. A pair took up their abode in a wood on a neighbouring estate and nested in one of the trees, two young ones being reared. This is the first time, so far as I know, that the Great Spotted Woodpecker has nested in Renfrewshire. Another keeper reported to me only last week that twice during the past summer he had come across single birds of this species.—T. THORNTON MACKEITH, Kilmacolm.

Kittiwakes nesting in Midlothian.—With reference to the note on this subject in the September-October 1932 issue of the SCOTTISH NATURALIST, I would like to mention that two pairs of Kittiwakes nested during 1931 on the western harbour wall at Granton. Along with Messrs W. Watson and W. Short I visited these nests during the season when they had young. Those nests were well known to the pier-end anglers, and a harbour official who saw us at the nests mentioned that he had known gulls to nest there before. The presence of a third nest which was unused at that time seemed to bear out this statement. Mr W. Serle, junr., and Mr G. R. C. van Someren knew of these nests before I saw them, and expecting them to record the fact, I was deterred from doing so a year ago.—DAVID HAMILTON, Edinburgh.

BOOK NOTICE

Scotty: The Adventures of a Highland Fox. By FRANCES PITT. London: Longmans, Green & Co., 8vo, 271 pages and many illustrations. Price 10s. 6d. net. This story, whether founded on fact or the outcome of the imagination of a highly gifted authoress who is well known for her knowledge of the mentality of wild animals, is an interesting and fascinating one. While its pages are full of adventure, and in some parts of exciting incident, the inner workings of the fox's mind are presented to the reader in a manner possible only to one who has paid much attention to the ways of wild creatures. The course of the tale is well held together, and the end a happy one. The attractiveness of this beautiful book is considerably increased by the clever line drawings by Persis Kirmse, many of them occupying a full page. We are hardly justified in giving an outline of the story. Rather do we recommend our readers to obtain the book and read it carefully for themselves.
BIRD NOTES FROM THE OUTER HEBRIDES.

By Leonora Jeffrey Rintoul and Evelyn V. Baxter.

In 1932 we spent 24th May to 10th June in the Outer Hebrides, during which time we saw 86 different kinds of birds. We began by spending a week in Lewis, then went down to Harris, where we stayed at Tarbert and Rodel, crossed to Lochmaddy and spent a few days in North Uist. We then crossed the ford to Benbecula, where we spent several days, motored through South Uist to Lochboisdale and so home. A considerable part of the time we spent in Lewis was devoted to an exploration of the woods about Stornoway Castle. The planting and growth of these woods has had a very marked influence on the bird life of that part of the islands. Species which formerly did not breed, or nested but rarely in the Outer Hebrides, are now common there and seem to be thoroughly well established—for example, Goldcrests and Willow-Warblers. The influence of even a few trees on these storm-swept islands is very marked, as may be seen in the small plantation and few old trees near Rodel, where we find birds such as Chaffinches, Willow-Warblers, Blackbirds, Robins, and Hedge Sparrows. We append notes on some of the species seen.

ROOK.—The rookery at Stornoway Castle is now a very large one and we have never seen trees so packed with nests. There were as many as eight nests in a small tree and sometimes the nests were touching each other. They were built in both coniferous and deciduous trees. One windy day we watched two Fulmars soaring and circling with the Rooks over the rookery. Circumstances make strange associations: we certainly never expected to see Rooks and Fulmars soaring together.

JACKDAW.—The only Jackdaws we saw were four at Stornoway Castle, on which they evidently nest.

GREENFINCH.—There are a fair number of Greenfinches in the woods at Stornoway Castle, where we watched them feeding young.

LINNET.—Linnets are rare in the Outer Hebrides; we saw one on Benbecula on 9th June.
Chaffinch.—Common at Stornoway and in the wood near Rodel (Harris); we saw young birds being fed.

House Sparrow.—The House Sparrow seems to be extending its range in the Outer Hebrides; we found it fairly common in Stornoway and in the townships we visited in the west of Lewis, as Callernish, Carloway, Barvas, etc. In Harris we found a good many at Tarbert, Rodel and Strond. In North Uist at Lochmaddy, Scolpaig and Balranald they were not uncommon, but they were much rarer on Benbecula, where we only saw two pairs. They occurred again on South Uist.

Tree Sparrow.—We saw very few Tree Sparrows; only one or two at Strond (Harris) and Lochmaddy (North Uist).

Yellowhammer.—Though we looked for it in all suitable places we never saw this bird while we were in the islands.

Grey Wagtail.—We saw a Grey Wagtail near Stornoway, by the River Creed on 30th May.

Pied Wagtail.—By the side of the harbour at Stornoway was a pair of Pied Wagtails and one was feeding young by the River Creed; there was also a Pied Wagtail on Benbecula.

Goldcrest.—The Goldcrest now breeds plentifully in the woods at Stornoway.

Spotted Flycatcher.—On 1st June we saw a Spotted Flycatcher at Tarbert (Harris), and the same day a pair in the wood at Rodel.

Willow-Warbler.—The wood at Stornoway holds a fair number of Willow-Warbblers, and there were some in the plantation at Rodel.

Whitethroat.—We saw a Whitethroat in the garden of Stornoway Castle on 31st May.

British Song Thrush.—Is now nesting plentifully in the grounds of Stornoway Castle.

Blackbird.—Was common at Stornoway and some at Tarbert and Rodel.

Whinchat.—The only Whinchat we saw on our travels was one at Rodel on 3rd June.

British Robin.—Is now very plentiful in all the Stornoway Castle grounds, and we saw some about Rodel (Harris).

Hedge Sparrow.—Is fairly common at Stornoway and about Rodel.
Swallow.—A Swallow was seen hawking near Stornoway on 26th May, and a pair found on Benbecula breeding in farm buildings.

Cuckoo.—Common about Stornoway and heard in Harris, North Uist and Benbecula.

Buzzard.—On 26th May we watched a Buzzard for a long time near Stornoway Castle. One was accidentally trapped here in January (Scot. Nat., 1932, p. 66).

Heron.—Seen frequently about Lochmaddy, but sparsely elsewhere. Mrs Macaulay, Creagorry, told us that this year Herons had for the first time bred on Wiay, a small island off Benbecula. She also said that this species began to breed in South Uist about seven years ago, and now nests in two places on that island. This information was confirmed by Mr M’Coll, Lochboisdale.

Mute Swan.—There was a pair of Mute Swans on almost every loch of any size in Benbecula, and in South Uist we saw a great many on Loch Bee and smaller numbers on many of the other lochs.

Wigeon.—Some seen on Benbecula.

Little Grebe.—Extremely common on Benbecula and South Uist.

Wood Pigeon.—Well established in the woods at Stornoway.

Corncrake.—Very common about Stornoway; heard at Rodel (Harris), and Balranald (North Uist), and extremely common on Benbecula.

BOOK NOTICE

Bird Haunts in Wild Britain. By R. N. Winnall and G. K. Yeates. London: Philip Allan, 8vo, 215 pages and 31 full-page plates. Price 10s. 6d. net. This is a book of personal experiences among the nesting sites of many of our most interesting birds. From the ubiquitous Rook to the Black and Red Throated Divers of the far north, many types of birds and nesting places are described. The difficulties encountered in procuring photographs, under the diverse conditions consequent upon the varying personality of the birds and the position of the nests, are related in an entertaining fashion, while the views of the authors regarding the shooting of birds, or vice versa, their protection by law, are presented with commendable frankness. The illustrations are excellent, and portray many of the subjects in most interesting attitudes. The typography is exceptionally good, and the general get-up of the book attractive enough to ensure success.
CURRENT LITERATURE

A New Periodical—The Transactions of the Northern Naturalists' Union.—We welcome the appearance of a new contemporary. The Northern Naturalists' Union, to which at present eight Societies in the north of England are affiliated, has issued Vol. I., Part I. of its Transactions. Five papers are printed, two of which are zoological. One, a list of the Rotifers of the Northumberland Plankton, is of purely local interest, but the other, on the Terrestrial Acari of the Tyne Province, by the Rev. J. E. Hull, will prove helpful to students of mites, inasmuch as analytical keys are given to the sub-families, genera and species of the family (Tyroglyphidae) with which the paper deals, together with a general introduction on the characters and habits of these mites, and a brief description of most of the species.

Birds ringed in Denmark and recovered in Scotland.—From a paper in the September number of the Irish Naturalists Journal (pp. 86-92) by P. Skovgaard we extract the following:

TEAL (Anas c. crecca).

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TUFTED DUCK (Nyroca fuligula).

Thy    | 12.vi.27, young | Isle of Lewis, May '28. |

(LAPWING Vanellus vanellus).

Aarhus | 26.v.29, young | Isle of May, Dec. '29. |

[This paper is to be concluded.—Eds.]

Slavonian Grebe breeding in North Scotland.—A further extension of the Slavonian Grebe's breeding range to the north-east is recorded by M. E. W. North in British Birds (October 1932, p. 166). The exact locality, a small loch half a mile long, is not given.

Green Sandpiper in Orkney.—An example of this species was seen by Duncan J. Robertson on a moor on St Ola, Orkney, on 13th August 1932. (British Birds, October 1932, p. 171.)
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