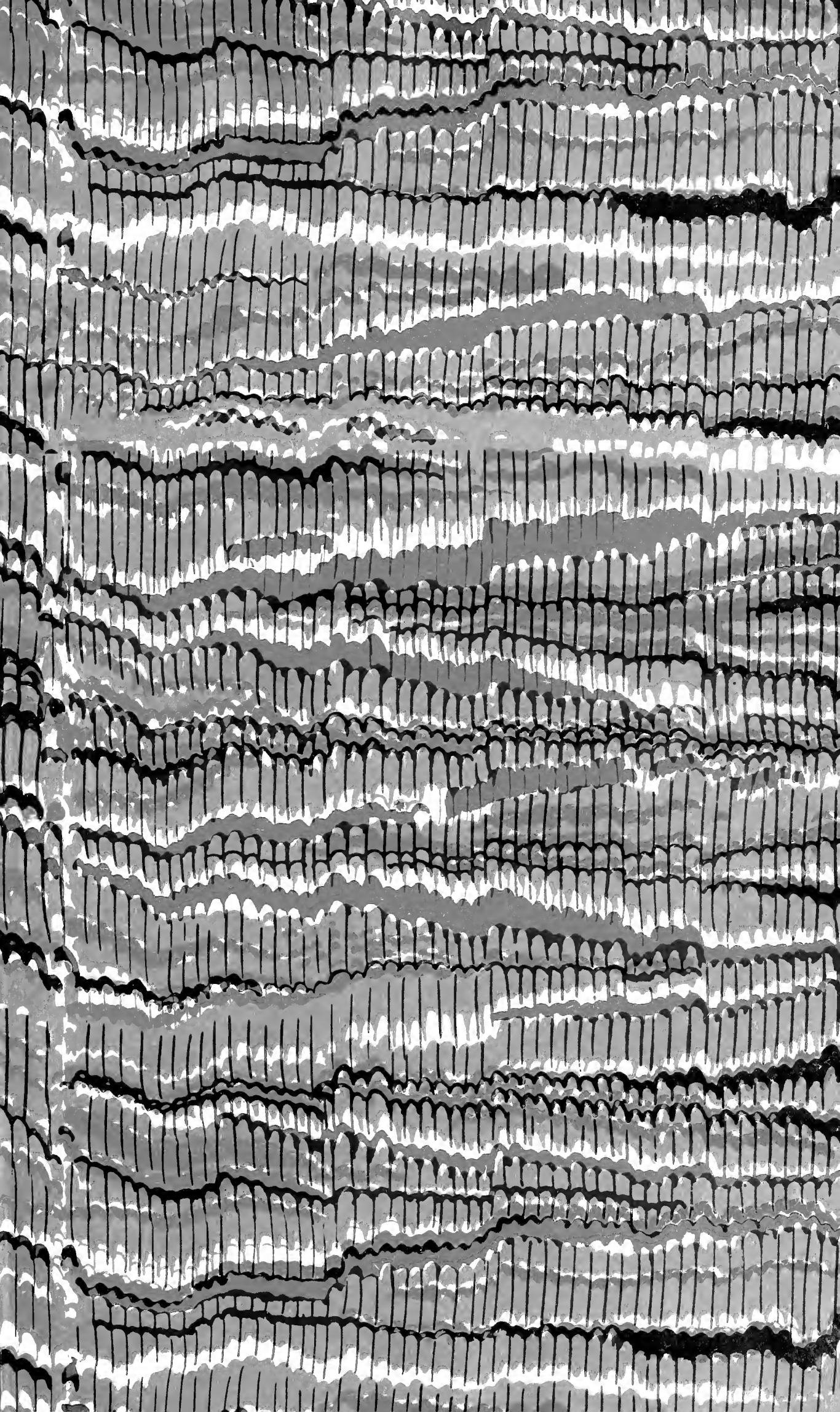

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The Scottish Naturalist

A Magazine devoted to Zoology

With which is incorporated

"The Annals of Scottish Natural History"

EDITED BY

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Keeper, Natural History Department, Royal Scottish Museum

AND

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

Regius Professor of Natural History, University of Aberdeen

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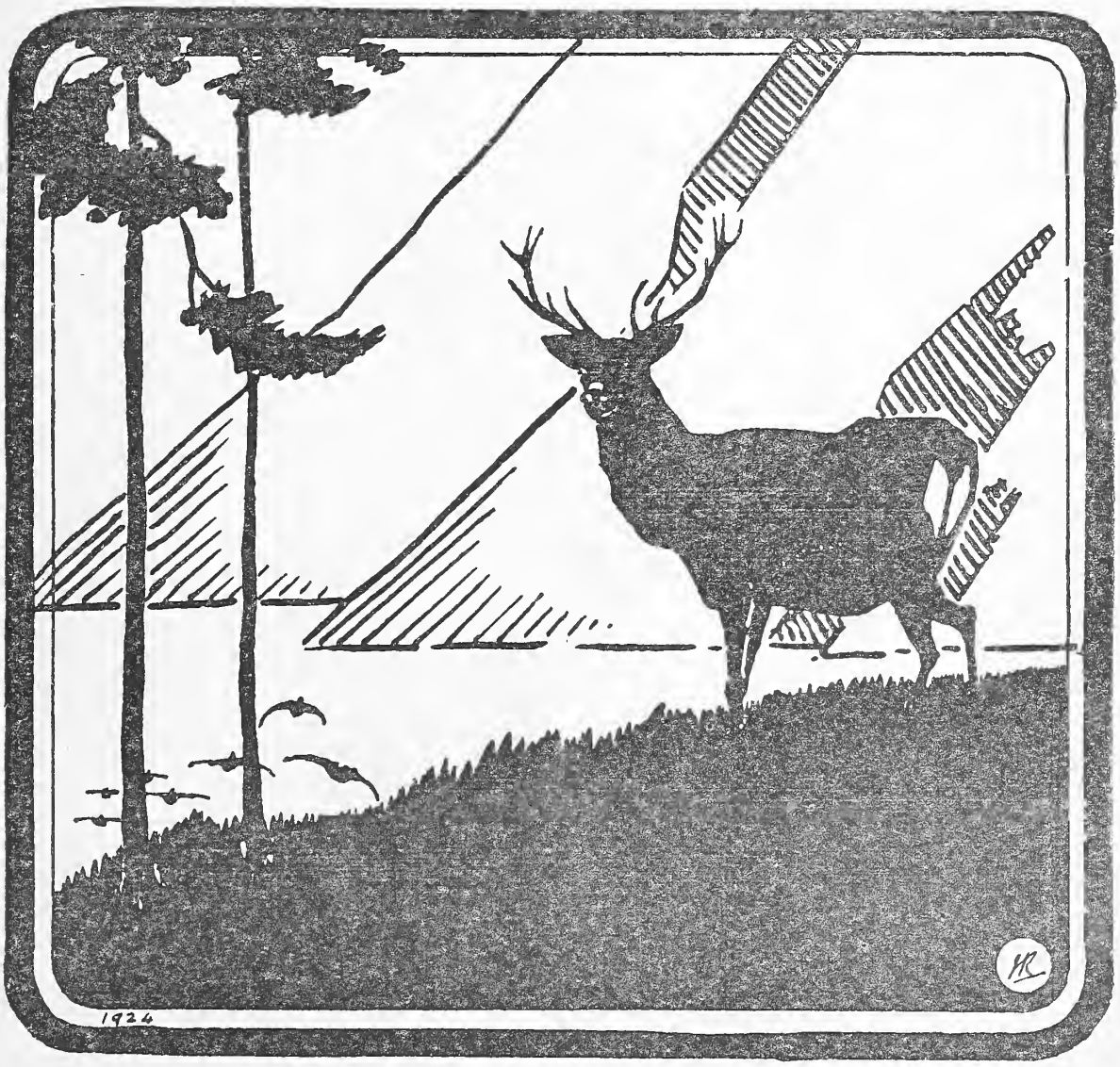

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EVERY NATURALIST SHOULD READ

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

Studies of Lanarkshire Birds.
A New Scottish Aquarium. (Illustrated.)
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.
The Garganey—an addition to the Breeding Birds of Scotland.
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.
White-sided Dolphin in Scottish Waters.
Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.

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

(*Authors are responsible for nomenclature used.*)

The Scottish Naturalist

No. 187] 1931 [JANUARY-FEBRUARY

ANIMAL WELFARE.

PRESSURE upon our space has hitherto prevented us from bringing to the notice of our readers a proposed new Scottish Society which we trust will have their cordial and practical support. The humane treatment of all animals, both wild and domesticated, should be practised and encouraged by all naturalists, and as this is the principal aim of the new Society we feel justified in reserving a little space on its behalf. Following on the lines of the "University of London Animal Welfare Society," this new venture is to be under the auspices of Edinburgh University, and Dr T. W. M. Cameron, of the Zoology Department of the University, is responsible for all arrangements in connection therewith. Its aims and functions are intimately associated with those of the Scottish Society for the Prevention of Cruelty to Animals, whose activities are so well known, though not sufficiently supported financially. We strongly urge our readers, and all Scottish naturalists and lovers of animals, to give this subject their careful consideration and their practical support.

At a preliminary meeting held in the Edinburgh Old University Buildings on the 27th October last an address was given by Captain C. W. Hume, M.C., B.Sc., Founder and Joint Honorary Secretary of the London Society referred

to above. Dr O. Charnock Bradley, Principal of the Royal (Dick) Veterinary College, occupied the chair, and the meeting was also addressed by Professor Baldwin Brown. A press notice of this meeting has been sent us, and from it we quote the following: "In introducing Captain Hume, Principal Bradley stated that there were three aspects of Animal Welfare, the commercial, the scientific and the humanitarian. Captain Hume dealt with the two questions (1) Does cruelty exist? and (2) What has it to do with the Universities? Under the former head he mentioned as the worst form of cruelty, the steel trap in capture of wild animals for fur, and as vermin. He also spoke of operations upon animals without the use of anæsthetics and by unqualified persons; the need for humane slaughter; the destruction of sea-birds by oil waste; and cruelty practised in foreign countries. As regards Animal Welfare in its relationship to the Universities, Captain Hume pointed out that the University is the training ground of the future leaders of public opinion, without which no reform can be effected. He emphasised the advantage of having the technical advice of zoologists and experts from Veterinary Colleges, and the need for strengthening the hands of the more responsible animal protection societies. Foreign contact at the Universities has important bearing on Animal Welfare, as the movement would be furthered by foreign students on returning to their own countries. To achieve the desirable objects in view Captain Hume left it for his hearers to suggest the formation in Edinburgh of a Society on the lines of that which he had successfully founded in London." The formation of such a Society was then considered and the names of those present were recorded. We shall be pleased to hear that the movement is successfully launched, and trust that this will be at no distant date.

REAPPEARANCE OF THE GOLDFINCH IN THE EASTERN BORDERS.

By Rev. Dr WILLIAM M'CONACHIE.

To many people—more so to ornithologists—the reappearance of the Goldfinch in Scottish haunts from which it was long absent is a fact of great interest and importance. There is little question that this charming and beautiful finch has increased very appreciably of late and is in process of still increasing its numbers.

In the south-east of Scotland this increase has been very noticeable. To those who know where to look for it and who can readily recognise its note, it has become again a fairly familiar bird in parts of the country where it was for many years unknown.

There are early records of its nesting at Duns (1821) and in Lauderdale (1844). The New Statistical Account of Scotland for the Parish of Manor in Peeblesshire (1845) reports Goldfinches as being very rare, but adds that "a great many had been seen that winter."

Soon after this, however, the bird seems to have practically disappeared from the countryside. Bird-catchers were largely responsible for this sad fact. About 1821, we are told, Goldfinches were so plentiful in the neighbourhood of Duns that some men there "made their living by catching them with bird-lime between harvest and spring and selling them as cage-birds."

The decrease in the numbers of the Goldfinch appears to have been more than local, for it extended also far into England. Mr G. Bolam in his *Birds of Northumberland and the Eastern Borders* (1911) says "the Goldfinch had become so scarce in the N.E. of England that Hancock in 1874 had only seen it on one or two occasions, and those in autumn or winter, and knew of no case of its breeding."

The same fact is remarked from other counties. In his valuable work *The Birds of Yorkshire* (1907) Mr T. H. Nelson says: "This charming little finch, which was formerly

abundant in most cultivated districts, is becoming very rare." The increasing scarcity of the Goldfinch extended as far as the south of England. Harting remarks of it—*Birds of Middlesex* (1866)—"At one time common but now seldom seen. . . . A few may be seen in autumn and in the early winter, but they do not remain to breed here as formerly." Sterling, writing about the same time—*The Birds of Sherwood Forest* (1869)—is one happy exception to the general lament of ornithologists over the disappearance of the Goldfinch. He writes of it as being "one of our commonest song-birds," remarking also that "with us it is especially abundant in the forest."

Improved methods of agriculture, interfering with the growth of thistles and other weeds on which the Goldfinch feeds, are given by most authorities as a reason for its disappearance. A much more likely explanation is that this was due to the ravages of the bird-catchers on the numbers of a finch which lends itself so readily to their arts. Mr G. H. Bolam points significantly to the fact "that its rehabilitation dates from the time of the first Wild Birds' Protection Acts."

An attempt to reintroduce the Goldfinch at Milne Graden, near Coldstream, was made in 1866, two pairs being brought from the south of England and liberated in the policies. Other instances of probable nests about the same neighbourhood are recorded.

In Lauderdale the Goldfinch became practically extinct towards the close of last century. I came on two male birds in January of 1907 feeding at hardheads by the public road. Others were occasionally seen during the years immediately succeeding this date, and almost always in winter.

Towards the "twenties" of the present century Goldfinches were oftener observed, more particularly in the glens where they find abundance of thistles, hardheads, hemp nettles, and other congenial weeds. From 1925 onwards the increase in their numbers became very marked. During June of this year a pair of Goldfinches were noticed by the River Leader. Later in the same season a number resorted to the glen near my own house to feed on the weeds there.

Before this they had become comparatively common in some parts of the south-west of Scotland. As they reappeared here and about Melrose earlier than in most parts of the eastern Borders, some at least of our Goldfinches may have reached us from the Dumfries direction, finding their way along Moffatdale, Yarrow, or other analogous routes to the valleys of Tweed and Leader.

Since 1925 these birds have certainly been nesting, and in increasing numbers, in Lauderdale. During 1929 they became quite familiar near my manse, and on one occasion three males were heard singing from the trees about it. A pair frequented the garden and, although they kept their secret very well, a nest with four fully-fledged young was found in a fork of one of the standard apple-trees. They all got safely away and were seen in the trees about the garden, where the old birds fed them. These were evidently a second brood, young Goldfinches having appeared earlier with the two birds which nested. The nest in question was sent to Dr James Ritchie—now Professor of Natural History in Aberdeen University—for the Royal Scottish Museum.

Again, through the past summer and autumn (1930) the local increase in the numbers of the Goldfinch has been fully maintained. I have heard of instances of their nesting in the neighbourhood from others, and one day towards the end of August I saw three broods being fed by their parents in a little plantation of firs and spruces close to Lauder. As early as the thirteenth of the month two young Goldfinches spent some time in a tree by one of our lawns. Their tails were so stumpy and their wings so weak that they very probably came from another nest inside the grounds. It is a remarkable fact that most of these broods were reared in autumn or very late in summer. Our local Goldfinches form flocks or charms of varying numbers which continue to feed well into winter along some of our glens and streams.

During recent years, too, there has been a marked increase in other parts of the two south-eastern counties. A nest was found in a garden at Berwick-upon-Tweed—also in an apple-tree—during the summer of 1922. Both

birds and one of the eggs were identified, but unfortunately a cat had destroyed the nest itself. A young Goldfinch was seen about the end of June 1925 close to Yetholm, where its parents had no doubt reared it. In the neighbourhood of Coldstream, during the past two years, Goldfinches have very sensibly increased, occurring there also towards autumn in small flocks. I have the authority of a keen local ornithologist, Mr A. M. Porteous, jr., for this statement, as well as for another that, during the past summer, he saw young Goldfinches being fed by their parents.

There is little, if any, question that more effective protection accounts for this recent increase in their numbers. All lovers of bird-life should see to it, so far as they can, that the present law which protects the Goldfinch throughout the year should be rigorously enforced. It is not only a harmless but a most useful bird, while its beauty and bright attractive ways do much to enhance the charm of any countryside.

Goldfinches in Midlothian.—On 19th October this year a few Goldfinches were seen near Ratho. They were feeding on thistles by the roadside. As they were constantly being disturbed by passing traffic, I was uncertain as to the exact number. One bird showed no concern when approached within four yards. I have had reports of Goldfinches from several localities near Edinburgh.—David Hamilton, Edinburgh.

Distribution of the Tree-Sparrow.—No further information regarding numbers or localities for the Tree-Sparrow has appeared since my last notes. I have met with this species lately in three places not mentioned in my last lists. In Midlothian a few were seen at Ratho near the Canal, and a single bird was seen in the village of Penicuik. In East Lothian several were seen at a farm near Penston. Perhaps this bird is more scattered now, for earlier accounts seemed to show that they were usually in small colonies.—David Hamilton, Edinburgh.

THE BIRDS OF LINLITHGOW LOCH.

By David Hamilton.

Lovers of birds residing within easy reach of Linlithgow Loch are fortunate in having such an interesting place to visit. Situated fairly near the Forth, and being the only loch of importance in the county, it naturally attracts a variety of bird life. As a sanctuary and place for the study of birds, it compares favourably with Duddingston Loch. Though lacking the extensive reed-beds that make the latter place seem so ideal, nevertheless the small patches at Linlithgow attract a fair number of birds for nesting purposes.

At Linlithgow Loch there are not the cross-bred ducks which are allowed to frequent Duddingston. Most naturalists will agree that these birds should be removed from a place intended strictly as a Wild Bird Sanctuary.*

Linlithgow Loch is comparatively narrow, and access can be had almost all round. This makes it possible with an ordinary field-glass to scan the whole area. Comfortable seats are placed at intervals along the north side, and all the birds seem fairly tame, evidently being entirely unmolested. As the loch is quite close to the town this is very satisfactory. Interesting at all times, it is specially so between the months of October and March, when numerous species visit the place. The following birds were observed during a few odd visits at different seasons. Other observers will no doubt be able to add to the list, and it would be very interesting to have them recorded.

The Duck family are at once the most conspicuous birds, several hundreds being collected on the loch at certain seasons. As the loch is well stocked with fish and the shores not greatly suited for surface feeders, the Diving Ducks are most in evidence. Nevertheless during the non-breeding season small groups of Shoveller and Teal are met with and

* [We understand that these ducks, which are crosses between the Mallard and Black Indian Ducks, are being reduced as much as possible. —Eds.]

a considerable number of Wigeon visit the place. Flocks of Mallard frequent the loch during the greater part of the year and a fair number remain to breed. On one of the small islands three nests were found side by side, and others were seen under whins by the water's edge, while another was found this season (1930) in a hole in an old willow tree. The Diving Ducks are also numerous. Tufted Duck and Pochard are about the loch during most of the year, and it is possible that either may be found nesting there in the near future. During their stay in this country the Goldeneye can often be seen in the loch, in different stages of maturity. The most interesting visitor is the Goosander. Every year numbers winter on the loch, where the beautiful males can be seen to advantage, although the more sober-coloured and piratical looking females appeal more to some.

Anyone wishing to see these birds should visit the place between December and March, though a single male has been observed as late as May. On one occasion eighty birds were counted, the sexes being in equal numbers. On January 1930 three females swam into the shallow water of the burn at the west end of the loch and commenced fishing. They showed little concern, though watched from a seat a few yards away. Small fish which they caught were brought to the surface and then swallowed.

Seven varieties of Duck have been noted on the loch at one time, and flocks of Wild Geese, presumably Pink-footed, have been observed flying past, making for the moors farther inland.

The Cormorant is a frequent visitor to the loch, and a dozen have been observed fishing at the same time. Trees on one of the islands are favourite perches of these birds, where they can be seen drying their wings or resting.

The Great Crested Grebe is now established on the loch. A late brood seen during 1928 was evidently the first recorded instance of its breeding in the county (SCOTTISH NATURALIST, 1929, p. 28). Since then other nests with eggs have been seen. Six adult birds were seen during the breeding season and on several occasions observed with chicks on their backs.

The Little Grebe is common and nests freely, and

clutches have been seen as late as the end of August. Several broods of young were observed at once, and thirty birds were counted in the month of September. A Little Grebe on being chased up and down a shallow burn when under water never used its wings, while another which was observed diving for food, in deep water, was seen to use its wings as in flight.

The Heron has been observed on two occasions, and the Kingfisher several times. Waterhen and Coot are numerous and both nest, and during winter flocks of the latter bird raid the fields bordering the loch. Numerous Gulls visit the loch, five species having been seen, namely: Greater and Lesser Black-backed Herring, Common and Black-headed Gulls.

The last-named can be seen obtaining food in various ways. They molest the Little Grebes on the water, as they do the Lapwing on land, swooping down on the Grebes whenever they appear on the surface with a catch. They may also be observed fishing for themselves, and seem fairly successful. Either swimming or flying low, they scan the water below for small fish. If swimming they rise about a foot, and plunge headlong in, going almost completely under. Very often they can be seen rising again with small fish in their bills. When they learn to rise higher before diving they will then compete with the Tern. During the month of August the Common Tern has been observed, accompanied by full-grown young. The old birds were feeding the young with fish caught in the loch.

During winter months, Common Snipe are often about the reeds and marshes round the loch. Lapwing are common, and the Redshank, Curlew, and Oystercatcher have been observed. In summer the Common Sandpiper can also be seen.

Numerous other species, though not exactly loch types, are continually about. Rooks, Jackdaws, and Magpies are common and all nest in trees round the loch. A Rook crossing the loch was observed to fly down, hover over the water, and pick something from the surface which it carried away. A pair of Carrion Crows are usually about, and a nest with five eggs was examined during April 1930 in a pine

at the west end of the loch not far from the water. The Starling should not be omitted from the list of birds frequenting the loch.

Missel-Thrush, Song-Thrush, and Blackbird all nest near the loch, and two nearly perfect albinos of the latter have been seen. Fieldfare and Redwing often visit the neighbouring fields. A row of rowan and service trees near the loch forms an attraction for all the Thrushes in the autumn.

During the nesting season a pair of Wheatears have been noted as frequenting the fields on the north side of the loch. In the woods and hedges near, the Robin, Wren, and Hedge-Sparrow are always present, and in summer the Willow-Wren. The Great Tit, Cole Tit, and Blue Tit are also met with, the latter species often visiting the tall reeds at the waterside. The Pied and Grey Wagtails are seen by the loch and burns, and the Skylark and Meadow-Pipits frequent the fields near. Chaffinches, Greenfinches, and House-Sparrows are in their usual abundance. The Tree-Sparrow is often about the poultry farm, while Bramblings and Lesser Redpoles have been observed during winter. The Common and Yellow Buntings are often about and the Reed-Bunting nests by the waterside. Swallows, Martins, and Sand-Martins feed in company over the surface of the water. A small colony of Sand-Martins nest near the loch. Swifts also spend the summer here and used to nest in the ruins of the Palace.

A Stock Dove was flushed from a hole in a willow tree at the waterside, and a Wood-Pigeon's nest with two eggs was found near the poultry farm.

The Kestrel has been seen several times; a Sparrow-hawk dashed into a tree, but scared at our presence, made off again, leaving a Blue Tit in a dazed condition and seemingly unable to move for a considerable time—evidently through fear.

This completes the list of birds I have seen and it contains sixty-seven species, half of which are found to nest. Although there is nothing of special note in the number, it gives some idea of what may be seen in a walk round the loch, which can be done with ease in little over an hour.

CHANGES IN THE STATUS OF BIRDS IN SCOTLAND IN 1930.

By Leonora Jeffrey Rintoul and Evelyn V. Baxter.

As a result of the work done during 1930 it has been possible to make a good many additions and corrections to our book *The Geographical Distribution and Status of Birds in Scotland.* This is very satisfactory, showing continued interest in the distribution and status of Scottish birds, on which, however, much work still remains to be done.

Yellow-breasted Buntings, *Emberiza aureola*, Pallas, have occurred in Scotland and by an oversight were omitted from our book. A new page should be headed as above and O added to Fair Isle and St Kilda. These are recorded in the latest edition of Saunders' *Manual of British Birds*, 1927, p. 81.

One new bird has been added to the Scottish list, namely, The Saharan Desert Wheatear, *Œnanthe deserti homochroa* (Tristram), which occurred on Fair Isle on 26th October 1929 (Scot. Nat., 1930, p. 8): this should be entered on a spare leaf and O inserted after Fair Isle.

Hereafter will be found further additions to the book, which should be entered as indicated.

Carrion Crow, *add* R and W to Kinross.
Golden Oriole, *add* O to Roxburgh.
Hawfinch, *add* "has bred" to Peebles.
Greenfinch, *add* R to Skye.
Scarlet Grosbeak, *delete* O, *substitute* OP and OW to Fair Isle.
Common Crossbill, *add* O to North Fife and *delete* italics and *insert* O to Midlothian and Forfar.
Tree Pipit, *add* "O probably S" to Skye.
Meadow Pipit, *add* P to Midlothian.
White Wagtail, *add* O to Skye.
Continental Blue Tit, *add* O to Shetland.
Wood-Warbler, *add* "O probably S" to Skye.
Yellow-browed Warbler, *add* O to Lanark.
White's Thrush, *add* O to Fair Isle.
Blackbird, *add* S to Dumbarton.

Redstart, *add* O to Skye.
Green Woodpecker, *add* O to W. Ross.
Cuckoo, *delete* O and *substitute* S to Skye.
Hobby, *add* O to W. Sutherland.
Osprey, *add* O to N. Argyll.
White Stork, *add* O to Fair Isle.
Pinkfooted Goose, *add* OP to Shetland.
Wigeon, *delete* "has bred," *add* R to Forfar.
Tufted Duck, *add* OS to Skye.
Goosander, *add* "R a few" to Selkirk.
Red-breasted Merganser, *add* O to Selkirk.
Shag, *add* W to Ayr.
Gannet, *delete* O in Aberdeen and *substitute* "S does not breed and OW."
Fulmar, *delete* O and *add* S to E. Ross.
Black-necked Grebe, *add* "has bred" to Forth.
Little Grebe, *add* R to Skye.
Northern Golden Plover, *add* O to Inner Hebrides and to Dumfries.
Southern Dunlin, *delete* "O has bred" and *substitute* "R a few" to Skye.
Dusky Redshank, *add* O to Fair Isle.
Snipe, *add* S to Kinross.
Sandwich Tern, *delete* "not now breeding" in Midlothian.
Arctic Tern, *add* "S a few" to the Isle of May and "has bred" to N. Perth.
Little Gull, *add* O to N. Perth.
Great Black-backed Gull, *add* W. to Outer Hebrides.

[Earlier additions to the volume appeared in SCOT. NAT., 1929, pp. 11-13, and 1930, pp. 23-25.—EDS.]

Bird Notes from Skye.—During a flying visit of one night only to Skye, I managed to visit the Loch of Cill Chriosd on 5th August 1930. My chief quest was the Tufted Duck we had seen there in May, but I could see nothing of them, nor did the keeper there know of their having bred. The loch was, however, much overgrown with reeds, which made observation difficult. I watched two pairs of Little Grebes on the loch feeding their young, and a Coot was also busy feeding babies.

At Broadford two broods of Swallows with their parents were frequenting the hotel where we saw the adults in May, and there were two Eider Ducks with young in Broadford Bay.

Several immature Black-headed Gulls were flying about the shore at Kyleakin.—EVELYN V. BAXTER, Largo.

RINGED ICELANDIC BIRDS RECOVERED IN SCOTLAND.

In *British Birds Magazine* for August 1930, pp. 70-72, there is published a list of ringed Icelandic birds which have been recovered in the British Isles. The list was taken from a Danish publication *Danske Fugle*, and the birds had been ringed through the agency of Mr P. Skovgaard. From it we have extracted the following information regarding ringed Icelandic birds which have been captured in Scotland.

White Wagtail (*Motacilla a. alba*).

Place Ringed and Date.		Place Recovered and Date.	
Myrasysia . . .	16.6.28	Rockall . . .	5.9.28

Teal (*Anas c. crecca*).

Sandarkrok. . .	24.8.29	Near Stranraer . .	3.12.29

Wigeon (*Anas penelope*).

Husavik . . .	17.6.28	Bay of Firth, Orkney .	15.9.28
„ . . .	21.7.28	Kirkwall . . .	1.2.30
„ . . .	6.7.28	Halkirk, Caithness .	28.9.28
„ . . .	15.7.28	Wick	6.12.28
„ . . .	17.7.27	Loch Eye, Ross . .	2.11.27
„ . . .	8.7.28	Invergordon, Ross .	25.12.28
„ . . .	5.7.28	Elgin	8.10.28
„ . . .	23.6.26	Loch Tarbert, Argyll .	24.12.26
„ . . .	31.7.27	Lochgilphead, Argyll .	16.9.27

Scaup (*Nyroca m. marila*).

Husavik, . . .	1.8.28	Nigg Bay, Ross . .	3.8.29

Northern Golden Plover (*Charadrius a. apricarius*).

Laxa	4.7.28	Tiree, Inner Hebrides .	12.4.29 (Found dead, decomposed)
Reydarfirdi. . .	15.7.29	Moniaive, Dumfries .	22.2.30
Akureyri . . .	23.6.29	Wigtown Harbour .	25.11.29

Great Black-backed Gull (*Larus marinus*).

Husavik . . .	27.6.28	N. Uist, Outer Hebrides	3.1.29

Regarding the other birds recorded as having been found in the British Isles, the great majority, as one would expect, have been met with in Ireland. Three of these were Gadwall, of which one was obtained in Sussex, and two in Ireland; six were Teal, one got in Northumberland, and five in Ireland; nine were Wigeon, of which four were found in England, and five in Ireland; while Icelandic Wigeon have also been secured in S.W. Spain (one), France (two), Italy (one), and Russia (one), and four in Eastern North America. In addition, three Pintail have been got in Ireland; one Tufted Duck in Cheshire; one Scaup in Cornwall and four in Ireland; two Golden Plover in England and eight in Ireland; and two Icelandic or Faroese Snipe (*Capella g. faroëensis*) in Ireland.

The occurrence of the White Wagtail at (? or near) Rockall is noteworthy: further details regarding its capture would be interesting.

The Black-necked Grebe—First Breeding Records for Scotland.—In his interesting account of the first breeding of the Black-necked Grebe in Scotland, Mr Connell states that the "books" refer to "some evidence" of this species having bred in Perthshire, and is apparently under the impression that the account given by Her Grace the Duchess of Bedford, in the *Field* (26th April 1903), is the sole published evidence of this species as a summer visitor to Scotland; but it should not be overlooked that Her Grace gave a second and much later account of the occurrence of this species, on presumably the same loch, where she observed a Black-necked Grebe in full breeding plumage, on 25th April 1912 (SCOTTISH NATURALIST, August 1912). Four birds were seen in 1903 and whether they bred or not, no one familiar with the Black-necked Grebe can have any doubt as to the accuracy of Her Grace's identification of the species, after reading her lucid account in the *Field*.—J. KIRKE NASH, Edinburgh.

REPORT ON THE MOLLUSCAN FAUNA OF DUDDINGSTON SANCTUARY (WITH SUPPLEMENT).

By D. K. KEVAN.

ON the 26th and 27th October 1929, I explored Duddingston Sanctuary in order to ascertain, as far as possible, the species of Mollusca inhabiting that area, and their distribution. The Sanctuary, as a whole, provides eminently suitable *loci* for the growth and development of a considerable number of species of Mollusca, and my expectations of being able to compile an interesting and sizeable list were fully justified.

The loch itself (*i.e.*, a few yards away from the edges) was a disappointment. It appears to be bottomed by liquid mud incapable of supporting anything in the nature of molluscan life, and even at the east end where it is shallow and more "solid" I obtained a negative result from "sieving," although a certain amount of weed is present over this area. The absence of molluscan life in the loch has since been confirmed by Mr A. C. Stephen (of the Royal Scottish Museum), who during the course of the summer spent a day in dredging the loch.

The surround, however, is very rich in molluscs, the area of greatest density comprising that part of the Sanctuary—all marshy land, covered by sedges, flags, reeds, and coarse grass—from Windy Gowl on the north-west to the boat-house on the south side near the curling pond. The species inhabiting this area are all either definitely aquatic or such as require a wet situation. The lines of demarcation between species in some cases are more or less distinctly defined; in others there is a gradual "dying away" of one species to give place to another, with a possible reappearance as the nature of the ground changes once more, and numerous examples of the association of different species are markedly evident.

For convenience, as regards the distribution of the Lamellibranchs and aquatic Gastropods, I divide the Sanctuary into five areas, although it is, of course, obvious that owing to similarity of situation, many species will be

found to inhabit more than one area, and some may be present in all areas, or groups:—

(1) In the marshy ground adjacent to the north-west boundary wall.
(2) In the marshy area along the south-west side of the loch as far as the boat-house, and extending southwards to the two isolated pools near the railway.
(3) In the two pools near the railway.
(4) Along the north side of the loch, eastwards from the boat-house until the rocky edge gives place to the marsh constituting the greater part of the surround.
(5) On the north-east, east, and south sides as far as the curling pond. The edge of the loch, westwards from the north boat-house to Windy Gowl, appears to be devoid of molluscan life, although no doubt occasional individuals turn up from time to time and become unwilling victims of the ducks which make that part of the loch a happy hunting-ground!

In addition to the above, there remain all the land Mollusca—some generally distributed over the marshy area, and some confined to situations suited to their own particular needs. In density of population, of course, the nature of the Sanctuary area precludes any possibility of their approaching that of the aquatic Mollusca, but there is, nevertheless, a very representative gathering of species mainly inhabiting the drier situations to be found near the railway wall and "embankment" on the south side, and the walls on the north side, east of the boat-house. All these species I propose to combine in Group 6, and to deal with each group *seriatim*, thereafter giving the complete list of species so far found living in the Sanctuary. The nomenclature as regards the Gastropoda will be that of Ellis in *British Snails;* that of the Lamellibranchs will be according to the list recognised by the Conchological Society of Great Britain and Ireland (Roebuck Census).

GROUP 1.—On 1st January 1930 I found the three species of which this group consists in the marshy ground *outside*

the north-west boundary wall. It was logical to conclude that they occurred inside the Sanctuary, and, having had no time to explore the north-west corner on the 26th and 27th October 1929, I did so on the 8th February 1930 and found all three species in association and in number, *i.e.*—

Pisidium casertanum (Poli). *Pisidium personatum* (Malm).
Planorbis spirorbis (Linn.).

I have not so far found these elsewhere in the Sanctuary area, although further search will doubtless reveal the occurrence of the *Pisidia* at any rate, in other places.

GROUP 2.—This group includes:—

Ancylus lacustris (Linn.). *Limnæa stagnalis* (Linn.).
Limnæa palustris (Müll.). *Planorbis contortus* (Linn.).

Ancylus lacustris is to be found on the rotting Iris and sedge, and appears to be generally distributed round the loch, occurring definitely to my knowledge also in Group 4. Var. *albida* (Jeffreys) is fairly commonly distributed with the type.

Limnæa palustris and *Planorbis contortus* are by far the most abundant of the fresh-water Gastropods not only in this group, but in the whole Sanctuary area. Greatest density is attained west and south-west of the boat-house to the two pools by the railway. Further west, and north to Group 1, the population decreases, and apart from isolated individuals appears to cease altogether. I found them, also, very sparsely on the east side of the curling pond, but further exploration will probably reveal patches of "greater density" here and there round the loch. *L. palustris* var. *roseolabiata* (Jeff.) is of frequent occurrence with *palustris vera* as stated by M'Murtrie (*Land and Freshwater Shells of the British Isles*, Rimmer). *Limnæa stagnalis* appears to be rare. Only one immature specimen occurred to me, although I spent some time in searching for more of this species.

GROUP 3.—This is composed of—

Limnæa pereger (Müll.). *Planorbis crista* (Linn.).
Physa fontinalis (Linn.). *Pisidium milium* (Held.).

To which must be added *Planorbis lævis* (Alder), found by Mr R. Waterston (Edinburgh) on the *Myriophyllum* in these two pools on 7th October 1930. The *Limnæa pereger* are

on the small side, thin, and of similar form to those in Dunsappie Loch, plentiful but not abundant. *Physa fontinalis* is sparse, and this species may be a comparatively new arrival from Dunsappie where it is abundant. *Pisidium milium* is plentiful round the edges of these pools. *Planorbis lævis* (a very local species) occurs in moderate number, and it is interesting to note that Mr Waterston also found this shell in Dunsappie Loch. *Planorbis crista* is fairly common in the grass and weed bordering the two pools, the ridges on the shells being well defined.

GROUP 4 consists of—

Limnæa auricularia (Linn.). *Ancylus lacustris* (Linn.).
Sphærium corneum (Linn.).

Ancylus lacustris, already referred to under Group 2, was here found attached to stones by the boat-house. *Sphærium corneum* was sieved along the north side of the loch approaching the boat-house from the east, but is not plentiful. The most interesting species in this group (and in the whole loch), however, is *Limnæa auricularia.* This is not the type, but var. *lagotis* (Schrank) with the spire proportionately longer and the aperture smaller and narrower. Duddingston specimens, however, are slightly more swollen than those from Dunsappie Loch, where this interesting variety also occurs.

GROUP 5.—The area covered by this group does not appear to be so densely populated with freshwater mollusca as its "sister" area (No. 2), the belt of marshy ground being narrow, excepting at the extreme east of the loch. Apart from an occasional specimen of *Limnæa palustris* (Müll.) and *Planorbis contortus* (Linn.), I found *Pisidium subtruncatum* (Malm.) and *Pisidium milium* (Held.), but not plentifully. It is possible that other species may be found, and the north-east, east, and south-east sides of the loch require further exploration.

GROUP 6.—This includes all the non-aquatic Mollusca of the whole Sanctuary area, so far found:—

Carychium minimum (Müll.). Generally distributed in damp situations, and abundant in coarse grass roots in marshy areas.

Succinea pfeifferi (Rossmässler). On Iris round margins of loch, but chiefly north-west, west, and south-west sides.

Lauria cylindracea (Da Costa). On "embankment" walls and on railway wall, and in similar situations round the Sanctuary area.

Vallonia excentrica (Sterki). On "embankment" walls and in grass roots thereunder.

Cochlicopa lubrica (Müll.).
Goniodiscus rotundatus (Müll.). — Along base of "embankment" and railway walls, and in similar situations.

Arion ater (Linn.). Generally distributed, but not common.

Balea perversa (Linn.). Along railway wall, north of "embankment." Not noticed on south side.

Euconulus fulvus (Müll.). Widely distributed in damp situations: under logs, in roots of coarse grass, moss, etc., in marshy ground.

Retinella nitidula (Drap.).
Oxychilus alliarius (Miller). — At base of walls, etc., chiefly by railway.

Vitrina pellucida (Müll.). On mossy walls of "embankment" by railway.

Agriolimax lævis (Müll.). Common in marshy ground.

„ *agrestis* (Linn.). Generally distributed.

To these must be added the following found by Mr Waterston on 7th October 1930:—

Vertigo pygmæa (Drap.). "Embankment" wall, south side.

Retinella radiatula (Alder).
Vitrea crystallina (Müll.). — Grassy roots by "embankment" by railway.

Oxychilus cellarius (Müll.). Situations similar to *O. alliarius* and *Retinella nitidula*.

Arion circumscriptus (Johnston).
„ *intermedius* (Normand). — Generally distributed.

Further search will doubtless reveal a much wider distribution of the majority of the land molluscs so far included in this group.

An interesting note with regard to *Balea perversa* is that it appears to continue right along the railway wall north of the "embankment," while *Laurea cylindracea* gradually disappears. In view of the fact that the Wall Rue (*Asplenium ruta-muraria*) occurs plentifully along this wall

and would seem to furnish ideal conditions for *L. cylindracea*, it seems strange that this species should not occur more commonly in this particular situation than it does. On a similar wall in the courtyard of Craigmillar Castle it occurs in great abundance in association with *Balea perversa* and *Pyramidula rupestris* (Drap.). Although searched for, this last does not appear to be present in Duddingston, but Mr Waterston has found it on Arthur's Seat.

The *Vallonia* collected by me on the 26th and 27th October 1929 were authenticated as being both *V. pulchella* (Müll.) and *V. excentrica* (Sterki), constituting new records for Midlothian. Mr Waterston collected further about eighty specimens from the same situation on 7th October 1930 and sent them away for identification. After separation they were further submitted to a second expert, who went through all the specimens and could find nothing but *excentrica* and would not pass those which had been identified as *pulchella*. There must now be some doubt as to whether the first batch contained any *pulchella*, and I have, therefore, not included this species in the present list. I could not distinguish any difference myself at the time, and on comparing Duddingston *Vallonia* with true *pulchella* obtained recently in Ireland, I am of opinion that the former are, in fact, all *excentrica*, although in a number of instances the reflection of the outer lip (the main point of difference between the shells of the two species) is very deceptive, and could quite easily result in shells having this somewhat abnormal characteristic being classed erroneously as *pulchella*. It may be present, but if so, it is in the extreme minority, and this question is one that requires elucidation. The association of *pulchella* with *excentrica*, however, is very unusual (Ellis, *British Snails*), and probability points to there being only one species—*excentrica*—in Duddingston Sanctuary.

Summarised, the known species of Mollusca living in Duddingston Sanctuary are as follows :—

Freshwater.

(1) *Sphærium corneum* (Linn.).
(2) *Pisidium casertanum* (Poli).

(3) *Pisidium personatum* (Malm.).
(4) „ *milium* (Held.).
(5) „ *subtruncatum* (Malm.).
(6) *Limnæa palustris* (Müll.).
(7) „ *stagnalis* (Linn.).
(8) „ *pereger* (Müll.).
(9) „ *auricularia* (Linn.).
(10) *Ancylus lacustris* (Linn.).
(11) *Physa fontinalis* (Linn.).
(12) *Planorbis spirorbis* (Linn.).
(13) „ *lævis* (Alder).
(14) „ *crista* (Linn.).
(15) „ *contortus* (Linn.).

Land.

(1) *Succinea pfeifferi* (Rossmässler).
(2) *Vertigo pygmæa* (Drap.).
(3) *Lauria cylindracea* (Da Costa).
(4) *Carychium minimum* (Müll.).
(5) *Vallonia excentrica* (Sterki).
(6) *Cochlicopa lubrica* (Müll.)
(7) *Goniodiscus rotundatus* (Müll.).
(8) *Arion circumscriptus* (Johnston).
(9) „ *intermedius* (Normand).
(10) „ *ater* (Linn.).
(11) *Balea perversa* (Linn.).
(12) *Euconulus fulvus* (Müll.).
(13) *Retinella radiatula* (Alder).
(14) „ *nitidula* (Drap.).
(15) *Oxychilus alliarius* (Miller).
(16) „ *cellarius* (Müll.).
(17) *Vitrea crystallina* (Müll.).
(18) *Vitrina pellucida* (Müll.).
(19) *Agriolimax agrestis* (Linn.).
(20) „ *lævis* (Müll.).

the total number of species thus being *thirty-five*. I do not consider that this list is by any means exhausted, and further investigation should make it possible to add to the above number.

On the 22nd September 1930, Mr Waterston found *Limnæa truncatula* (Müll.) and *Vertigo antivertigo* (Drap.) in the marshy ground outside the north-west boundary wall in association with the three species mentioned in Group 1. I have found the whole five species in similar association by the loch at Macbie Hill, south-west of Leadburn (Peebles), and as three are known to occur just over the wall in the Duddingston area itself, there is little reason to doubt that the remaining two (*L. truncatula* and *Vertigo antivertigo*) will also be found to be present somewhere round the loch, but most probably with the other three species comprising Group 1.

Planorbis planorbis (Linn.) is another possibility. Neither Mr Waterston nor I found any trace of this species, but specimens are on exhibition in the Royal Scottish Museum from Duddingston, and Rimmer (*Land and Freshwater Shells of the British Isles*) writes to the effect that M'Murtrie found it abundantly near Edinburgh in Duddingston and Lochend Lochs. I have not explored the latter but, so far, it has escaped notice in Duddingston—if it still be there.

An interesting fact is, that of the various species present in Dunsappie Loch, all but three have been found in Duddingston. These three are:—

Anodonta anatina (Linn.). *Planorbis albus* (Müll.).
Pisidium nitidum (Jenyns).

I am of opinion that *A. anatina* can be ruled out of Duddingston possibilities, owing to unsuitable environment. *Planorbis albus* may possibly be found to occur in the pools by the railway, and *Pisidium nitidum* somewhere round the margin of the loch itself.

(*To be continued.*)

ADDITIONAL NOTES ON HUMBLE BEES IN SCOTLAND.

By W. B. R. LAIDLAW, B.Sc., Department of Forestry, Aberdeen University.

SINCE my notes in the July-August number were written, I have been able to collect the following additional points.

From September onwards the Humble Bees become more and more confined to Dahlias. As the month advances, Knapweed, the latest of visited wild-flowering plants, ceases flowering, and nearly every species may be taken on Dahlias. With the exception of heath dwelling *B. muscorum*, *jonellus*, and *lapponicus*, I have seen or taken all my other nine species on it, and *Psithyrus distinctus*. Later in October, Monkshood takes its place. On the 23rd October I saw queens of *B. terrestris*, *lucorum*, *hortorum* and *derhamellus*, with drones and workers of the first-named visiting this plant. Other September plants are Antirrhinum, Canterbury Bell, and Buddleia. My latest record is a drone of *B. terrestris* on Monkshood on 28th October. Till the end of October this year there were no serious frosts to kill them off or send them into hibernation. The drones, workers, and young queens will continue to fly as late as the weather remains open, which is usually well on in October.

Psithyrus goes much earlier. My last date was a *Ps. distinctus* queen on 3rd September, the drones disappearing in August.

The following species were not mentioned in my last lists :—

B. soroënsis, Fabr. . . .	Aberdeen.
B. muscorum, Fabr. . . .	Mull.
Psithyrus quadricolor, Lep. .	Aberdeen, Edinburgh, East Lothian.

Additional Localities—*B. jonellus*, Kirb., Mull.*
„ *Ps. distinctus*, Pérèz, Edinburgh.*

* (*Cf.* SCOT. NAT., July-August 1930.)

B. soroënsis and *muscorum* are established on the strength of solitary specimens, as was *B. jonellus* for Mull. I took a worker of *soröensis* on Dahlia on 3rd September, a worn queen of *muscorum* on bramble, 19th July, and a worker of *ionellus* on bramble, 22nd July.

Of *Psithyrus quadricolor* I took a queen on blaeberry in Aberdeen on 3rd June, a drone on garden composite in Edinburgh on 9th August, and a drone on garden composite in Dirleton (East Lothian) on 7th August 1929.

My examination of the sting sheaths of the first two, and the armature of the last *quadricolor* drone, confirmed their identity with the aid of Mr O. W. Richard's invaluable paper on Humble Bees (*Trans. Ent. Soc., Lond.*, vol. lxxv., part 2, December 1927, pp. 233-268). For the identity of the *jonellus* worker and the queen and drone of *Ps. quadricolor*, I am able to thank Dr Oliver H. Wild, who was kind enough to examine a number of specimens for me.

Convolvulus Hawk-Moths in Renfrewshire.—On reading the article on the occurrences of the Convolvulus Hawk-Moth in Scotland, I think it may interest readers to know that one was found on a wall in the village of Kilbarchan, Renfrewshire, on 23rd September and brought to me. It was in fine condition and very lively. I liberated it a few hours later.—FREDERICK J. RAMSAY, Kilbarchan.

Referring to the article on the Convolvulus Hawk-moth in Scotland in the Sept.-Oct. No. of the SCOTTISH NATURALIST, I have pleasure in mentioning that one of these insects was brought into the Museum here in September, having been got at Johnstone, Renfrewshire. I write to mention this, because there is no reference to this Shire in the article.—ROBT. S. HOUSTON, Joint-Curator, Paisley Free Public Library and Museum.

NOTES

Common Hare in the City of Edinburgh.—A Common Hare stayed in George Square Gardens from 12th to 15th December. It probably arrived from the south or east (from Blackford Hill or Arthur Seat) early in the morning of the 12th; on which day it was disturbed by my dog, and had a canter round the railings, passing within a yard of me without noticing me. It did not seem at all worried by being in the centre of the city. On the 15th the gardener found it dead, killed apparently by a dog when feeding or sleeping. He took it to be a female from its size. This is not the first instance of a Hare being found in the Gardens. The present gardener saw one last year.—H. M. Gray, Edinburgh.

Food of Black-headed Gulls.—With regard to Mr Van Someren's note in the Scottish Naturalist, it may be of interest to mention that for many years I have known of Black-headed Gulls catching moths. In the summer evenings at Balavie, near Kingussie, I have many times watched them hawking over the grass and discovered that they were catching the males of the Ghost Swift. This was probably the "White Moth" noted by Mr Van Someren.—Evelyn V. Baxter, Largo.

Early Fieldfares in Berwickshire.—Mr J. S. Taylor Cameron, Edinburgh, informs me that in the course of a walk from Carfrae Mill to Gifford on the 2nd September last he saw, near Tollis Hill, Berwickshire, a flock of about a dozen Fieldfares, and a week later, on the 9th September, near the same place, he saw a flock of over thirty of these birds.—Bruce Campbell, Edinburgh.

Albino Chaffinch in Lanarkshire.—On frosty days I provide seed food for the birds in my back garden. Among about a score of Chaffinches an albino one has appeared several days this month (December). When it flits up and down among the fruit trees it looks like an entirely buff Canary. On the ground it appears as if it had been dipped in milk, and the white and yellow bars in the wings show faintly through. Ordinarily these bars vary so much in both male and female that I cannot determine the sex of this particular bird. The head and neck feathers are a dull buff, the breast and underparts are buff, with no trace of chestnut. The wings do not meet on the back, the space between them being yellowish-green and, I think, indicating a male. There is the characteristic duskiness round the eyes and at the base of the bill.—William Miller, Motherwell.

Curious Changes of Diet of Black-headed Gulls.—Under this heading your correspondent records the moth-hunting of the Black-headed Gull. My old home at Ruskie, near Lake of Menteith, Perthshire, was close by Flanders Moss where there was a large gullery. My memory goes back almost fifty years. During the whole period I have watched the Black-headed Gulls in the twilight of the July evenings hawking moths round a hundred-year-old yew tree in our garden and a clump of old ash trees on the other side of the road. I fancy this habit of the Black-headed Gull will be much older still.—T. Thornton Mackeith, Kilmacolm.

Abundance of Lapwings in East Fife.—It may be of some interest to record that in the month of September I was greatly struck by the immense number of Peewits to be seen along the east coast of Fife. In one flock I counted over 300, while many other flocks numbered well over a hundred.—George Waterston, Edinburgh.

Goosander in Dumfriesshire.—For a week or two in April of this year I saw the male and female Goosander frequenting the River Esk at Langholm. A gamekeeper told me he thought that they nested some miles farther up, but I could get no proof of this.—James Davidson, Langholm.

Goosander or Red-breasted Merganser Nesting in Dumfriesshire.—Referring to my note on this subject (Scottish Naturalist, 1930, p. 50), I must now report that in the summer of 1930 I was told that two broods of "Saw-billed ducks" were to be seen daily on the River Nith near Cowhill. It was not, however, till 12th September that specimens of these birds could be obtained, when two were sent to me; these I at once forwarded to Mr H. F. Witherby, who has identified them both as female Red-breasted Mergansers (*Mergus serrator*). Mr Witherby informs me that judging from the condition of their sexual organs and from the smallness of their crests he considers that both birds were hatched this year.

This note may be read in conjunction with Mr G. R. Millar's record of the breeding of the Goosander in Selkirkshire (Scottish Naturalist, 1930, pp. 87-88).—Hugh S. Gladstone, Capenoch.

Crossbill in Ayrshire in November.—On the 26th November I saw and heard a somewhat noisy Crossbill. The date is so unusual that it is well worth recording. It was in a fir plantation here.—E. Richmond Paton, Hareshawmuir, Ayrshire.

Red-backed Shrike in Fife.—At Crail on the 11th September I saw what was undoubtedly a female Red-backed Shrike. The bird was seen in a small garden down near the shore and allowed me to approach to within 15 yards. Its hooked bill and general coloration were sure identification marks. The weather had been very stormy the previous night, with an east wind blowing off the sea.—GEORGE WATERSTON, Edinburgh.

Numbers of Shearwaters and Skuas in the Firth of Forth.—During the past two years I have spent the month of August at North Berwick, and in the waters offshore I have been peculiarly interested in the Richardson's Skuas and Manx Shearwaters there. The area I have watched lies within the line joining the Bass Rock, May Island, Elie and Eyebroughty (Ibros) Island, and the northern half of that area is by far the most prolific in bird life.

In 1929 although I heard reports of them from others, I saw only one Manx Shearwater myself, whereas in 1930 a single bird on the wing crossed our bows, flying west, on a voyage to May Island on Sunday, 29th June; while during August it was only necessary to make a voyage out into the Firth at any time to see numbers of Shearwaters, sometimes singly, sometimes in pairs, and on one occasion as many as ten birds together. The way to find them with the greatest certainty was to approach groups of Terns feeding from the air in the restless manner peculiar to these birds. Always in the midst of this diving throng were to be found, swimming on the surface and presumably sharing in the feast, Guillemots, Razorbills, Gulls, and, as we found this year, almost invariably Man. Shearwaters: my opportunities for observation being the same each year, the difference in numbers was very striking, and in contrast to this the case of the Skuas was exactly the reverse.

In 1929 over a dozen specimens of the Skua had been taken before the middle of the month of August, birds in the dark phase being in splendid plumage, whereas those in the light phase were in very poor condition. Whatever the reason, this was invariable. In 1930 I did not see a single Skua during the first fortnight of August, but towards the end of the month they became more plentiful, although never anything like so numerous as in the previous year and never more than a single bird at a time.—H. H. M'TAGGART, Edinburgh.

CURRENT LITERATURE

Hoopoe in Argyllshire.—On 4th May 1930 a Hoopoe was seen near Oban. It flew up from the grass at the side of the road in company with a Lapwing.—G. H. MALCOLM in *British Birds*, vol. xxiv., p. 52.

Late Little Tern in Skye.—A Little Tern (*Sterna m. minuta*) was observed diving near Dunvegan on 15th October 1930.—A. MACRAE, in *British Birds*, vol. xxiv., p. 226.

Green-Woodpecker in West Ross-shire.—"On 26th June 1930, when walking in a large pine wood on the slope of a hill on the borders of Loch Duich, I heard the 'laugh' of a Green Woodpecker (*Picus viridis*). Then a glimpse of it was obtained through the trees and I heard the 'laugh' again twice."—M. BARCLAY in *British Birds*, vol. xxiv., p. 129.

Wild Duck nesting in November.—In *The Field* of 3rd January 1931, this unusual occurrence is reported.

The Duck was found brooding on 15th November on the banks of a Suffolk stream. It was flooded out on 27th November.

Osprey in Ross-shire.—On 21st June 1930, an Osprey was seen to rise from a river in south-west Ross carrying a big fish in its talons. It took it up to a ledge of rock and proceeded to eat it.—M. BARCLAY in *British Birds*, vol. xxiv., p. 192.

White Snipe in Moray.—On 30th September 1930 there was shot at Benzie House, Moray, a white example of the Common Snipe. The bird is not a perfect albino, there being a few sandy feathers on the back. The eyes unfortunately were shot out, so their colour cannot be stated. The bill and feet shade from yellow to brown. It was flushed amongst turnips and was the only bird of its species seen in that field.—*The Field*, 3rd January 1931.

Great Spotted Woodpecker breeding in Sutherland.—Messrs G. K. Yeates, M. G. Robinson, and H. A. Patrick, writing in *British Birds*, vol. xxiv., p. 161, report the finding of the nest of this bird in an old birch on the Sutherland side of the Dornoch Firth on 24th June 1930. Both the adult birds were seen, and in the nest were well-advanced young, which appeared at odd intervals at the entrance hole. [We are glad to note that this bird has again bred in Sutherland. For a previous record, see SCOT. NAT., 1926, p. 92.]

Black Redstart breeding in Kent.—In *British Birds*, vol. xxiv., p. 190, Mr T. J. Wallace records the nesting of this species at a farm in Kent, three or four young of the first nest being hatched by 10th June. A second clutch of eggs was laid about 7th July, and young were hatched on 23rd July, but only two of this second brood survived. Later the parents were seen with five full-grown young. [This bird has for some years been extending its range in Germany and is apparently attempting to establish itself in South England. It nested on the south coast in 1923, 1924, and 1925, and we are glad to hear of its again breeding in the British Isles.—Ed.]

Entomological Notes.—Under this heading W. B. R. Laidlaw, B.Sc., in the *Scottish Forestry Journal*, vol. xliv., pp. 90-94 (October 1930), writes on three destructive insects in the Moray and Dee districts. The first is a Weevil, *Pissodes validirostris*, Gyll., whose larvæ were found in seeds of the Scots Pine in Morayshire. This species is new to Britain, and five Hymenopterous (Braconid) parasites were reared from minute circular holes in the cones. The second note is on a Bark-Louse (*Chermes cooleyi*), an insect related to the Aphids or Green-Fly, attacking the Douglas fir in the Moray and Dee districts. An account is given of four of the principal natural enemies of this pest. The Clay-coloured Weevil (*Otiorrhynchus singularis*, L.) forms the subject of the third note. This was found attacking sycamore and beech seedlings in an Aberdeen nursery. Lead arsenate, as a stomach poison, proved the most successful remedy. Three plates accompany the paper.

The Galleries of the Bark-Beetles.—A short Memoir of much interest to foresters, and to entomologists in general, appears in the December number of the *Bulletin of Entomological Research*, vol. xxi., pp. 469-480. It is entitled "Studies on the Galleries of the Bark-Beetles," and is by Ivar Trägårdh, D.Sc., the Chief of the Entomological Department of the Royal Swedish Institute of Experimental Forestry. All students of forestry are aware that the number and the direction of the galleries excavated by these injurious insects are highly characteristic, enabling the investigator to say definitely what is the attacking species without seeing a specimen of the insect. It is also sometimes possible to say whether the damage to a felled tree was done before or after the felling. In Dr Trägårdh's interesting paper many important points are discussed, such as the reason why some of the tunnels are longitudinal and others transverse, why certain species never breed in felled trees, why the nuptial chamber differs in shape

in the different species, and so on. The article is illustrated by seven very telling illustrations.

New British Caddis-Fly.—In the *Entomologist's Monthly Magazine* for January 1931, pp. 16-17, Kenneth J. Morton records the capture near Aberfoyle of specimens of *Triænodes simulans*, Tjeder, a species new to Britain and described as a new species in 1929. It is apparently related to *T. reuteri*, M'L., and the Aberfoyle examples were at first recorded as that species. Subsequent examination, however, proved them to belong to the new Swedish form.

Clay Weevil Larvæ damaging Conifer Seedlings.—E. V. Laing, in the *Scottish Forestry Journal*, vol. xliii., pt. 2, pp. 159 and 160 (October 1929), gives an account of serious damage caused by the larvæ of *Otiorrhynchus singularis*, L., to seedlings of the Scots Pine in a nursery in Scotland. The damage is similar to that caused by the grubs of cockchafers. Naphthalene and toluene used as soil fumigants were found to be completely successful remedies.

Ocean Currents.—The ocean currents are of special interest to fishery investigations and are studied by several methods. One method is to liberate sealed bottles at various places, and this has been used extensively by the Fishery Board for Scotland. The results of the bottles liberated in 1910 have been worked up by Mr Tait, and charts showing the circulation of the surface drift in the North Sea and Faroe-Shetland Channel are given. One very interesting point emerges, namely, the presence of several eddies. The largest of these is the "Great North Sea Eddy" lying between Scotland and Norway.

Scottish Sea-Squirts.—The Ascidians (Molgulidæ and Pyuridæ) taken by the research vessels of the Fishery Board for Scotland have been worked up and reported on by Dr Thompson (*Fishery Board for Scotland, Scientific Investigations*, No. 3, 1930). The classification has been revised and previous records of occurrence of the various species in the area are included.

BOOK NOTICES

Dream Island: a Record of the Simple Life. By R. M. LOCKLEY. With Sketches by D. LOCKLEY. London: H. F. and G. Witherby. Demy 8vo, pp. 192, and 7 plates. Price 8s. 6d. net. This attractively written volume is a mixture of adventure, romance, and natural history, in which perhaps the first-named predominates. The author tells of his desire to live on some quiet, remote island where he could indulge in his day-dreams and his love of birds and flowers to his heart's content. After wandering with a friend along the coast of Wales he learns of the lonely, uninhabited island of Skokholm, off the south-west corner of Pembrokeshire. He settles there, turning certain ruined buildings into a habitable house, by dint of many crossings from the mainland, weeks of hard labour, and aided in the furnishings by property acquired from a wrecked schooner. All this makes entertaining reading, while to the naturalist the nineteenth chapter, on the habits of the Manx Shearwater, is perhaps the most interesting. The shortest chapter is devoted to the "wedding-day," when the author marries quietly the lady who, we presume, is responsible for the clever sketches and tail-pieces which adorn the volume.

The Aquatic (Naiad) Stage of the British Dragon-flies (Para-neuroptera). By WILLIAM JOHN LUCAS, B.A., F.E.S. London: printed for the Ray Society, 1930, pp. xii and 132, 35 plates (many coloured). Price 25s. Like many other volumes published by the Ray Society this monograph represents an enormous amount of careful work and patient observation. It is devoted to a detailed description of the second or middle stage (*i.e.*, between the egg and adult insect) of our native Dragon-flies. The author has already published an excellent account of British Dragon-flies in the adult stage, which is the recognised text-book for British collectors. He has now most usefully filled up the gap in our knowledge of their life-histories, and the volume will be of the utmost value, not only to the specialist, but also to those investigators of pond life who, in their dippings with the water-net, must perforce capture many of the grotesque-looking objects which he could hitherto only term vaguely "dragon-fly nymphs," but which he will now be able to determine with ease as belonging to a particular species. For those who desire to study these fine insects more deeply the author provides an excellent introductory account of the structure of Dragon-fly naiads, with a classification and key to species founded on nymphal characters, which cannot fail to be helpful. Forty-two species are then dealt with in detail, with an excellent description of all the external parts, a list of specimens, with localities, upon which the descriptions are founded, and full particulars of habits. Lastly, the plates, no less than 35 in number, are extraordinarily good, and as they are all drawn by the author himself their accuracy may be taken for granted.

Zoo Ways and Whys. By T. H. GILLESPIE. London: Herbert Jenkins, Ltd., pp. 218, 16 plates. Price 3s. 6d. net. The eighteen chapters of this instructive and entertaining little volume are founded upon a series of broadcast talks given during the Children's Hour of the Edinburgh and Glasgow stations of the B.B.C. These talks, by the Director of the fine Zoological Park at Edinburgh, will be much appreciated in book form, and the author is well advised in presenting them to the public in general. It is interesting to learn much of what goes on behind the scenes in a Zoological Park, and the versatile author has written a very entertaining account of the behaviour of various animals in captivity. Their temperaments, likes and dislikes in diet, and general behaviour when under restraint are all dealt with in fascinating style, while their habits of life in the wild are instructively told and contrasted with the same habits in a Zoo. It is good to read how well the creatures are treated in confinement, and that they are, on the whole, probably better off in a well-conducted Zoological Park, where they are safe from persecution by their natural enemies, than they are in a state of nature. This book would make a charming gift or an excellent school prize.

The Origin of the Human Skeleton: An Introduction to Human Osteology. By R. BROOM, D.Sc., F.R.S. London: H. F. and G. Witherby. Demy 8vo, pp. 164, figs. 46, and 2 charts. Price 10s. 6d. net. We began to read this book with some eagerness, but after a few pages a feeling of disappointment arose. It was found to be so technical that without a thorough grounding in osteology no one can follow the argument. The difficulty is increased, moreover, by an irritating and unaccountable absence of any reference in the text to the figures with which the volume is provided. The author has given upwards of thirty years of study to this important subject, and the book contains a mass of detailed information difficult to find elsewhere, and invaluable to the specialist who is competent, by reason of previous study, to follow the argument which makes up the volume as a whole.

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CONTENTS

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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 New Scottish Aquarium. (Illustrated.)
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.
The Garganey—an addition to the Breeding Birds of Scotland.
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.
White-sided Dolphin in Scottish Waters.
Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.

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

(*Authors are responsible for nomenclature used.*)

The Scottish Naturalist

No. 188] 1931 [March-April

THE MENACE OF THE GREY SQUIRREL.

The rapid spread in the British Isles of the American Grey Squirrel has recently been the subject of many articles in the daily Press, weekly and monthly Journals and Scientific Periodicals. It appears to be now generally realised that unless drastic steps are taken to control the spread of this destructive rodent it will eventually cover the whole country. Mr A. D. Middleton of the Oxford University Museum has, within the last six months, published two important papers on the subject, the more exhaustive of which appeared in the *Proceedings of the Zoological Society of London* (1930, part iii., pp. 809-843) and was illustrated by six plates and four text-figures. The other paper, on similar lines, but with less detail, is to be found in the *Journal of the Ministry of Agriculture* (vol. xxxvii., No. 11, February 1931, pp. 1069-1078) with three plates and a map. The importance of this subject need not be emphasised, but that there is a real danger to our woodlands, orchards and gardens in the presence of this little alien rodent is shown by the fact that Mr Middleton's investigations are being financed by a grant from the Empire Marketing Board.

Since many of our readers will not have ready access to the two periodicals mentioned it may serve a useful purpose if we summarise, as briefly as is consistent with clearness, the main points brought out in these researches. Before doing so, however, we may point out that the occurrence of the Grey Squirrel at Dunfermline was recorded by Dr James Ritchie in this magazine eight years ago

(SCOTTISH NATURALIST, 1923, pp. 93-94) while, three years previous to this, he had commented on the Grey Squirrel danger in his well-known volume *Animal Life in Scotland* (1920, pp. 288-290.)

The Grey Squirrel of North America is known scientifically as *Sciurus carolinensis* Gmelin. Many racial forms have been described, but it is interesting to note that all the examples introduced into this country belong to the form *leucotus* Gapper, which ranges throughout the north-eastern United States and south-eastern Canada, from latitude 44° to latitude 50° N., and from 69° to 96° W. longitude. The general colour of the animal is a silvery grey, with a white belly. Where these two colours meet along the sides there is a line of brown, which colour also often tints the head, ears, back and upper surface of the feet. There are no tufts on the ears as in the winter coat of our native Red Squirrel, and the ears themselves are rather small.

The food of the Grey Squirrel has been carefully investigated, and has been found to consist, in the main, of the following items, arranged in order of frequency: green shoots of deciduous and coniferous trees, ripe or unripe nuts, seeds and fruits, inner bark of young beech, sycamore and other trees, bulbs and roots, eggs of birds, young birds and lastly carrion. *A propos* of this subject we are tempted to quote an interesting letter which appeared in *The Field* of 17th January 1931. W. Rolles Biddle, the writer, says:—

"I see further correspondence *re* Grey Squirrels. On Sunday, 14th December last, a head-keeper on an estate in Kent told me the following. In March, 1929, to his amazement he found a hen pheasant with head and crop eaten in one of the pens. The next day there was another treated in the same fashion. At the risk of damaging one of the other birds he set a trap: nothing touched it, but a third pheasant was lying dead. To solve the mystery he made a hide and sat watching, and next day about 2 P.M. a Grey Squirrel came over the wire and started muzzling about in the grass, apparently taking no notice of the birds, who seemed to avoid him, and came down to the end of the pen where the keeper was watching. They were restless and eventually edged round to the other end and came nearer to the squirrel. Suddenly, when some of the birds were about two yards from him, the squirrel sprang and

seized another bird by the neck. The keeper shouted and the squirrel let go and dashed up the wire netting, to be shot when he reached the top. As the keeper said, he would never have believed it if he had not seen it. As one can imagine it has been war to the knife ever since, but there are still some left, and he is sure they are responsible for mangling the heads and crops of birds shot which could not be picked up before nightfall. In each case the crop of the birds was attacked. It looks as if the squirrel knew they might have corn in them."

Grey Squirrels frequent open woodlands or park-lands where there are deciduous trees rather than the dense coniferous forests haunted by the Red Squirrel. It is exceedingly nimble in the tree-tops, but spends much of its time on the ground searching for bulbs and roots. There are one or two litters in each breeding season, with an average of four to each litter. The normal length of life is said to be from three to six years.

Although there is some evidence that the Grey Squirrel occurred in certain parts of Wales so long ago as 1828, yet the main introductions of this destructive animal were between the years 1889 and 1929. Middleton mentions no fewer than 33 centres of introduction, in most of which there has been a notable increase. In some, if not in most, cases the animals were turned down deliberately, but in a few instances they were accidental escapes from captivity. However this might be, the increase has been so rapid that the country's woodlands are seriously threatened. The total area of distribution at the present day is estimated to measure about 13,350 square miles. Fortunately for Scotland only three or four areas are reported to be infested, viz. the county of Dumbarton, the north-western portion of Stirlingshire, an area of a few miles radius round Dunfermline in Fife, and Corstorphine, near Edinburgh, invaded by escapes from the Zoo. An infestation of the Dalmeny estate recently reported to us, is no doubt due to escaped animals from the Edinburgh Zoo.

Lastly, it may be interesting to mention that, according to the evidence available, the reported decrease in the numbers of the Red Squirrel has apparently no connection with the rapid spread of the American species.—P. H. G.

NOTES

Twaite Shad (*Clupea finta*) from the North Sea.—A specimen of this fish, taken 55 miles E.N.E. of Buchan Ness, Aberdeenshire, about the middle of January, has been presented to the Royal Scottish Museum by Messrs Johnston, Green, Ltd., of Edinburgh. The fish was 18½ inches in length and weighed 2 lbs. 7 ozs. The shads are usually found in or near estuaries and are seldom taken at sea. From old accounts it would seem that they were formerly much more abundant in Scottish waters than they are at the present day.—A. C. Stephen.

***Phyllodrepoidea crenata*, Grav., in East Inverness and East Perth.**—This Bark Beetle, as it may be called from its habitat, still seems to be extending its range in Britain. Since I drew attention to its movement southward as indicated by the records of its occurrence in Cumberland and Northumberland (Scottish Naturalist, 1922, 28) it was discovered by the late William Evans in another Scottish county, Midlothian, where it occurred under beech and oak bark in two localities near Penicuik (*Ent. Mo. Mag.*, lviii., 190); and it has been noted in another English county, North Yorkshire, where it was found by Mr M. L. Thompson near Whitby in 1924 (*Ent. Mo. Mag.*, lx., 260). During last September I was able to obtain evidence of its further progress in Scotland through the capture of a single example amongst the timber in a woodyard near Aviemore. A few days later I came across another specimen in a different woodyard in the same district. These captures mark the most northerly point of the insect's known distribution in Britain. In common with most of the other Scottish localities in which *crenata* occurs, Aviemore has been well investigated by coleopterists for very many years, but, so far as I know, the Beetle has never previously been recorded from that district, nor indeed from any other part of East Inverness, thus leading one to infer that it is a newcomer there. I may add that, towards the end of September, when collecting in a woodyard near Dunkeld I found another specimen amongst the timber. This is the second locality for the Beetle in East Perth, as it had previously been taken by Dr N. H. Joy at Pitlochry.—A. Fergusson, Glasgow.

TRUE'S BEAKED WHALE (*MESOPLODON MIRUS*) NEW TO THE SCOTTISH FAUNA.

By A. C. STEPHEN, B.Sc.

SIR SIDNEY HARMER in 1913 began an investigation into the species of Whales stranded on the British shores. The results of this inquiry (Harmer, 1927) showed that some of the species deemed scarce were really quite frequently stranded, but that there were others which only appeared

FIG. 1.—Photograph of the two compressed teeth extracted from the jaw, shown broadside and edgeways respectively.

on rare occasions. The Beaked Whales (*Mesoplodon*) are amongst the rarest of these stranded Cetaceans, and their external characters are still inadequately known. It is possible that three species may occur on British coasts but, so far, only the above has been recorded. There are only two records of the stranding of this Whale in Britain (Harmer, 1927, p. 53) both from the west coast of Ireland near Galway. Only two other specimens are known to exist and they were found on the east coast of the United States. The species was first described from one of these American specimens (True, 1913, p. 651).

Another record has now been added to this meagre list, this time from Scotland; a specimen having come ashore in the first week of January 1931 at Geirnish, on the west side of South Uist. The head and one flipper were secured for the Royal Scottish Museum.

The position of the teeth in the lower jaw of these Beaked Whales is an important diagnostic character.

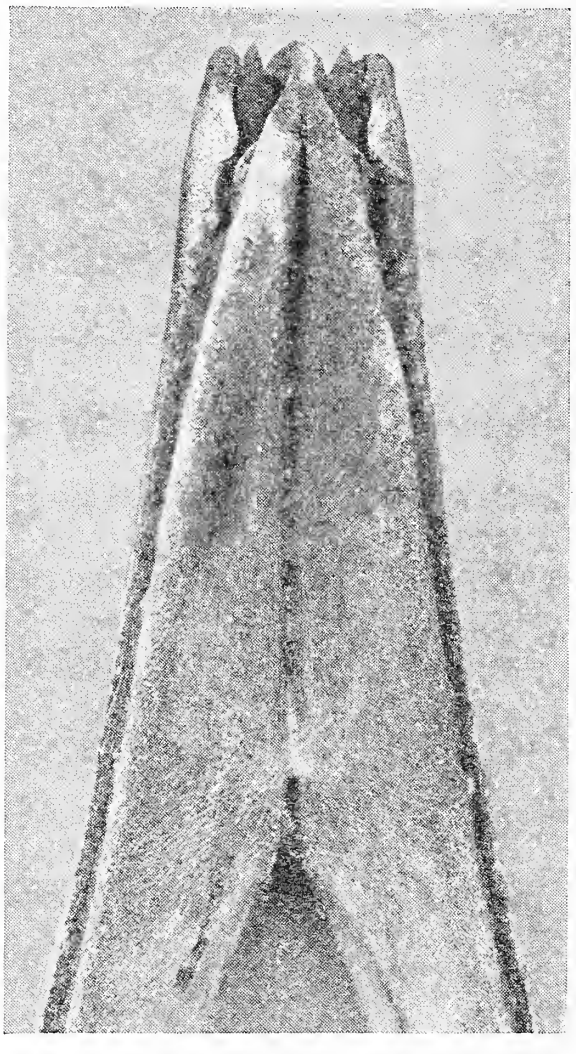

FIG. 2.—Photograph showing the single pair of teeth *in situ* at the tip of the lower jaw.

True's Beaked Whale shares with the New Zealand species, *M. hectori*, the peculiarity of having the single pair of teeth set at the extreme end of the lower jaw (Fig. 2). In the South Uist specimen the teeth are of equal size, acutely pointed, laterally compressed, and with the tips devoid of enamel. (Fig. 1). Their length is 55 mm. (approx. $2\frac{1}{10}$ inch). and the two diameters 15 and 11 mm. (approx. $\frac{2}{5}$ and $\frac{9}{20}$

inch). True's measurements of the teeth in the type specimen are considerably less. Since he did not remove the teeth from the jaw, however, his figures are only approximations. The teeth are strongly inclined forwards in the jaw (Fig. 2) but show no appreciable outward curve. They were not visible from the outside of the gum. This is a character which is shared by the young males and females; since the teeth are solid and nodular at the base, however, the animal would be at least full grown, and therefore a female. The total length was 17 feet 6 inches and the distance from the tip of the snout to the blowhole was 2 feet 3 inches. The colour of the head was black. Over most of the body the skin had peeled away, except for a few patches on the back which were also black.

This record forms an interesting addition to the list of British Cetaceans and the material forwarded to the Museum is a valuable contribution to the collections. The Museum is therefore greatly indebted to Mr Archibald Macdonald, Stilligarry, South Uist, for his good services in securing and arranging for the transport of the material; also for his notes on the colour and size of the animal.

[During a recent visit to London I compared the two teeth in the lower jaw of this Scottish example with those in the British Museum specimen, at the same time taking a rough outline sketch of the bones of the skull for comparison on my return. Everything confirmed Mr Stephen's identification.—PERCY H. GRIMSHAW.]

LITERATURE CITED.

1913 TRUE, F. W., *Proceedings of the United States National Museum*, vol. 45, p. 651.

1927 HARMER, Sir S. F., Report on Cetecea stranded on the British Coast from 1913-1926. Published by the Trustees, British Museum (Nat. Hist.) issued Feb. 1927.

***Epuræa terminalis,* Mann. (*immunda,* Er.), in West Perth.**—This Beetle, which is found under the bark of various trees, appears to be rare in Britain, the only records of its occurrence given by Fowler in his *Coleoptera of the British Islands* being from Scarborough in England, and the Tay and Moray areas in Scotland. It may accordingly be of interest to record the fact that a few specimens were found, during July 1920, under the sappy bark of birch at Loch Dhu, which lies about twelve miles west of Aberfoyle. The late William Evans does not mention the Beetle in any of his papers in this Journal dealing with "Forth Coleoptera," so it would appear to be an addition to the Forth area list.—A. Fergusson, Glasgow.

Goldfinch in Perthshire.—With regard to the occurrence of Goldfinches in Scotland, it might be interesting to note that I saw two near Killin, on the 4th of January 1931. They were feeding on thistles among snow, at a height of about 750 feet. The weather was cold, and there was snow in the valleys.—Douglas Falconer, Edinburgh.

Owl hooting upon the Wing.—The ways of nocturnal creatures are not generally easy of observation and I do not recollect ever having seen any reference to Owls *hooting* upon the wing It may, therefore, be of interest to record that, chancing to be out in the early gloaming of 11th May last, my attention was drawn to a Tawny Owl sitting in a leafless tree some forty yards from me. I was on the other side of a low dyke and possibly the bird may not have seen me, although that is not much to the point since it is notorious how indifferent this species often is to human juxtaposition in the dark—as though presuming upon our limited vision? While I stood watching it hooted at intervals, the two customary calls following one another in the usual succession. Presently it flew to another tree, fifteen or twenty yards away, and rather nearer to me, and as it did so gave vent to a full and ordinarily rendered hoot, *Too-hoo, ho-ho-ho-ho.* My position was very favourable for seeing. The bird's flight was, perhaps, slightly more of a glide than usual, but it did not disclose any special sort of effort made in hooting upon the wing.—George Bolam, Alston, Cumberland.

Purple Sandpipers at Granton Breakwater.—On 28th December 1930, three of these birds were seen feeding at the end of the Breakwater, on the seaweed at low tide. Being, as is their manner, singularly tame, I was enabled to get within three yards of them. Their alarm note was very reminiscent of a Starling's.—George Waterston, Edinburgh.

GREAT CRESTED GREBE INQUIRY (1931).*

By T. H. Harrisson, M.B.O.U., and P. A. D. Hollom.

Of late years the Great Crested Grebe (*Podiceps c. cristatus*) has increased to a remarkable extent in Great Britain, and every year it appears to be extending and colonising new localities, though in some cases old sites have been abandoned. For this reason it seems to us most important that a full inquiry into the present status and economy of the bird should be made, and that all possible facts relating to its past history and rapidity of increase should now be brought together and published.

With the support of Mr H. F. Witherby and *British Birds* Magazine we intend, during 1931, to carry out an inquiry on these lines, and we are most anxious to cover Scotland satisfactorily with the help of readers of this Magazine.

Appeal for Wide Support.

Many observers have, during the last few months, sent us valuable data for years prior to 1931, and the great majority of these have offered to continue to help in this inquiry. But there are large areas of Scotland which promise to prove troublesome, and for that reason we are making a special appeal to Scottish observers through the pages of the Scottish Naturalist. We shall need help from every part of Scotland, and in particular from Clyde, Solway, Tay, and the Edinburgh area. The northern limit of the species (Moray, Aberdeen, Banff, etc.) is of special importance and requires careful study.

The excellent paper by the Misses Baxter and Rintoul, published in the Scottish Naturalist, 1919, pp. 67-77, will provide a useful basis for observations, and we shall be glad to pass on all additional information at our disposal to those who offer to help us. Our main objective in Scotland is to obtain sufficient support to enable us to arrange that

* Summary of article published in *British Birds*, February 1931 (vol. xxiv., pp. 249-254).

every lake on which the Great Crested Grebe has been known to breed is visited in 1931.

Will all those who can assist, even if only able to visit one lake, please notify T. H. HARRISSON, PEMBROKE COLLEGE, CAMBRIDGE, specifying the areas and lakes to be covered, and in what counties they are situated. Schedules and further details will then be sent immediately.

We are glad to be able to say that Mr W. B. Alexander has very kindly agreed to cover any area which proves particularly difficult, and similar offers from others would be most welcome. It is particularly hoped that natural history societies will interest themselves in this inquiry.

HINTS.

Those who have notes some years old, but none for 1931, are asked to send what they have. We suggest that keepers and owners can often furnish useful data, and that every opportunity of consulting them should be taken. Observers are by no means required to keep to their home areas, and are asked to send data from any part of the county. All readers, whether they are themselves able to assist or not, are asked to draw the attention of other ornithologists, societies, lake owners and the local press to this inquiry.

SPECIAL POINTS.

1. *Food.*—Much more information on food is needed. Dr W. E. Collinge has very kindly agreed to write a full report on this subject. Will all those who can obtain whole birds or stomachs (from oiled or storm-driven birds, etc.), send them to T. H. Harrisson?

2. *Habits.*—All observations on nesting habits, care of young, dives, territory, relations with other species, non-breeding birds, migration, etc., will be most welcome.

3. *Literature.*—We should be greatly obliged if any one who may be able to help by undertaking to investigate and analyse the literature of the subject for any area, will communicate with us. Already two correspondents have proved of great service in this direction.

Difficulties.

We must point out two difficulties, which may be overcome if the recommendations made here are adopted.

(*a*) In some areas there is a well-marked May passage migration, continuing after some birds have started nesting operations. For this reason it is best to take final counts in June or July (where possible). It is certainly not safe to rely too much on April or May figures, though these will be very useful.

(*b*) Care should be taken to distinguish between pairs which have been robbed of their eggs, and non-breeding birds. Local inquiries and the behaviour of the birds will usually decide this point.

Other minor difficulties will probably be encountered, as is always the case in any such work, but late June or July counts will overcome these, for the most part. Where time is limited it will be best to concentrate on visiting as many lakes as possible, rather than spending much valuable time in attempting to obtain an exact count for a few lakes.

The success of the scheme depends on the enthusiasm and response of observers throughout Scotland. Will all who can possibly help, do all they can to make this inquiry an efficient one?

Lingering Insect Life.—The late lingering of bees at autumn blooms was described recently by W. B. R. Laidlaw, B.Sc., in the Scottish Naturalist. I might mention that in Kilmun district, Holy Loch, Argyll, the Fuchsia, amongst others, is a common shrub that continues in flower into October, and I have watched the bees, chiefly of a brown species which nests annually in the garden, travel to and from the flowers until, as the writer says, the frost or the weather ends their activities. Another insect came under notice last autumn in the same connection and in the same district. On an alder tree on 7th September was discovered a brood of the Buff-tip Moth (*Phalera bucephala*), and in rearing these it seemed to me that I had under observation a race between these larvæ and the waning vegetation of their food plant. Would the caterpillars reach the pupal stage before alder leaves became unobtainable? They did—on 27th October. The larvæ are at once recognisable by the black V-shaped mark on the front of the head.—T. Malloch, Kilmun.

BOOK NOTICE

The Formenkreis Theory and the Progress of the Organic World. By OTTO KLEINSCHMIDT, Dr.h.c. Translated by the Rev. F. J. C. JOURDAIN, M.A., M.B.O.U., F.Z.S., London: H. F. and G. Witherby. Demy 8vo, pp. 192, with 16 plates and numerous text-figures.

English-speaking people owe a debt of gratitude to Mr Jourdain for the accomplishment of a difficult task, the translation into clear language of a German work which has attracted much attention in its original form, but which can now be read and judged with much less effort by readers in this country. The theory of the "Formenkreis" as here presented is an elaboration of a conception first promulgated by the philosopher Kant in 1775. It is an attempt to prove that the innumerable species known at the present day have originated from several independent sources, and have not all been evolved from a common source, as the Darwinian theory suggested. Three fundamental concepts are distinguished in this new theory: (1) the Formenkreis or "true species," (2) the race, and (3) the variety. We are recommended to avoid the use of the term "species" as ambiguous. The distinction between a species and a Formenkreis (this word is apparently untranslatable!) is given as follows: "A species is an artificial notion due to human intelligence, by means of which it comprises as a unit particular cases or individuals, which are indistinguishable. A Formenkreis, on the other hand, is a real relationship detected by observation of nature, and existing in nature itself, of often quite different looking groups (races) of individuals, which are similar to each other, within the race, or which only vary according to age, season, sex, or individual variation." It appears to us that this is mere quibbling. The modern scientific conception of a species *is* the grouping together of a number of races in a real relationship as revealed by investigations *carried out by human intelligence!* How then does this differ from a Formenkreis?

In spite of our impression that the author's conceptions are vague and fanciful, that there is nothing really new in his arguments, and that his definitions and explanations are difficult to follow, many interesting facts are brought forward in the volume. The book should certainly be read and pondered over. It is nicely got up, and much more attractive in form than the original German edition. It is also full of illustrations, which are always interesting, though sometimes fantastic.

MIGRATION NOTES FROM FAIR ISLE.

By Surgeon Rear-Admiral J. H. STENHOUSE.

LAST autumn observations on bird migration were made for a period of five weeks, 14th September to 19th October inclusive, at many different stations on both sides of the North Sea. The idea of having an "International Observation-Net" originated with the Bird-Watcher at Heligoland, Dr Rudolf Drost, who is, I understand, working out the results. At Fair Isle notes were taken during the period by Mr George Stout, and it is from his diary, which has been forwarded to me, that the following details have been extracted.

Bird migration on a large scale took place three times during the five weeks: first on 14th September, again on 18th September; on both occasions east winds prevailed; and lastly on 15th and 16th October, when there was either no wind or very light south-westerly breezes.

On 14th September the migrants were chiefly Meadow Pipits, Larks, Starlings, and Twites. There were a few Rooks and Jackdaws, eighteen Hooded Crows, and all three species of the Swallow family were represented. On the 15th, House Martins had increased and a male Eversmann's Warbler (*Phylloscopus b. borealis*), the sixth occurrence of this bird at Fair Isle, and the seventh in the British Isles, was secured. On the 16th there were large numbers of Swallows and House Martins on the island, a most unusual occurrence in autumn, when these birds are, as a rule, rarely seen, and usually only single birds appear. On the 16th there was also a very large immigration of Great Black-backed Gulls. On the 18th the chief visitors were again Larks and Pipits, but many other species were also present. The weather conditions were very bad, and after midday observations were hopeless. The most striking feature of the movement was the abundance of Bluethroats, of which more than twenty were seen. Common Whitethroats were also abundant and among the

rarer birds noted were four Yellow-browed Warblers, one Great Snipe, one Siskin, one Turtle Dove, one Little Bunting, and one Little Stint. Bluethroats were observed every day after this till 2nd October. On the 20th the first Woodcock of the season was seen, and also the first Redwing, and four Little Stints were present; while a Rough-legged Buzzard arrived on the 21st. After that date there was little unusual migratory movement noted till 15th and 16th October, when Snipe were very numerous, and also Redwings with Bramblings and Snow Buntings. On the later date two Scarlet Grosbeaks and one Ortolan Bunting were observed, and an adult male Northern Bullfinch was found dead under a wall.

From July onwards Crossbills were on the island; the last record of them is on 10th October. Three Two-Barred Crossbills were seen on 12th September, and one on 18th September.

The captures of a Short-toed Lark on 24th October and of a Petchora Pipit on 27th October have already been recorded in the SCOTTISH NATURALIST (1930, p. 188), but it is stated that a Petchora Pipit was both seen and "*heard*" on 18th September, and that when the example was secured on 27th October there were two or three on the island. It seems as if this bird (whose call-note is quite distinctive) comes much more frequently to Western Europe than has been suspected, and there is no doubt whatever, that, from its resemblance to other Pipits, it is easily overlooked.

Whooper Swans in East Inverness-shire.—On the 29th August 1930 I saw a pair of adult Whooper Swans on a loch in eastern Inverness-shire—at an altitude of 956 feet. I had a very good view of them. They were swimming together close inshore where the road passes, and I "spotted" them as being other than Mute Swans, even although I was driving the car at the time. On stopping, we were able with glasses to make out the distribution of colour on the bill with great distinctness.—A. LANDSBOROUGH THOMSON, Kensington, London.

THE VARYING LENGTH OF LARK SONG.

By Noble Rollin.

Much ink has been spilt by ornithologists in the struggle to settle once and for all, how long a Lark sings. It is true that a great deal of the controversy on the subject could have been dispensed with had the standard works of various naturalists been consulted. Thus, so long ago as 1839, Macgillivray published a number of carefully recorded times, together with notes on the weather; and much has been written since. Even so it is perhaps as well that such works were not consulted, for the other avenue of information open to those engaged in these controversies is that of going outside and timing Larks for themselves. Much of this timing of Lark songs could be turned to useful account, if the extreme variability in the length of song and consequent limitations of the subject were properly understood. Anyone attempting to study bird-song is immediately confronted with the difficulty of comparing his records with those of others. The *timing* of the song of the Lark, however, can be presented in a *statistical* form which should be readily comparable with other records.

Making the Records.

The actual recording of songs presents no difficulties. Everyone is agreed that the timing is started when the bird rises, singing, from the ground, and the timing is finished either when the bird ceases singing, preparatory to an earthward dive or—if the dive is dispensed with—when the singing bird reaches the ground. During the last four years I have timed over a thousand Lark songs, representing probably about 36 hours of continuous song. In making these records the time has been taken to the nearest half-minute, and the efforts which failed to reach half a minute have been omitted. It is obvious to anyone who has timed a dozen or so songs, and noticed the difference between one song and another, that those enthusiasts who

sought to settle the length of a Lark's song had as much chance of accomplishing their task as someone trying to fix the diameter of the pebbles on a sea-beach. When the songs are taken in the aggregate, however, it is seen that the fluctuations are not altogether haphazard, for we may note variations according to the time of day, and the month of the year, and also the fact that some birds habitually sing longer than others.

In presenting records we can take the *average* of a number of songs, or the songs may be *grouped* according

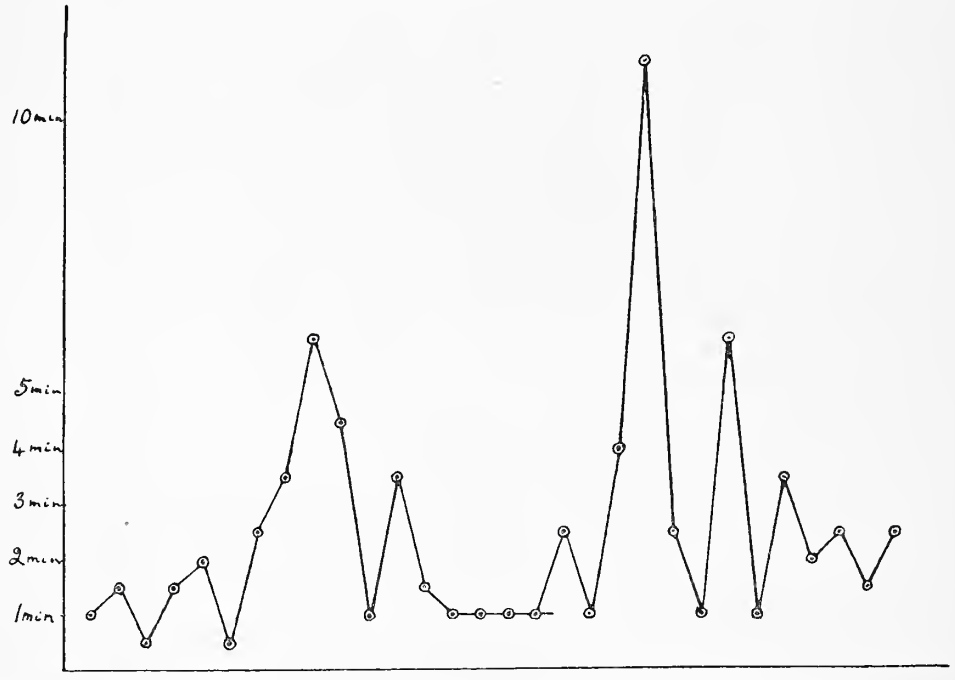

FIG. 1.—*Song Variation.* Curve showing the variation in length of successive songs. Each point represents a song.

to their length—for instance one group may include all songs of 2 to $3\frac{1}{2}$ minutes, another all songs of 4 to $7\frac{1}{2}$ minutes and so on—and the numbers occurring in each group compared. At the outset it is necessary to realise the extreme variability of successive songs, and perhaps this is best illustrated by recording a number of songs and making a graph of them in the order in which they were taken down. Fig. 1 is an example of this and it is a typical portion of a graph made from over a hundred songs. With such differences between successive songs it is obviously imperative that when dealing with averages a large number of songs must be timed.

The Average Length.

To settle what is the average length of song is a rather difficult problem, so much depends on the locality in which the timing is done. The average length of song for a particular locality, however, is more easily determined; and I propose to base my calculations on over 500 songs timed in a restricted area. This area is on the outskirts of South Shields (Durham) and within half a mile of the sea; it consists of a grass field, a group of allotment gardens and a field usually sown with corn. Practically all the

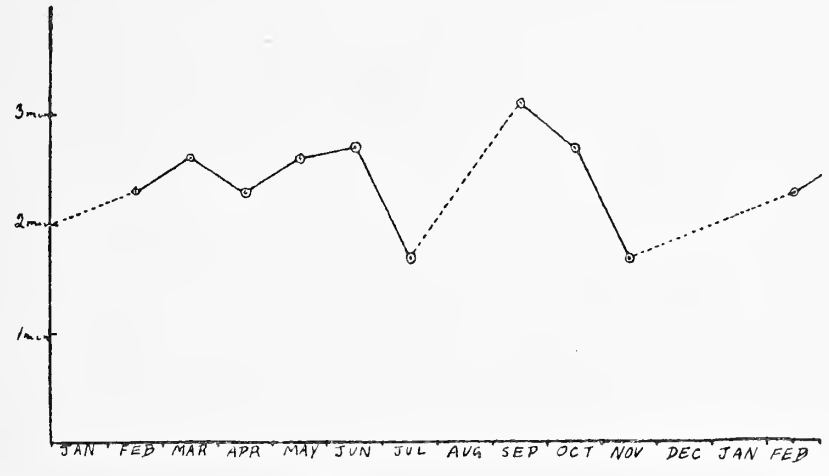

FIG. 2.—*Monthly Average.* Curve showing the average length of song for each month.

songs in this area were timed in the morning and the following is a summary of the results.

Year.	Number of Songs.	Total Number of Minutes.	Average Duration.
1927 . . .	29	63·5	2·19
1928 . . .	91	209·0	2·30
1929 . . .	429	944·5	2·20
	549	1217·0	2·22

From these figures it appears that in this area the average length of morning song for the *whole season* is 2·2 minutes.

Monthly Averages.

In Fig. 2 times from the same area have been split up and the average length of song for each month worked out. The same data have also been divided into time groups, the

percentage *number* of songs occurring in each group being shown in Fig. 3. In the monthly averages we find an anticipated increase in the song length from February to March but it is unexpected to find the average for April lower than that for March. The reason for this lower April average is, no doubt, that the younger birds—and therefore more migratory, if I may add a heresy—do not start singing till later than the older ones and therefore bring down the April average with their less practised efforts. In Fig. 3 we find that this fall in average is chiefly attributable to a rise in the numbers of the 1 to 1½ minutes group, at the expense of those of the 2 to 3½ minutes group. It will

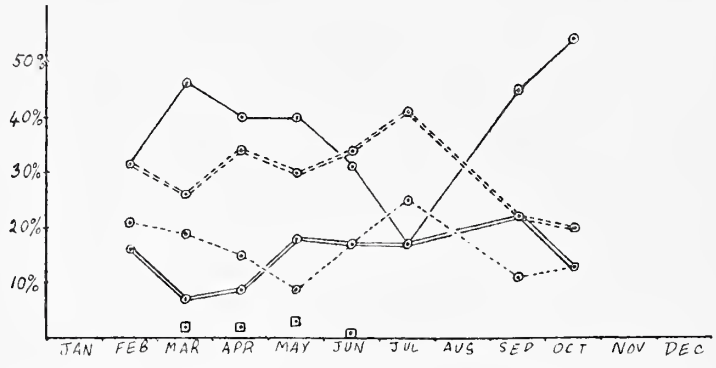

FIG. 3.—*Percentage Occurrence of Various Song Lengths.* Curves showing the monthly percentage occurrence of various song lengths. Songs of ½-minute – – – – –; 1-1½ = = = = =; 2-3½ ————; 4-7½ ═══; 8 minutes and over [·].

be noticed that June with 2·7 minutes has the highest monthly average for the breeding season, yet it is followed by the lowest average—in July; this, of course, being preparatory to the August silence, which so far as my observations go is complete. If half-minute songs be taken as indicating a lack of singing energy, and the percentage of these half-minute efforts be traced month by month in Fig. 3, it will be seen that after falling in the spring months the first sign of song decline may be noted in June where the percentage of the half-minute group starts rising again. It is, as it were, a foretaste of the collapse of song in July.

AUTUMN SONG.

August, with its paucity of song, acts as the dividing line between the breeding-season and autumn song. The high

averages for autumn songs shown in Fig. 2 are very interesting and illustrate how strong an urge there must be behind what Abel Chapman called pseudo-erotism.* The quality of these autumn efforts, however, does not come up to the same standard, falling considerably short of the summer. The November average is based on two songs only and, therefore, ought scarcely to be considered, save that it comes where one would expect it. In December and January, as in August, I have no records.

Maximum Length.

In the way of maximum length of song I have nothing spectacular to add to those records already published. Pycraft, in the *British Bird Book*, tells us that "In the full flush of spring, and in the excitement of courtship, a quarter of an hour is commonly spent. On occasion, however, with specially vigorous birds, this period is exceeded, and a continuous song of half an hour's duration has been recorded." Even 60 minutes has been advanced as a maximum song. As will be seen in Fig. 3, Larks in my area have not given much in the way of long songs at all (see 8 minutes and above group). But these differences may be attributed to different conditions obtaining in the areas under observation.

Application of Timing Songs.

At the beginning of this paper I suggested that the timing of Lark songs could be turned to useful account if the variation in the length of song was properly understood. I have endeavoured to illustrate some aspects of this variation. Some possible applications of the timing of songs

* That the two autumn months should be as high and higher than the highest summer month is hardly what one would expect. Fig. 3 shows it to be due to a drop in the two lowest groups and a steep rise in the 2 to $3\frac{1}{2}$ minutes group. Confirmation of this relation between summer and autumn songs seems desirable. It seems unlikely, for instance, that in a group where birds habitually sing long songs (see later in this paper) that they would eclipse their summer average in the autumn.

I hope to make confirmatory observations—in a different locality—this summer.

may now be considered. The rise and fall in the intensity of the various activities in bird-life throughout the day is a subject of considerable interest. The timing of songs for a whole day would make an excellent curve of the various singing intensities. Two seasons ago I attempted to obtain records for such a curve but at mid-day—after I had made records since dawn—a very strong wind got up and put an end to the Lark's song, or the aerial part of it at any rate. I made another attempt last year but this also ended without success. At a third try perhaps luck will change—but these failures are not really of much consequence, as whatever happens much interesting information is always obtained.

Light on Age Segregation.

Another possibility is that the timing of Lark songs will throw some interesting light on the subject of local segregation according to age. I have not much information on the point at the moment, but such as I have is very suggestive and comes from the attempts to time songs for a whole day mentioned above. The records were taken during the greater part of the day, from two fields. One of these was sparsely covered with growing corn, and was probably not very suitable as a place for nesting. The other, which lay alongside, was pasture and had been so, to my knowledge, for some years. I was informed that birds bred quite freely in this field, and close to where I took my stand were two nests, one with eggs and the other with young. Eighty-four songs were timed from the cornfield community, and forty were timed from the pasture field. The result is shown in Fig. 4. From this it will be seen that these two communities had entirely different ideas on the subject of song length. Thus the cornfield birds were well represented with songs up to the 4-7½ minutes group, but above this group they have practically nothing. The pasture field Larks are less well represented up to the 4-7½ minutes group, and instead have a relatively high proportion in the higher groups.

Two Champions.

Further inspection of the details of the pasture songs revealed that those in the higher groups are due almost

wholly to the work of two Larks. The records of these two champions—including all the songs given whilst they were under observation are:—

Lark A.	Lark B.
19 minutes	10½ minutes
17 ,,	10½ ,,
16 ,,	19½ ,,
29 ,,	1 ,,
12 ,,	6 ,,

The records of these two Larks make those from the next (corn) field look puny in comparison. In the previous summer I remember noticing what long songs the bird from A area

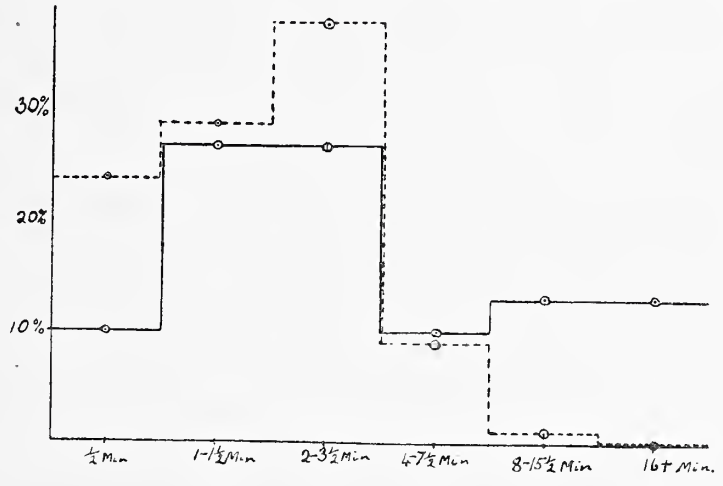

FIG. 4.—*Songs from Different Fields.* Curves showing the percentage occurrence of various song lengths from pasture and cornfield. Pasture ————; cornfield – – – – –.

gave in comparison with those from the cornfield, and no doubt this was the same Lark that I timed this season. Here we have local segregation according to length of song. The long singers keep together in one field, the short singers in another and this is probably only another way of saying that the older and more experienced Larks segregate apart from the younger and less practised ones.

An interesting feature in these A and B and cornfield songs is that they show that a long song is not necessarily a chance effort, but rather points to each Lark having its own length of song, so that many habitually sing record songs whilst another sings insignificant ones. In timing Lark songs then, we have a useful method for the study of individual

variation, a subject about which one hears so much, yet about which comparatively little field data have been published.

Geographical Variation.

In the preceding paragraphs a number of aspects of variation have been considered, amongst which seasonal, local and individual variations occur. One aspect which has not been considered is that of geographical variation. Howard,* in both his large works, has stressed the variation in song which may occur in different parts of a species, range and it would be interesting if this variation could be traced statistically in the song of the lark by means of timing. This, however, is a subject to be studied by co-operation between observers, rather than by an individual, and with this hint I must leave the subject for the time being.

CURRENT LITERATURE

Plankton and Herring Migrations.—During the spring of each year a great outburst of microscopic life takes place. As a result the water frequently becomes discoloured and has a pungent odour. A lesser maximum also takes place in autumn. R. E. Savage (*Ministry of Agriculture and Fisheries Fishery Investigations*, Series ii., vol. xii., No. 2, 1930) deals with the density of one of these organisms (*Phæocystis*) in the southern North Sea, and attempts to trace the effect of patches of this organism on the Herring migrations, with interesting results.

Bacteria and Diatoms of Clyde Estuary.—In a recent number of the *Journal of the Marine Biological Association* (vol. xvi., No. 3, 1930) two papers of interest to Scottish biologists appear.

Dr Lloyd deals with the Marine Bacteria and their varying numbers under various conditions.

Mr Orr and Miss Marshall write on the Spring Diatom Increase in Loch Striven. These authors have published several papers on this subject and summarise their work for a three-year period.

* *The British Warblers* and *Introduction to the Study of Bird Behaviour.*

REPORT ON THE MOLLUSCAN FAUNA OF DUDDINGSTON SANCTUARY (WITH SUPPLEMENT).

By D. K. KEVAN.

(*Concluded from* p. 22.)

Other common species of Mollusca (some hitherto unnoticed because of their diminutive size) are bound to be present, although, may be, but sparsely distributed. Taking the various *loci* into account, the following would appear to be "probables" which may be discovered on further search:—

Limnæa truncatula (Müll.).
Vertigo antivertigo (Drap.).
Planorbis albus (Müll.).
Pisidium nitidum (Jenyns).
Punctum pygmæum (Drap.).
Retinella pura (Alder).
Trichia hispida (Linn.).
Succinea putris (Linn.).
Arion subfuscus (Drap.).
Arion hortensis (Féruss.).

with occasional occurrences of other species. *Planorbis planorbis* already referred to, *may* still be present, but it is a long time since it was reported as being abundant, and it may now have disappeared from the fauna of Duddingston Loch altogether. On the other hand, it may have periods of greater productivity, when "time, place and opportunity" will reveal the secret hitherto so well guarded.

As will be seen from this report, the whole area contains a most interesting and varied molluscan fauna, and will undoubtedly repay any further time that can be given for its exploration. Specimens of all the species taken by me on the 26th and 27th October 1929 and 8th February 1930 (excluding the *Arionidæ* and *Limacidæ*) are in the possession of the Royal Scottish Museum, and have been duly authenticated by Prof. E. V. Boycott and others.

I am indebted to Mr R. Waterston for particulars of the seven additional species he found on the 7th October 1930.

Supplementary Report.

On 29th November and 13th and 27th December 1930, I further investigated Duddingston Sanctuary, confining my

attention chiefly to the north, north-east, east, south-east, and also north-west of the area (*i.e.* Groups 4, 5 and 1) not previously fully explored, and including the "plantation" over the wall (belonging to the Sanctuary) by Windy Gowl, with the following result:—

GROUP 1.—The undernoted species have to be added to this Group:—

Limnæa truncatula (Müll.). *Limnæa palustris* (Müll.).
Bithynia tentaculata (Linn.). *Planorbis contortus* (Linn.).

The first two named are new to the Sanctuary area. The former (*L. truncatula*) as mentioned in the body of the report was a strong probability, but the latter (*Bithynia tentaculata*) was an entirely unexpected find. It is, as far as it is possible to judge, somewhat scarce, as only one specimen occurred to me. *L. palustris* and *Planorbis contortus* are sparingly distributed in the tall reeds, the latter, however, being very plentiful in the ditch over the wall at the foot of the "plantation" referred to above.

GROUP 3.—*Limnæa palustris* (Müll.) and *Planorbis contortus* (Linn.), hitherto not actually taken in these two pools, were found to be fairly plentiful on 29th November 1930, and can be added to this Group.

GROUP 4.—*Limnæa pereger* (Müll.), found along the margin of the loch, is the only additional aquatic species in this Group.

GROUP 5.—*Limnæa pereger* (Müll.) and *Limnæa stagnalis* (Linn.) occurred to me on the north-east side along the marshy edge of the loch. I was very pleased to find *L. stagnalis* again, as only one very young specimen was found in Group 2 on the 26th and 27th October 1929, and the present one (although still immature in size) serves to show that this species is still in the loch, although very sparsely distributed. *Limnæa palustris* (Müll.) and *Planorbis contortus* (Linn.) mentioned previously as only being of occasional occurrence, are to be found fairly plentifully in the marshes at the south-east corner of the loch. The area, however, is much smaller than is the case in Group 2, and the population is less thick. This further exploration has confirmed that the most widely

distributed and plentiful aquatic molluscs in the Sanctuary are *Limnæa palustris* and *Planorbis contortus*.

GROUP 6, comprising all the land molluscs of the whole Sanctuary area, can be increased by seven new species, and many of those species already included have been found, as anticipated, to be much more widely distributed. The seven additions are as follows:—

Trichia hispida (Linn.). Foot of walls between boat-house and church.

Vertigo antivertigo (Drap.). Marshy ground, east end of loch.

Succinea putris (Linn.). East end of loch in sedges and flags, probably generally distributed.

Helicella caperata (Montagu). Under stones, etc., in "plantation" by Windy Gowl.

Limax marginatus (Müll.). Under stones, etc., in "plantation" by Windy Gowl.

Arion hortensis (Féruss.). Under stones, etc., in "plantation" by Windy Gowl, and in grass roots, etc., near boat-house (north side).

Zonitoides nitidus (Müll.). Marshy ground north-west of Sanctuary.

Under stones in the "plantation" dead and broken shells of *Cepæa nemoralis* (Linn.), and *Helix aspersa* (Müll.) were noted and it is probable living individuals will be found in due course. *Pupilla muscorum* (Linn.) may also be found here, as this species occurs on Arthur's Seat just above this situation. *Balea perversa* occurs sparsely on the boundary wall in the plantation and, generally speaking, the following commoner species were found to be distributed under stones and at the foot of walls wherever they occur round the loch:—

Oxychilus alliarius (Miller).
Oxychilus cellarius (Müll.).
Vitrina pellucida (Müll.).
Lauria cylindracea (Da Costa).
Cochlicopa lubrica (Müll.).
Goniodiscus rotundatus (Müll.).
Vallonia excentrica (Sterki).
Retinella nitidula (Drap.).

On the last date referred to at the beginning of this supplementary report, I was accompanied by Mr R. Waterston, who found a shell in the marshes at the edge of the reed-bed in the north-west of the Sanctuary, and this has been confirmed as *Zonitoides nitidus*. I have found this shell in a very similar situation near Bellanoch, south of the Crinan Canal, Argyllshire, but it was very sparsely distributed there, and the same will doubtless apply to Duddingston. This species is not a common one in Scotland as far as my personal experience goes. *Vitrina pellucida* appeared to be very plentiful at the roots of grass by the ditch in the "plantation" (Windy Gowl). *Lauria cylindracea* (referred to in the main report as gradually disappearing from the railway wall to the north of the "embankment") is firmly established along the walls at the north-east end of the Sanctuary, but can nowhere be termed abundant.

The addition of TWO freshwater species and SEVEN land species thus raises the total number of species, presently known to inhabit the Duddingston Sanctuary, to *forty-four*, and possibilities are by no means exhausted.

The digging of a long trench about four feet in width, and running parallel with the railway wall from the south-west corner (by the entrance gate) to the bridge "embankment," has just been completed as a protection against the firing of the reeds, etc., by engine sparks, and trees have been planted between this trench and the railway wall. It will be interesting to note the length of time taken before this trench becomes inhabited with molluscan life, and the order in which the various species arrive.

A NEW SIPUNCULID WORM (*PHASCOLOSOMA CLUTHENSIS*, SP. NOV.) FROM THE FIRTH OF CLYDE.

By A. C. STEPHEN, B.Sc.

Locality.—Off Loch Ranza, Arran, Firth of Clyde, June 1902. One specimen taken in 73 m.

This specimen from the collections of the Scottish Marine Biological Association, Millport, is extremely

FIG. 1.—Photograph of the entire animal.

FIG. 2.—Enlarged view of the caudal region.

peculiar in that the posterior end of the body is drawn out into a long irregular "tail" (Fig. 1).

The total length of the specimen, which is strongly contracted, is 59 mm., and the "tail" 29 mm. The body is smooth, devoid of papillæ, flesh-coloured and thick-walled. Owing to the contracted state of the specimen the arrange-

ment of the tentacles cannot be made out. Circlets of hooks occupy the anterior part of the proboscis. These hooks are very similar to those of *P. elongatum*, but seem smaller and more numerous. There are four retractors and two segmental organs. The bases of the latter are not greatly swollen and the organs themselves are long and thin—approximately 6 mm. The gut does not extend into the "tail" but stops some distance short of it. At the end of the gut there was a small mass of tissue containing a few fairly large thick-walled bodies, probably ova. A few are present in the body cavity.

The "tail" Fig. 2, consists of several thin-walled swollen portions of a rather lighter colour, alternating with narrow sections of unequal length of the same colour and texture as the rest of the body. The last 5 mm. of the "tail" consist of an empty funnel of thin skin, like that of the swollen portions, with the edge apparently torn. It is probable, therefore, that the animal is incomplete and there may have been a terminal bulb-like expansion of some kind.

It closely resembles *P. elongatum*, the outstanding difference being the presence of this long peculiar "tail." It seems, however, to be sufficiently distinct to warrant its being considered a new species and I suggest the name *cluthensis* for it, in reference to the Firth of Clyde from which the specimen came.

The species, by reason of its "tail," seems to differ widely from any one previously described. It is interesting to note, however, that Hutton (1903, p. 29), from two specimens he took off the Wigtonshire coast, described the species *P. teres* which had also a long tail with a terminal bulb-like expansion containing the coiled gut. Southern (1913, p. 16) states that he has examined numerous *P. elongatum* showing a similar condition to *P. teres*, this condition being brought about by strong contraction if the animal be killed quickly. While *P. teres*, therefore, is only *P. elongatum* strongly contracted, *P. cluthensis* seems to be quite distinct. It is difficult to see how such a form could be derived from *P. elongatum* by contraction or how the swellings on the "tail" could be formed.

The locality from which the species was secured is within reach of the Millport Marine Station and an endeavour will be made to revisit the locality in the hope of securing additional specimens.

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1903 HUTTON, *Proceedings Zool. Soc. London*, 1903, 1.
1913 SOUTHERN, "Fisheries of Ireland, Scientific Invest.," 1912, No. 3 [1913], *Gephyrea of the Coasts of Ireland.*

CURRENT LITERATURE

Coleoptera in Dumfriesshire.—In the *Entomologist's Monthly Magazine* for February, 1931, pp. 40-41, appears a note by Jas. Murray under the above heading. A list is given of upwards of seventy species taken mainly in the south-eastern area of the county.

The Earlier Stages of Diptera.—Under this title H. W. Andrews delivered an Annual Address to the members of the South London Entomological and Natural History Society, which is published in the *Proceedings* of the Society for 1929-30. The paper as printed is useful and suggestive, giving as it does a brief summary of what is known of the early stages of the various groups of Two-Winged Flies.

Scottish Marine Biological Association. — The Annual Report of this Association for 1930 contains, in addition to general items, interesting summaries of the scientific work carried out at the Station, both by the staff and by workers from other institutions who have availed themselves of the facilities offered by the Station for investigating the rich fauna of the Clyde estuary. The chief researches carried out have been, on Plankton by Mr Orr and Miss Marshall; on the Investigation of Sea Mud by Mr Moore; on Marine Bacteria by Dr Cranston and Dr Lloyd; on Mollusca by Mr Stephen, and a Shore Survey by the Superintendent and Professor King.

RECOVERED MARKED BIRDS RINGED OR FOUND IN SCOTLAND

In *British Birds* for December 1930 and January 1931, is given a list of recent recoveries of ringed British Birds. From Mr Witherby's list we have extracted the following records which have a special reference to Scotland, and it will be noticed that we have not included any birds recovered near where they had been originally marked.

Song-Thrush (*Turdus musicus clarkei*)

Ringed	Recovered
Kinnoull Hill, Perth, young, 21.5.30.—J. Ritchie	Lasseube, Basses Pyrenees, 12.10.30
Kirkmahoe, Dumfries, nestling, 30.4.27.—W. and A. B. Duncan	Perth, 30.3.30

Blackbird (*Turdus m. merula*)

Kirkmahoe, Dumfries, adult, 30.12.28—W. and A. B. Duncan	Ryfylke, near Stavanger, Norway, 15.4.30

Heron (*Ardea c. cinerea*)

Almondbank, Perthshire, nestling, 22.5.30—Lord Scone	Inishmore, Galway, 19.8.30
Crofton, Cumberland, nestling, 1.5.29	Arrochar, April 1930—L. J. Rintoul

Sheld-duck (*Tadorna tadorna*)

Tentsmuir, Fife, adult, 25.4.30 —Lord Scone	River Elbe, Germany, 5.9.30

Mallard (*Anas b. boschas*)

Leswalt, Wigtownshire, adult, 18.1.29—M. Portal	Pant Glas, Carnarvon, 2.10.30
Leswalt, Wigtownshire, adult, 10.2.28—M. Portal	Boat of Garten, Inverness-shire, 31.8.30

Wigeon (*Anas penelope*).

Loch Leven, Kinross, young, 12.6.30—Lord Scone	Brière, Loire Inferieure, France, 25.10.30

CORMORANT (*Phalacrocorax c. carbo*)

Badcall Bay, Sutherland, nestling, 4.7.30—E. Cohen

Mochrum, Wigtownshire, young, 25.6.29—Lord D. Crichton-Stuart

Near Loch Kinder, Kirkcudbright, 23.9.30—D. Purdie

Near Pontevedra, N.W. Spain, January 1930

LAPWING (*Vanellus vanellus*)

Comrie, Perthshire, 5.6.30—Lord Scone

Glenorchard, Stirlingshire, young, 13.6.24—J. Bartholomew

Newbury, Berks., 11.10.30

Borrisokane, Tipperary, 24.12.29

CURLEW (*Numenius a. arquata*)

Almondbank, Perthshire, nestling, 15.6.29—Lord Scone

Ballylongford, Kerry, 15.6.30

WOODCOCK (*Scolopax r. rusticola*)

Scone, Perthshire, young, 27.7.27—Lord Scone

Kenmare, Kerry, 8.1.30

SANDWICH TERN (*Sterna s. sandvicensis*)

Farne Isles, young, 4.7.30

Banff, 25.8.30—W. W. Gardiner

COMMON TERN (*Sterna h. hirundo*)

Anisdale, Lancashire, nestling, 2.7.21

Burghead, Moray, 5.5.30—L. Gordon

RAZORBILL (*Alca torda*)

Handa Island, Sutherland, young, 3.7.30—E. Cohen

Kristiansand, South Norway, 26.10.30

Do. do.

Do. do.

Do. do.

Do. do.

Do. do.

Kristiansand, 15.10.30

Tvedestrand, S. Norway, 31.10.30

Little Belt, Denmark, 7.11.30

CORN-CRAKE (*Crex crex*)

Scone, Perth, nestling, 28.6.30—Lord Scone

Commune de Fresselines, Creuse, France, 14.9.30

Perhaps the most interesting of all these recoveries is that of the Blackbird ringed in Dumfriesshire in December 1928 and reported from Southern Norway 16 months later. It confirms what has been for long an accepted fact that Scandinavian *Turdidæ* winter in the British Isles.

Almost equally interesting is the recovery of the ringed Razorbills in Norwegian and Danish waters. Lately many of the Heligoland-breeding Guillemots have been marked and the majority of those recovered have come also from the neighbourhood of the Skager-Rack, thus showing that, after the breeding season, these sea birds migrate in a northerly direction. Now the question arises, Why should our Handa-bred Razorbills seek the same neighbourhood at the same time of year? Probably food supply is the cause.—[EDS.]

NOTE

Convolvulus Hawk-Moth in East Lothian.—I have a specimen caught in a small back garden at Dunbar on September 24th, 1930. It is a fairly good specimen though by no means perfect.—ALICE BALFOUR, Whittingehame House, Haddington.

CURRENT LITERATURE

Feeding Habits of certain Dipterous Maggots.—D. Keilin and P. Tate have published in *Parasitology*, vol. xxii., March 1930, pp. 168-181, an interesting paper entitled "On Certain Semi-Carnivorous Anthomyid Larvæ." The flies investigated on this occasion belonged to five species fairly closely related to the Common House-fly. In previous investigations it was found that in the Dipterous group to which such flies belong there is a remarkable correlation between the anatomical structure of the larvæ and their mode of life. The various structures of the five species in question are described in detail, and the paper is illustrated by five text-figures and a full-page plate. The concluding summary shows that, judging from the biological studies of these larvæ four out of the five species were suspected of being carnivorous, but the structure of their mouth-parts shows, however, that they are not purely so, but may either at certain stages or under certain conditions live upon decaying animal matter, and should be described as semi-carnivorous or omnivorous.

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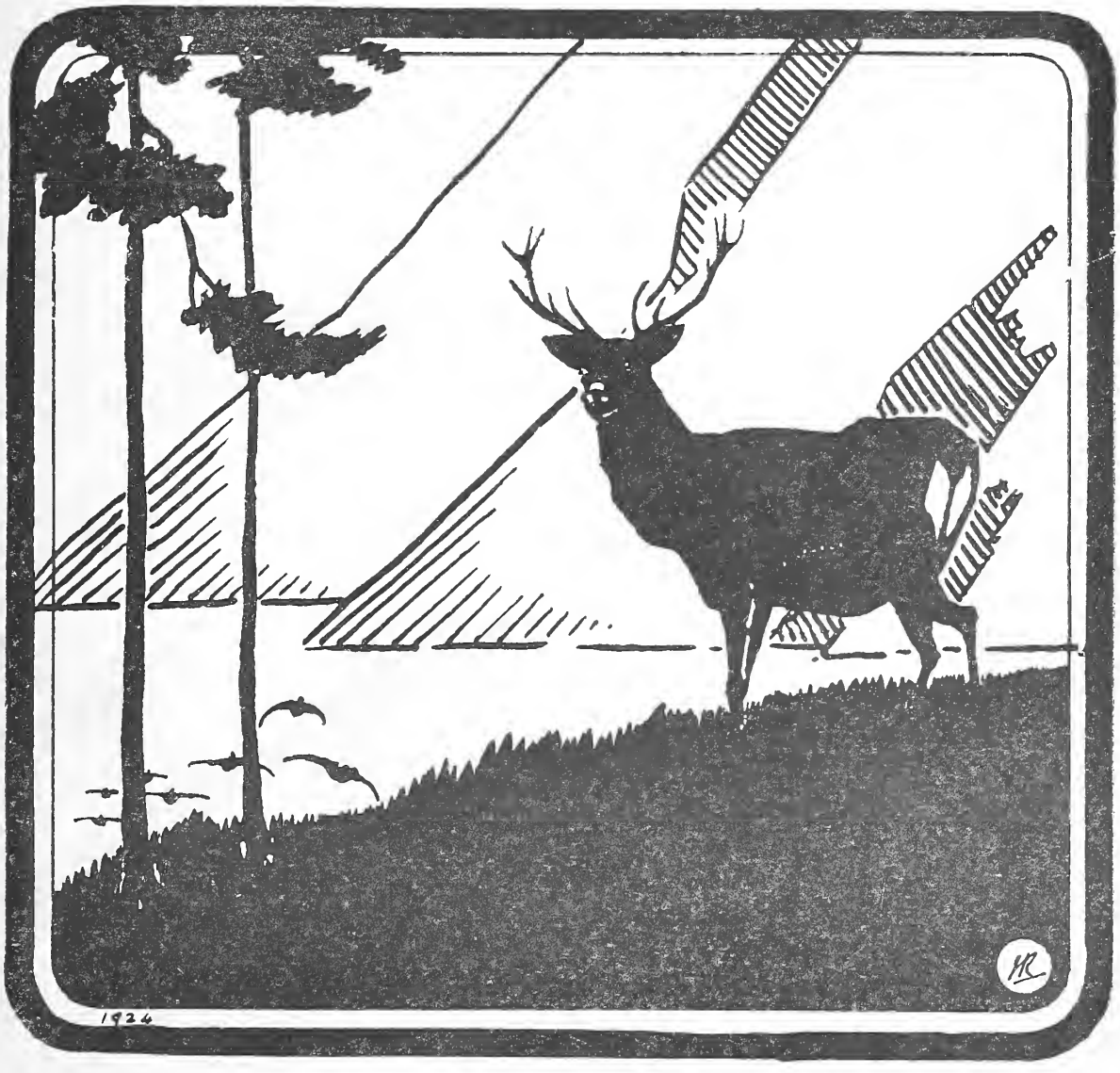

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Bird Life by the Esk at Musselburgh.
Spread of the Mountain Hare in the Scottish Lowlands.
Animal Welfare.
The Menace of the Grey Squirrel.
The Varying Length of Lark Song.

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

(*Authors are responsible for nomenclature used.*)

The Scottish Naturalist

No. 189] 1931 [May-June

MUSQUASH IN SCOTLAND.

By T. M. Munro, Organising Officer, Rats and Mice (Des.) Act.

Before dealing with Musquash or Musk Rats in Scotland, I propose to furnish some information concerning these animals in Europe. The Rodents known as Musquash (*Ondatra zibethica* or *Fiber zibethica*) are natives of North America; they are of the beaver family, with long flat tails which, with their paws, are well adapted for swimming. In size they are about four times as large as an ordinary full-grown rat; they are vegetarians and live chiefly on the roots and stems of reeds and grasses, but have been known to do damage to crops and fish hatcheries. At Carsebreck they have frequented the hatchery and one was caught near by. They are bred and trapped for their fur which makes the popular musquash coats so useful to ladies in winter.

The details which follow are from publications of the Governments concerned, or of scientific societies, or those interested in the breeding of fur-bearing animals. I am also indebted to an article which appeared in *The Times* in April 1930.

In the spring of 1905 Prince Colloredo-Mansfield, who had been hunting in Alaska, brought home three female and two male Musquash and set them free on his estate at Dobris, about 25 miles south-west of Prague. Later, a few others, possibly obtained from Canada, were added to the stock. So far as is known, no other Musquash have been liberated in Central Europe. These animals have three or

four litters in the year, with an average of seven young at each birth. Finding conditions very suitable, they bred rapidly. In the autumn of 1907 thirty-two were captured in this vicinity. They spread over the surrounding country, and by 1914 they had invaded an area within a circle of 140 kilometres diameter with Dobris as centre. By 1927 nearly half of Austria was covered by them, and towns, such as Vienna and Munich, were invaded.

Some idea of the rate of increase of these animals is afforded by the record of the campaign against them in Bavaria. From 1st April 1925 to 31st March 1926, 14,477 were killed; next year 33,000 were destroyed. In Thuringia, the numbers killed are also remarkable: in 1919, 1; 1923, 207; in 1926, 19,016, in the first six months of the year. In Central Europe it is estimated there are now about 100,000,000 Musquash.

Between 60,000 and 80,000 skins are sold annually in Germany.

Two annual migrations have been observed, one in spring, the other in autumn. The spring migration is probably due to the flooding of their "houses" and burrows; the autumn migration to the increase in numbers and the decrease of the available supply of food.

The damage done by these imported invaders is serious. In Central Europe much damage has been done to property by the undermining of banks and the obstruction of drainage. In the Palatinate, Musquash destroyed the dam of a large electrical works; in Thuringia seven subsidences of main roads and several bursts in the banks of reservoirs are attributed to their burrowings; at Moritzburg they have done damage costing thousands of pounds to make good; a railway near Leipzig has been interrupted by their work; and lastly, navigable waterways have been rendered useless as the Musquash have let the water out. Where embankments have been repaired they have been attacked again and again, as these animals find it easier to burrow in the recently replaced soil than in the consolidated older material.

Germany * has forbidden the importation or transit of

* [So also has Norway.—Eds.]

Musquash in the Reich. Switzerland has taken the same line of action and has also forbidden the keeping of these animals in captivity or the buying or selling of live specimens. Luxemburg has followed the example of Switzerland.

Systematic measures of repression have been adopted by the local Governments of Bavaria, Saxony, Silesia and Brandenburg. Men trained and specially detailed to trap Musquash are employed by these states as under:—

Bavaria, 7 ; Saxony, 1 ; Silesia, 3 ; Thuringia, 5.

In Saxony, in addition to the official trapper, 179 private persons are actively employed as catchers. Premiums up to 3 marks are paid for each animal destroyed and the catcher is allowed to keep the skin. In the Franconian Jura, along the threatened frontier, trappers are given beats of 30 to 40 miles in an endeavour to prevent the incursion of Musquash.

Within the areas already occupied by these animals trappers have been attached to the waterworks, and it is part of their duty to teach the natives how to ascertain the presence of these pests and how to trap them.

Finland, on the other hand, is not averse to the presence of Musquash. That country contains so much marshy land, useless for agriculture, that any means of deriving a revenue from the marshy areas is welcome. There is perhaps less likelihood of these animals becoming too numerous and a danger in this country, and in Russia, because of the severe winters customary in both, which might be expected to keep the Musquash down to reasonable numbers.

The Soviet Government are also encouraging the breeding of Musquash in the great marshes in Russia, so that in the near future we may expect a large supply of skins from these two countries.

From an economic standpoint the breeding of Musquash in Britain cannot hope to remain a paying proposition for any length of time in view of the potential large supply of skins from Central Europe, Finland and Russia.

In their natural state Musquash build "houses" to live in; these houses consist of mounds of reeds and grasses and, as this material is pulled up by the roots, there is a

certain amount of earth in the heap. Houses I have seen in Scotland are of various sizes; the largest was quite 6 feet in diameter and 4 feet in height. The entrances in marshy land are always under water.

When these animals were set loose in Europe, it was thought that they had forsaken their habit of building houses as they made deep burrows in the banks of the streams. This seems to be purely a matter of environment, as in Scotland we have the burrows where there is no marshy ground and the houses in marshy areas. The chamber in the house is well above the water-level and in burrows it is usually just beneath the level of the grass or roots of the vegetation. Where large colonies of Musquash become established in embankments or in the banks of a stream there is great danger of the earth collapsing, as these animals are determined burrowers and honeycomb a site with their tunnelling. The entrances to these burrows are usually under water, and the tunnels are excavated from below, as earth from the burrows never shows externally as with burrows made by rats or the runs made by moles. This is a very important detail, since a locality may become infested without any outward sign of Musquash being in the vicinity, as they are nocturnal in their habits. In Perthshire the presence of Musquash was only discovered by the houses they threw up, though they had probably inhabited the streams near by for a year or more prior to this discovery.

Musquash were first introduced into Scotland in 1927 by a gentleman who had been on a Musquash farm in Canada. A few acres of land at Feddal, near Braco, were enclosed with wire netting and six pairs were let loose within this area. In the same year ten animals escaped, but a couple, probably two males, fought and killed each other; leaving three males and five females as a breeding stock.

In 1929 a lease of Whitemoss Loch, a shallow, marshy loch near Dunning, was obtained by this gentleman and he surrounded it with wire netting; the area fenced in is about 15 acres. Four male and eight female Musquash, purchased from Canada, were set free within the netting. The

Musquash find their food in the loch, but to ensure an ample supply, water-rice has been imported and sown in the loch with a view to securing a large supply of food for the animals. The Musquash in this loch are breeding freely and several young animals have been seen.

In 1929, two pairs were imported into Kincardine from Canada. Although each pair was confined in a large pen lined with stout zinc, within a fortnight both had escaped. After various vicissitudes all these animals died except one pair which have bred in the freedom they enjoy on the Bervie.

In 1928 a stock of Musquash were imported into Dumfriesshire. Of this stock all are said to have died, except one pair which escaped from the pens. These were made of wire netting and placed in a shallow pond into which a small burn flows. This pair have burrowed into the bank where it is steep. There are rushes and a large amount of water-cress in this pond so that the food supply is secure, but should they breed freely the increasing numbers will soon lead to migration.

Musquash are known to be kept in pens in three other localities, but no escapes are said to have taken place in any of these places. One of the keepers informed me that Musquash bit through heavy gauge wire netting quite easily and he found $\frac{1}{4}$ inch expanded metal the only means of preventing escape.

In Scotland we have therefore three localities in which Musquash are known to be at large, and in two of these they have bred freely :

1. At Thornhill, Dumfries, only one pair are said to be free.
2. On the Bervie and adjacent waters, Musquash are breeding and have been seen in three places by different people.
3. At Feddal, as already stated, eight animals gained their liberty in 1927 and are the progenitors of a large number of descendants.

In the spring of 1929 a gamekeeper on the Ardoch estate counted sixteen houses in marshy land.

Floods in 1929 washed most of these sixteen houses

away, and in 1930 only six remained; but their inhabitants, being such excellent swimmers, probably took refuge in the banks of the Allan, or migrated farther up stream to higher, but still marshy land. I believe each house contains seven or eight Musquash; even if we reduce the numbers said to inhabit a house by half, the increase in this locality in the time is certainly considerable.

The embankments of Carsebreck pond were burrowed into in 1929; most of the marshy area from Kinbuck to Carsebreck is infested. The banks of the Allan shelter colonies of Musquash; three were caught by an Ardoch keeper one morning in a rabbit trap on the bank below the spot where there had been sixteen houses. These animals are exploring and invading the surrounding country; one was killed in a bush 1½ miles from the nearest water, and near no ditch or drain; they have spread on to the Orchil Estate and appear to be in numbers at Carsebreck. At the latter place there is no sign of any excavated earth, yet I was able to place my foot and leg up to the knee in a hole left by the falling in of one of their chambers just under the surface.

Eleven Musquash have been trapped between Ardoch and Carsebreck and three at Orchil.

The three trapped at Orchil were caught in the same house at different times and were all males. This "house" was built on the nest of a pair of wild swans which had nested here for years. It will be interesting to see what happens this year at this house in the nesting season. Is the fact that all three Musquash trapped in this house were males a coincidence? Does it mean that the males had females with them and were exploring for new quarters, but being more venturesome they first entered the empty house and were killed?

From the foregoing it is evident that Musquash have got a footing in this country. If they breed as freely here as they do in Central Europe, it will not be long before they become almost as great a pest as the common rat, and they certainly are able to cause greater damage than the smaller rodent.

THE GLASGOW NATURALIST.

WE welcome the appearance, after an interval of five years, of our western contemporary. We had begun to fear that, like some other periodicals devoted to Natural History, the *Glasgow Naturalist* had succumbed, owing to want of financial and other support, but it is pleasant to read that the journal has taken a new lease of life, and that (to quote the words of the Editors) the *Glasgow Naturalist*, "whether it continue in its present or in altered form, will, we hope, return to the publication at frequent and regular intervals which it formerly enjoyed. It will, we hope, record without delay the original work of the members of the Society whose organ it will be."

This Society, by the way, as now constituted, is an amalgamation of the original Natural History Society of Glasgow with the Andersonian Naturalists' Society and the Microscopical Society of Glasgow, which union was finally consummated in January last. We trust that this very satisfactory step will result in an increased activity on the part of the members of all the three original Societies concerned. The area allotted for their investigations is an extensive and an exceptionally rich and varied one, embracing mountain, moor and loch, valley, plain and marsh, and including also one of the finest natural estuaries in Britain, to say nothing of numerous important islands and many miles of interesting coast. To all this may be added the great advantage of a more congenial climate than is bestowed on the dwellers in the East of Scotland. There is thus scope for any amount of work, faunistic and otherwise, and happily there is now promise of such being undertaken with new zeal on the part of our western colleagues.

The *Transactions* and *Proceedings* recently issued form a separate volume, the ninth and last of the present Series. It contains one paper, an important botanical one, on "Clyde Casuals, 1916-1928," by the late Robert Grierson,

a number of "In Memoriam" notices, and a Digest of Proceedings from January 1919 to October 1930. Numerous interesting records are published in these pages, but it is particularly gratifying to read that "it may be possible gradually to publish in more complete and accessible form the information about the fauna and flora now collected in the Clyde Card Catalogue of 1928 . . . as well as the information which will assuredly have been added since 1928."

There is a list of Presidents and Members, but the names of the Editors, for some unaccountable reason, are not given.

Surgeon Rear-Admiral J. H. Stenhouse.

It is with the deepest regret that we announce the sudden death, on 4th April last, of our much esteemed colleague Surgeon Rear-Admiral J. H. Stenhouse. He succumbed to heart failure following an operation. For many years he acted as one of our Assistant Editors, and his many services in ornithological matters, always freely and cheerfully rendered, were invaluable. His untimely decease is a severe blow, not only to ourselves, but also to Scottish ornithology. We hope to publish a more extended tribute to our late friend and helper in our next issue.

SWIFT *VERSUS* STARLING AND SPARROW.

By the late Surgeon Rear-Admiral J. H. STENHOUSE.

AMONG the feathered tribes of this country, with each returning spring there occurs the annual struggle for suitable nesting places. Before community-nesting birds, such as Rooks, get properly settled down to housekeeping duties, some bickering regarding sites and not a little theft of nesting material take place. Birds which nest in bushes or on the ground have no great competition for actual sites, but amongst them there is considerable jealousy regarding territory before matters are finally decided. But amongst birds which nest in holes the site question is acute; suitable nesting places are none too plentiful, and the law of supply and demand holding good, the scarcer they are the more intense is the competition for them.

Of all our resident British birds, none have now greater difficulty in obtaining suitable recesses in which to nest than the Starling. As is well known, this bird has increased enormously in numbers during the last five or six decades, and yet, abundant though it now is, it is still uncertain whether it raises one or two broods each year: the general opinion is that it occasionally is double-brooded, though some think that the later broods are the offspring of birds which have been unable earlier in the season to find suitable nesting holes, and have been compelled to defer operations until the desired sites were vacated. We have here a reasonable explanation of why so many Starling's eggs are found lying on garden paths or in similar situations.

The Starling's chief rival for nesting sites in or near human dwellings is the House-sparrow. Of course in a pitched battle, the Sparrow has no chance against the heavier bird, but *Passer domesticus* is possessed of a good deal of indomitable perseverance and not a little cunning and every year there are disputes between the two species, which disputes are probably solved, where competition is very keen, by the Sparrows occupying sites which have

entrance holes too small to admit of the Starling entering. By mid-April the contestants have generally ended their squabbles and have settled down to a position of armed neutrality—until next season comes round.

But in certain places in this country, even after their quarrels have ended, these two birds may not be allowed to possess their nesting places in peace. A summer visitor from the South has still to arrive—the Swift—and this is a bird which returns year after year to its old nesting haunts. Should either the Starling or the Sparrow have taken possession of a nesting site which in previous years had been occupied by a Swift, and should the original occupier return, there is every prospect of further fighting for possession. Observers see very little of such struggles: they are carried out under the roofs of houses, in church towers or similar situations, but that tragedies, deplorable from our point of view, annually occur there is little doubt. Very few prolonged observations on the ways of the Swift have been made, and most bird lovers rarely disturb or examine their nests, the real reason being they are too inaccessible. In our literature there is little to be found bearing on the relations between these three birds.

In Witherby's *Practical Handbook*, vol. ii., p. 6, the Rev. F. C. R. Jourdain states, under "Breeding Habits" of the Swift: "Eggs also at times laid on the top of old Sparrows' nests in holes." To this remark I can take no exception, but I will add that there is no need for the Sparrows' nests to be old.

Once, and only once, have I examined Swifts' nests. The date was 13th June, and the nests, four in number, were placed behind the weather boards of one of the sheds in Sheerness Dockyard. All four nests contained eggs. Two were in no wise abnormal, but the other two were placed on the flattened tops of what had been Sparrows' nests. From the appearance of the straws both seemed recent, and on examination one was found to contain a quite fresh Sparrow's egg. There is little doubt that the Sparrows had invaded the Swifts' nesting ground, and had paid the penalty of eviction and loss of property.

In *British Birds*, vol. xix., p. 177, there is a record from Somerset of an observation on 15th June 1925 of a Swift brooding three fully-fledged young Sparrows. In the same attic another Swift was at that time sitting on eggs. The observer may have been correct in his determination of what the Swift was doing, but it is much more likely, as will be shown later on in an analogous case, that the apparent kindness of the Swift was of the nature of a Greek gift, and that it was really engaged in attempting to destroy the young Sparrows.

In the SCOTTISH NATURALIST of 1924, and again in that of 1928, there are articles on the nesting of Swifts from observations made in Edinburgh by Mr David Hamilton. From these articles have been extracted the following notes, which seem to have some bearing on our subject.

SCOTTISH NATURALIST, 1924, p. 77.—"To-night (30th May 1913) I went up to see if I could get at the Swifts and came across two pairs sitting: one pair was resting on the straw of a Starling's old nest."

Page 79.—"11th May 1923. Five or six birds (Swifts) huddled together on a Starling's nest. The Starling's nest is there every year; last week it had three eggs. I felt carefully under the Swifts, but no eggs were there."

SCOTTISH NATURALIST, 1928, p. 175.—"11th June 1924. No. 1 nest was not in use, a Starling having young there. Every year there seems to be a competition for this site between Starling and Swift. On one occasion the Starling had eggs: these disappeared and the Swift nested. The other two Swifts' nests contained eggs."

Page 177.—"14th June 1928. Only two Swifts' nests are in use this year, both having eggs to-night." "12th July. Eggs or young disappeared from one nest, this being the site where the Starling also nests."

From these observations there seems to be little doubt that in 1913, and again in 1923, the Starling was dispossessed by the Swift. The most probable explanation of the Starling being allowed to rear its brood in 1924 is that the Swifts which had previously occupied the site did not

return: that season only two pairs of Swifts were nesting, previously there had been three. Regarding the disappearance of the eggs or young in the following year, no explanation appears to fit the case: it is unlikely that the Starling had retaliated.

More details regarding this question are to be found in an article on the breeding habits of the Swift in a German publication, the *Ornithologische Monatsberichte* for 1925. On the gable of his house the author had two nesting boxes which were yearly occupied by Swifts. His observations cover a period of five years, 1920-1924 inclusive, but unfortunately, regarding the annual fights for possession of the boxes, his details are not complete. From his paper have been extracted the following notes.

In 1920 the Swifts had arrived on 20th April. Between their arrival and the laying of the first egg a considerable time always elapses. One box was in occupation of a Starling and on 3rd May six eggs were hatched. On 4th May two young were missing; the other four died on 8th May, before which date the hen Starling had disappeared. On the 7th the cock Starling sat at the entrance hole of the nesting box, sang as if his heart would break and allowed the young to starve. It was considered that there had been the usual yearly violent fight for the nesting box between the hen Starling and the Swift, and in this fight two young had been ejected and the Starling scared and driven off. After the death of the young Starlings the Swifts occupied the box and reared a brood.

In 1922 no young Swifts were reared. Two eggs were laid in each box: one clutch disappeared, the other was forsaken after sixteen days' incubation. The cause was not ascertained.

In 1923 again arose in unchanged and undiminished strength the old fight for the nesting boxes. In one box on 3rd May there were found four young Starlings about two to three days old and one Starling's egg. On 4th May a Swift was observed leaving the box; on examination it was found to contain only one young Starling, dead and

crushed flat; everything else had doubtless been thrown out by the Swift. In the other box Sparrows had a brood. On 16th May a Swift spent the day lying on the young Sparrows, which died of hunger, and on the 19th the observer threw out the dead. Young Swifts were afterwards reared in each box.

In 1924, the author, to quote his own words, had the good fortune to be able to find out how the Swifts' eggs disappeared. In that year the battle with the Starlings again took place. A clutch of five Starling's eggs was in one box, and on 10th May only two of the eggs were left and these were holed and empty. It was suspected that this had been done by some rodent, but how it could have got into the box was a mystery. It was considered that the bill of the Swift was too weak to drill a hole in the shell of a Starling's egg. Later one Swift's egg was laid in this box and incubated: the other egg was shell-less and was thrown aside. In the other box the first Swift's egg was laid on 17th May. It was sucked that day and pushed out of the nest hollow up towards the entrance hole. A second egg was laid on 19th May, and a third on 21st May. "As I on 23rd May approached the box, I became aware of a strange twittering which certainly did not come from Swifts. Cautiously I opened the box-lid, when out flew a Sparrow. Both fresh eggs were holed and half empty and the sides of the shells were besmeared by the contents of the eggs. Consequently he was the culprit and I had caught him in the act. No one other than this little rascal had picked and sucked the Starling's eggs." In a further remark on the struggle for existence which went on round these nesting boxes, the author states that yearly from the nesting place was the Sparrow ejected by the Starling and then the latter by the Swift, and that whenever opportunity offered, the Sparrow despoiled the two others.

He makes one further statement. About the beginning of September, long after the Swifts had gone, he had occasion to examine one of the boxes and in it he found a fully fledged dead young Sparrow. So, after all, the Sparrow had occupied the box and had reared therein

a brood. Perseverance won in the end. But still one puzzle remains unsolved. One can understand that it is possible that in fair fight a Swift would be able to overcome a Sparrow, plucky though the latter may be; but it is difficult to understand how a bird possessing the weak bill of a Swift can defeat and drive off a Starling, a bird in every way heavier and more powerful. Here is an interesting subject for future investigation.

It is just possible that the key to the solution of the puzzle is to be found in Mr Hamilton's paper in the SCOTTISH NATURALIST of 1928. There he states on p. 177, under date 29th April 1928, that he heard a strange squealing in his back garden that morning, and on looking out saw a cat with a bird. The bird was whirring about in the long grass so violently that the cat seemed rather amazed. He ran out and rescued a Swift soaking wet. He thought it had just arrived, had entered the nesting hole, had a fight with the Starling there, been knocked out and had fallen on to the wet grass below. He took the bird indoors, placed it on a cushion; it slept for several hours and then began to preen itself. It then started whirring its wings so vigorously that a tame canary sitting beside it was swept off the cushion. When freed later in the day, it was hotly pursued by a Starling.

My suggestion is that the Swift does not fight with beak and claws as other birds do, but that it scares its opponent off by the rapid movement of its wings. If that can be sufficient to keep a cat at bay, it is more than probable that it proves too much for Starling as well as Sparrow.

Early Appearance of Whinchat in Ayrshire.—It may be of interest to record seeing a Whinchat on the moors here to-day (17th March 1931). So far as my experience goes, this is an exceptionally early date, and the fact that such an early arrival should have been seen at an altitude of about 750 feet in the present inclement weather makes its appearance the more remarkable.—G. HUGHES ONSLOW, Girvan.

THE PINE-CONE WEEVIL (*PISSODES VALIDIROSTRIS*) IN BRITAIN; WITH A BRIEF COMPARATIVE ACCOUNT OF THE GENUS *PISSODES*.

By W. B. R. LAIDLAW, B.Sc., Forestry Department, Aberdeen University.

THE Genus *Pissodes*, Gm. is closely allied to the Genus *Hylobius*, Schönh. The latter contains the single British species *H. abietis*, L., the large and very common Pine Weevil. *Pissodes* up to 1930 (Sir T. Hudson-Beare, *Cat. Col. Brit. Isles*, 1930) contained the two species *P. pini*, L. and *P. notatus*, F. Both are conifer pests, the former being rare. The life histories are briefly as follows :—

P. pini.—Attacks young Scots pine and spruce from 15 years of age, being injurious in the larval state, on root, stem and crown. The pupal chamber is a tunnel in the sapwood, blocked with fibres at both ends.

P. notatus.—Attacks Scots, Austrian and Weymouth pines. Older trees are attacked from the first whorl of branches downwards; younger trees, right up the stem, and sometimes on the roots. The adult also gnaws shoots, in the same way as *Hylobius* on the stem, and is thus injurious both in the adult and larval state. It prefers trees of two to ten years. The pupal chamber is a hollow in the sapwood, roofed with chips and fibres.

P. validirostris, Gyll. (syn. *P. strobili*, Redt.) attacks cones of Scots and Austrian pines.

I quote the following details from Escherich: "As many as three larvæ may occur in one cone. The attacked cone reaches normal size but appears always more pointed and of a greener colour, which later becomes yellow-green, and owing to the defective development of the seed, the scales are not so prominent.

"As regards the generations of the beetle, Altum reports that in his breeding cages, which contained broken cones of small suppressed pines, near Eberswalde, the beetles

emerged in autumn, and there is one generation per year. The statement by Altum that one never finds infected cones on the ground is not always true." (See Ref. 5.)

He also remarks that near Berlin often from one-half to three-quarters of the cones of a tree were attacked by larvæ, and that near Vienna it has often been seen in the cones of the Austrian pine.

From these details one is led to presume that the eggs are laid in the cones early in the second summer (*i.e.*, the year after flowering, while they are still green and soft, but fully sized), otherwise the distortion of the cones would be much greater. The specimen recorded hatched on 19th June, so that it would spend roughly a year inside the cone in the larval and pupal states.

The specimen was bred out from Scots pine cones from Morayshire. Its presence was first detected in the seeds when the larvæ, killed in the heating process to open the cones, had fallen out and were discovered with the seed, in a hard condition. After soaking, they measured 6·5 mm. and were creamy white with the head red. It has not been previously recorded in Britain. Hudson-Beare has accepted this record as an addition to the British List. (See Ref. 9.)

Its past history may be quoted briefly as follows: "In 1898 MacDougall challenged the validity of the species, affirming that it was identical with *P. notatus*, in proof of which he bred *P. notatus* in Scots pine cones. In 1905 Torka drew up a distinction between the two species (see Ref. 4), and since then the species *P. validirostris*, Gyll. has been accepted by all subsequent writers; thus Kleine, in 1928, refers to it in his handbook of plant diseases." (See Ref. 10.)

The continental species of *Pissodes* are seven in number and have been classified by Escherich as follows:—

1. Hind angles of prothorax sharp. (2)
   Hind angles of prothorax blunt or rounded. (6)

2. Hinder angles of prothorax pointed, protruding, base of prothorax doubly sinuate, the deeply pitted punctures commence some distance from the base of the elytra, the posterior band of elytra broader outside than inside. (3)

Hinder angles of thorax right angled, not protruding. Base of thorax, not, or slightly insinuate. (4)

3. Striæ of elytra with very large pitted punctures. The third and fifth interstices between the striæ clearly elevated, without a brighter band of hairs before the middle. Size larger, 7-10 mm. On standing spruce . . *piceæ.*

Striæ of elytra with regular and much smaller pitted punctures. The third and fifth interstices only slightly elevated, with a transverse raised yellow band of hair before the middle. With a two-coloured band behind middle of elytra, yellow outside, grey-white inside. On pine, 5-7 mm. . . . . *notatus.*

4. Striæ of elytra of large rectangular pitted punctures. Hinder transverse band of hair, narrow and uniformly coloured. On pine, 7-9 mm. . . . . *pini.*

Striæ of elytra regularly punctured, not pit-like; hinder band usually broader outside than inside, usually two-coloured. (5)

5. Length 5-6 mm., rusty brown, richly and obscurely scaled. Elytra finely striate and with deeply tuberculate interstices. Front transverse band of scales usually of two spots, hinder band broader outside, usually yellow, inside whitish. Cones of pinus . . . . . *validirostris.*

Length 4-5 mm., black brown, elytra strongly striate with fine and thick tuberculate interstices. Front band reduced to a point. Hind band broadest outside, usually two-coloured as preceding. On spruce . . *scabricollis.*

6. Elytra with only one broad transverse band of scales just behind middle, upper side otherwise slightly scaled; ground colour red brown. Length 4-5 mm. . *piniphilus.*

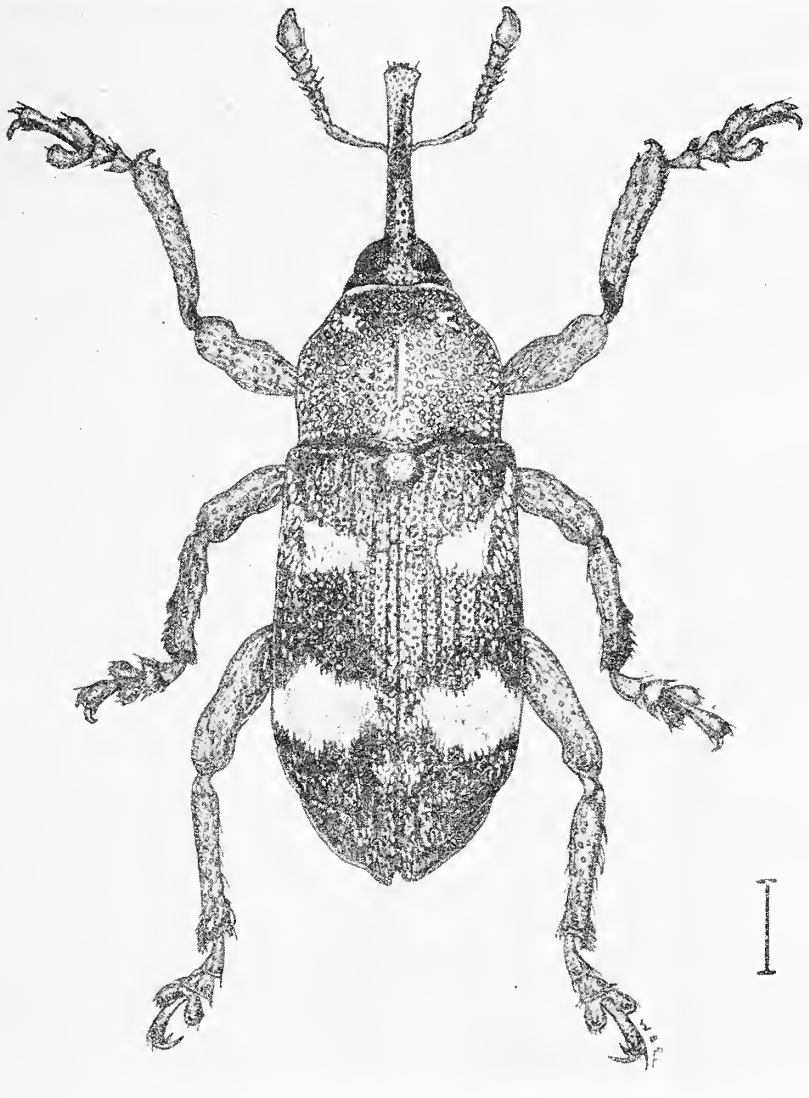
Elytra with two bright yellow, more or less complete bands of scales, one before and one behind middle; upper side otherwise almost hairless, body black-brown. Length 5-6 mm. . . . . *harcyniæ.*

Overleaf is a key to the species occurring in Britain.

Character.	*P. pini.*	*P. notatus.*	*P. validirostris.*	*P. piniphilus.*
Size (excluding beak) .	7-9 mm.	5-7 mm.	5-6 mm.	4-5 mm.
Anterior band on wing covers	Meet in the middle Colour yellow	Not meeting in middle Yellowish and white	Not meeting in middle Brick to yellow	Absent
Posterior band . . .	Narrow throughout Yellow	Wide outside, narrowing towards suture Yellowish outside; grey-white inside	Wide outside, narrow inside Brick to yellow outside, pale yellow to cream inside	Reduced to a pair of spots Rusty yellow
Rows of punctures on wing covers	Large rectangular pits; distinct	Smaller pitted punctures, less distinct	Finely punctured, regular, not pit-like, less distinct	Punctures more widely separated
Corners of thorax . .	Sharp Not protruding Less prominent	Sharp Protruding More prominent	Sharp Not protruding Right angled, less prominent	Rounded
Base of thorax . . .	Not sinuate	Doubly sinuate	Not sinuate	
Habitat	Scots pine (spruce) Older trees over 40 years	Scots, Austrian, Weymouth pines Younger, 2-10 years	Cones of Scots and Austrian pines	Pines 20-40 years

In the single specimen bred out, the elytral bands are terracotta coloured, not yellow as described by Escherich.

The continental species *P. piniphilus*, Hbst. is not accepted as a British species in Fowler's British Coleoptera



Pissodes validirostris, Gyll.
(By courtesy of the Royal Scottish Forestry Society.)

or by Sir T. Hudson-Beare in his Catalogue of British Coleoptera, 1930. MacDougall mentions it as being found in Sunderland in imported timber (see Ref. 3), and it has appeared since then from time to time, without proof however of it being an established breeding species.

I wish to make acknowledgments to the Royal Scottish Forestry Society for their kindness in lending the block to illustrate this paper.

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Green Sandpiper in Dumfriesshire in Winter.—On 18th February 1931 I was sent a Green Sandpiper (*Tringa ochropus*) which had been shot on the previous day by Mr G. Robson on Bowhouse Merse, near Caerlaverock, Dumfriesshire.—HUGH GLADSTONE, Capenoch.

Ringed Icelandic Birds recovered in Scotland.—At the conclusion of the article in the SCOTTISH NATURALIST, 1931, pp. 13-14, it is stated that further details regarding the capture of the White Wagtail at (or near) Rockall would be interesting. The ring in question was sent to me by my brother, who lives in Aberdeen, and was forwarded by me to Skovgaard. My brother informed me that the ring was taken from a small bird, which flew exhausted on to an Aberdeen Line boat. He added that from the description of the bird given to him by the man who gave him the ring, he supposed the bird must be a Wagtail. At the time, the boat was fishing at Rockall, 240 miles west by north of the Butt of Lewis. The capture must have been made earlier than 5th September 1928, as this was the date of my brother's letter.—WILLIAM E. GLEGG, London.

[We are glad to publish this information, as it was suspected that the bird had been captured on board ship.—EDS.]

RECORDS OF CETACEANS STRANDED ON THE SCOTTISH COAST.

By A. C. Stephen, B.Sc.

Bottle-nosed Dolphin, *Tursiops truncatus* (Gray).

A female, 11 feet 5 inches in length, was stranded at Ugadale, eight miles north of Campbeltown, on the 7th April 1931. The specimen was badly decomposed and had evidently been dead for some time. The lower jaws were forwarded to the Museum for identification by Mr A. H. Charles. From the state of these jaws it would seem that the animal was a very old one. The teeth were missing. Some had evidently been removed by visitors, but the loss of others had taken place earlier in life, since some of the alveoli were closed. From Harmer's observations * it would seem that such a diseased condition of the jaws is not uncommon in stranded specimens.

The species occurs fairly frequently on the southern and western shores of England, but seems to wander into Scottish waters only on rare occasions.

There are two additional records of stranded whales which were not published at the time of stranding.

Lesser Rorqual, *Balænoptera acutorostrata*, Lacépède.

This animal, which came ashore about one mile north of Girvan, Ayrshire, on the 16th August 1929, was 31 feet 4 inches in length. When examined by a member of the Museum staff it was in a badly decomposed and damaged state, so that no particulars as to its sex were obtained.

Sei Whale, *Balænoptera borealis*, Lesson.

This specimen was 48 feet in length and was reported from Papa Westray, Orkney, on the 3rd October 1929. A

* 1927. Harmer, Sir S. F., *Report on Cetacea stranded on the British Coast from* 1913 *to* 1926, p. 70.

plate of baleen was forwarded to the British Museum, to whom I am indebted for this identification.

Since the publication of the Report by Sir S. F. Harmer in 1927 the following notices of Cetaceans, stranded on the Scottish coast, have been published in the SCOTTISH NATURALIST :—

Risso's Dolphin . . .	SCOT. NAT.,	1927,	p. 60
False Killer Whale . .	„	„	p. 121
„ „ . .	„	1928,	p. 15
Lesser Rorqual . . .	„	„	p. 15
Common Porpoise . .	„	„	p. 50
Pilot Whale . . .	„	„	p. 50
Lesser Rorqual . . .	„	„	p. 76
Pilot Whale . . .	„	1929,	p. 8
Bottle-nosed Dolphin . .	„	„	p. 38
White-sided Dolphin . .	„	„	p. 133, 168
True's Beaked Whale (First Scottish Record)		1931,	p. 37

Foundation of an "Edinburgh Entomological Club."—At an informal meeting held in the University Department of Agricultural Zoology, 10 George Square, Edinburgh, on 10th February 1931, it was decided to form an Entomological Club for Edinburgh. Meetings will be held about eight times a year on Tuesday afternoons at 5.15 P.M. and for the present they will be at 10 George Square. The subscription was fixed at 5s. per annum, the Club year to date from 1st October. As the current year is already nearly half over the subscription till September 1931 was fixed at 2s. 6d. The following Officers were elected:—*President*, Prof. Sir Thomas Hudson-Beare; *Vice-Presidents*, Prof. J. H. Ashworth and Prof. E. P. Stebbing; *Treasurer*, Dr A. E. Cameron; *Secretary*, C. B. Williams; *Committee*, P. H. Grimshaw, Dr A. F. Rosa, P. F. Kendall, M. Halcrow and Miss A. Borthwick. Twenty-four members were enrolled at this meeting. The first meeting of the club was held on Tuesday 3rd March, at 5.15 P.M., at 10 George Square. Tea was served from 5 P.M. It is hoped that all interested in entomology in the Edinburgh District will hand in their names to the Secretary or any other member of the Society.—C. B. WILLIAMS, *Secretary*, 10 George Square, Edinburgh.

NOTES

Hawfinches in Midlothian.—During the past winter a number of Hawfinches frequented a small glen on the eastern boundary of Midlothian. Numerous hawthorn trees, heavily laden with haws, formed the attraction for these birds.

When first observed in December 1930, they numbered about twenty, and as they were exceedingly shy and wary, we had to be content with watching them through glasses. Though known to nest in the locality, it would be difficult to say whether it was a migratory flock or a gathering of local birds.

Visiting the place on 11th January only a single bird was seen, and it seemed to have strayed from the main flock, as it flew about in an erratic manner from tree to tree. Under one of the hawthorns the discarded pulps and broken stones of the berries could be gathered in handfuls.

On 8th February a dozen birds were about, and by persistently going after them, we managed to get some fairly good views. When on the dense hawthorns they were by no means conspicuous, but when flushed they usually flew to the tree-tops at the other side of the glen, where they were seen to better advantage against the sky-line. We did this so often, that we became familiar with their rapid flight and peculiar looking build. This enabled us to pick them out at once as they flew about the glen. One bird was observed on a wild rose, and we were certain it took the hips. This is not often mentioned as a food of the Hawfinch and we could not discover if the seeds only were taken. My friend Mr Watson managed to get fairly near three Hawfinches, feeding under a bush in company with Redwings.

On 1st March we counted nine birds, and though the weather conditions were wintry they were just as wary—when we were hiding under the Hawthorns the birds flew in and one landed quite near. Though we were absolutely still and fairly well hidden this bird seemed to be aware of our presence. Turning its heavy looking head constantly about, it never attempted to feed and we only had it under view for a few seconds, when off it went, the others following.

All our observations of this bird, though disappointingly brief, were exceedingly interesting. Difficult to observe at this season, the Hawfinch is much more so during the breeding time, when the trees are in full leaf. When at the nests of this species some years ago, only momentary glimpses of the birds were to be had. Very difficult to find, these nests were rather flimsy affairs and seemed

to be laid on a branch. An East Lothian nest which could not be reached was easily removed by pushing the crook of a stick under it and hoisting it bodily over.—DAVID HAMILTON, Edinburgh.

The Grebes and their Generic Title.—Grebes received their generic title from the ornithologist John Latham (1740-1837). I do not know whether he is to be held responsible for the form *Podiceps* in which that title is often written (as in the SCOTTISH NATURALIST, No. 188, page 41), or whether the name got that form through a printer's error for *Podicipes*. *Podiceps* means "rump-headed," which is nonsense; but *Podicipes* means "rump-footed," in allusion to the peculiar position of the Grebe's feet.

Even if Latham wrote *Podiceps*, surely the rule of priority should not be so rigidly enforced as to perpetuate the error. It may be considered as savouring of pedantry to object to the form given to what is intended to serve merely as a label; but if that label has a meaning it ought not to be a false meaning. Greek and Latin, being fixed and unchangeable, are employed on account of their precision for scientific classification.

While Yarrell, Gatke, and the late Lord Lilford all wrote *Podiceps*, Seebohm, A. H. Evans in the *Cambridge Natural History*, and Alfred Newton wrote *Podicipes*, the last-named ornithologist protesting vigorously in his *Dictionary of Birds* (page 381) against the erroneous form.

A parallel case of misnomer occurs in the case of one of the many species of Rhododendron recently introduced from China. It has been named *R. neriiflorum*, meaning with flowers like those of an Oleander, to which they bear no resemblance whatever. The specific name should be *neriifolium*, meaning with leaves like those of an Oleander, being somewhat similar in shape.—HERBERT MAXWELL, Monreith.

Long-eared Bat in Orkney.—A living Bat which was caught in the Lighthouse buildings of Start Point Lighthouse, Sanday Island, Orkney, this week, was sent me to-day (19th February). It appears to me to be a Long-eared Bat, but I should be glad to know if I am correct, and whether the species has occurred in these islands before.—JAMES G. MARWICK, Stromness.

[We have seen this specimen which, we are glad to note, is being mounted for the Museum of the Orkney Natural History Society. It is undoubtedly a Long-eared Bat (*Plecotus auritus*) and this is the most northerly record for the British Islands and an addition to the fauna of Orkney. According to Barrett-Hamilton's *History of*

British Mammals, p. 195, this species is abundant in the low-lying southern, central, and eastern counties to the Moray Firth; it is recorded also as abundant in West Inverness, and has been noted from Sutherland and the Outer Hebrides.—Eds.]

Birds of Linlithgow Loch.—With reference to Mr D. Hamilton's article on the "Birds of Linlithgow Loch," it may be of interest to record two ducks not included in his list of species. I had a male Red-breasted Merganser (*Mergus serrator*) under close observation at the loch on 4th October 1930, and on 7th February 1931 I noted a male Scaup (*Nyroca marila*) feeding at the west end of the loch where the burn flows in.—William Serle (Junior), Duddingston.

Small Tortoise-shell Butterfly in Orkney.—On 14th March last I received a butterfly which had been caught the same morning at Kirkwall, and easily recognised it as the Small Tortoise-shell, *Vanessa urticæ*. I am only aware of four species of Butterflies having been found in Orkney, viz., the Red-Admiral, Large White Cabbage, Common Blue, and Marsh Ringlet. Could you tell me if this one is a new variety for these islands, and hence a record for Orkney?—James G. Marwick, Stromness.

[This is not a new record for Orkney, as it was taken in these islands so long ago as 1881, and has also been mentioned as occurring in 1887. It is also recorded for Shetland. We are glad to hear of its recent occurrence at Kirkwall. Since the above was in type we have heard from Dr Marwick that the butterfly was taken in full flight on the 11th March at Heathfield Farm, St Ola, by Kirkwall. Snow lay deep on the ground, but the sun was shining.—Eds.]

CURRENT LITERATURE

Crabs and Lobsters.—A report on Crabs has been issued by the Interdepartmental Committee on Crabs and Lobsters through the Stationery Office, price 1s. 6d. Two sections are of special interest to Scottish naturalists. The first concerns the crab-marking experiments conducted by the Fishery Board for Scotland. Four small charts are given, and these show that the direction of migration is, in the main, northwards. Thus Crabs liberated near Berwick-on-Tweed were mostly recaptured from Fifeshire to Banffshire.

A summary of the results of the observations on the growth of Lobsters at Millport carried out by Mr Elmhirst is also included.

The life of crustaceans is punctuated by periodic moults when the old skin is shed and a marked increase in size takes place. The increase in weight may be as high as 38 per cent.

Lobsters reared in captivity are usually about 110 mm. ($4\frac{1}{4}$ inches) long at 3 years of age. One Lobster hatched at Port Erin died when 10 years old and only measured 235 mm. ($9\frac{1}{4}$ inches). Lobsters therefore grow but slowly.

Speed of Game Birds.—In *The Field* of 28th February 1931 Lieutenant R. W. Wicks, R.N., has an interesting communication on this subject. He obtained his results by racing his aeroplane against the birds after they had been scared by its approach and had increased their speed to what he thought must have been their maximum. On four occasions in October during the early morning flight he raced Geese (species unfortunately not stated and probably not determined) and his results were 56, 55, 53 and 52 miles per hour. With Wild Duck (presumably Mallard) in a Scottish estuary on a morning in November he obtained four "fairly good results," all about 46 m.p.h. Teal are stated to be very fast, and most shooters who have any experience of these charming small Ducks will agree. Several "moderately good results" show a speed of about 70 m.p.h. Five attempts with Grouse over a Perthshire moor in October gave them a top speed of 56 to 58 m.p.h.

The last report is that on migrating Quail, of which three were pursued between Sicily and Malta in September. Their greatest speed is given as 30 to 35 m.p.h. It seems a low estimate, but the observer states they were probably exhausted, having had a flight of at least 80 miles before he raced them. Another factor which must be taken into account is that the month was September,

just about the moulting season, and a time of year when one would expect some of the migrants to have been young birds.

American Wigeon in North Uist.—Mr C. C. Hitchcock, writing in *The Field* of 14th March 1931, records that when flight-shooting on the west coast of North Uist one day in mid-February, he shot two American Wigeon (*Anas americana*), a duck and a drake. They appear to have been flighting along with our European Wigeon. He adds that the locality in which they were shot points to their being genuine migrants, and with his opinion we concur.

This species has been obtained several times in Scotland, but it is so often kept in captivity amongst ornamental water-fowl that previous records must be regarded with great suspicion, with the exception of that of a drake killed in Benbecula on 3rd January 1907.

Dusky Redshank in Perthshire. — In *British Birds*, vol. xxiv., p. 296, Mr John Ritchie records the occurrence in Invergowrie Bay at the beginning of September last year of two Redshanks. One shot proved to be of this species (*Totanus fuscus*). The sex was not determined. It is further mentioned that in its œsophagus two specimens of the nematode *Acuaria obvelata* were found.

Bird-Rings in the Nests of Birds of Prey.—In the March number of *British Birds*, vol. xxiv., will be found an account of the different Bird-Rings recently recovered from the pellets and nests of various Birds of Prey. With one exception, all the rings had been placed on the victims in the immediate neighbourhood of the nests in which they were found. The one exception was discovered in the nest of a Peregrine in Wigtownshire and had been fixed on the leg of a young Curlew in Cumberland six months before. The nests examined comprised those of the Little Owl, Tawny Owl, Peregrine, Kestrel, and Sparrow Hawk.

The Immature Stages of two Syrphid Flies.—Details concerning the young stages of Diptera are none too plentiful. Consequently, a paper by W. E. H. Hodson, A.R.C.S., in the *Bulletin of Entomological Research* for March 1931, pp. 55-58, is of much interest. In it the larvæ and pupæ of two flies belonging to the family Syrphidæ are described, figured, and compared in detail. The species in question are *Eumerus tuberculatus* Rond., and *Syritta pipiens* L. The larvæ of the former are very destructive to *Narcissus* bulbs, while those of the latter occur in manure, and being very similar

in appearance to those of *Eumerus* are very liable to be mistaken for them. After repeated unsuccessful attempts to induce the *Syritta* larvæ to feed upon healthy plant tissues, the conclusion is reached that they are merely scavengers, and therefore of no economic importance. It is of importance to be able to distinguish the young stages of these two flies, and the careful descriptions and excellent figures given in this paper should prove of great assistance.

A New Scottish Gall-fly.—In the *Entomologist* for March 1931, p. 69, J. W. Heslop Harrison records the occurrence of this rare Cynipid of the Rose (Hymenoptera) in Central Perthshire. This is a new record for Scotland, the species having been previously taken in the counties of Durham and Kent, but not elsewhere in Britain. Its gall occurs on *Rosa subcoriifolia.*

A New British May-fly.—*Siphlurus linneanus* Eaton, not hitherto recorded as a British species, was captured in June 1913 at the River Tummel, in Perthshire, and has only recently been determined specifically. This addition to our fauna is referred to, and its ♂ genitalia figured, by its discoverer, Martin E. Mosely, in the *Entomologist* for April 1931, p. 91.

Swallow Breeding in the Shetlands.—J. Bishop, in *British Birds*, April 1931, pp. 338 and 339, states that on 6th July 1924 he saw a nest of the Swallow built on a beam in a stone outbuilding on Foula and the birds hawking about the place. He did not examine the nest, but surmised that it contained young birds.

Nightjar in Shetlands.—In *British Birds* for April 1931, p. 339, J. Bishop reports that he heard the "churring" of a Nightjar on the nights of 5th and 6th July 1924, on the island of Foula. It had been seen and heard by the inhabitants for at least two years previously.

Road-tarring and its Effect on Fresh-water Fishes.—The Joint Committee on Damage to Fisheries has issued through H.M. Stationery Office a Report entitled *Detailed Biological and Chemical Reports on Tars used in Road-surfacing.* This Report should provide useful reading for those interested in our fresh-water fauna.

BOOK NOTICES

Parade of the Living. By J. HODGDON BRADLEY. London: George Routledge & Sons, Ltd., 1931. 8vo, 276 pp. and 16 illustrations by J. F. Horrabin. Price 10s. 6d. net. This is a most fascinating book. It tells the history of life on earth in a series of chapters or essays remarkable for the picturesque style in which they are written. The text round which the story is constructed may be expressed by the first three sentences of the Preface, which is called an "Apologia." They run as follows: "The history of life on earth is more than a collection of shells and bones in a cabinet. It is more than a procession of changing forms and functions. It is a dramatic spectacle." The whole book is remarkable for its clever word-painting, and it is difficult to select a portion to illustrate the beauty of its diction, so full of charm are its pages throughout.

The following paragraphs (pp. 113 and 114), written to emphasise the struggle between vegetarian and flesh-eating dinosaurs, may serve the purpose; "One night some seventy million years ago the moon looked down at the earth. Where now Wyoming lifts its western borders to the sky lay the shorelines of an inland sea. Night air came sweet and heavy off the coastal marshes. Palms and evergreens stood quietly against the sky. Only *Triceratops* moved as he raked the sedges for food.

"Suddenly the browsing dinosaur raised his head. Thunder was rolling somewhere in the sodden gloom, growing louder as it approached. A black cloud rose over a hillock and quickly shaped to the terrible form of *Tyrannosaurus*. One leap and the tyrant sank teeth and talons in the soft back of his victim, but not before the horns of *Triceratops* had found their target. Locked in the embrace of hunger and hate they died. But the moon looked down unmoved."

And as a contrast, speaking of the armoured dinosaurs (e.g., *Stegosaurus*) the author writes (p. 110): "They gradually acquired bodies so massively armoured that against them *Tyrannosaurus* himself was no more effective than a mosquito on a tin roof."

The origin and destiny of man are quaintly discussed in the last few pages of this entrancing volume, which we strongly recommend our readers to peruse for themselves.

The Intelligence of Animals: Studies in Comparative Psychology. By FRANCES PITT. London: George Allen and Unwin, Ltd., 1931. 8vo, pp. 320, with 68 photographs by the author. Price 15s. net. The author of this delightful volume is a well-known student of animal behaviour, and here we are presented with a new series of essays elucidating the mentality of a variety of animals, including the horse, dog, cat, cow, pig, sheep, fox, lemming, mallard, peafowl, crane, and trout. It is shown that, in the case of some of our domestic animals, their difference in behaviour is largely due to different conditions in

the life of their wild ancestors. The dog's attachment to and dependence on mankind, for instance, is attributed to its ancestors having hunted in packs, so that there is an inherent tendency for this animal to enjoy company and to follow and obey a leader. The cat, on the other hand, is attached to places rather than persons—its progenitors, of the lion type, living solitary or in couples only. Hence the cat's nature is independent, and Kipling's summing up of its character in the *Just So Stories* is quoted as being extraordinarily true: "I am the Cat who walks by himself, and all places are alike to me."

The horse is shown to be a creature of nerves and impulse, liable to panic; while the cow has more stability of conduct, a good memory, and more intelligence than is usually ascribed to her.

The three chapters on the lemming are of much interest to the naturalist, apart from consideration of their behaviour, but the two on the crane are to us the cream of the book. The author's several attempts to find and photograph the eggs of this excessively "wild" bird are described in a manner which is peculiarly fascinating. The marvellous and almost incredible eyesight of the two birds whose nest was the objective of the author and her companion proved an insuperable difficulty for some considerable time. After the eggs had been photographed the nest was abandoned and a second clutch in another place was laid some days later, only to be abandoned likewise. "Such was the timidity of this pair of birds that they would not tolerate anything suspicious anywhere in the neighbourhood of the nest. As a study in nervousness and what we usually term 'wildness' they certainly could not be surpassed!"

Memories of Fourscore Years less Two, 1851-1929. By ABEL CHAPMAN, M.A. With a Memoir by GEORGE BOLAM. With many Illustrations in the Text by the Author; Coloured and Half-Tone Plates by W. H. Riddell. London: Gurney and Jackson, 1930. Large 8vo, pp. 257. Price 21s. net. This handsome volume contains a number of reminiscences by the author, completed and revised by him during his last illness. It is divided into four parts, which deal respectively with Egypt, Africa, Spain, and Northumberland. The subjects discussed are of a varied nature, but, as we should expect, bird-life occupies the main portion. The pictures of bird-life, especially on Lake Menzaleh, where the Suez Canal opens into the Mediterranean, are of much interest, and it is a privilege to read these first-hand observations described in the well-known vivid style of the lamented author. But apart from the more ordinary subjects of bird and animal life treated of in this volume, one reads of unusual topics discussed in an original manner by one who does not fear to express views of a novel and very decided character. One of the most striking features of the book is the courage with which Chapman states his views on debatable points, such as the routes traversed by migrating birds or the reasons usually assigned for such. A chapter of exceptional interest is that on Thirst, where it is pointed out that "in the Sahara and other vast Desert regions of Africa, there are several species of

big game which never drink at all," that other species "must be physically capable of withstanding thirst (or, at least, the total lack of water) during quite indefinite periods," and so on. The coloured illustrations in this beautiful work are exquisite examples of colour-process work, while the author's own sketches, reproduced by half-tone blocks, scattered through the text, add much to the attractiveness of the volume. The photogravure frontispiece, representing the author with fishing-rod in hand, is a characteristic and charming portrait. Lastly, the tastefully written Memoir by George Bolam is a fitting tribute to the memory of one of Britain's most worthy naturalist travellers.

A Text-book of Agricultural Entomology. By KENNETH M. SMITH. Cambridge: The University Press, 1931. 8vo, pp. 285, 79 text-figures and frontispiece. Price 12s. 6d. net. This well-designed book deals purely with the insect pests of farm crops, no reference being made to the devastators of fruit-trees, either bush-fruit or trees of the orchard. With this limitation it is an excellent and useful manual. The information is thoroughly up-to-date, and is presented in a practical and systematic manner. There are three introductory chapters, brief and to the point, the first of which includes a map of England and Wales showing the division of the country into "collegiate advisory centres and provinces." Scotland is not mentioned! Chapter II. gives a summary of the various methods used to control insects, while Chapter III. is devoted to the effect of weather conditions on insect outbreaks. The next ten chapters deal with the various insects in systematic order, commencing with the Collembola or "Spring-tails" and ending with the Diptera. The Orders and Families are briefly but carefully defined, and every species is dealt with on a uniform plan so that it is an easy matter to find exactly the item of information required. A concise description of the adult comes first, then a brief account of the earlier stages, a summary of the life-history, an enumeration of the cultivated and wild host plants, symptoms of attack and injury to host plants, distribution, control and natural enemies. At the end of each Order is given a useful bibliography, while there are two Appendices in tabular form which should prove very helpful. In the first the various crops are arranged under their Natural Orders, while printed opposite each are the chief symptoms of attack and the name of the insect attacking. The second Appendix gives in two columns a list of common farm weeds acting as alternate hosts and the insect pests which feed upon them. An Index of Authors, one of Parasites and Predators, and a General Index complete this exceedingly useful and well-printed volume. The illustrations throughout are all that could be desired.

A Manual of Practical Vertebrate Morphology. By J. T. SAUNDERS and S. M. MANTON. Oxford: The Clarendon Press (Humphrey Milford), 1931. 8vo, pp. 220, with 43 text-figures. Price 15s. net. The student of general vertebrate anatomy must be considered fortunate in being able to procure, at a moderate cost, a book of such excellence as that which

lies before us. The types selected and described in full, are for the most part easily obtained, and the student is led carefully, step by step, through every detail in the operation of dissecting, so that if he reads closely as he works he cannot go wrong. The numerous illustrations are clearly drawn, and, like the whole of the book, well printed on a paper specially selected for colouring by chalk or crayon—a course which the student is recommended to take. Commencing with the Lamprey, the Skate and the Whiting are next taken in full, then follows a short section on the auditory ossicles and the swim-bladder of the Roach. The Salamander is chosen as the Amphibian type, and after the general dissection of this animal the student is conducted over a detailed display of the central and sympathetic nervous system of the Frog. Reptiles are exemplified by the Grass Snake, and Birds by the Pigeon. The six closing sections are devoted to Mammals, which are thoroughly well dealt with in an original manner. The first of these treats of the brain of the sheep ; next follow a general account of the vertebrate nervous system, a chapter on the skull and visceral arches of the dogfish (or skate), cod (or whiting), reptile (turtle, lizard and snake), a bird (turkey), and a mammal (dog). The following section considers the bones of the mammalian skull, giving the characteristic modifications in each Order ; and this is followed by an account of the vertebral column and ribs, and a similar one of the pectoral and pelvic girdles, the sternum, and the limbs, of various vertebrate types. Special mention should be made of a short but excellent summary (in Section XIII.) of the derivation of the tritubercular tooth and its subsequent elaboration.

Salmon Hatching and Salmon Migrations. By W. L. CALDERWOOD, I.S.O., F.R.S.E. Edward Arnold & Co., London. Price 4s. 6d. net. This volume, comprising the Buckland Lectures for 1930, contains much interesting information regarding the hatching and life-history of the Salmon. The first two chapters deal with the hatching and the third with the life of the fish in the river and sea. After dealing with natural spawning and hatching artificial methods are described. Hatching of ova in shore stations may be undertaken for two reasons, either to enable species to be introduced into new waters or to increase the stock in waters already colonised. The introduction of new species is shown to have been notably successful in New Zealand, where, after many failures, the Quinnat, Sockeye, and Atlantic Salmon have become established.

Hatching in shore stations has been carried out in many places, but, until recently, there have been no statistics to show whether any increase in the stock has followed the introduction of fry into any particular river. Recent investigations have been conducted by the Biological Board of Canada to estimate the effect of adding Sockeye fry to Cultus Lake. This has been done by means of an ingenious trap, set in the river below the lake, in which the descending fish may be counted. Counts have shown that planting out fry has increased the number of descending fish nearly four times.

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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.*)

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EMERITUS PROFESSOR W. C. M'INTOSH, M.D., LL.D. D.Sc., F.R.S., 1839-1931.

By Professor JAMES RITCHIE, University of Aberdeen.

FOR more years than fall to the life's span of most men, Professor M'Intosh has been a leading figure in Scottish zoology. Like most naturalists of the older school, he entered the path of his desires by way of the study of medicine; but the direction of his thought and interests was made clear even in these early days, for the thesis with which, in 1860, he obtained the Degree of M.D. at the University of Edinburgh was upon "Observations and Experiments on the Shore Crab"—a strange subject, one might think, with which to prove a qualification for the art of healing.

At the conclusion of his University studies, which he shared between the Universities of St Andrews and Edinburgh, Dr M'Intosh turned to medical work, and for long held the responsible post of Superintendent at Murthly Institution. So it came to be that it was comparatively late in life before he took to zoology as a profession—on his appointment to the Chair of Natural History in his old University of St Andrews. That was in 1882, a memorable year in the history of zoological studies in the universities of Scotland; not only did M'Intosh begin then a long tenure of the St Andrews Chair, but Edinburgh lost by death its famous professor and explorer, Sir Wyville

Thomson, leader of the *Challenger* expedition, and gained Professor Cossar Ewart, while Aberdeen, having lost Ewart, gained Alleyne Nicholson.

Notwithstanding his preoccupation with medical work at Murthly, the young doctor showed from the first where his heart lay; paper after paper on zoological subjects appeared from his pen, and he soon showed special interest in the two lines of knowledge to which later his energies were mostly to be given—the study of fishery problems and the structures and classification of marine worms. While still a practitioner he began, with the publication of a monograph on the Ribbon-worms or Nemerteans in 1873-74, that great series of sea-worm monographs, the final volume of which was recently published by the Ray Society, and the illustrations of which combine to add to the value of the work and to testify to the artistic skill of the family.

Such special studies brought it about that the collections of several important expeditions came under his survey for critical examination, amongst them the results of the cruises of the *Valorous*, the *Porcupine*, and the *Challenger*. Of these the greatest was the last, for the descriptions of the worm-collections made on the world voyage of the *Challenger* occupied seven long years of investigation and appeared in a monumental work, a quarto volume of about 600 pages with not far short of 100 plates.

Professor M'Intosh's second great achievement in zoological research was of more general interest and of very considerable importance from the point of view of human economy. Broadly, it concerned the marine fisheries of these islands, but it branched out into a series of related efforts. There was, for example, the foundation of the Gatty Marine Laboratory at St Andrews, the first institution of its kind in Britain, and the centre of fundamental studies bearing upon the fisheries. Again, as a move to the same end, M'Intosh took up the study of the eggs and young stages of the marine fishes commonly used for human food. At the time little was known about the life-histories of marine fishes, and the work then carried out laid on a sound

foundation a branch of investigation the importance of which in any scientific interpretation of the movements and fluctuations of fishes has become increasingly recognised with the passage of years.

Finally there was the general scientific aspect of fishery problems, and to the body of evidence and of opinions Professor M'Intosh made significant contributions. His early studies led him to believe that the continuous fishing by man on selected fishing grounds could not but result in a diminution of the stock, and in the end a ruling out of areas that had been fished from time immemorial. But the publication in 1899 of his *The Resources of the Sea*, showed that his views had changed, and thereafter he became a strong advocate of the view that in relation to the manifold influences of Nature all the efforts of man could be regarded as but a drop in a bucket; that, in short, no amount of fishing could deplete a stock which was renewed annually through a prodigal reproduction.

As a direct result of his view of the relations between natural replenishment and human interference in the fisheries, Professor M'Intosh held that there was no need for the State to interfere with the activities of fishermen by the protection of fishing grounds through the closing of areas such as the Moray Firth. It is a question which has aroused much controversy, although the debate has departed from the strict limits of scientific argument and has become complicated by the introduction of political considerations.

Since M'Intosh began his investigations the methods of fishing have been greatly perfected, fishing has become more intense, and the slaughter of the fish stock in the old areas has gradually driven fishing vessels farther and farther from the shores of Britain, even to seek fishes in the seas where in the days of our forefathers whalers from Scottish ports made adventurous voyages. We have reason to believe that in the later years of his active life—and all his years were active—the protagonist of non-interference came to see that even in his beloved area of St Andrews Bay, vast changes to the detriment of the stock of edible

fishes had taken place since he first had studied the fauna of that fine breeding ground.

Till the very last of his long life—he died in his ninety-third year—Professor M'Intosh retained his vigour, his freshness, and his devotion to scientific labours. So recently as 1929 he published, in the *Transactions of the Royal Society of Edinburgh*, a 75-page paper on abnormal teeth of mammals, an investigation in the course of which he visited most of the large collections of mammals in the kingdom to hunt out and describe their treasures.

A man of engaging personality; a good friend, ever ready with advice and encouragement; a worker of the older school, interested in animals in the field as well as in the laboratory; his death breaks one of the last remaining links with the opening of the Darwinian epoch, and marks the close of a life which will remain one of the great landmarks in the progress of Scottish natural history.

Butterflies in Caithness.—On 26th May 1931 by the shore between John o' Groats and Duncansby Head we saw eight or nine Painted Ladies (*Vanessa cardui*) and two Red Admirals (*Vanessa atalanta*). They were in perfect condition; we got very near them and watched them basking on dandelion flowers, or on red campion. They also settled on the sand and grass.—Leonora Jeffrey Rintoul and Evelyn V. Baxter.

A Rare Spider, *Dysdera crocota*, C.L.K., in Midlothian.—The occurrence of this conspicuous and rare species in Midlothian is again confirmed by the discovery of an example in a garden at Inveresk on the 12th May last. It was uncovered during the process of raking loose soil, and sent next day to the Royal Scottish Museum, where it was preserved and identified.—M. R. Tomlinson, Inveresk.

[The specimen in question has been kindly presented by Mr Tomlinson to the Royal Scottish Museum. Our last record of the species was in 1925 (p. 160).—Eds.]

THE OYSTERCATCHER (*HÆMATOPUS OSTRALEGUS*): FROM PERSONAL OBSERVATION.

By the late Rev. H. N. Bonar.*

I DO not propose to give here an exhaustive and scientific history of this quaint and likeable bird. This paper is only a record of the impressions of my own meetings and dealings with it, with a few added deductions to which readers may attach what weight they please.

The Oystercatcher is very closely related to the Lapwing, and although at first sight the two birds may seem widely different, one has only to study it closely, especially at the breeding season, to discover in it many points of resemblance to its slighter, shyer and more graceful cousin.

Of its distribution let me only say that our British species ranges over the greater part of Europe and the whole of the Mediterranean and the Red Sea, while it also occurs in Central Asia and Northern India.†

Its food consists of crustaceans and bivalves (but *never* oysters) and small insects and creatures which inhabit the sand and gravel flats which it frequents. I have seen it frequently in newly ploughed fields, eating worms and grubs. It is also occasionally a vegetable feeder, for tender roots and green leaves have been found in its crop. Its curious, vertically flattened powerful beak is specially useful for slicing limpets off rocks, or for opening mussels. As oysters are never left bare at low tide, and as the Oystercatcher cannot dive, I need not point out that the bird's name has been bestowed on it under a misapprehension.

* This paper from among the MSS. left by the author, was kindly lent us for perusal by his sister, Miss E. M. Bonar, to whom we are much indebted for permission to publish. The paper in question was read before the Scottish Natural History Society some years ago and, with the exception of a few minor alterations, is published as it stood.

† *Hæmatopus osculans* of Dr Bowdler Sharpe (Eastern Asia) has less white on the outer primaries and a somewhat longer bill "unworthy of even subspecific rank" (Dresser). "A closely allied race" (B.O.U. List).

I cannot help conjecturing that this bird is, in many parts of Scotland, being driven from its coastal nesting spots and is more and more taking to nesting inland. I venture to suggest that it gets greater seclusion and security on the gravelly haughs of our larger rivers and the shingly spits on our lochs than it does when it keeps to its ancestral sea-shore. The Black-headed Gull seems to be a bird which has almost forsaken its salt-water nesting haunts—possibly the Oystercatcher is beginning to do the same, for its inland breeding is certainly on the increase in Scotland. I am inclined to hazard a guess—it is not more than a guess—that either the Oystercatcher does not come to maturity at the end of its first year, as is generally believed, or else that a very large number of the one-year-old birds do not breed. For this I have the reason, that at the breeding season one sees many flocks of unmated birds—whether male or female I cannot say, as there is no plumage-indication of sex in this species. These flocks are sometimes pretty large, and throughout the spring they remain undiminished. At first when I noticed them I used to think that possibly they were the males whose hens were sitting on eggs in the neighbourhood. But at Rannoch, when I noted this first, I think I may say that I knew every nest five miles up the loch and four miles down the river—sixteen in all—and in every case both birds were, as one would naturally expect, in attendance on the eggs, while the flocks of "bachelors" were in evidence all the time. What, then, is more likely than this, that they are birds not old enough to breed? Unless we are to suppose that all over the country the sexes are so badly balanced that great numbers are unpaired every year?

I have a very vivid recollection of a big gravel bank (sometimes an island if the loch were high) at Kinloch Rannoch where a flock of those solemn, wary, leisurely birds used to spend the whole April day. Sometimes they would stand or slowly stalk about in silence for long, and then one would break out into a shrill, penetrating repetition of its cry, and presently the whole flock would take it up and raise an extraordinary commotion. Then

the clamour would die down, and the whole group would resume its impressive gravity. I have noted this flocking of unmated birds in many other places also, on the sea coast as well as inland, particularly in the island of Texel (Holland).

That the Oystercatcher pairs for life I am pretty sure, as also does, I believe, its relative the Lapwing. It has the habit of returning to the same nesting spot spring after spring, even though the site may sometimes be a badly situated one, and so conspicuous that the nest is often robbed. One instance of this I know very well. The nest was made every spring in a rather open meadow at Rannoch, which lay below and in full view of the road. The nest was in the short grass, not far from the Tummel, and it was not a mere scrape in the ground, but a collection of twigs, dry rushes and grasses. There the bird nested year after year, always in this meadow, though there were gravel-flats close by. One could be sure that it was the same pair, from the peculiarity of the nest-materials and site. I used to look out for the sitting bird as I drove along this road spring after spring—it was not 100 yards from the road—and there the nest always was unless it had been destroyed, manifestly the work of the same architects.

I could give other instances which, to my mind, prove the return of the same individual birds to the same nesting spot year after year. I have noted, for example, certain tricks of approach to the camera, in certain birds, certain odd little mannerisms and habits which I could recognise quite well from the experiences of previous years, and I am confident that each desirable "pitch" on a gravelly river-side or loch-shore is occupied by the same pair of Oystercatchers again and again. But it would be wearisome to multiply instances. Let me give one more. In a haugh on the Tummel, where I used to fish a good deal, there was an Oystercatcher which was a regular adept at shamming lame. I never saw any Wader do it better. As one came near its nest its antics were remarkable, and once it actually came so close to an angler of my acquaintance that, by throwing himself down at full length (he was a

Rugby player) he caught the bird. He actually thought that it was injured and in pain, but after examining it carefully he could find nothing wrong with it and set it free, being much relieved to find when he did so that it had regained its powers of flight. He told me of the incident in the evening, and would scarcely believe me when I told him that this was only a ruse on the bird's part. I had noted that bird and its antics the previous spring, and I noted it two springs afterwards. I think I am justified in conjecturing that it *was* the same individual.

The typical nesting-site is, of course, a mere "scrape" in the middle of a stretch of gravel, among stones just the size and general shade of the eggs. In such surroundings the colour-protection is wellnigh perfect. But there are many variations from the perfect type, and sometimes the bird seems to go out of its way to make its eggs less inconspicuous. Sometimes, for example, in its inland breeding places twigs, chips or bits of dead grass are added as lining, especially after incubation is eight or ten days advanced. On the other hand, on the sea-coast fragments of limpet or mussel shell are added, making the eggs more conspicuous. In the polders of Holland where, as a rule, there is no gravel, the nest is just a "scrape" in the clayey sand on the turf. In the latter case I have noticed, both in Scotland and Holland, that if the "scrape" goes right through the grass-roots to the soil or sand beneath, a few bits of shell are almost invariably added as lining.

As for the localities in which the nest may be found, these vary considerably. There is one curious spot on the Garry, between Blair Atholl and Struan, beside a great gravel-bank where the railway flanks the river. I suppose the available ground had been occupied by another pair, and a bold pair of birds, finding that the railway was ballasted with stones of the right size and shape from the river-bed, resolved to nest there—which they did—and there the bird sat, between the rails, only leaving the eggs when a train passed. I believe the young were hatched in safety!

Many other very different nesting-spots I might mention.

I have found the eggs among heather, in grass pasture land, in a ploughed field—all of which were typical sites for a Lapwing's rather than an Oystercatcher's nest. I have found the nest in a crevice in the bare rock on an island, on a sandy ledge half-way up the steep side of a "bunker," and on the smooth sandy slope of a Dutch plain near a dwarf oak wood, far from any fresh water and four miles from the sea. We read in *Yarrell* that the nest was once made in the cavity at the top of a felled pine-tree in Norway, but I think that I have a site to tell of which matches any of those previously mentioned. On 1st June 1914, and following days, in Texel, near Hoorn, I daily passed a high-pitched thatched barn. At the ridge-pole the two slopes of thatch were covered and made water-tight by a line of turf a little less than a foot broad running all along the top of the barn. On the middle of this line of divots was an Oystercatcher's nest, and as I cycled past the farm I used to watch the sitting bird. It showed pretty clearly from both sides, but still was wonderfully inaccessible.

In all my fairly extensive experience of this bird I had never found a nest with more than three eggs until I went to Holland. I rather agreed with what Howard Saunders says in *Yarrell* that if there be a fourth egg in a nest it does not show any family likeness to the other three. But in Holland I found as many 4-egg nests as I did 3-egg ones. I have a record of at least fourteen or fifteen of these, and I do not think I noted all that I found. I was rash enough to repeat Saunders' statement to some friends on Tayside once when we were hunting for a nest, and five minutes after I had said it I found a nest with four eggs, all unmistakably laid by the same bird. But this is the only instance of a 4-egg nest which I have ever found in Scotland.

One very bad habit this bird has is that of egg-stealing, but, so far as I have noticed, it is only in Dutch birds that this habit occurs. I have never either seen it or heard of it in Scotland. But in one or two polders in Holland, where Avocets, Terns, Reeves, Redshanks and Kentish Plovers nest freely, it is no uncommon thing to find three or four

nests robbed every day by the Oystercatcher. This is not conjecture—I have seen through my binoculars the theft taking place on the other side of a canal where I could not reach. And the fear which the other nesting birds have of the Oystercatcher shows how well they know his habits. Let me give the following extract from my Journal to illustrate this: "June 11, 1909. Set my camera at an Avocet's nest beside a little 3-foot high grassy dyke, near water. Both birds began to return soon. An inquisitive Oystercatcher brought one of them right up to defend its eggs—but when the intruder retired the Avocet retired also. It dared not *attack* the stronger bird, but it sidled and dodged and doubled and always kept between the enemy and its eggs." Later in the day: "Both Avocets soon came near. Once an Oystercatcher waded past, close by the nest: both birds made a rush for him, and though they did not make him fly away they hustled and shouldered him past their eggs in fine style." Note, at close of day: "The Avocet was far more ready to sit if an Oystercatcher came near; while a sheep or a lamb made it fly back to the nest however far from it it might have been before." I may add that a Mallard, a Tern, a Redshank or a Ruff might pass the eggs and the Avocets exhibited no concern whatever.

Let me give one instance of the Oystercatcher's unthinkingness (I will *not* say stupidity) and then at some length let me instance its clever watchfulness. I quote the following from my Journal: "June 11, 1909. Tried some experiments with a very tame Oystercatcher which was sitting on three eggs close by the hiding-place from which I was photographing the Avocets. While waiting for the Avocet to return I took two of the Oystercatcher's eggs and laid them just outside the nest, leaving only one in. The bird came and sat on the one, and then after five minutes it drew another under it with its beak, leaving the third outside. Again, in half an hour, I laid all the eggs just outside the nest, but quite within reach if the bird sat on the empty "scrape." It refused to take any notice of them, and wandered about desolately. On my putting *one* in, it sat and presently drew the other two into the nest under

it. I tried other experiments, and found that it never tried to reach an egg if it was outside the range of its bill as it was sitting. The idea of getting up and rolling the egg into the hollow never seemed to occur to it." Possibly it was not very anxious about the eggs, as the day was very warm indeed, and the sun gave heat enough to keep the eggs from taking any harm, even though they were not sat on.

Now let me tell of the intelligence and watchfulness of this bird, as I saw it in the Tay valley, giving my experience in the form of a narrative. It was a bright breezy day in the end of April when we went out to photograph the Oystercatcher. The spring migrants had begun to arrive, and we met with many of them as we descended the steep slope which ended in the narrow strath and flat haugh which we were bound for. The Cuckoo called melodiously in the distance, and a Willow-Wren sang faintly and delicately in an alder thicket beside the road. Wheatears flickered about a stony slope, while when we reached the river itself we heard the melodious "wheet-wheet" of the Sandpiper. We cautiously approached the great gravel-bank which we had previously reconnoitred, and saw the Oystercatcher leave its eggs with an air of unconcern and detachment which was too emphatic to be real. For presently both the owners of the eggs came flying up the river, and as we approached the "scrape" among the gravel where lay the three stone-coloured dark-spotted eggs we were greeted with shrill pipings and remonstrances. Thirty or forty yards away, at the junction of the sandy turf with the rough gravel of the river-bed, rose a thickish whin-bush which I had already fixed upon as a sufficient hiding-place for myself during my operations, as it afforded me fair concealment and a clear view of the nest. I soon set my camera down on a convenient flat stone, and focussed it on the eggs. The releasing-wire was attached to a little electro-magnet, and the camera was then covered up in front with a carved and stained mask, and the rest of it enveloped in a green cloth, blotched and spotted with other tints to make it look less conspicuous. Then dead sticks, leaves, a divot or two, and

some twigs of whin were put all round and over it and weighted down with stones, and the concealment of the camera was finished.

I must say that it did look a very noticeable lump, in spite of all its disguises, as it lay there on the stony sloping haugh; but the main point was, that whatever it *did* resemble it did not look like a camera, or indeed like any instrument of human construction. It did not take long to lead the wire up to my hiding-place in the whin-bush at the edge of the bank, where I connected it with my dry-cell battery. I crept into the heart of the bush, arranged the smallest permissible peep-hole for my binoculars, after which my friends covered me with waterproofs, on which they spread branches and dead leaves. According to our plan, they then walked openly from the bush towards the camera, in full view of the Oystercatchers which were waiting at a distance. Then they strolled ostentatiously up the river-bed to give the birds the idea that the intruders had gone away. After going up-stream for some distance they made a detour inland and, unseen by the birds, returned to my neighbourhood and climbed a low-branching Scots pine, within easy range of both my whin-bush and the camera.

An anxious Oystercatcher reappeared on the gravel-bank almost as soon as the coast seemed to be clear. It waddled towards its nest with that preternaturally solemn and almost judicial gait which is peculiar to the deliberating Oystercatcher. Whenever it came within full view of the heap concealing the camera it halted, and began to make a show of feeding, and pecked about among the gravel with a grave energy. All this time it was taking stock of this new erection which had suddenly arisen within a yard of its home. Then, having decided that this heap was harmless, it advanced leisurely with several zigzags but without another halt to its eggs. It stood beside them and eyed them carefully for some minutes (I could clearly see the bright crimson of its eye as it moved its head from side to side) and then, straddling its legs and fluffing out its lower breast-feathers, it sat down, gradually working the feathers in among the eggs, so that all should be equally

covered. I watched intently through my glasses, and after a good while released my shutter whenever I thought that my sitter was in a proper attitude. The slight click of the muffled shutter did not disturb the bird, which gradually settled lower and lower as it continued to brood, until from a rather conspicuous black and white patch it subsided into a lifeless-looking lump which harmonised wonderfully with the surrounding stones, grey though they were.

Then came the most difficult part of my work—to emerge from my "hide" without letting the Oystercatcher know that I had been there. I had arranged with my friends that as soon as I whistled they were to leave their tree and take a circuit down the river-bank to me, driving the bird off the nest as they did so. Thus when they reached my bush I should be able to emerge unseen by the bird, change the plate in my camera, set my shutter anew, and get into concealment again with my friends' help. But the noise of the river quite drowned my whistling, so after a good deal of thinking I attempted to signal by thrusting out one of my feet from under cover. I imagined that if I made this movement at the back of my "hide," my friends would see it, while the sitting bird would not. I was mistaken, for it detected my signal in a moment, shot off its nest and scuttled down the stony haugh to the river at a most unusual rate, and then flew down the stream. My friends presently joined me and unhapped me. But my "hide" was now of no value, since the bird suspected that it harboured an enemy, so that I resolved to conceal myself at another spot farther up the river.

I unrolled my wire as far as it would go, and constructed another hiding-place in a bush about 120 yards from the nest and away from the river, for there was not another whin which commanded a view of my camera. There I lay and was covered up in the same way as before, while my friends walked past the nest again, before going up the river and making their detour to the Scots pine where they were again to hide. The arrangement we made was that they should watch the bird from the tree, and signal to me when to take the photograph. They were to blow several

short notes on a metal whistle whenever the bird came near the nest, but when it had settled on the eggs they were to give one loud blast as the signal for me to release my shutter and take my photograph.

As I lay hidden, I could not see any part of the gravelly slope where the nest was: my field of vision was limited by the edge of the grassy flat, prominent on which stood the whin-bush, from which I had taken my last photograph. After ten minutes' waiting I saw the black and white plumage and the bright orange bill of the Oystercatcher showing on the far side of the bush. The bird advanced hesitatingly with even more than its usual deliberation, pausing every few yards—evidently scouting. When it got close to my former hiding-place it took rather a wide half-circle on the landward side of it, scrutinising it very carefully all the while. Then I became aware that my friends up in the tree were blowing the "make ready" signal repeatedly. I wondered why they were doing this, and at first supposed that they were merely calling my attention to the presence of the bird at the whin-bush. It had now come to a standstill, and remained meditatively for some time on the turfy edge of the bank above the gravel. Then the "make ready" signal sounded out again, and this time, wondering but obedient, I laid my finger on the switch of my battery. The sentinel bird seemed to have finished its thinking, for it took the few steps round the bush which brought it to the river-side again, and then it stepped down the bank out of my sight. Three or four seconds later rang out the whistle's signal "release shutter." I could not help hesitating for an instant, knowing that it was impossible for the bird I had just seen to cover the forty yards which separated it from its nest, in the time. But as I was working at this moment entirely on trust, and as I could rely on the keenness of vision of my young friends in the tree, I felt that I could do the questioning afterwards, so I obeyed orders and pressed the switch and then lay still and waited, and presently my signallers climbed down from their observation-post and joined me. Then I got their very interesting account of what had

taken place on the sloping gravel-bed beyond my range of vision.

After we had hidden ourselves, both Oystercatchers (instead of only one as formerly) returned to the neighbourhood. After standing together and watching for a little they separated. The male (I imagine) went to investigate the mystery of the whin-bush, while the female walked across the stones till she came within eight or ten yards of her eggs. There she halted and remained motionless, not even making a pretence of feeding, as is generally the custom of these birds while waiting for the coast to be clear. But here I ought to say that I cannot be quite sure which was the male and which the female, for the plumage of the sexes is exactly the same, the only outward sexual difference being that the female is slightly larger than the male. Evidently she had resolved to do nothing until that whin-bush had been thoroughly searched and declared to be unoccupied. But when her mate appeared again on the top of the bank she brisked up and looked more alert, and the moment he hopped down on to the stones again, thereby declaring that there was no danger, she walked straight on to her eggs and sat down.

This incident in all did not occupy much more than twenty minutes, and the perfect understanding between the birds and their quickness in giving and taking signals impressed me not a little. I may add that half an hour afterwards I took another photograph from the same spot by the same method of signalling by whistle, but this time the male bird did not search the bush for a concealed enemy. I suppose that he and his mate, watching us keenly from afar, noticed that none of us approached the suspected whin-bush.

Continental Robin (*Erithacus r. rubecula*) in Shetland.—This specimen was picked up at Bixter, Shetland, on the 9th May 1931. It is not usual to see one here at this season.—James C. Bowie, Bixter.

[This bird proved to be a specimen of the continental race of the Robin. It occurs as a passage migrant and winter visitor to the Shetland Isles. It is generally distributed over Europe from France to the Urals up to 68° lat., and winters in Persia and Mediterranean countries. It closely resembles the British Robin, but is paler brown above and the breast and throat are yellowish orange.—Eds.]

Basking Shark (*Selache maxima*) stranded near Campbeltown, Argyllshire.—A Basking Shark 30 feet in length was stranded on the rocks at Sanda, near Campbeltown, on the 31st May. This shark is the largest of the North Atlantic species, and is an inoffensive fish of oceanic habit. It approaches our western shores in spring. Off the West Coast of Ireland it is reported with some regularity in May and by August reaches the shores of Norway. In summer it is occasionally reported from the North Sea.—A. C. Stephen, Royal Scottish Museum.

Hawfinch in East Lothian.—A Hawfinch was found dead—apparently killed by telegraph or telephone wires—by Mr James Chirnside, Aberlady. It was handed to me yesterday (30th April 1930) and the record of its occurrence in East Lothian may be of use.—A. M. Jamieson, Schoolhouse, Aberlady.

***Tanyptera nigricornis*, Mg.—A New Scottish Fly.**—On the 9th May last Mr A. R. Waterston discovered a larva feeding in the decaying wood of a tree (? oak) in Roslin. This larva pupated a few days later, and finally emerged as an adult two-winged Fly on the 4th June. It was then kindly presented by its discoverer to the Royal Scottish Museum, and proved to be a male *Tanyptera nigricornis*, Mg. I am not aware of any previous Scottish record for this species beyond the bald initials "E.S.I." after the description in Vol. iii. of Walker's *Insecta Britannica Diptera*. Where Walker obtained his authority for "S" (meaning Scotland) I cannot imagine. The flies of this genus, like those of the allied genera *Xiphura* and *Ctenophora* are always rare and usually only taken singly. In any case this record is a notable addition to the Dipterous fauna of Midlothian—Percy H. Grimshaw.

NOTES ON THE PECULIARITIES OF SOME LEPIDOPTERA AND HYMENOPTERA FROM THE INNER AND OUTER HEBRIDES.

By Oliver H. Wild, M.B., Ch.B.

(*With Coloured Plate.*)

From 7th to 19th July 1930, a cruise was made on the yacht *Dalga* to the Hebrides by the Rev. J. M. McWilliam, B.A., and the Author, as the guests of Mr Arthur B. Duncan, B.A. An attempt was made to study the insect fauna, particularly the Humble-Bees (Bombi) and certain Lepidoptera. The weather during the period was inclement, though short periods of sunshine were experienced.

Argynnis aglaia, L. The Dark Green Fritillary. Fig. 1.

We caught specimens of this butterfly on the islands of Mull, South Uist, Barra and Skye, where they were plentiful near the shores. A specimen was seen by Mr Duncan and the Author on Canna.

Barrett[1] states that *Argynnis aglaia* is "not found in the Isles." South[8] says concerning this insect: "In Scotland it occurs in many suitable districts, but Skye is the only one of the isles from which it has been reported."

Frohawk[2] states regarding the Scottish distribution of this Fritillary: "In Scotland it is chiefly confined to the mainland but it has been recorded from the Isle of Skye." As usual, males were more numerous than the females, being in the ratio of five to one; they conformed in marking to mainland examples, but were a little brighter in colouring. Every female obtained was remarkable in coloration, the upper side strikingly blackish, shot with greenish reflections. The markings were similar to typical mainland specimens. Examples of this dark form of female were taken on Mull, Skye, Barra and South Uist. No examples of the typical light form of the female were taken during the voyage.

Mr H. T. G. Watkins[10] has separated Scottish examples of this butterfly, under the subspecific name *Argynnis aglaia scotica*, from the Scandinavian type, which is the form

occurring in Southern Britain. Mr Watkins has kindly examined a male and female of the Hebridean examples and considers them identical with *Argynnis aglaia scotica.* I have examined the co-types of *scotica* in the British Museum, and do not consider them to be so dark as our Hebridean examples. Through the kindness of Mr A. H. Hamm, A.L.S., F.E.S., I have also compared the Hebridean specimens of *Argynnis aglaia* with examples in the Hope Collection at Oxford, and find nothing approaching them in darkness of ground.

It is difficult to account for the occurrence of this special form of the female of *Argynnis aglaia.* The fact that the variation in colour is confined to the female makes it unlikely that climatic agencies (which are generally considered to be the cause of darkening of so many of the Hebridean Lepidoptera) can be the factors producing the variation in this case. It is of interest to note that a similar case of female dimorphism is found in another species of Fritillary, *Argynnis paphia.* This butterfly has a variety confined to the female known as *Argynnis paphia*, var. *valesina*, in which the fulvous colour of the typical female is replaced by smoky bronze-green. In Britain, it is principally confined to the New Forest, where it occurs side by side with the typical female. In other countries, *valesina* may be the only form of female represented. Tutt,[9] in his account of *valesina*, states "that one of the colours, brown or green, was the primitive tint of the species is certain. Owing to the colour of the male being brown, and the tendency in Rhopalocera to the production of a more highly coloured male than female form, it would appear that the brown female is the more highly specialised one, and that the green form (*valesina*) represents a more ancestral type." Again, Frohawk[3] states: "From what we know of the earliest existing Lepidoptera, they then lacked the brilliancy of colouring now prevailing in so many species, and that in the world's earlier ages only white, black and brown forms existed, therefore very probably *valezina* still represents the ancestral form of *paphia.*"

Now we obtained only the dark form of the female of

Argynnis aglaia in the Hebrides; can we assume that in the Hebrides the dark form of female found there is of the primitive ancestral type which has been superseded in most parts of Britain by the lighter and more highly specialised type?

EPINEPHELE IANIRA L. The Meadow Brown. Fig. 2.

Females of this species obtained on Canna are remarkable for the extent and brilliancy of the dark-orange patches, which are not only found on the forewings but also extend over a considerable area of the hind wings. I have shown these Canna examples of *ianira* to Colonel C. Donovan, who has made a study of the British and Irish forms of this insect. He considers the female to be brighter and more extensively orange than any form he has obtained elsewhere.

In a paper on the British and Irish races of *Epinephele ianira* under the synonym *Maniola jurtina*, Graves subdivides the British and Irish races into several subspecies, amongst which the subspecies *Maniola jurtina splendida*, White, is recorded as the form occurring on the shores of the Gairloch in Ross-shire, also in Coll Island and localities in West Sutherland. Among the distinguishing features the female of *splendida* is characterised by large patches of raw sienna found on the upper side of both fore and hind wings.

The Canna specimens of *Epinephele ianira* resemble closely the subspecies *Maniola jurtina splendida*, White, as portrayed by Graves[4]; they are, however, brighter and more extensively orange. Now the Hebridean Lepidoptera are remarkable for their tendency towards the production of melanic forms. We have here, however, an exception—not only have we a race where one sex is of enhanced brilliancy but also it is the female which has undergone the specialisation.

CIDARIA (DYSSTROMA) CONCINNATA. Fig. 3.

An interesting form of the Geometrid moth *Cidaria* (*Dysstroma*) *concinnata* was found in some numbers sitting on vertical faces of rocks among heather in South Uist at

Loch Druidibeg on 15th July. Prout[5] considers *C. concinnata* to be a good species as proved by the male genitalia, and not just a form of *Cidaria truncata.* He gives as the distribution, "chiefly in the Isle of Arran, though one or two examples have been recorded from the Western Mainland of Scotland." Colonel C. Donovan, to whom I have submitted the South Uist specimens, tells me they are similar to examples he has taken in hilly districts of S.W. Cork and Kerry in Ireland. These lack the russet colouring of the Arran species. He considers these examples from Ireland and South Uist to be worthy of subspecific rank, and intends to call this subspecies *Cidaria concinnata oressigena* (Mountain bred).

APOROPHYLA LUTULENTA *var.* LUNEBURGENIS, Freyer. Deep Brown Dart. Fig. 4.

A dark example of the female of this moth, which has been identified for me by Colonel C. Donovan, fell out of the sail of the yacht whilst it was being unfurled at Loch Boisdale, South Uist, on 16th July.

Most authorities give the time of appearance of this species as from middle of August to September.

Colonel Donovan, from data extracted from Barrett's *Lepidoptera of the British Isles*[1] and other authorities, has pointed out to me that "some autumn noctuæ and geometers are out in Scotland a month prior to their emergence in South of England, this being the opposite to moths which emerge in the earlier months of the year."

I append a list of moths compiled from Barrett[1] whose date of emergence in Scotland is prior to that of English examples.

	Time of Emergence.	
	England.	Scotland.
Orthosia litura . .	September and October	August (end)
Orthosia rufina . .	,, ,,	,, ,,
Agriopis aprilina .	,, ,,	,, ,,
Dryobota protea . .	August (end) to beginning of October	August, 1st week

Barrett[1] hints that the early emergence of *Orthosia rufina* in Scotland is due to the more rapid advance of autumn.

Further investigation of the times of emergence of Scottish Lepidoptera as compared with English examples might yield information elucidating this anomaly.

Occurrence of a Form of *Bombus jonellus* in the Outer Hebrides different from the Mainland Type. Figs. 5 and 6.

In 1929, I saw a collection of Humble-Bees obtained in that year from the Outer Hebrides, made by the Rev. J. M. McWilliam and Mr Arthur Duncan. Amongst these was a queen of *Bombus jonellus* taken in the Isle of Lewis, which had the typical white terminal segments of the abdomen replaced by a tawny-red colour, and the usual reddish hairs of the corbicula mainly replaced by black. A special watch was kept for this bee during the voyage in 1930. Canna, which lies between the Inner and Outer Isles and is especially rich in Humble-Bees, was searched without success. In South Uist, this bee was found in numbers; queens and workers were both plentiful, visiting the flowers of *Erica cinerea*. Mr Arthur Duncan informs me that on a visit to Barra, Outer Hebrides, at a later date, he took a number of specimens of this bee. Five nests of this bee were found, four of which were sufficiently advanced to have workers. Two nests were on the surface of the ground; three were just below the surface, one of which was approached by a tunnel about two feet long. The nests had an outer covering of moss. I do not think the queens used small mammals' nests as nesting sites, but had simply selected dry patches of moss. A nest containing a queen and six workers, to which four more workers were added, was despatched to the writer's home at Cheltenham, where it was placed in an observation hive, with the object of gaining further knowledge of the life-history and breeding males. This nest, though a number of workers was hatched from the existing cocoons, did not thrive, probably through the bees being unable to find suitable flowers. The wax excreted by these bees was of a bright orange colour and scanty in amount. The number of cocoons surrounding the incubatory groove was ten.

According to Saunders,[6] "There is a variety of *B. jonellus*, found in the Shetlands which F. Smith described as *nivalis*, in which the hairs of the first and second abdominal segments are entirely yellow, and those of the apical segment yellowish, not white; the hairs of the tibiæ in this variety are quite black."

Sladen,[7] in his description of *B. jonellus*, var. *nivalis*, Smith, states that this bee has the tail tawny instead of white, that the coat is longer and more shaggy, and that in the queen and worker the hairs of the corbicula are black, not reddish. He also records "this variety or one approaching it occurs in the Outer Hebrides, a tawny-tailed male having been taken in Harris by Dale."

I have submitted specimens of the queen and worker of this bee to Mr O. W. Richards, M.A., of the Imperial College of Science, South Kensington. I am indebted to him for the following report: "There appear to be a number of northern races (of *B. jonellus*) differing from the southern form in having the corbicular hairs largely black or black with short red tips. Your form is rather intermediate in this character. It would be more satisfactory to have material from other islands in the Hebrides to know what range this form has, and how far it is typical of all the Islands."

I consider this form of *B. jonellus* to be an intermediate race between the typical *B. jonellus* of the Mainland and the race described by Smith as *B. jonellus*, var. *nivalis*, of Shetland. I propose naming this form *B. jonellus*, var. *hebridensis*. I am placing in the Royal Scottish Museum, Edinburgh, examples of the queen and worker of this bee.

I wish to acknowledge the help I have received from my wife, who painted the insects portrayed on the plate. I wish to thank Colonel C. Donovan, I.M.S. (Ret.), for valuable assistance; also the Rev. J. M. McWilliam for many kindnesses. I am especially indebted to Mr Arthur B. Duncan for his great generosity in defraying the cost of the plate, and asking me to accompany him on the voyage.

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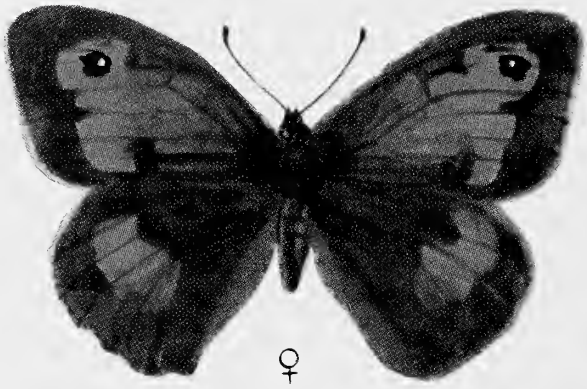

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K. Ma. Wild.
PINXIT

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DESCRIPTION OF PLATE.

FIG. 1. ♀ *Argynnis aglaia*, L. Dark Green Fritillary. Mull.
FIG. 2. ♀ *Epinephele ianira*, L. Meadow Brown. Canna.
FIG. 3. *Cidaria* (*Dysstroma*) *concinnata*. S. Uist.
FIG. 4. ♀ *Aporophyla lutulenta*, var. *luneburgensis*, Freyer. Deep Brown Dart. S. Uist.
FIG. 5. ♀ *Bombus jonellus*, var. *hebridensis*. S. Uist.
FIG. 6. ♀ *Bombus jonellus*, var. *hebridensis*. S. Uist.

Quail in Aberdeenshire. — On 26th May I received for identification from Mr W. J. Caird, Sandhaven School, Fraserburgh, an adult female specimen of a Quail (*Coturnix coturnix*) which was found dead in the neighbourhood of the school. The latest nesting of the Quail in Aberdeenshire, as recorded in Sim's *Vertebrate Fauna of Dee*, occurred in 1893 on the Ythan, near Newburgh, but a solitary individual was shot on the links north of Donmouth in 1895. It has seldom been seen in the north-east corner of the county, but a manuscript note in Sim's handwriting in his own copy of his book states "one shot, Ardlaw, Sept. 21, 1869, 4 or 5 miles from Fraserburgh."—JAMES RITCHIE, University of Aberdeen.

CURRENT LITERATURE

The Assumption of the Male Plumage by the Hen Pheasant.—An interesting paper on this subject by Professor F. A. E. Crew, of Edinburgh University, appeared in the *Veterinary Record*, 9th May 1931. After a description of the changes which take place in the female chick of the Brown Leghorn fowl consequent upon the surgical removal of the functional left ovary the author records the case of a hermaphrodite Pheasant sent to him from the Royal Scottish Museum, and shows that the condition of the sex glands was similar to that of a fowl whose left ovary had been experimentally destroyed. He concludes that "this hen pheasant was assuming male plumage because her ovary had atrophied, and because on the right side of the body the rudimentary sex-gland had consequently pursued its development to adopt a tabular structure and to elaborate the male sex-hormone." Allusion is also made to other birds in similar condition, which were being kept alive "in order to find out if they, like the fowl, will later re-assume a female plumage."

Birds Marked Abroad and Recovered in Scotland.—From an account in *British Birds* for May 1931, of birds marked abroad and recovered in the British Isles, we extract the following:—

TUFTED DUCK (*Nyroca fuligula*).

Ringed at Ove Lake, North Jylland, 1927; recovered in Island of Lewis (Outer Hebrides), May 1928.

RED-BREASTED MERGANSER (*Mergus serrator*).

Ringed at Husavik, Iceland, 29.8.30; recovered at Thurso (Caithness), 29.10.30.

Ringed at Myvatn, Iceland, 4.7.30; recovered near Inverness, 14.12.30.

LAPWING (*Vanellus vanellus*).

Ringed near Aarhus, Denmark, 1929; recovered at Isle of May, December 1929.

Ornithological Notes from North Uist, Outer Hebrides.—S. W. P. Freme, *British Birds*, May 1931, pp. 369-371. Notes are given on the American Wigeon (*Anas americana*), Harlequin Drake (*Histrionicus histrionicus*), Glaucous Gull, a probable Iceland Falcon, the House Sparrow, Whooper Swan, and a Peregrine Falcon fatally injured in a fight with a pair of Ravens.

NOTES ON FLYING FISH.

By W. L. Calderwood, I.S.O., F.R.S.E.

Favoured by a perfectly calm sea while crossing that section of the Indian Ocean usually called the Arabian Sea, an opportunity occurred for watching the countless flights of flying fish (*Exocœtus*).

The fish rose from the water and sped away from the ship in which I was travelling. The general appearance was as if flocks of large dragon-flies were skimming over the water, except that the direction taken by each fish was more or less straight or on a very wide curve, while the dragon-fly makes sharp zig-zags.

For a distance of five or six yards the fish was "taking off" from the surface and was leaving a track on the water, and the appearance of this track was of considerable interest. It appeared to me, as I watched as carefully as possible through a pair of prism glasses, that during this "taking off" period the pectoral fins were vibrating rapidly, and that after the creature left the surface it "planed" with the pectoral fins extended and stationary. The pattern left upon the water seemed to me to indicate that the tips of the fins were beating the surface, for it was that of two rows of circles becoming closely superimposed as they spread. The tail fin dragged, leaving a spreading central line, but this became obliterated by the spreading circles which rapidly presented the appearance of a double row of circular wire springs pressed out on the flat. Also as the creature gradually rose off the surface after the manner of a flying boat the little waves from the tail became less and less evident, while the marginal circles produced by the tips of the pectoral fins dominated, thus showing that definite and repeated impressions from the wing-tips was continuing.

After the fish had taken off, the dragon-fly-like appearance of the vibrating wings ceased, and one could see the set

appearance of the extended fins or wings. The fish was then planing or gliding.

I began to estimate the distances to which individual fish went, and I watched from various heights above the water ranging from 17 feet to 80 feet. Many of the smaller fish flopped into the sea after going 20 or 30 yards, but I watched quite a number of larger sized fish continue a uniform flight for 140 or 150 yards. These fish first showed about thirty feet or so from the ship's side, and sped away at right angles to the ship's course. They not infrequently showed a curving direction towards the end of their flights, and just before they fell back on the surface they not infrequently rose a little just as a bird does on landing. When they did so, the tail fin touched the surface first. The smaller fish seemed to flop as if they had simply allowed themselves to drop from flight.

I could not estimate, with any degree of accuracy, the height above the surface at which the flight was made. The sea was very calm and there was no occasion for the fish to rise high. It appeared as if the great majority were about a foot above the surface, but as numerous records of flying fish entering ship's portholes and falling on ship's decks have occurred, it is clear that if necessary the fish can rise sufficiently to clear waves of some height. I noticed, however, that when the calm weather was succeeded by a wave-covered surface and a long swell, no flying fish appeared.

I could not believe that fish flying to a distance of 70 or 80 yards, much less to a distance of 150 yards, were able to glide that distance, keeping only about a foot above the surface, without having recourse to some propelling power. I saw some fish touch the surface and take off again in the usual way, but the great majority of the long-distance flyers I watched did not do so. When they got far out from the ship it was impossible to determine if their fins were vibrating again, but the flight was at no time very rapid, and it could not have been kept up, as it seemed to me, except by a repetition of the vibrations by means of which, as the natural swimming action of the tail fin lost grip on

the water, the fish had been enabled to leave the surface. The pace was very uniform, and I formed the opinion that at short intervals the pace was maintained by use of the pectoral fins.

A leaping fish simply projects itself through the surface by a rapid swim from below. Salmon can leap eleven feet by this means provided the pool from which the leap is made is a deep one. These flying fish rose, a score at a time, and gradually accelerated as they left the surface, after which the pace became stable.

BOOK NOTICES

A Preliminary Investigation of the Food of the Sea-Trout (*Salmo trutta*). By CHAS. H. O'DONOGHUE, D.Sc., and ELISABETH M. BOYD, B.Sc., Fishery Board for Scotland. Salmon Fisheries, No. 111, 1930. H.M. Stationery Office. Price 1s. Of late years the Sea-trout has been the subject of a good deal of study, and marked differences have been found in its rate of growth in different districts. For example, Sea-trout grow very rapidly in the Tweed but only slowly in the Ythan and Ewe. These differences point to variations in the amount and quality of the food supply. Unfortunately there is not a great deal known about the subject, and this investigation was undertaken with a view to filling the gap in our knowledge. The Sea-trout examined were found to be feeding on the following animals: young herring, smelts, the young of sundry other fishes such as sand-eel, cod and salmon, small crustacea, and the nymphs of ephemerids or May-fly.

This investigation was of a preliminary nature and is to be continued. The authors would welcome the co-operation of anglers in sending material to the Zoology Department, Edinburgh University. The whole fish is not required, only the entire alimentary canal, and a few scales from the shoulder of the fish put in a separate screw of paper, are necessary. The material may be forwarded either wrapped in grease-proof paper or preserved in dilute formalin. Particulars of the date and place of capture, sex, and, if possible, the length of the fish should be added.

Natural History of Central Asia, vol. iv.: The Permian of Mongolia. By AMADEUS OF GRABAU. London: Putnam. Price £2, 2s. net. The Central Asiatic Expedition of the American Museum under the leadership of Roy Chapman Andrews went to Mongolia to seek and discover the ancestry of man, and to explore the natural history of the region. With the ample support which the Expedition received it was able to secure a large staff and to carry out the project on a grand scale. The original purpose finally developed into a very complete survey of Mongolia from all aspects. The material collected has already furnished matter for over a hundred papers and, in addition, twelve volumes of final reports are to be issued. The present volume is one of the series and contains nearly six hundred pages of text and thirty-five plates of figures.

The volume is splendidly got up and contains a mine of information. The plates illustrating the Permian fossils of the region are particularly fine.

Modern Progress in Vertebrate Palæontology: Huxley Memorial Lecture, 1931. By Sir ARTHUR SMITH WOODWARD, LL.D., F.R.S. London: MacMillan and Co. Price 1s. In this booklet the author has given a very interesting and useful summary of Vertebrate Palæontology, revised and clarified in the light of recent researches. The prevalent conception that the great creatures of our age have finally gone down before the attacks of later evolved and more highly organised forms is not accepted by the author. He considers that the giant land Reptiles of the Jurassic and Cretaceous periods can have scarcely succumbed in competition with the mammals. These latter spread and flourished only when the lands had become almost empty, and long after the Great Reptiles had passed from the scene. Even so late as the Lower Eocene Period there were no land mammals larger than a pig. The procession of life has probably depended as much on the influence of physical conditions as on the inherent qualities of the animals themselves.

Early Arrival of Migrants at Montrose.—I do not know if it will be of any interest, but the Swallows, Martins, and Sand-Martins arrived in this district earlier than usual this year—although at the time the weather was very cold and unseasonable. The Swift (*Apus apus*) arrived here on the night of 2nd May, which is about 8 (eight) days earlier than usual.—R. W. THOMAS EWART, Montrose.

THE ROOSTING OF STARLINGS.

By David Hamilton.

Though long known to naturalists, the mass-roosting habit of the Starling has lately been forced on the attention of the general public in the neighbourhood of Edinburgh. Several places within the city boundaries have been selected by the birds as suitable sites for this purpose. In most cases their occupation of these sites was short-lived, the birds being driven away, though not before causing considerable surprise and attracting the attention of those not familiar with this habit of the Starling.

The trees and shrubs round the Victoria Hospital, also at the Blackford Hill pond and the Botanic Garden, were some of the sites selected. Another site was the Cooling Towers at the Electric Station, and this was a more successful place so far as the birds were concerned, as they had the use of that site for almost a year. The latest and most spectacular roost near Edinburgh was on the New Hailes estate, enormous numbers resorting to that place during the past winter and spring. The sight of the birds passing over Musselburgh nightly attracted the attention of most of the inhabitants, owing to the great numbers engaged.

One or two points regarding these roosts may be of interest. When the Cooling Towers were in use the distance travelled by some of the birds to and from that place was surprising. Flocks of Starlings passed me during February 1930 near Joppa, when cycling nightly from Musselburgh to Edinburgh. These birds were going in the direction of Duddingston. As the nights grew lighter I was at the latter place before the flocks passed me, and I observed them make in the direction of the Towers. By the end of March I was home in the south of Edinburgh before the birds passed, and from there they could be seen going direct to the roost. Other flocks came from the direction of Liberton, and while watching at the roost I noted that in every case they came from these directions.

The birds coming to the Blackford Hill pond seemed to traverse the same routes. This applies also to the New Hailes roost, all birds coming from the east or south-east. From Fawside Castle, flocks of Starlings coming from East Lothian were seen passing on to New Hailes, and others seemed to come from the direction of Fala. None were ever observed flying from other directions to the roost.

For a great number of years, before any roost was known near Edinburgh, it was a common sight during the winter months to see bands of Starlings passing over the city just before dark. In every case these birds made in a westerly direction to a known roost, and this can still be seen in the south-westerly outskirts during the roosting period.

The late William Evans, describing the roost at Winchburgh, mentions that the birds flew to it from every point of the compass, but as they circle about when at a roost it would be interesting to know if they travelled any distance from these directions. By flying in a westerly direction to the roost at night the birds are going towards the light, and this would also happen when leaving in the early morning for their distant feeding grounds in an easterly direction.

It would also be of interest to hear of any roost where the birds are known to fly to it at night in a direct easterly direction.

Referring to the New Hailes roost again, we visited the place in February last during a violent gale just before dark. A great number of the birds were settled on the ground on the lee side of the bushes where they usually perched for the night. As these bushes were being violently shaken by the gale, we wondered if the birds intended roosting on the ground. We therefore put them up and hid in the bushes, and in a short time they came back and again settled on the ground where we left them in the now almost total darkness.

NOTES ON THE GREAT SPOTTED WOODPECKER.

By C. Brewster Macpherson.

I had but little knowledge of the Great Spotted Woodpecker and its ways; in fact, only to the extent of verifying its nesting in this high part of Inverness-shire through the finding of a young one on the ground unable to fly, which was brought to the house by one of the maids who discovered it. It was promptly returned to the spot where it was picked up, where its arrival among the fir-tree tops, and its early removal to safer quarters, was heralded by loud rejoicings. On many occasions since I now know that these birds were present in spring, for their strange cry was often heard in the woods and attributed to the action of a certain leaning tree which in a wind creaked loudly when it rubbed against its supporting neighbour.

This spring, hearing the familiar sound on a windless day, I went to investigate the cause. On my approach the sound ceased and broke out again some distance off in the wood, and then began a lengthy hunt, the elusive creaking like a "will o' the wisp" leading me on in vain pursuit; for no bird was seen.

The next incident occurred in the sitting-room, when the weird sound was heard apparently inside the room where the windows were open; a minute search revealed no bird or beast under the furniture, but next day I fancied it was outside the window, and on looking out observed a gaily coloured bird, rather larger than a starling, which ran up and down a half-rotten branch of an old plane-tree, the end of which had been broken off and pointed upwards. The bird, on reaching the top, clung on there, and diving his head into the cavity, evidently enjoyed a feast probably of some sort of grub—at intervals withdrawing his bill, and with raised head and open beak giving forth the creaking rattling sound I had followed in the woods—while he vigorously shook his head from side to side as

one might shake a hand-rattle. At such times there was no contact of bill with wood, the bird's head being held up and slightly back. For days I regularly observed his operations with a × 8 binocular, the branch proving a veritable widow's cruise. The weird call went on for some time about the woods, and suddenly ceased when, I presume, hole-drilling for the nest began. The noise made in scooping out nest-holes is a totally different sound and is often heard. The birds appear to open up holes and then abandon them. In the woods there are several trees in which holes have been made, chips surrounding their base, and then given up—in one case starlings have taken possession—and it was only quite recently that the approved hole, in a half-rotten birch-tree near a burn, was discovered by a lady visitor. The same evening, from a safe hide, the birds were observed bringing in food at intervals of three, in one case, to six minutes in most. The meal seemed to consist of some sort of light coloured grub, the parents always flying to get it in the same direction; on return invariably alighting first on a branch below the hole before entering. The rattle-like sound I have tried to describe is very distinct and vibrant, the shake of the head appearing to produce or assist it in some mechanical manner which can only be guessed at.

On reference to Coward's book, I find he alludes to the call as "the mechanical call—a loud vibrating rattle produced by the rapidly repeated blows of its strong bill upon a branch or trunk"; while Saunders writes: "there is little evidence that it nests in Scotland," and again, "the male often makes a loud vibrating noise by hammering with his bill on the bark of a tree." Possibly neither of these great authorities had the chance of seeing these birds at the time of their "rattle" sounding—for, so keen of sight and wary are they, that an expert stalker might well fail to get near enough for accurate observation when their signal cry is heard in the woods.

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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

No. 191] 1931 [September-October

SURGEON REAR-ADMIRAL J. H. STENHOUSE.

1865-1931.

By Professor James Ritchie.

Readers of the Scottish Naturalist know of Dr Stenhouse as an observant and acute recorder of bird-life in Scotland, hearers of his expositions before scientific meetings know of his wide knowledge of birds and his sound judgment. If I could add an impression of his enthusiasm, his thoroughness, and his good fellowship, it would still only convey an imperfect picture of an outstanding man among Scottish ornithologists.

At heart John Hutton Stenhouse was a born wanderer and adventurer as well as a naturalist, and, like many another, he sought a means for accomplishing his double purpose through the highway of medicine. At the age of 15 years he entered the University of Aberdeen, where he studied zoology under Professor Cossar Ewart. But the spirit of the roving naturalist was already manifesting itself in the young student, and in his third year he joined one of the sealing vessels, the successors of Scotland's famous whaling fleet, which sought their fortune amongst the ice-packs of the Arctic Ocean. So we find him, at midnight on the 9th of March 1883, setting forth from the harbour of St John's, Newfoundland, in that annual race to the harbour mouth to decide which of the sealing fleet was to be "first out" on the first day of the legal sealing season.

SEP 14 1931

It was one of the successful years of the fishing, and the student doctor has recorded amongst his memoranda how the *Resolute* of Dundee (Captain Jackmann) in three days of strenuous killing added 12,600 "whitecoats," the young of the Saddleback or Harp Seal, to her previous cargo of 5000 young and 4000 old Hooded Seals, and returned a "full ship."

In 1886, at the age of 21, Stenhouse obtained his medical degree at Aberdeen (M.B., Ch.B.), and the following year saw him enter the medical service of the Royal Navy, from which he retired after the War with the rank of Surgeon Rear-Admiral. The Service offered just the opportunities of exploration and bird-watching in many lands for which he longed, and he had the good fortune to be associated on the Mediterranean and China Stations with two keen naturalists, Admiral Farquhar and Admiral Lynes.

A sketchy summary from his diaries of the places he visited for the purposes of observing and collecting birds and birds' eggs, during the ten years 1892 to 1901, will give, better than any considered description, an idea of his persistent enthusiasm and wide experience as an ornithologist. In 1892 he was at Algeciras in Southern Spain with Admiral Farquhar, in Galicia, and back in Forfarshire. In 1893 at Malta, Salonika, and many islands of the Grecian Archipelago. In 1894 in Malta and Asia Minor. In 1895 in Malta, Smyrna, Alexandria, Beyrout and Tripoli. In 1896 in Syria; 1897, Aden. In 1898 he was on the China Station and in that and the following year recorded and collected in Chafoo, Shanghai, Labuan and Foochow. In 1901 he returned again to the Mediterranean Sea, with excursions to Greece, Gibraltar, Malta, Corfu, Sardinia and Morocco. And all the time he was noting and recording, so that the bare records of his observations fill more than 200 pages of a quarto note-book. It is but a sample of a great record of an enduring enthusiasm.

But it is by no means all; for on his retiral from active service he settled in Edinburgh and continued his good work. He became a regular worker in the Royal Scottish Museum and for ten years concentrated upon the collections of foreign birds, which he re-examined and re-arranged. It

Surgeon Rear-Admiral J. H. STENHOUSE.
1865-1931.

was as one of the outcomes of this study that he was able to publish in the SCOTTISH NATURALIST a valuable series of papers tracing the origin and describing the specimens of collections of birds of historical interest in the Museum.

The spirit of exploration and adventure still stayed with him in those years of retiral. In 1921 he first visited Fair Isle, midway between the Orkneys and Shetlands, in the company of Dr Eagle Clarke, who had made it famous as a station for observing the migrations of birds. So impressed was Stenhouse with the further possibilities of this remote observation post that in six years he spent seven different periods upon the island, two during the spring migration and five during the autumn movements. Our readers are familiar with the many interesting records of new birds to Scotland and to the British Isles, as well as of migration, which appeared in these pages as a result of his visits and of the interest which he aroused in the gifted observers living on the island.

Although bird life was his outstanding hobby Admiral Stenhouse took more than a passing interest in other branches of natural history. For some time he served on the Council of the Royal Physical Society of Edinburgh, and he was a regular attender at the scientific meetings of the Society.

By his untimely death on 6th April 1931, Scottish ornithology has lost one of its most accomplished adherents, and many friends, scientific and personal, will retain warm memories of his enthusiasm, his knowledge, his helpfulness, and his strong personality.

NOTES

Additions to the "Birds of Ayrshire."—A Glaucous Gull (*Larus hyperboreus*, Gunn) again paid a visit to the lochs here on the 23rd March. This bird seemed almost pure white and was therefore in its third or fourth year's plumage. The lochs are some fourteen miles from the sea.

On the 22nd a pair of Pintail was noted here; again a female was seen on the 5th April—possibly one of the same pair.—E. Richmond Paton, Hareshawmuir.

Hen-Harrier in Ayrshire.—A female Hen-Harrier was shot on Ladyland Moor, Ayrshire, on the 14th of June, by Mr William Thomson, gamekeeper to Mrs Cochran-Patrick. The bird was destroyed inadvertently, not being recognised as an uncommon species. The specimen has been presented by Mrs Cochran-Patrick to the Royal Scottish Museum, where it is preserved in the cabinet collection of skins.—V. J. K. Cochran-Patrick, Beith, Ayrshire.

[In E. Richmond Paton's *Birds of Ayrshire* the Hen-Harrier is stated to be an "Irregular winter visitor in north; almost regular to south Ayrshire." Several records are given in this book.—Eds.]

Common Terns feeding on Arable Land.—For the last three years we have noticed Common Terns feeding on arable land. The first year was in a potato field about a mile from the sea: day after day we saw two Common Terns hawking over this field and picking something off the ground. Last year we again saw them behaving in this way in a potato field below Lahill House, as many as four being thus occupied. This year four are constantly working a field of potatoes and turnips near the same place, and in the recent floods, when half the field was submerged, they were swimming about in the flood water preening and washing themselves. Common Terns nest on the links by Largo Bay about a mile away. It seems to be an increasing habit of these birds to feed on the arable land here, and it would be interesting to know if this has been noticed in other parts of the country.—Leonora Jeffrey Rintoul, Largo, Fife.

SOME NOTES ON CAITHNESS BIRDS.

By Evelyn V. Baxter and Leonora Jeffrey Rintoul.

Since the appearance of Harvie Brown and Buckley's *Fauna of Sutherland, Caithness, and West Cromarty*, in 1887, little concerted work appears to have been done in Caithness. In 1907 a book entitled *The County of Caithness* was published in Wick; it contains a very useful article on the Fauna by David Bruce, which includes a complete list of the birds of the county. The book is now, however, out of print. Notes have also been published from time to time, but it appeared to us that these might well be supplemented by further observations. We therefore determined to make our spring trip this year (1931) to Caithness and spent from 19th May to 1st June there, during which period we saw 96 kinds of birds. We began our observations in the country round Thurso, then moved on to John o' Groats and then to Lybster, in each place exploring as much of the surrounding district as possible, both inland and coastal. In our investigations we were greatly helped by the wonderful kindness shown to us by everyone we met. We owe most grateful thanks to the Duke of Portland, Sir Ralph Anstruther, and Mr Pilkington for kind permission given to go anywhere we liked on their estates and for all the arrangements they made to help us. In addition to this tour we spent a week-end in Caithness in 1929, and E. V. Baxter was there from 21st February to 1st March 1930.

Since 1887 areas of land have been planted and trees have grown up; this has produced a change in the status of many of the Passeres. Of late years Duck have extended their range in Scotland; and this tour afforded fresh evidence that this wave of expansion has not yet spent its force. The most wonderful extension of all is that of the Fulmar; in 1887 it is described as "a rare visitant" but is now breeding in numbers all round the coast. The vast interior plain of Caithness with its moors, its bogs, and its lochs affords a refuge for many nesting species, and every here and there one comes upon gulleries of Black-headed

and Common Gulls and hears overhead the call of the Golden Plover, Greenshank, and Curlew.

In the time we spent there we could not visit nearly all the places we should have liked and do not pretend to a complete knowledge of the birds of the county. We are only including in this paper the species of which the status has changed or of which there is something special to say.

RAVEN.—Appears to have decreased, but still nests in small numbers in the county. We were shown a nesting site at Berriedale Head.

HOODED CROW.—Not very abundant, but we saw several pairs and found a nest on the face of a cliff, with the bird sitting right in the midst of a colony of Kittiwakes, Guillemots, and Puffins.

ROOK.—In most suitable patches of wood Rooks are nesting, and even in the trees of Thurso and Wick.

JACKDAW.—Has obviously decreased since 1885, when Harvie Brown reported "vast numbers." Though we saw a good many in places along the coast line, there was no large number of them anywhere and we never saw Jackdaws inland.

MEALY REDPOLL.—Mr M'Nicoll, Sandside, says that he "often sees Mealy Redpolls in winter." Mr Bruce records a specimen got in the county.

LESSER REDPOLL.—One of the surprises of our tour was the abundance of Lesser Redpolls at Sandside and Langwell. The bird is evidently extending its range and becoming more plentiful in the north of Scotland. It was only recorded as an occasional visitor by Harvie Brown and Buckley in 1887, and by Bruce in 1907, but has now evidently colonised these woods. We saw a good many pairs at Sandside and several at Langwell.

BRITISH BULLFINCH.—We heard the Bullfinch piping in the Langwell woods, and were told that it is so common there, and in Berriedale, as to be almost a pest in the gardens.

COMMON CROSSBILL.—At Langwell we saw a male Crossbill (*Loxia curvirostra curvirostra*) which had been

picked up injured in a big immigration which took place there in June and July 1930. The birds stayed about for some time, and the gardener told us that while they were there the paths were strewn with torn-up fir cones, and Mr Anstey, head-keeper at Langwell, told us that they occur most years. At Watten, Mr Sinclair, an excellent observer, said he sees small parties of Crossbills almost every year in July; they feed in the elm trees there, as there are no fir trees.

MEADOW-PIPIT.—In 1885 Harvie Brown found this bird to be "abundant inland, rarer near the coast," while Bruce in 1907 characterised it as "abundant all over the county." We were surprised by its comparative scarcity; we found it thinly distributed and nowhere abundant either on the coast or inland at any of the places we visited.

ROCK-PIPIT.—Also rarer than we expected, being but thinly distributed on the coast line, where in 1885 and 1907 it was described as very common.

GREY WAGTAIL.—We found the Grey Wagtail nesting at Sandside in the north and Reiss Gill, near Lybster, in the south of the county, and were told that they nest by Langwell water.

GREAT TIT.—Owing no doubt to the planting and growth of woods in Caithness, the status of the Tits has entirely altered since Harvie Brown and Buckley's book was written. They make no mention of the Great Tit in Caithness, and the first record of the bird in the county was not till 1904 at Wick. Later a specimen was obtained at Keiss, and Bruce saw this bird at Castletown in the breeding seasons of 1904 and 1905. We found Great Tits in the woods at Langwell, and Mr Anstey tells us that it nests there regularly; these hundred-year old woods hold a wealth of bird life.

COLE TIT.—Recorded by Harvie Brown as "rare in Caithness," but in Bruce's time a few pairs nested in the Langwell and Dunbeath districts. It now breeds in the woods at Sandside, where we saw them feeding young, at Shurrery, at Langwell, and at Banniskirk.

BLUE TIT.—Harvie Brown only records two or three specimens obtained in the county, but by 1907 Blue Tits had begun to breed, and are recorded from Langwell, Dunbeath, Hempriggs, Wick, Stirkoke, Keiss, and Reay. The species is now well distributed in suitable places throughout Caithness; we found it breeding at Sandside, in Thurso, at Castletown, Stirkoke, Reiss Gill near Lybster, and the Langwell woods. Mr Sinclair, Watten, told us they come to the fat in his garden in winter, and Mrs Gunn informed us in 1930 that they also nest in the Banniskirk woods.

LONG-TAILED TIT.—We did not see this species, but Mr Anstey told us that it breeds at Langwell. Harvie Brown records two specimens only, but by 1907 it was known as a regular visitor on spring and autumn migration.

SPOTTED FLYCATCHER.—We saw a pair of Spotted Flycatchers at Sandside and a good many at Langwell.

WILLOW-WARBLER.—In 1885 Harvie Brown found the Willow-warbler at Barrogill, Dunbeath, and Langwell, but considered it "still rare in the north." By Bruce's time it was a common summer visitor, and it is now plentiful in all suitable places, north as well as south.

WHITETHROAT.—Appears to be still rare in Caithness; we saw one in a small wood at Barrogill in 1929, and heard a Whitethroat singing in the same wood this year. Bruce observed it at Lynegar, Watten, Stirkoke, and Stemster.

SONG-THRUSH.—A plentiful nesting species, especially in the wooded areas; seems to have increased since Harvie Brown's time. Bruce says "few stay through the winter," but some were observed in February 1930.

BLACKBIRD.—A very common nesting species, and large immigrations take place in winter. In February 1930 there were great numbers of males, evidently wintering birds. Mrs Gunn, Banniskirk, tells us they have increased enormously there and are driving out the Thrushes.

WHEATEAR.—In Harvie Brown's book the Wheatear is described as a "well-known and plentiful species," and Bruce found it well distributed all over the county. In 1929 we

found it fairly common along the north coast, but this year we only saw it in a few places and in small numbers.

WHINCHAT.—We did not see Whinchats anywhere except on the moors near Sandside and on the Ord of Caithness.

STONECHAT.—Pairs of Stonechats were seen by us at Dunnet Head, Scarfskerry, and about six miles from Wick on the Thurso road.

HEDGE-SPARROW.—In 1885 Hedge-Sparrows were said to be common, and Bruce calls it a very common resident all the year round. We found it unexpectedly scarce, only seeing it in a few places and in small numbers.

HOUSE-MARTIN. — Osborne says (1868), "the House-Martin nests in great numbers all round the high cliffs from Noss southwards," while in 1885 Harvie Brown did not meet with it except at Dunbeath and Berriedale. We saw several at John o' Groats and Duncansby Head, found two small colonies breeding on the cliffs near Lybster, and saw a large number soaring over Berriedale; these were doubtless nesting on the cliffs.

TAWNY OWL.—This Owl seems to have increased in the county; we heard them hooting at Langwell, and were told that they are very common there. Mrs Gunn tells us they nest in the woods at Banniskirk.

GOLDEN EAGLE.—The Golden Eagle has bred in the county, but, although carefully protected, the eyrie has been deserted for the last two years.

WHOOPER SWAN. — In February 1930 large flocks of Whooper Swans were seen on all the larger lochs visited.

SHELDUCK.—Obviously increasing in the county. Harvie Brown and Bruce record it as an occasional visitor only. The Shelduck was first recorded as nesting in Caithness in 1927 by Mr Charles Oldham, who found a brood of young in Dunnet Bay and another in Sinclair Bay. In 1929 we saw a pair of Shelduck at John o' Groats, and this year (1931) we saw fifteen adults there, tracked one to its nesting burrow, and found signs that other burrows were also occupied by

Shelduck. We saw one bird in Dunnet Bay and five in Sinclair Bay, these being the only localities visited by us suitable for Shelduck to nest.

GADWALL.—Although no definite occurrence of the Gadwall in Caithness is given by Harvie Brown or Bruce, it has since been found breeding there several times, and we saw a duck with a convoy of newly hatched young on Loch Heilan.

WIGEON.—Is now a common nesting duck in Caithness; we saw pairs on all suitable stretches of water.

SHOVELLER.—Has recently extended its range to Caithness. This year we saw a duck on Westfield bog near Thurso, and were told by the keeper at Shurrery that it has bred for three years on a reedy bog there. Neither Harvie Brown nor Bruce gives any definite record of its occurrence.

TUFTED DUCK.—The Tufted Duck seems to be becoming more plentiful in Caithness. We found pairs on Westfield bog, Shurrery (where they nest occasionally), Loch Scarmaclett, and Loch Heilan. In February 1930 there were a good many about the lochs.

EIDER.—The status of the Eider in Caithness given by Harvie Brown is, "occurs but rarely," while Bruce says "only occasionally seen." When we were in Caithness in 1929 we saw one Eider drake off John o' Groats; in February 1930 a fair number were seen round the coasts off Thurso, Canisbay, etc. This year we saw four drakes and a duck near John o' Groats; though we hunted for a nest we failed to find one, but discovered a freshly sucked Eider's egg.

RED-BREASTED MERGANSER.—This species has evidently increased since Harvie Brown wrote. Bruce says they breed on many of the lochs of Strathmore, and we saw pairs in full breeding plumage in Dunnet Bay, off John o' Groats, and in Sinclair Bay.

SHAG.—Osborne says the Shag always nests, in Caithness, "in some gloomy cave or vertical fissure"; we, however, found many nests on the open ledges in the geos where they often bred in colonies, and we saw the birds sitting in the

sunshine panting with heat. At this time of year (May) they were much more plentiful than the Cormorant, though in February 1930 the Cormorants out-numbered the Shags.

FULMAR.—When Osborne wrote in 1868 this species was only a rare visitor to Caithness. Five pairs of Fulmars are recorded on the Dunnet Head cliffs in May 1900; by 1907 Bruce wrote "they could be numbered by the hundred there"; while by 1911 they had reached Berriedale Head, as recorded by Harvie Brown (SCOT. NAT., 1912, 123 and 125). Since then a vast increase has taken place, and now the Fulmar nests in numbers on all the cliffs and stacks which we saw. They were plentiful on the cliffs at Sandside and Dunnet Head, and were breeding on all the geos at Duncansby Head as well as on the cliffs and stacks of Duncansby and all along the huge cliffs to the south of these stacks. We found them again at Noss Head, where they first bred in 1910, as we were informed by the principal lightkeeper, Mr Groat. High up on the ruins of Girnigoe Castle, on a tuft of grass growing there, a Fulmar was sitting; her mate kept flying up to her as she sat. It was too high up to see if she had an egg, so we could not say for certain that she was nesting there, but it looked very like it. On all the cliffs below the Castle, and between it and Noss Head, Fulmars were nesting. From Lybster we explored the cliffs for some miles on each side of the village; there, too, Fulmars were nesting in numbers. At Berriedale Head they are very numerous, in fact we saw more Fulmars nesting there than any other kind of bird; the number of Fulmars breeding in Caithness now is enormous.

TURNSTONE.—We saw three Turnstones at Ackergill on 27th May.

SANDERLING.—On 25th May we saw one Sanderling at John o' Groats, and on 27th May five at Ackergill.

SANDWICH TERN.—We saw one bird, not fully mature, at Ackergill, on 27th May.

COOT.—Harvie Brown and Bruce both describe the Coot as a summer visitor to Caithness, but a few were seen on the lochs in February 1930.

Flamingo in Aberdeenshire.—I regret to record that a Flamingo (*Phœnicopterus ruber antiquorum*) was stalked and shot near Ellon, on the river Ythan, on 15th July. It had been seen in the district for a day or two, and rumour has it that a second Flamingo was also present in the district. I had an opportunity of examining the shot bird in the flesh. It was a female in adult plumage, which had not yet laid, the largest of the eggs in the ovary being only 1·5 mm. in diameter. Except for the bill, significant measurements fell well within the range given in Witherby's *Practical Handbook*: wing 392 mm.; tarsus 295 mm.; bill 117 mm.

Careful examination was made to see whether any indications of captivity were present, such as faded plumage, broken or much worn wing feathers or overgrown nails; but the bird was in perfect and brilliant plumage, and there seems to be no reason to doubt that it was a wild individual and not an escape from captivity. There is no great unlikelihood of occasional wanderers visiting this country since the bird breeds in Spain and occasionally in South France.

From correspondence in the Press I learn that at least one Flamingo was seen on the Kent Coast at Cley-Salthouse Marshes and at Sheppey earlier in the year, and the bird-watcher there records that on the night of the earthquake, 7th June, the bird left the area, flying north. It is just possible that the Ellon Flamingo may be the same bird.

In Scotland Flamingoes have been previously recorded from the Clyde area, from the counties of Renfrew, Dumbarton, and Lanark, but they are considered to have been birds escaped from captivity.—James Ritchie.

Birds on the Bass Rock.—The two most interesting visitors which came to the Rock this spring were a male Brambling in magnificent plumage, which arrived on 22nd May and stayed for four days, and two Red-backed Shrikes, one on 23rd May, the other on 1st June. The first Shrike stayed six hours, and during that time he robbed the nest of a Rock-Pipit with four eggs and a Pied Wagtail's with five. Both nests were built in the walls of the Castle ruins and the Shrike is the only thing I can think of which could have taken them. Several Tree-Sparrows were on the Rock on 16th and 17th May and a Grey Wagtail on the 24th. There was never any great number of birds during the spring migration—just a few stragglers at odd times.—John Bain, Bass Rock Lighthouse.

NOTES ON THE SPRING MIGRATION OF BIRDS IN THE NEWBURGH DISTRICT, RIVER TAY, 13TH APRIL TO 13TH JUNE 1931.

By JOHN BERRY.

WHILE engaged upon salmon investigation for the Fishery Board for Scotland, I had occasion to spend nine weeks on a 10-ton fishing smack in the Firth of Tay, and for almost the whole of this time was anchored off Cairnie Pier, about two and a half miles above Newburgh. As I had to be on deck throughout the greater part of the day and night from 13th April to 13th June, I had an excellent opportunity for observing the movements of birds along the valleys both of the Tay and the Earn.

During the first week weather was cloudy and quiet by day, and clear at night, with hard frost.

Shortly before dusk on Monday, 13th April, 4 Whooper Swans came up the river and settled on a bank within two hundred yards of the boat, where they spent the night. At the same time Goldeneye began to flight down in surprising numbers, and as it grew darker they were followed by endless streams of gulls. At daybreak next morning the gulls flew inland again by the thousand, about equal numbers following the Tay and the Earn, and after the gulls came the Goldeneye whistling past in small flocks which rarely exceeded half a dozen, but which went on coming at few-minute intervals for over an hour; for the first few weeks at least they far outnumbered every other species of duck. Geese were still numerous although the first wave of migration had already left, and Greylag were said to be but a fifth of the number of the previous fortnight, and only 12 went up at this morning's flight although there were several hundred Pinkfeet. Throughout the day single pairs of Mallard and pairs or small parties of Shelduck were always flying past or feeding at the water's edge, in fact there was scarcely a day when the drakes at least of these birds were not to be seen at the edge of the reed-beds.

Wednesday, 15th, saw the first Sand-Martins hawking flies in the rain, which fell heavily all day. No geese were seen or heard, and apart from Goldeneye, duck were only represented by four pairs of Mallard, a few Shelduck and two packs of Teal. A Diver, probably Red-throated, passed up at dusk, also several packs of Wigeon, all of which went down again half an hour later.

On the 16th, the dawn flight having been missed, about 07.00 hours 21 Pinkfeet went down to rest on Goose Island, a weed-covered bank not far from Mugdrum Island. They were followed an hour and a half later by two flocks of 9 and 28.

While taking my customary half-hour's morning walk ashore, I flushed 38 Wigeon from the bend of a creek, as well as many Teal and several pairs of Mallard. Redshank had appeared in large numbers overnight, and from this date onwards their note, with that of Curlews and the drumming of Snipe, was almost continuous. Towards midday several parties of Oystercatchers went up, and for the greater part of the afternoon a Hawk, almost certainly a Hen-Harrier, was seen quartering the marsh, but it never came sufficiently near to make identification certain. For the rest of the week nothing of interest was recorded; on the 17th, a wild day of wind and rain, flocks of 9, 23, and 84 geese passed down in the afternoon, and on the 18th, 16, 4, and about 200, apparently all Pinkfeet, in the morning. A Cormorant fished in the vicinity for over an hour until discouraged by a man with a rifle.

The second week was wild and stormy, with heavy falls of rain or sleet. Apart from 300 odd geese on Monday evening few birds were seen until midday on Tuesday 21st, when 16 Greylag came within easy shot of the boat on their way up the river.

The Goldeneye went down far earlier than usual, the numbers counted between 16.00 hours and 17.00 hours being over 250. Two flocks of 21 and 9 Greylag went up at this time, followed by 31 Pinkfeet, the latter coming down again an hour later with a larger flock, making over 400 in all.

Wednesday, 22nd, was a steady downpour almost all day; at 07.40 hours 41 geese crossed over high, going east. An hour later a dozen Oystercatchers came down the Tay, and after circling round for nearly half an hour, went off up the Earn.

At 11.00 hours 17 Pinkfeet, after much honking, settled on a grass field on Rhynd, and a quarter of an hour later 200 Pinkfeet came down the Earn valley at a great height and settled on Goose Island, followed by 16 Greylag, and some time afterwards by 16 of the Rhynd Pinkfeet, making a great noise, one of their number having just been shot. During the evening a flock of Oystercatchers came over from the Earn to feed on the shore, and down on the marsh where several small parties of geese were feeding, the Harrier was still to be seen at intervals. At 17.15 hours 33 Pinkfeet appeared at a great height to the south-west, another large pack of between 750 and 1000 arriving an hour and a quarter after, and both going down to Goose Island.

Thursday, 23rd, another fearful day of east wind and rain, was unimportant, except for a flock of several hundred Chaffinches and Common Buntings, which went up at 11.00 hours, and a vast flock of House-Martins, the first seen this year, which went down at 18.30 hours, stretching almost from bank to bank across the river.

Friday and Saturday were not worthy of mention, except that on the afternoon of the former the first Swallow of the season crossed within a yard of the cabin hatch, going north-north-east in the teeth of a full gale.

Tuesday, 28th April, provided one of the most interesting goose migrations which I have ever seen. It was a cold moonlight night, and fine quiet day, with light northerly winds after a wild week-end of gales and rain. Shortly after midnight a big wave of small birds swept up the river, but it was too dark to make out what they were, although they seemed to be Finches of some kind. Three Whoopers came trumpeting down the river at 05.15 hours and settled at the upper end of Mugdrum Island, and geese could be heard honking high overhead but could not be seen.

The first geese were spotted at 05.56 hours, from which time pack after pack were seen going over north-north-east at a great height. Two small parties swung down on to the river, both being Pinkfeet, but they were off again in under half an hour. At 07.05 hours, while having a hurried breakfast, I heard the yelling of a very large number of geese, and jumping on deck saw line after line of them coming over the hills to the south.

The general line of migration was up Glen Farg from the south, across the Tay near the mouth of the Earn, and on north-eastwards to cross the Sidlaws to the east of Dunsinane Hill.

It was now a perfectly glorious day, and V's of geese were visible at a stupendous height. The majority went straight on for the most part in complete silence, but every few minutes one bird would call and then for a minute every gaggle joined in and the noise was impressive until, as suddenly as it had begun, it ceased. Suddenly at 07.14 hours 54 geese broke formation and came hurtling down out of the blue, their wings making a row that was heard over a mile away, 4 more followed a minute later, then two pairs, and ten minutes after three bunches of 14, 16, and 96, some gliding down in wide spirals, others dropping almost plumb as if shot, the noise made by the latter being quite beyond description. The next three gaggles were too far off to count, but at 07.35 hours, three flocks of 11, 15, and 51 came down, and 10 more passed on northward, there being about five minutes between each flock. Apart from a few stragglers during the next hour or two, no more geese arrived for nearly twelve hours. The Goldeneye flighted down at 15.00 hours, high water having been an hour earlier, this unusual time being probably accounted for by a speed-boat practising on the higher reaches, on this occasion over 200 were counted in half an hour.

(*To be continued.*)

SOME PROBLEMS CONNECTED WITH THE CUCKOO AND ITS ECTOPARASITES.

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

It has already been shown elsewhere that the distribution of the ectoparasites of mammals and birds is genetic rather than geographical, and that a study of them is important in that they indicate something of the ancestry of their hosts. As the subject may be carried to greater lengths, not only to demonstrate the common ancestry of birds that are well known to-day with others of a paradoxical nature (and otherwise regarded by ornithologists), but also to confirm or modify our conceptions of the relative antiquity of animal orders or families, a simple example may be taken to illustrate the general principle. This principle is based upon the handing down of an ectoparasite from a common ancestor to its widely divergent though more or less obviously related descendant genera and species of to-day, so that identical ectoparasite species may be found, for instance, on the Ostrich of South Africa, the Rheas of South America, or the Cassowaries of Australia; or an ectoparasite of the Camel may again be found upon the Llama and its kind of South America. Again, one may find strongly characterised associated lice-genera or groups of genera containing several species confined to obviously related genera of birds, such as the Pheasants and their kind, or the Rails, so that the presence of a member of such a genus on an anomalous and puzzling bird would suggest at once that the bird had, at least, the same common ancestor as the Pheasants or Rails, whichever the case may be.

Let us consider our Cuckoo; for is it not a bird we all know, and one that possesses a wider interest to many of us than other birds? And apart from this lesson in its ancestry it will be seen that the ectoparasites of the Cuckoo present to us yet another problem.

When Henry Denny published his *Monographia Anoplurorum Britanniæ* in 1842 (with 26 coloured plates) he

described *Docophorus latifrons*, Nitzsch (p. 97, pl. i., fig. 4), and *Nirmus cuculi*, Denny (p. 120, pl. x., fig. 11), as lice of the "Cuckow," the latter of which is synonymous with *N. fenestratus*, Nitzsch.

Now, recognising that the Cuckoo has bird-lice peculiar to itself and is devoid of those peculiar to its various foster-parents, and remembering that the old birds leave our country before the young are ready to fly, we can only presume that the ectoparasites are transferred to the younger generation after they have made their first migratory flight to southern climes. Here, then, lie two problems; firstly, how do the young know in what direction to fly to join their kind, and secondly, do they carry the lice of their foster-parents up to establishing contact with their elders?

Of course there are other ectoparasites of the Cuckoo—for instance, a minute mite, a Sarcoptid, *Pterolichus cuculi;* but I will only deal with the two bird-lice already mentioned and this Sarcoptid in demonstrating yet another instance of how a parasite has been handed down practically unchanged from the common ancestors of the specifically and even generically different birds of to-day.

Our Cuckoo (*Cuculus canorus*) belongs to the genus *Cuculus* which is confined to the Old World and is remarkable for its parasitic habits. The family, taken as a whole, is "essentially a tropical group of weak insectivorous birds abounding in varied forms in all the warmer parts of the globe, but very scarce or only appearing as migrants in the temperate and colder zones" (see A. R. Wallace, *Geographical Distribution of Animals*, 1876, vol. ii., p. 308; and Bartholomew, Eagle Clarke, and Grimshaw, *Atlas of Zoogeography* plate 13, map 3). The true *Cuculi* are richest in the Oriental and Australian regions, wherein 100 species belonging to 24 peculiar genera abound. Of the genus *Cuculus* there are eleven species, of which our Cuckoo belongs to Europe and Northern Asia, extending to Africa, the Indian peninsula, and the Malayan sub-region, to Australia in our winter.

Now, of the genera of Cuckoos that are essentially American in their distribution we are, for the purpose of this illustration, concerned with *Coccyzus* and *Piaya*. The

former genus consists of over a dozen neotropical species, of which *C. americanus* is found in temperate North America and the Antilles, extending through South America to the Argentine in the winter; whilst *C. erythrophthalmus* extends in North America to 49° N. lat. and south through Central America to Colombia, Peru, and Trinidad, and Cuba in the winter. *Piaya* is a small genus of neotropical Cuckoos.

Here we have two groups of Cuckoos that do not overlap in their distribution: the one an old-world genus containing our own Cuckoo that does not touch the American, and the other containing two other genera of Cuckoos that are purely American.

But the links that have come down to us through the ages are three ectoparasites each of which is common to these two groups of birds and each of which has demonstrated to us as clearly as any study of the bird's morphology could have done the common origin of those birds that to-day are so divergent in form and distribution.

The ectoparasites and their hosts are:—

ACARI.—Sarcoptidæ.

Pterolichus cuculi, found on *Cuculus canorus*, *Coccyzus americanus*, and *Piaya cayana* (see Berlese's *Acari, Myriapoda et Pseudoscorpiones hucusque in Italia reperta*, xi., 1892-97).

HEXAPODA.—Mallophaga.

Docophorus latifrons N. (Kellogg, "Mallophaga" in Wytsman's *Genera Insectorum*, 1908, p. 16); found on *Cuculus canorus*, and the var. *occidentalis* of Kellogg on *Coccyzus americanus occidentalis* (Baja, California).

Nirmus fenestratus (Kellogg, *l.c.*, p. 24); found on *Cuculus canorus* and in the U.S.A. on *Coccyzus erythrophthalmus*.

White Stork in Aberdeenshire.—I learn from Mr Mutch, taxidermist, Aberdeen, that an adult male White Stork (*Ciconia ciconia*) was shot at Mintlaw, Aberdeenshire, on 2nd June 1924.—James Ritchie.

Migrations of Grouse.—Much doubt exists as to the extent and even the occurrence of migrations amongst Grouse. With the object of obtaining definite observations upon a problem of unusual interest the Natural History Department of the University of Aberdeen has, with the willing help of many proprietors and keepers, been successful in ringing many hundreds of Grouse, especially in the north-east of Scotland, during the present spring. For the successful prosecution of the enquiry it is essential that all the rings recovered upon the legs of Grouse should be saved and returned, along with a note of the place and date of shooting, to The Grouse Migration Enquiry, The University, Aberdeen. Professor Ritchie appeals with confidence to all sportsmen and keepers to further this scientific investigation to the best of their ability.

The Black-necked Grebe (*Podiceps nigricollis*).—There is now further evidence that the Black-necked Grebe is fully established as a breeding species in Scotland. Exceptionally wet weather this season has greatly hindered observation at their breeding locality, but on 1st August I was much interested to find a pair on a certain loch with three well-grown chicks.—J. Kirke Nash.

Nesting of Black-necked Grebes in the Tay Area.—In 1903 the Duchess of Bedford reported having seen Black-necked Grebes in full plumage, on a loch in Tay, in April. Last year (1930) the breeding of the species in Scotland was established, a nesting place being found in the Forth area and the birds watched at close quarters. On 24th July 1931 we visited a loch in the Tay area to investigate the duck breeding there, and were overjoyed to discover two pairs of Black-necked Grebes feeding their young. One brood was very small, the other about half-grown. By concealing ourselves, we were able to watch the Grebes at a distance of a few yards for a considerable time, watching them diving and bringing food to their young, and listening to their curious notes. Seen thus the fan-shaped patch on the head, the bright red eye, the dark neck and top of the head and back were very noticeable, also the rusty brown on the flank. They were extremely quick in their movements and by no means very shy. This Grebe is evidently extending its breeding range in Scotland.—Leonora Jeffrey Rintoul and Evelyn V. Baxter.

NOTES ON A TINEID MOTH (*HYPONOMEUTA EVONYMELLUS* Linn.) AND ITS OCCURRENCE IN MIDLOTHIAN.

By Ann V. Borthwick, B.Sc.

Early in July, it was reported to Mr Grimshaw, the Keeper of the Natural History Department of the Royal Scottish Museum, that several trees near Temple, Midlothian, were being attacked by net-spinning caterpillars. A few web-covered twigs were sent in and the larvæ on them were identified as those of a Small Ermine Moth, either *Hyponomeuta evonymellus* Linn. (*padi* Zeller) or *H. padellus* Linn. As the former feeds only on bird-cherry and the latter on apple and hawthorn, efforts were made to determine the species of tree from the partially-eaten leaves. As far as could be ascertained, they were those of bird-cherry or gean (*Prunus padus*), and therefore the infesting moth would probably be *H. evonymellus*, which is of no economic importance. In order to make certain that it was not the apple-attacking species, and to see the extent of the damage, it was decided to visit the locality. Accordingly, on 14th July, I did so, accompanied by Mr Grimshaw and Mr Wotherspoon. With little difficulty the spot was located, and there it was found that the previous identification of the leaves had been correct and that over a dozen of the trees were infested and partially defoliated.

Colonies of many dozen larvæ had spun together groups of twigs, by means of very fine whitish silk, with which they formed a fairly dense web or tent, usually extending over a foot in length. The larvæ devour the enclosed leaves, and, according to Lennon,[2] "add to the tent as they require more food."

Stainton[5] describes the early stages of the life-history as follows: "The larvæ of most of the species [of *Hyponomeuta*] are hatched in the autumn, but remain under a glutinous covering during the winter, and do not commence their depredations till the appearance of the young leaves in

spring, when a sudden *blight* changes the face of vegetation, or in other words these larvæ quit their winter quarters, having been fixed throughout the winter on the very same twigs where their ravages now become so conspicuous."

The climatic conditions of Scotland seem to have prolonged the larval stage, for, according to Meyrick[3] and Stainton,[5] it should have been completed in June. At Temple, however, many larvæ were still in the webs in the middle of July and one or two were found living on the dried twigs at the Museum early in August.

The larva is greenish brown, marked laterally by a dark band and several series of black spots. The head and legs are black and there is a pair of large black triangles on the dorsal surface of the prothorax.

The pupæ are found in the web and tend to occur in clusters, though each is enclosed in a separate spindle-shaped cocoon of closely-spun silk. In this the pupa lies with its head towards the point at which the imago will later emerge, and with the exuviæ of the last larval stage at its posterior end. The pupa is light brown in colour and one centimetre in length.

A few days after our visit to Temple, adults commenced to emerge from the pupal cases on the twigs at the Museum and proved to be the expected species *Hyponomeuta evonymellus* Linn.

The imago has a wing span of 20 to 23 mm. and a body length, from the head to the tip of the abdomen, of 9 mm. The head, antennæ, and palpi are white, while the proboscis is orange-yellow. The abdomen is grey dorsally and white ventrally, with yellowish brown external genitalia. The legs are whitish, except for the anterior surfaces of the distal segments of the first pair, which are black. The anterior wings are silvery white with five or six series of black dots. According to Stainton[5] there are only four series, two of which are near the costa and one on either side of the fold. But as the costal series are ill-defined, it is easier to regard them as a short anterior series, which does not reach the middle of the wing, followed by two or three irregular series. The one along the posterior margin of the wing contains

from nine to eleven spots, a character which serves to separate this species from *H. cognatellus* Hübner (*evonymellus* Scop.) where there are only four to seven dots in this series. Towards the termen, or hinder margin of the wing, there are some additional black spots, which Stainton[5] tries to divide up into series, but their distribution is very irregular and varies with the individual. The cilia are comparatively short in this genus and white in *H. evonymellus* and *H. cognatellus*. The posterior wings are dark grey, with paler cilia.

Meyrick[3] states that the distribution of the species is local in England and Ireland, but he does not mention its occurrence in Scotland, where, however, it has been recorded, though not since 1879, when Sir Thomas Moncreiffe[4] found it on Moncreiffe Hill, Perthshire, as reported in the SCOTTISH NATURALIST for that year. Lennon[2] in 1867 records the presence of *H. evonymellus* on a hedgerow in "Kirkconnel avenue," but he gives no authority for his name, nor does he mention the kind of hedge, so his description may apply to *H. evonymellus* either of Linnæus or of Scopoli, the latter being usually regarded as a synonym of *H. cognatellus* Hübner.

Owing to the vagueness of the description given by Linnæus some confusion arose in connection with the specific name *evonymellus*. This name was used by Scopoli for another species which was afterwards described by Hübner as *cagnagellus*, later corrected to *cognatellus*. Stainton[5] used Scopoli's name, and was uncertain of the identity of the Linnæus species, which he referred to doubtfully as a synonym of *padi*, Zeller. The full synonymy of the two species is therefore as follows:—

1. H. EVONYMELLUS Linn.
   padi, Zeller, Stainton. Food-plant, Bird-cherry (*Prunus padus.*)

2. H. COGNATELLUS Hb. Food-plant, Spindle.
   cagnagellus Hb. (falso.)
   evonymellus Scop., Stainton.
   evonymi Zeller.

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[3] MEYRICK, E., *Revised Handbook of the British Lepidoptera*, London, 1928.
[4] MONCREIFFE, Sir T., "The Lepidoptera of Moncreiffe Hill," *The Scottish Naturalist*, vol. v., 1879-80.
[5] STAINTON, H. T., *Insecta Britannica. Lepidoptera: Tineina*, London, 1854.

Acme lineata (*Drap.*) in Midlothian.—On 9th May 1931, whilst collecting molluscs in Bilston Glen below Dryden House, and on the south side of the Bilston Burn, I came upon a small colony of six specimens of *Acme lineata* under a decaying tree stump, partly embedded in the ground and covered with beech leaves. Later in the same woods I came across this species more commonly at the foot of an old dyke. Some specimens were crawling on the dyke itself, but the majority were among beech leaves. Associated shells were *Acanthinula lamellata*, *Punctum pygmæum*, *Goniodiscus rotundatus*, *Retinella pura*, *Oxychilus cellarius*, *O. alliarius*, and *Carychium minimum*. This tiny mollusc has previously been recorded in Scotland from the counties of Kirkcudbright, Ayr, Renfrew, and West Ross.—RODGER WATERSTON, Edinburgh.

Painted Lady Butterfly in Shetland.—From notes in the natural history journals it is clear that there has been an unusually large influx of *Pyrameis cardui* in Britain this year. As in some previous invasions, *e.g.* in 1903, pioneers have even reached the Shetlands, where the appearance of the handsome insects is the more noticeable as the islands are without any indigenous Butterfly. During the last week in July and the first in August I saw examples on the wing at Lerwick, Scalloway, Hillswick, the slopes of Rona's Hill, and Walls: all localities on the mainland. Earlier in July one was caught at Balta Sound in Unst. I met with the Silver Y Moth (*Plusia gamma*), another notorious migrant, in many places on the mainland and in Unst and Bressay.—CHAS. OLDHAM.

A CONTRIBUTION TO THE KNOWLEDGE OF SCOTTISH SPIDERS—KIRKCUDBRIGHTSHIRE.

By W. S. Bristowe, B.A., F.Z.S.

The Rev. O. P. Cambridge, W. Evans, Prof. G. H. Carpenter, and Dr A. Randall Jackson have done much to increase our knowledge of the spider fauna of Scotland, but there are still many gaps that it is hoped in time will be filled. Records for Kirkcudbrightshire comprising 52 species are contained in papers by the Rev. O. P. Cambridge and the Rev. J. E. Hull, and in the course of three days spent there in September 1929 (the 8th-10th inclusive) this list was increased to 84 by means of the collection of 52 species that I made.

Collecting was carried out on marsh and moorland near Balmaclennan and one day was devoted to Merrick (2700 feet), the highest mountain in this part of Scotland. At the summit I found:—

Tapinopa longidens Wid.
Leptyphantes zimmermannii Bertk.
Œdothorax fuscus Bl.
Pirata piratica Clerck.
Mitopus morio Fabr.

From this point down to 2000 feet there is a gradual slope which is covered with grass and stones, and here the following were collected:—

Cryphœca silvicola C. L. Koch.
Theridion ovatum Clerck.
Robertus lividus Bl.
Leptyphantes mengii Kulcz.
Leptyphantes tenuis Bl.
Hilaira frigida Thor.
Caledonia evansii Camb.
Meioneta gulosa L. Koch.
Centromerus bicolor Bl.
Centromerus concinnus Thor.
Oreonetides vaginatus Thor.
Lycosa pullata Clerck.
Trochosa terricola Thor.
Pirata piratica Clerck.
Mitopus morio Fabr.

The following list of 84 spiders and 4 Phalangids comprises, I believe, all the records for Kirkcudbrightshire up to the present date.

LIST.

(B. and M. refer to my captures at Balmaclennan and Merrick respectively; C. D. to spiders recorded by Cambridge from near Castle Douglas, and A., R., and D. to those recorded by Hull from Auchencairn, Rascarrel and Dalbeattie respectively).

Araneae.

Harpactes hombergii Scop. B.; C. D.
Segestria senoculata Linn. C. D.
Prosthesima petiverii Scop. C. D.
Drassodes lapidosus Walck. C. D.
Clubiona pallidula Clerk. C. D.
Amaurobius fenestralis Stroem. (both sexes) B.; C. D.
Dictyna arundinacea Sund. B.
Cœlotes atropos Walck. (both sexes) B.; C. D.
Tegenaria derhamii Scop. B.; C. D.
Hahnia montana Bl. C. D.
Cryphœca silvicola C. L. K. M.; A.*
Xysticus cristatus Clerck. B.; C. D.
Oxyptila atomaria Panz. A.; R.
Tibellus oblongus Walck. B.
Theridion tepidariorum C. L. K. B.; C. D.
Theridion sisyphium Clerck. C. D.
„ *ovatum* Clerck. C. D.
Asagena phalerata Panz. R.
Enoplognatha thoracica Hahn. R.
Robertus lividus Bl. M.; C. D.
Lophomma punctatum Bl. B.
Stemonyphantes lineata Linn. (= *Linyphia bucculenta* Clerck.) C. D.
Labulla thoracica Wid. (= *Linyphia thoracica* Wid.) C. D.
Bolyphantes luteolus Bl. B.
Linyphia pusilla Sund. B.
„ *clathrata* Sund. B.
Leptyphantes tenuis Bl. B.; M.; C. D.
„ *cristatus* Menge (= *Linyphia explicata* Camb.) C. D.
Leptyphantes zimmermannii Bertk. B.; M.
Leptyphantes ericæus Bl. B.
„ *mengii* Kulcz. M.
Bathyphantes gracilis Bl. B.
„ *approximatus* Camb. B.
Gonatium rubens Bl. B.
Centromerus bicolor Bl. B.; M.; C. D.
„ *concinnus* Thor. M.
Evansia merens Camb. Solway Banks†
Œdothorax fuscus Bl. B.; M.
Meioneta gulosa, L. K. M.
Erigone dentipalpis Wid. B; R.
„ *promiscua* Camb. B.
Diplocephalus fuscipes Bl. C. D.
Cnephalocotes elegans Camb. A.
Cnephalocotes curtus Sim. R.
Caledonia evansii Camb. R.
Hilaira uncata Camb. B.
„ *frigida* Thor. M.‡
Lophocarenum nemorale Bl. B.
Cornicularia cuspidata Bl. C. D.
Hypomma bituberculata Wid. B.
Metopobactrus prominulus Camb. R.

* Both sexes under stones in damp situations at 2000 ft., one female sitting beside flat white opaque cocoon, fastened to the underside of a stone, from which the young were emerging.

† ? Kirkcudbrightshire.

‡ Abundant above 1500 feet. One eating a small Staphylinid beetle.

Mengea scopigera Grube	B.
Walckenæra acuminata Bl.	B.
Tapinopa longidens Wid.	M.
Oreonetides vaginatus Thor.	M.
„ *abnormis* Bl. (= *Erigone douglasii* Camb.)	C. D.
Pachygnatha degeerii Sund.	B.; C. D.
„ *clerckii* Sund.	B.
Zilla atrica C. L. K.	C. D.
„ *x-notata* Clerck.	B.
Meta segmentata Clerck.	B.; C. D.
„ *merianæ* Scop.	B. M.
Singa hamata Clerck	C.D.
Tetragnatha extensa Linn.	B.
Epeira quadrata Clerck.	B.
„ *diadematа* Clerck.	B.; C. D.
„ *umbratica* Clerck.	B.
„ *cornuta* Clerck.	B.; M.; C. D.
Pisaura mirabilis Clerck.	C. D.
Pirata piratica Clerck.	B.; with eggs, M.; C. D.
„ *latitans* Bl.	D.
Trochosa terricola Thor.	B.; M.; C. D.
„ *ruricola* De G.	C. D.
„ *leopardus* Sund.	C. D.
Tarentula pulverulenta Clerck.	B.; C. D.
Lycosa amentata Clerck.	C. D.
„ *pullata* Clerck.	M.; C. D.
„ *agricola* Thor. (= *L. arenicola* in Hull's Paper —later corrected by him.	R.
Lycosa monticola Sund.	R.; C. D.
„ *nigriceps* Thor.	C. D.
„ *palustris* Lin.	C. D.
Euophrys frontalis Walck.	B. ; R.
Heliophanus cupreus Walck.	R.
Salticus cingulatus Panz.	B.

PHALANGIDEA.

Nemastoma lugubre O. F. M.	B.
Mitopus morio Fabr.	B.; M.
Oligolphus tridens C. L. Koch	B.
Oligolphus agrestis Meade	B.

The Quail in Midlothian.—It is of interest to note that the call of the Quail was heard in a cornfield at Inveresk on 5th July 1931. Some years ago a similar record from this district was published in your columns.—M. R. TOMLINSON, Shepherd House, Inveresk.

CURRENT LITERATURE

Black-tailed Godwit in Orkney.—Duncan J. Robertson, *British Birds*, May 1931, p. 372. A bird of this species was seen on the beach at Scapa Bay on 22nd February 1931. This is only the second or third record for Orkney.

Hawfinch in Perthshire.—Lord Scone, *British Birds*, June 1931, p. 22. A male noted on the Perth-Blairgowrie road on 14th May 1931, about a mile and a half from Perth.

Black-necked Grebe in Ayrshire.—Jas. D. P. Graham, *British Birds*, June 1931, p. 24. Three seen on 1st January 1929, in Ayr Bay.

Numbers of Smews near Glasgow.—Jas. D. P. Graham, *British Birds*, June 1931, p. 32 (Letter to Editors). A "fine company" of Smews observed on 23rd November 1929 on Craigallion Loch, and seven (including three adult males) on the same loch on 16th March 1930.

Moth-Trap Experiences in Dorset.—H. L. Andrewes, *The Entomologist*, April 1931, pp. 86-90, and May 1931, pp. 104-106. By the use of a trap of simple construction the author caught in 101 nights in the spring and summer of 1929 no fewer than 4502 moths, representing 227 species. The most productive night was that of 13th August, when 218 specimens (51 species) were captured. Of these no fewer than 104 were *Luperina testacea*.

Sandwich Tern breeding in the Outer Hebrides.—In *British Birds*, August 1931, p. 82, the Hon. Guy Charteris records having seen a Sandwich Tern in a colony of Arctic Terns in South Uist in June 1928. From the small island on a loch where this bird was seen an egg of the same species was brought to him a day or two later. This is apparently a new record for the Outer Hebrides.

Breeding of the Whimbrel in Inverness-shire.—In *British Birds* for August 1931 (pp. 62-65) appears an account of the nesting of this species on the mainland of Inverness-shire, north of the Spey, during the present year. A photograph of the nest, which was discovered on 3rd June and which contained four eggs, is given. These eggs hatched between 12th and 16th June, and two of the nestlings were seen and are described.

A New Theory of the Evolution of the Insects.—Under this title Dr R. J. Tillyard, F.R.S., contributes to *Nature*, vol. cxxvi., pp. 996-998 (27th December 1930), an article which summarises an important paper by himself, published in the *Papers and Proceedings of the Royal Society of Tasmania*, 1930. This theory is founded upon the results of an analysis of the evolution of (1) segmentation, (2) the walking leg, and (3) the reproductive system, in insects and other arthropods. These three lines of analysis agree so closely that it is possible to exhibit the conclusions arrived at in a single genealogical diagram, which is given in the paper. The Springtails appear to be the oldest group, dating back to the Lower Devonian; Winged Insects probably arose in Carboniferous times; while the hypothetical ancestors of Insects and Myriapods alike originated in the Upper Silurian, and were probably "terrestrial forms dwelling in moist places and feeding on primitive plant life."

The Biology of certain Lamellibranchs on the Scottish Coast.—A. C. Stephen, B.Sc., F.R.S.E., *Journ. Marine Biological Association*, vol. xvii., No. 2 (June 1931), pp. 277-300, with 15 text-figures. Observations made on *Cardium edule*, the Common Cockle, point to the breeding season being in summer, and not, as is usually stated, in the spring. The first winter-ring is faint and easily overlooked, so that what has been previously called the first is really the *second* winter-ring. The amount of spat varies considerably in different years, the summer of 1926 having been unusually favourable, through some unknown cause, for the production of spat in both *Cardium* and *Tellina*. The size increases regularly from high to low water-mark. In the case of *Tellina tenuis* the reverse is the case. Mortality among the adults is often very heavy after spatting. In *Macoma baltica*, the third species investigated, the breeding period is from April to May, small individuals appearing in June. In this species the duration of life of the individual is apparently three years.

Incubation Period of Golden Plover.—A note on this subject, by Hugh S. Gladstone, appears in the August number of *British Birds* (p. 82). At Capenoch, Dumfriesshire, a nest was kept under observation from 21st April 1931 till 18th May, when three eggs were hatched. On this date the fourth egg was chipped, and the chick emerged next day.

BOOK NOTICES

Life by the Sea-shore. By MARION NEWBIGIN, D.Sc. Revised by RICHARD ELMHIRST, Superintendent of the Marine Biological Station, Millport. London: George Allen & Unwin, Ltd., Museum Street. Price 7s. 6d. net. The sea-shore, which we may consider more particularly as the area between high-water mark and low-water mark, contains the most diverse series of habitats to be found anywhere. At many points, even on our own coast, we may encounter within small compass stretches of sand or mud, shingle, boulders and rocks, each with its special assortment of living forms. On the sand or mud flats the ebbing tide lays bare an area which at first sight seems largely barren and devoid of life, the inhabitants having mostly burrowed to escape being dried up or being seen by enemies, and so remain until refreshed by the returning tide. The collections made on such an area with spade and sieve, however, are often a revelation. But it is to the rocky shore with its weedy pools that the student naturally first turns, and during ebb-tide a varied assortment of forms may be collected. There may even be some treasure washed in from the deep sea beyond. There is no better introduction to natural history than a study of these shore forms, their external appearance, their habits, their habitats and the like.

Dr Newbigin's book has usually been the source to which the student has turned for guidance in these matters, and the volume has been of great service during its twenty-five years of existence. We are glad to observe that its life and usefulness have been prolonged by an up-to-date revision, carried out by Mr Elmhirst, Superintendent of the Marine Biological Station, Millport. While much of the book remains the same, the opening chapters have been entirely rewritten, and a chapter on sea-weeds added. The keys at the end of various chapters have been greatly extended and provide a ready means of identifying the commoner shore forms. Both the printing and the illustrations, in black and white, are excellent.

The Literature of the Charadriiformes from 1894 to 1928. By G. CARMICHAEL LOW, M.A., M.D., F.R.C P., F.Z.S., F.R.G.S., M.B.O.U. Second edition. Revised and much enlarged. London: H. F. and G. Witherby. Price 12s. 6d. net. Students of ornithology will welcome the appearance of a revised edition of this important and useful volume. The Order with which it deals comprises Bustards, Snipe, Plover and Wading Birds, and since no bibliography of the group has appeared since the issue of Bowdler Sharpe's *British Museum Catalogue* (vol. xxiv.) in 1896, the usefulness of Dr Low's compilation, including as it does the relevant literature of the whole world, need not be emphasised. The volume, which runs to over 630 closely printed pages, is divided into ten chapters, with three Appendices and a complete Index of scientific names. In carrying

out this laborious undertaking the all-important questions of classification and nomenclature naturally presented themselves and had to be considered. The result is given in Chapter I., where a new and confessedly tentative classification is given, which is followed in the subsequent portion of the volume. Chapter II. deals with the general literature of the Order for the thirty-five years covered by the work, while the special literature is arranged systematically and chronologically in the ensuing eight chapters. The three Appendices give a summary of Mathews and Iredale's Division of the Family Scolopacinæ, Wetmore's Classification of the Order, and a suggested new Classification by Dr Low himself. The whole work appears to have been thoroughly well done, and a helpful feature of this fine bibliography is the fact that many of the references have been annotated, so that the student may save much time by ascertaining at a glance the scope of the paper referred to and may determine whether it is advisable or necessary to consult it in its original form. These annotations must have involved an immense amount of reading on the part of the author, and all ornithologists must acknowledge their indebtedness to him in this matter. The volume should find a place in every good ornithological library.

Nature Photography. By OLIVER G. PIKE, F.Z.S., F.R.P.S., M.B.O.U. Illustrated with photographs taken from Nature by the author. London: Chapman and Hall, Ltd., 196 pages and 52 photographic plates. Price 12s. 6d. net. The author of this useful and charming volume is a well-known authority on the subject of which he writes, and the value of the book is considerably enhanced by the addition of special chapters on (1) Big-game Photography, by Major Radclyffe Dugmore, F.R.G.S.; (2) Marine Photography and Low-power Microscopy, by F. Martin-Duncan, F.R.M.S., F.R.P.S., F.Z.S.; and (3) Photography of Plant Life, by E. J. Bedford, F.R.P.S. While the essential aim of the book is to be practical, its interest is greatly increased by the narration of the many thrilling experiences undergone by certain of the authors in their endeavours to obtain really good pictures of the various wild birds and beasts whose portraits they were seeking. The book can be well recommended to the naturalist, apart from the question of photography. Many incidents are related which well illustrate the habits of the creatures concerned. The main purpose of the volume, that of giving practical advice on the subject of photographing forms of animal and plant life in their natural surroundings, is well fulfilled. All necessary details connected with the obtaining of a good picture are dealt with, such as the proper style of camera, the best plate or film to be used, stopping-down, exposure, and the building of the "hide" in which the photographer can remain concealed during the essential part of his operations. The illustrations in this book, so moderate in price, are of great excellence, as we should naturally expect. The printing and the type are in keeping and the cover is strong and artistic.

Honeycraft in Theory and Practice. By J. A. LAWSON, F.E.S. London: Chapman and Hall, Ltd., 228 pages, 19 plates and numerous text-figures. Price 6s. net. This handy volume gives, at a moderate price, a concise and well-written account of the natural history of the Honey Bee and of the practical handling of bees and hives for the successful harvesting of honey. The text is simple and direct in style, and thoroughly practical. All problems which confront the apiarist are dealt with in turn, and there is nothing superfluous in the book. The author's information is thoroughly up to date, the "Isle of Wight" and "Nosema" diseases are fully dealt with, both as to diagnosis and treatment. The text-figures are simple, those illustrating construction of apparatus easy to understand, while the photographic plates are clear and helpful.

A Students' Illustrated Irish Flora: being a Guide to the Indigenous Seed-Plants of Ireland. By J. ADAMS, M.A. (Cantab.), Ashford, Kent: L. Reeve & Co., Ltd., 343+viii pages, 578 illustrations and an outline map of Ireland. Price 12s. net. To the botanist of the Sister Isle, and especially to the amateur, this handy manual will be of great service. It is beautifully printed, while the figures taken from the well-known Fitch's *Illustrations* and the recently published Butcher and Strudwick's *Further Illustrations* are all that could be desired. The arrangement of the text, that is to say, the classification adopted, is somewhat novel, and invites criticism. The plants are arranged in "biologic groups" and the group to which any plant belongs is ascertained by the use of an artificial key. Each group is indicated by a letter, and the various chapters deal with the groups in order, commencing with "A.—Parasitic and Saprophytic Plants," and ending with "T.—Shrubs and Trees with Alternate Leaves." Analytical keys are given for each group and for most of the families, aiding the student to identify the genus, and in some cases the species, to which his specimen belongs. An enumeration of genera is given under each group, and the *principal* species mentioned, with their habitat and distribution. It appears to us that very little is gained by this novel method of grouping the various plants according to "habitat, manner of life, or structural modification." To one accustomed to systematic "floras" the method appears somewhat cumbersome, and the true affinities of the various genera are obscured. It seems a pity, too, not to include *all* the Irish species in the sections devoted to distribution. Their inclusion would have added little to the bulk of the work and would have rendered it complete. As it is, the student running down his plant to the genus *Valerianella*, for instance, finds a short description of *V. olitoria* on p. 56, but on turning to Chapter XVIII. and p. 287 learns that Ireland possesses three species of this genus. He is therefore left wondering what the other two are, and there is no mention of them anywhere in the book. Chapters XIX. and XX. are both useful and interesting, being written on ecological lines, while the two Appendices, giving lists of poisonous plants and the Irish names of plants, are of value.

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CONTENTS

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(*Authors are responsible for nomenclature used.*)

The Scottish Naturalist

No. 192] 1931 [November-December

ON THE BREEDING OF THE BLACK-THROATED AND RED-THROATED DIVERS IN SOUTH ARGYLLSHIRE.

By Rev. J. M. McWilliam, B.A.

In *The Geographical Distribution and Status of Birds in Scotland* no occurrence, breeding or otherwise, is given for the Black-throated Diver in South Argyll. In North Argyll it is recorded as a summer visitor. A reference to Harvie-Brown's *Fauna of Argyll and the Inner Hebrides* will show that he had no record of the Black-throated Diver breeding in Argyllshire. In the former of these books the Red-throated Diver is not noted in South Argyll for any season, and for North Argyll it is recorded that it "has bred." There were indications that the breeding range of these two Divers in Argyllshire might be more extensive than these accounts would suggest. The Red-throated Diver has bred on Arran, and a pair or two have nested for many years in Co. Donegal in Ireland. In Islay, according to *A Practical Handbook of British Birds*, the Red-throated Diver "bred in 1922." I may say in passing that, according to reports that I have been given, this note describes very inadequately the breeding status of the Red-throated Diver in that island. In *The Birds of the Island of Bute* I stated that the Red-throated Diver nests within the Clyde area. That refers to a loch in Argyllshire. I also

NOV 16 1931

stated that a Red-throated Diver, one of a pair in breeding plumage, was shot on the Bull Loch in Bute in August 1914. Of the Black-throated Diver I had two occurrences for Bute. An immature bird was shot in February 1922, and on 8th May 1904 Mr Robert Wilson saw a Black-throated Diver at Scalpsie.

A few months ago a correspondent wrote to me to say that the Black-throated Diver and the Red-throated Diver nest regularly on a group of lochs in South Argyllshire, and have done so for many years. I am sorry that I cannot mention his name, as it might give an indication of the locality, but I am extremely indebted to him for most valuable information about these birds. The only indication that I can give of the breeding-place is that it is on the mainland of Argyllshire, south of the 56th parallel of latitude. This of course covers a considerable area. A glance at a map will show that it puts the known breeding-range of the Black-throated Diver much further south than had been believed, and that for the Red-throated Diver it also gives a much needed record.

I called on my correspondent in June this year, and was shown eggs of both the Divers, taken at this place. I measured and took an outline of one of the eggs of the Black-throated. It measured 87 millimetres by 52. Of its identity there is no question. I then visited several of the lochs with a friend. While walking along the shore of one of these we suddenly saw a Black-throat on the water behind us, fifty yards out from the shore. It had apparently slipped off its eggs as we passed. From its behaviour in the next hour there is no question that it had a nest. We watched it at a range of hardly more than a hundred yards. It cruised about at the entrance to a couple of little bays, keeping us in view. It only dived once for a moment. The light was perfect and we had prism glasses, so the identification is certain. The nature of the ground at the edge of the water made it difficult to find the eggs, and after hunting for a while we gave it up, as we had other birds to visit. On the same day a Black-throated Diver with eggs was seen by a gamekeeper, with whom I had discussed the matter, on

a loch a couple of miles away, and very shortly before this a Black-throated Diver was seen by another gamekeeper on another loch in the neighbourhood.

We walked next to a group of little lochs about half a mile away. After walking round one of these we suddenly saw a Red-throated Diver on the water. It had slipped off its eggs. We had gone round the whole shore, so I swam out to a little rush-covered island, and as I was raising myself from the water I saw the two eggs on the edge of the bank. The Diver left the loch as soon as I entered the water, and flew back immediately when I left.

From what I was told by my two informants, borne out by what I myself saw, it can be set on record that on this group of lochs, all of which could be visited by a person in one day, there are at least three pairs of Black-throated Divers nesting regularly, as they have done for many years, and this year there were possibly four pairs. At least two pairs of Red-throated Divers habitually nest here. I was given several interesting facts relating to both species. The birds apparently go to the sea for fish to feed the young. They are regularly seen flying from loch to sea. This year one of the Black-throated Divers made a large and substantial nest such as has been reported from Europe though not hitherto, I believe from Scotland.* The great danger to the eggs is from otters, which eat them. Both of the Divers nest as a rule on the sphagnum moss at the edge of the lochs, where it is sometimes not easy to reach them. Most of the nesting-places of both species are at little lochs.

To prevent possibility of doubt in the future as to the locality which I describe, I propose to place a full account in an envelope and lodge this in the Royal Scottish Museum, to be opened at discretion at any time. There have been cases of natural history records being practically lost in the past, which would not have happened if something of this sort had been an established practice. My own opinion, supported by scraps of information from other places, is that the Black-throated and Red-throated Diver may be found

* I find that one such nest was seen in Lewis by H. W. Feilden (*Proc. Nat. Hist. Soc., Glasgow*, vol. ii., p. 58).

to nest regularly over a large area on the mainland of Scotland much further south than has been hitherto known. In *The Birds of Ayrshire* by Messrs Paton and Pike, a most valuable book, there is a suggestion that the Red-throated Diver may possibly nest in Ayrshire. My information about the status of the Red-throat in South-West Scotland makes the one isolated breeding-place in Co. Donegal distinctly less extraordinary than it has hitherto appeared. Divers may easily be overlooked amongst those great stretches of tumbled hills. A casual glance at a loch when walking past is not sufficient, especially if one is not thinking of Divers. Little hill-lochs are almost innumerable and no doubt many of these have never been visited by a naturalist. Might I say that I should be very glad if any reader of this paper would be kind enough to send me any information about the birds of this district of South Argyllshire, as I have a special purpose in view? Local knowledge of birds has not always penetrated to the scientific journals. I am publishing these facts in the interests of natural history, and if any naturalist is led by any indications that I have given to the discovery of the nesting-sites of these birds I hope that he will not take advantage of what I have written to the extent of doing any injury to the birds. The status of the two species may now stand as "breeding regularly in South Argyllshire."

Flamingo (?) in Inverness-shire.—As a result of the publicity given to the shooting of the Flamingo at Ellon I have received an account of the probable appearance of a Flamingo at Dalwhinnie in May 1929, with the request that it be brought to your notice. The bird was observed for about four minutes, as it rose from a rain pool in the heather, where it had apparently been feeding. My correspondent states that she was unable to identify the bird until the account of the Flamingo at Ellon was published. The description of the bird seen at Dalwhinnie tallies very well with that of a Flamingo in colour, size and shape.—G. N. Pennie, Bucksburn, Aberdeen.

BIRD NOTES FROM THE ISLE OF MAY, AUTUMN 1931.

By Leonora Jeffrey Rintoul and Evelyn V. Baxter.

We were on the Isle of May this autumn (1931) from 26th August to 11th September; while there we saw 67 species of birds, but in the following paper mention only the more interesting ones. During this time there were three very distinct types of weather. From the time we arrived till the 31st of August the wind was easterly and very light with a high barometer and fine weather. On the 1st of September the glass began to drop and the wind to freshen and there was a low glass and strong easterly wind till 5th September. After this the glass rose again, the wind went into the north and eventually into the west, was very light, and the weather fine. These different types of weather had considerable effect on the migratory movements observed. During the first period of light easterly wind we had constant arrivals of small numbers of migrants, some evidently from the Continent. During the second period of strong easterly winds the movement strengthened and many interesting birds came in; while in the third period of light northerly and westerly winds little movement was observed.

When we reached the island we found some Willow and Garden Warblers, Whitethroats and one Barred Warbler. There was a Nightingale in a patch of nettles and this bird stayed till the 29th. Though wild at first it became quite tame and we had many excellent opportunities of observing it at very close quarters. This is the first time the Common Nightingale has been recorded on autumn migration in Scotland. Next day a few more birds had arrived, the most interesting being a Woodlark; there were also a couple of Greater Wheatears and a Whinchat. On the 28th the new arrivals were Tree-Pipit, Chiffchaff and Lesser Whitethroat; a Barred Warbler was seen and there were still some common Warblers. The following day further arrivals took place including 8 to 10 Pied Flycatchers, a second Barred

Warbler, about a dozen Whinchats, a Redstart and a Nightjar. We watched a Lesser Whitethroat which was climbing about the wall of the lighthouse garden like a Creeper; it pulled the loose pieces of mortar out of the wall and caught and ate the small beetles (or what appeared to be small beetles) which were hiding behind them. We had a wonderful chance, too, of watching one of the Barred Warblers. These birds are generally very skulking and difficult to observe, but this one was tempted into the open by the sunshine and sat sunning itself on the shaft of the wheelbarrow or on the dividing wall. On the 30th there were arrivals of Meadow Pipits, Pied Flycatchers, Willow-Warblers, Lesser Whitethroats, British Song Thrushes, Wheatears, Redstarts, Golden Plover, and Whinchats. On 31st no Barred Warbler was seen, most of the other Warblers and the Pied Flycatchers had gone on. During the first period there were small movements of Swallows, a few being seen most days going south.

On the 1st of September the wind freshened from the east and there was a little movement, but on the 2nd with a strong east wind, rain, and an overcast sky a considerable arrival occurred. On this and the following two days the strong wind and bad light made working very difficult. We saw, on 2nd September, at least half a dozen Barred Warblers, the greatest number we have ever seen in a day; about the same number of White Wagtails and Pied Flycatchers had arrived; Whitethroats, Lesser Whitethroats, Whinchats, and Redstarts were also in. The identification of birds was extraordinarily difficult; the light was very bad. As soon as the birds rose above the shelter of the walls they were caught up by the wind and whirled away at great speed, and the spray from the heavy seas dimmed our glasses and added to our difficulties. Next day the conditions for working had improved a little. The movement continued; in addition to those mentioned we found a Reed Warbler, this being a first record for Forth, two Blackcaps and a Red-spotted Bluethroat, while there were further arrivals of some of the commoner species. On the 4th the wind had again strengthened considerably from the east and there were a

good many birds in. Species not seen before included two Ortolan Buntings, a Grasshopper Warbler and a *very* early Black Redstart, a young male. We saw no Swallows during this period.

On the 5th of September the wind backed to the N.N.E. and many departures took place. From this time to the end of our stay, with light northerly and westerly winds and lovely weather, little movement was observed. The Swallows and House-Martins, however, were again seen passing, as many as 30 in a party on the morning of the 8th. On the 5th we observed a Sooty Shearwater flying low over the rollers which were coming in from the east; on the 6th a Sparrow-hawk passed, an uncommon visitor to the Island.

We saw a Pomatorhine Skua on 24th August, but Arctic Skuas were scarce this year and we saw no Great Skuas, though on our way up the Firth on 11th September we saw about half a dozen Great and some Arctic Skuas off Fidra.

We have endeavoured in the above paper to correlate the weather and the migratory movements observed, and find that the results of the season's work strengthen the conclusions to which we have already arrived. The best migration weather for the birds, obviously, is that in which they travel high and in a more or less direct line from their summer to their winter quarters. This migration takes place chiefly outside our ken, and though best for the birds, is worst for the migration observer. The easterly type of weather which brings birds from the Continent on to our coasts, and is therefore best for our observations, lengthens their journey by causing a deviation from their direct routes. It is, for example, a very considerable deviation for the Barred Warbler to visit our shores on its way between its nesting places on the Continent and its wintering quarters in N.E. Africa. In our experience this bird does not appear on the Isle of May except in easterly wind. Given easterly wind at the birds' migration time it may arrive in fair or foul weather and whether the glass be high or low. We have instanced the Barred Warbler; the same holds

good of many other species. We should again like to tender our thanks to the Commissioners of Northern Lights for their kindness in allowing us to continue our work on the island. We also offer most grateful thanks to Mr and Mrs Carmichael and our other kind friends there who made our stay so pleasant.

Roseate Terns nesting in the Forth Area.—On several occasions in 1931 we visited a locality in Forth where a considerable number of Common Terns were nesting. On the first of these visits we were overjoyed to hear the characteristic grating note of the Roseate Tern; later we were able to establish the fact that a pair nested there and we saw the young. There appeared to be but one, and we watched the parent birds carrying fish to it. It was interesting to notice the difference in flight between the Roseate and Common Terns; the wing beat of the former looks shorter and the flight seems stronger than that of the latter. The Roseates, too, nose-dived in the air in a way we have never seen the Common Terns do; they also bullied and chased the Common Terns and were very much masters of the situation. The long tail feathers show most distinctly when the bird spreads them out either when it turns in its flight or nose-dives, and the roseate under-part is best seen as the light catches it when it turns in the air. These points, but more especially the very characteristic note and the different flight, make the identification of the Roseate Tern not very difficult even among a host of the Common species. In view of the recent records of the breeding of the Roseate Tern in the Tay area, it is specially interesting to discover that it is also nesting in Forth, and it is much to be hoped that it will become established in both areas.—LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER, Largo.

NOTES ON THE SPRING MIGRATION OF BIRDS IN THE NEWBURGH DISTRICT, RIVER TAY, 13TH APRIL TO 13TH JUNE 1931.

By JOHN BERRY.

(*Concluded from* p. 144.)

At 19.45 hours between 2000 and 3000 geese were seen circling below Mugdrum Island, many hundred were feeding on the Island itself, and several fields beyond Newburgh were grey with them.

Another wave of migration was observed at 20.30 hours, pouring on to Goose Island from the south, flocks varying from 2 to 200 coming in at a stupendous height with a mile or two between each. At 21.00 hours, having finished fishing, instead of retiring to our bunks, "the Cook" and I set out for Goose Island in the cobble. There was still a fair amount of tide running; helped by a spate, and favoured by a strong wind, the three odd miles were covered in little over half an hour. For the next hour and a half we could only gasp helplessly with amazement—the numbers of geese passed all hope of computation. I had no idea there were so many geese in the entire British Islands; even the thousands on Loch Leven at the beginning of October were negligible compared to these hordes, which extended literally for miles. There were geese paddling about on the shallow pools, geese sitting asleep on the sand-banks, and acres of geese feeding on the young shoots of reeds and rushes which flank the river in a broad belt for a dozen miles in that district.

Poling our boat up a creek we put up eight Bean-Geese at twenty yards, which jumped a pack of at least 2000 Greylag half a mile further on. There followed a thunderous roar of wings as pack after pack of geese rose and swung round and round, all yelling their hardest.

It was unfortunately too dark to attempt photography, and it became increasingly difficult to identify species except within a few yards, for to attempt to recognise any individual cry in that ceaseless babel was perfectly futile.

Of the geese recognised for certain, Pinkfeet predominated, being for the most part in vast flocks on the sand-banks. Greylag came second in point of numbers, although they were in small gaggles of a few dozen up to a couple of hundred scattered over the weed-banks on which the majority were feeding. These two species greatly outnumbered all the others, but there were certainly far more White-fronted than the two flocks of approximately 225 and 575 counted; from the sound there was probably a strong contingent on a broad morass where it was quite impossible to go either with the boat or on foot. True Bean were only represented by the 8, the first geese put up, and of the Yellow-billed Bean only 30 were seen for certain, although two big packs disturbed at close quarters on the way home, when it was too dark even to count them, may also have belonged to this species.

Of the ducks, Mallard, Teal, Wigeon, Shelduck, Golden-eye and Tufted were everywhere in large numbers; Shoveller, Pochard, Goosanders, and Mergansers were seen but were far scarcer, and Gadwall were only represented by a single pair. There were at least 70 Mute Swans and the 3 Whoopers which had passed down the river early that morning.

The wind had veered further west and freshened, and the journey which had taken little over half an hour coming, took just under three hours hard rowing in the dark to get back.

Wednesday, 29th April, was the hottest day so far recorded for the year, the shade temperature being 71° F. and the sky clear of clouds or haze all day.

The geese had begun moving on northward before dawn, and by sunrise I had seen a great many hundred set off in flocks of much the same size as I had seen them arrive. But, when leaving, about 1000 would rise together, sometimes a far larger number, and these split up into separate parties as they rose, some setting off north at once while others circled round, not heading off after the leaders until they were at a great height. After sunrise the geese began to leave very rapidly, large packs rising from different spots, usually a mile or two apart, every few minutes and spread-

ing out until they were fast-fading specks on the north-east horizon. The departure was surprisingly silent, there was a good deal of muttering, but except for the occasional "wink-wink" of an old Pinkfoot gander, there was no honking at all.

By 06.00 hours the exodus appeared to be over, and no more geese were seen to leave. During the day several single birds returned and flew up and down the river, honking ceaselessly, having presumably got lost, a flock of 8 finally collecting to feed in a field near the boat towards evening.

Neither on this nor the following day were any large flocks of geese seen, the only gaggles being of 7, 24, and 6 respectively.

May arrived accompanied by a heavy fall of snow on the high ground during the night, followed by a violent gale, with rain which lasted all day. Few birds were seen; the first Swift of the season passed up the river 10.00 hours, followed by another an hour later. At 15.05 hours, a flock of several hundred waders, probably Dunlins, went up, and about 19.00 hours, there was a big movement of Fieldfares flying north-eastwards.

Saturday, 2nd, was another perfectly beautiful day with cold northerly winds. At 05.00 hours, 10 geese passed over high, going north, and were followed twenty-five minutes later by 13 more, several other flocks being observed during the ensuing two hours. At 09.42 hours, over 2000 geese were spotted swinging down on to Goose Island in a single bunch, and eight minutes later a pack of at least 5000 dropped down after them out of the clouds, from the sound both packs being almost certainly Greylags. I had to leave on Saturday at midday, and presumably the geese departed on Sunday morning which was fine and quiet, for when I got back on Monday 4th, there was not one single goose to be seen anywhere, nor were there any ducks; however, they had been recently disturbed by the speed-boat.

A count of the evening gull-flight at this time showed the number passing each evening in the immediate neighbourhood of the yawl was about 2000, but many came down after it was too dark to see them clearly.

Wednesday, 6th, was a fine day after a wild night of wind and rain. At 12.07 hours a pack of between 2000 and 3000 geese rose from Goose Island, circled high into the air, and went off to the north-east in flocks of a half to two dozen, all those coming near enough for identification being Pinkfeet, as, from their honking, were all the rest. These birds had probably arrived on the previous evening while we were asleep, as we had had to be on deck shortly after midnight.

At evening flight 10 Common Sand-pipers went up the river and there were quite a number of Mallard and Shelduck moving about, but only 21 Golden-eye came past.

On the afternoon of Friday 8th, a sweltering hot day of haze, I set out alone in the cobble to explore the sedge banks round Kerewhip Island and Goose Island.

For the first mile there was little bird-life, but once amongst the reed beds the variety was zoo-like, and, in marked contrast to the shooting season, it was frequently possible to get within a few yards of many species feeding in the creeks. The most plentiful birds were unfortunately gulls, Common and Black-backed in equal numbers, and about half the number of Black-headed; crows, too, were in distressingly large numbers, the Carrion here far out-numbering the Grey. Along the main channel Herons were standing at intervals of a hundred yards or so, Lapwings were flapping about everywhere, and in addition to their cries the air was filled with the breeding notes of Red-shanks and Curlews. The banks themselves were a blaze of colour, the young shoots of sedge and rushes were only six or seven inches above the mud, and the *Ranunculus* made a carpet of gold often unbroken for hundreds of acres except by the white or purple of patches of Cuckoo-pint. In the creeks were any number of Mallard, Shelduck, Teal, Widgeon and Shoveller, the last named being far commoner than on my previous visit, while out on the deeper water between the sand-banks Golden-eye, Tufted, Pochard, and one Scaup were diving and courting. On the sand-banks themselves Oyster-catchers, Curlews, Red-shank, Sand-pipers and Dunlins by the score ran in and out among the little parties of sleeping duck.

Rounding the corner of a reed-patch I saw 5 geese asleep beside the water, and had drifted within seventy yards before the boat grounding on the sand awoke them. As I was lying flat in the bottom of the boat with my coat over my head, they did not seem unduly alarmed, but swam a hundred yards further down the creek and went to sleep again. They were Yellow-billed Bean-geese.

At the same time a pair of Pinkfeet walked down the bank of the creek to drink and were followed by 23 others in a leisurely manner, none of them giving the cobble more than a passing glance. Soon there were 152 geese sleeping, preening and paddling about within three hundred yards, and many others might have joined them had not a bad attack of cramp made it impossible for me to keep motionless any longer.

Although two more hours were spent on the island and in the neighbourhood not more than 300 geese were seen all told, and of these only 2 were seen to be Greylags. On the return journey no less than 23 Goosanders and 4 Mergansers rose from one large pool, but other than the ubiquitous Coots, Water-hens, and Dabchicks, few birds were seen, the duck having gone further down the river when previously disturbed.

The fifth week, beginning on 11th May, provided the worst weather experienced, and four days of continuous south-westerly gales kept heavy seas breaking over the yawl and even swamped the cobble.

The avifauna was almost completely restricted to Gulls and Common and Sandwich Terns, but on Thursday 14th, 6 Whoopers came past at 06·58 hours having come down the valley of the Earn with the wind straight behind them, and from the time taken to travel from the Earn-mouth to Newburgh their speed worked out at approximately 110 m.p.h., the wind velocity being of the order of 50 m.p.h.

The storm abated on the following afternoon, and there was a bright sunny evening, with Swallows and Swifts hawking round the boat and a Cuckoo, heard for the first time on the previous Saturday, calling incessantly in the distance. The 6 Whoopers reappeared up the river at

18.20 hours, and for two hours provided entertainment by their repeated efforts to find somewhere to roost unmolested by an irate old Mute who was unable to chase more than one at a time.

The week-end was fine and sunny with strong westerly winds. There was a considerable influx of Warblers to the willow-scrub and reed-beds fringing the north shore, and Willow, Grasshopper, and Sedge-Warblers were to be seen at any time from this date.

On the 19th, the first Redshank's nest was found on the sea-wall, and the same morning a pair of Garden-Warblers were watched for over half an hour, and a single Blackcap seen.

On Friday 22nd, a wild day with heavy banks of cloud, another expedition was made to Goose Island in spite of the unpromising conditions, as my father had made a visit on purpose. However, it proved impossible to go further than Kerewhip Island where only 7 geese were seen, 4 Yellow-billed and 3 Pinkfeet, although a flock of about 200 were sitting on a sand-bank below Goose Island. The young reeds were now high enough to offer excellent cover, and it was hard to follow duck with glasses; but in addition to large numbers of Sheldrake and Mallard Drakes, there were at least a couple of dozen Mergansers and Goosanders, but no other diving duck except 4 immature Golden-eye. Later in the evening a Green Sandpiper was running about on the shore near the yawl; this is the first I have seen locally in spring although they are fairly regular autumn migrants to the Morton Lochs.

During the last week of May the weather was hot and sultry, and as most species were now nesting, there was little further movement to record. A very marked increase in the numbers of Swallows, Martins, and Swifts was the most noticeable feature, and the largest number of Golden-eye seen in one evening was a dozen, all immatures.

On Tuesday 2nd June a pair of Shelduck came swimming down stream with a brood of 6, the first seen; they disappeared out of sight below Mugdrum Island still swimming hard, the young ones having the greatest difficulty to keep up.

After this the yawl was moved about the estuary as far down as Tayport, but no migration worthy of note was observed. Geese were still in evidence at Goose Island on 12th June, but were probably immatures and pricked birds, many of which spend the summer there every year.

Fulmar Breeding in East Lothian.—On the 25th June 1931 I was at Tantallon Castle ruins and had my attention drawn to a pair of Fulmars that were flying in front of the cliffs about half a mile to the east. I found upon investigation that there was a small colony of Fulmars breeding upon the cliffs immediately to the east of the Castle. There were four adults and two chicks. It was exceedingly interesting to watch the young being fed. One of the young ones could take short flights, but the other did not attempt to fly but made appeals to its parents to be fed. The adults were very tame and flew past at close quarters so that I could see the peculiarity of their bills and plumage distinctly. As the Fulmar lays only one egg, the two chicks would represent the produce of two nests belonging to the four adult birds. Evidently at least one other pair of Fulmars were breeding not far off. As far as I know this may be a further extension of the nesting area of this interesting bird in Scotland. Darwin, in *Origin of Species*, p. 78, 4th Edition, states that the Fulmar is the most numerous bird in the world, but on whose authority does not seem to be known. It is a statement that seems to require further investigation. —Symington Grieve, Edinburgh.

[It is many years now since the Fulmar passed the East Lothian coast on its southward colonising, but the nesting of Fulmars at the place mentioned by Mr Grieve has occurred only during the last two summers. We watched them there in 1930.—Eds.]

The Increasing Distribution of the Starling. — On 7th June this year considerable numbers of Starlings were observed on the lower moorland slopes of the Pentlands near Listonshiels. The flocks consisted of adult birds, and also great numbers of this year's young birds, already strong on the wing, and feeding for themselves. One flock we estimated to comprise over three hundred birds, and there were several groups. The ground they were confining their attention to was a large tract of rough grass, very marshy, with numerous patches of reeds, moss, and heather. As the day was dull and wet, and the ground very sodden, few insects were visible, numerous slugs being the only thing in evidence. Judging by the

squealing and quarrelling among the Starlings, as they advanced in waves over the ground, they were evidently faring well. Though the slugs were taken, they would also clear the ground of other forms of food. On this type of ground no damage could be done, yet it would seriously affect the feeding of the Pipits, Larks, Reed Buntings and even the Lapwings, which were all nesting on the place. The moorland is the last type of ground left for the Starling to invade, and should they do so, changes will soon occur in the bird and insect life of these places. That the Starling is now too numerous is generally acknowledged, and something will soon have to be done to reduce their numbers, if only to save other species.—David Hamilton, Edinburgh.

The Great Wood-Wasp (*Sirex gigas*) spreads to Ross-shire.—A large female of the Great Wood-Wasp, measuring 40 mm. from front of head to tip of ovipositor, was received for identification from Mr Wm. Fraser, Marybank, Muir of Ord, Ross-shire. It was found in the locality by one of the scholars on 2nd September, and its occurrence marks the first record of the species from Ross-shire. No species of the genus has hitherto been found on the mainland so far north, although both this species and a representative of the blue-black group have been found in Eastern Inverness-shire. It is not very likely that the individual now recorded could have found its way to Muir of Ord in imported timber, and the probability is that its appearance there marks an extension northward of an insect which appears gradually to be extending its range and its abundance in Scotland. This idea is confirmed by a writer who in a letter to the *Aberdeen Press and Journal* (29th September) records his finding of a large female specimen of the Giant Wood-Wasp at Achnasheen, in central Ross-shire, far to the west of the locality of the specimen I have recorded above.—James Ritchie.

Steel-blue Wood-Wasp (*Sirex noctilio*) in Aberdeenshire.—Towards the end of September 1931, attention was drawn to the trunk of a pine tree, which had been lying felled for eighteen months in a garden at West Cults, Aberdeenshire, by the presence of fresh "sawdust" lying nearby. And on 1st October an adult Wood-Wasp emerged. The specimen, which I received for identification, is a male of one of the steel-blue species, *Sirex noctilio*, distinguished from males of *Sirex gigas* by its totally black head and black antennæ, and from males of *Sirex cyaneus* by the blue-black eighth abdominal segment. There is no previous accurate record of one of the blue-black species from Aberdeenshire, although an indeterminate form was recorded as "juvencus" so long ago as 1862.—James Ritchie.

RECOVERED MARKED BIRDS RINGED OR FOUND IN SCOTLAND.

In *British Birds* for July and August 1931 (pp. 45-51 and 72-78), a long list of British Birds recovered in various places is printed. From this we extract the following records, which refer to birds ringed or recovered in Scotland:—

Jackdaw (*Colæus m. spermologus*).

Ringed.	Recovered.
Near Dundee, 10.6.28, young.	Near where ringed, 3.5.30.

Magpie (*Pica p. pica*).

Kirriemuir (Angus), 21.5.30, young	Edzell (Angus), 24.4.31.

Starling (*Sturnus v. vulgaris*).

Yell (Shetland Is.), 5.3.24, adult	Where ringed, 15.11.30.
Scone Estate (Perth), 21.3.30, ad.	Perth, 5.12.30.
Do. 27.1.30	Luncarty (Perth), 12.3.31.
Do. 29.11.29	Where ringed, 1.11.30.
Do. 26.12.29	Do. 31.10.30.
Do. 15.1.30	Do. 6.1.31.
Do. 16.3.30	Do. 6.1.31.
Broughty Ferry (Angus), 20.12.25, ad.	Alyth (Perths.), Dec. 1930.
Do. 16.11.29	Where ringed, 10.4.31.
Largo (Fife), 22.3.30, ad.	Do. 27.3.31.
Glenorchard (Stirling), 10.5.30, young.	Do. 25.4.31.
Do. 21.5.30	Do. 25.4.31.
Cumdivock (Cumb.), 19.5.27, young	Powfoot (Dumfries), 24.12.30.

Linnet (*Carduelis c. cannabina*).

Near Dundee, 2.6.30, young	Near where ringed, 31.1.31.

Yellow Bunting (*Emberiza c. citrinella*).

Scone Estate (Perth), 25.3.30, ad.	Where ringed, 12, 29.1.31.
Do. 27.3.30	Do. 22.1.31.
Do. 8.4.30	Do. 24.1.31.
Do. 30.3.30	Near where ringed, 3.5.31.

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

Near Dundee, 17.5.27, young	Where ringed, 29.5.30.
Largo (Fife), 21.3.30, ad.	Do. 1.1.31.
Do. 16.8.30	Do. 5.1.31.

Blackbird (*Turdus m. merula*).

Ringed.		Recovered.	
Dornoch (Suth.), 22.7.29, ad.		Where ringed, 9.7.30.	
Scone Estate (Perth), 30.12.29		Do.	18, 25.1.31.
Do.	8.2.30	Do.	12.1.31.
Do.	11.2.30	Do.	18.1.31.
Do.	12.2.30	Do.	11.1.31.
Do.	14.2.30	Do.	26.1.31, 1.2.31.
Do.	14.2.30	Do.	6, 18, 25.1.31.
Do.	15.2.30	Do.	6, 9.1.31.
Do.	15.2.30	Do.	13.1.31.
Do.	17.2.30	Do.	11.1.31.
Do.	23.2.30	Do.	8.1.31.
Do. (pair)	27.2.30	Do.	7, 11.1.31.
		Do.	8, 11.1.31.
Do.	4.3.30	Do.	26.1.31.
Do.	16.3.30	Do.	13.1.31.
Do.	17.3.30	Do.	11.1.31.
Do.	18.3.30	Do.	26.1.31.
Do.	18.3.30	Do.	9.1.31.
Do.	18.3.30	Do.	13.1.31.
Do.	19.3.30	Do.	26.1.31.
Do.	22.3.30	Do.	11, 30.1.31.
Do.	23.3.30	Do.	30.1.31.
Do.	26.3.30	Do.	6, 30.1.31.
Do.	30.3.30	Do.	12.1.31.
Broughty Ferry (Angus), 2.1.29		Do.	1.1.31.
Largo (Fife), 22.3.30		Do.	1.1.31.

Robin (*Erithacus r. melophilus*).

Dornoch (Suth.), 22.7.29		Where ringed, 11.7.30.	
Scone Estate (Perth), 19.2.30		Do.	10.1.31.
Do.	do.	Do.	7, 13.1.31.
Do.	23.3.30	Do.	6.1.31.
Broughty Ferry (Angus), 26.11.22, ad.		Do.	12 times up to 19.2.28.
Do.	21.11.25	Do.	10 times up to 28.10.28.
Do.	10.9.26	Do.	5 times up to 4.1.31.
Do.	4.11.28	Do.	20.11.29 ; 13.2.30 ; 4.1.31.

Hedge-Sparrow (*Prunella m. occidentalis*).

Dornoch (Suth.), 10.7.28, ad.		Where ringed, 11.7.30.	
Do.	29.7.29	Do.	29.6.30.
Scone Estate (Perth), 30.1.30		Do.	10.11.30.
Do.	27.2.30	Do.	13.1.31.
Do.	21.3.30	Do.	12.1.31.

Dipper (*Cinclus c. gularis*).

Dunkeld (Perth), 20.6.29, young	Blairgowrie (Perth), August 1929.

Barn-Owl (*Tyto a. alba*).

Ringed.	Recovered.
Logiealmond (Perths.), 15.5.30, young	Near Dunkeld (Perths.), May 1931.
Do. 15.5.30 . .	Do. May 1931.

Kestrel (*Falco t. tinnunculus*).

Kingoldrum (Angus), 16.6.29, young .	Mergie (Kincardine), 28.4.30.
Scone (Perths.), 17.6.30, young . .	Muthill (Perths.), 5.3.31.
Kirkconnel (Dumfries), 27.6.30, young	Near Dalry (Kirkcudbright), 22.5.31.

Heron (*Ardea c. cinerea*).

Balmoral (Aberdeen), 16.5.29, young .	Glen Buchat (Aberdeen), 26.2.31.
Loch Long (Argyll.), 11.5.30, young .	Fintry (Stirling), 17.3.31.
Almondbank (Perths.), 22.5.30, young	Rannoch Station (Perths.), 22.3.31.

Shelduck (*Tadorna tadorna*).

Tentsmuir (Fife), 25.4.30, adult . .	Helensburgh (Dumbarton), 3.2.31.

Mallard (*Anas p. platyrhyncha*).

Pitlochry (Perths.), 14.7.30, young .	Blairgowrie (Perths.), 17.1.31.
Almondbank (Perths.), July and Sept., 1930	Where ringed, 12.11.30.
Leswalt (Wigtown), 10.3.30, adult .	Oesel I., Esthonia, Oct. 1930.

Wigeon (*Anas penelope*).

Loch Leven (Kinross), 12.6.30, young	Near Reykjavikand, Iceland, 14.1.31.

Eider (*Somateria m. mollissima*).

Tentsmuir (Fife), 12.6.30, young .	Arbroath (Angus), 15.12.30.
Do. 17.5.26, adult . .	Where ringed, 8.5.27, and May.

Cormorant (*Phalacrocorax c. carbo*).

Mochrum (Wigtown), 25.6.29, young .	Near Quimper (Finistère), France, 21.11.30.

Shag (*Phalacrocorax a. aristotelis*).

Badcall Bay (Suth.), 4.7.30, young .	Eriskay (Outer Hebrides), 29.11.30.
Sound of Harris (O. Hebrides), 2.7.29, young	Near where ringed, 1.11.30.
Sound of Harris (O. Hebrides), 2.7.29	Loch Stocknish (Harris), 29.12.30.
Treshnish Is. (Argyll.), 5.7.30, young	Eriskay (Outer Hebrides), 20.9.30.
Do. 3.7.30 . .	Near Arisaig (Inverness.), 12.8.30.
Do. 13.6.28 . .	Loch Sunart (Argyll.), 19.11.30.

Wood-Pigeon (*Columba p. palumbus*).

Scone Estate (Perths.), 26.6.29 . .	Near where ringed, August 1930.

Lapwing (*Vanellus vanellus*).

Ringed.	Recovered.
Cortachy (Angus), 5.6.29, young .	Rosscarbery (Cork), end Dec. 1930.
Logiealmond (Perths.), 7.5.28, young .	Boyle (Roscommon), Feb. 1931.
Glenorchard (Stirling), 15.6.24, young	Nenagh (Tipperary), 5.1.31.
Do. 6.6.27 . .	Near Limerick, 7.12.30.
Do. 16.5.30 . .	Where ringed, May 1931.
Kilmacolm (Renfrew), 29.6.29, young	Galbally (Tipperary), Dec. 1930.
Glen Fruin (Dumbarton), 21.5.27, young	Where ringed, March 1931.
Machrihanish (Argyll.), 20.6.30, young	Tobercurry (Sligo), 15.12.30.
Kirkconnel (Dumfries.), 19.7.29, young	Near Bangor (Down), 27.4.31.
Tynron (Dumfries.), June 1929, young	Belmullet (Mayo), 20.1.31.

Curlew (*Numenius a. arquata*).

Almondbank (Perths.), 27.5.30 . .	Achill I. (Mayo), Dec. 1930.
Logiealmond (Perths.), 6.6.30, young	Near Strabane (Tyrone), 6.1.31.
Tynron (Dumfries.), June 1929, young	Lindeen (Clare), June 1930.

Woodcock (*Scolopax r. rusticola*)

Letterwalton (Argyll.), 1.8.28, young	Port Appin (Argyll.), 7.1.31.
Near Crieff (Perths.), July 1930 .	Where ringed, 29.11.30.
Do. 4.6.28 . .	Comrie (Perths.), 10.1.31.
Murthly (Perths.), 4.6.28 . . .	Newcastle West (Limerick), 15.2.31.
Scone Estate (Perths.), 30.4.30, young	Where ringed, 11.11.30.
Do. 28.6.30 . .	Ledaig (Argyll.), Dec. 1930.
Almondbank (Perths.), 19.5.30 . .	Ballyvaughan (Clare), 7.12.30.
Dupplin Castle (Perths.), 4.6.30, young	Near where ringed, 5.4.31.
Auchen Castle (Dumfries.), 2.5.30, young	Killarney (Kerry), 26.12.30.
Islay (Argyll.), 1930	Near Ballymena (Antrim), 3.1.31.
Do. 6.5.30, young . .	Melford (Argyll.), 22.1.30.
Kirkmichael (Dumfries.), 22.7.29 .	Carhaix (Finistère), France, 11.1.31.
Ballaugh (I. of Man), 5.5.30, young .	Castle Kennedy (Wigtown), Jan. 1931.

Common Gull (*Larus c. canus*).

Dornoch (Suth.), 24.7.29, adult . .	The Mound (Suth.), 8.5.31.

Razorbill (*Alca torda*).

Handa I. (Suth.), 3.7.30, young .	Mandal, S. Norway, 25.5.31.

Puffin (*Fratercula a. grabæ*).

Orkney, June, 1928, adult . . .	Where ringed, May 1930 and May 1931.
Do. June 1928	Do. May 1931.
Do. May 1930 (four) . . .	Do. all, May 1931.

Land-Rail (*Crex crex*).

Peartree (Kirkcudbright), 17.6.29 .	Falaise (Calvados), France, 5.9.29.

NOTES AND OBSERVATIONS ON HUMBLE BEES IN ABERDEEN.

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

At Benmore, Argyllshire, *Bombus lucorum* queens were numerous on *Andromeda* flowers in the third week in March. In Aberdeen, however, the early species were late compared with last year's records, while the remainder were from two to three weeks earlier. The order of appearance remains essentially the same. The records taken for the queens suggest four definite periods: thus—1st week May, *B. pratorum*, *B. terrestris*, *B. lucorum*; 2nd week May, *Psithyrus bohemicus*, *B. muscorum*, *B. agrorum*, *B. lapponicus*, and probably *B. jonellus*; 3rd week May, *B. lapidarius*, *B. ruderarius* (syn. *derhamellus*) *B. hortorum*; 4th week May, *B. distinguendus* (*B. soröensis*, mid-June—late note).

With regard to frequency, *B. muscorum* Fabr., of which I could find no sign last year, is really common this season, and brings the Aberdeen list up to twelve, of which *soröensis* alone is really rare. The *B. soröensis* queen above mentioned was found on the coast on Purple Vetch in Kincardineshire on 16th June. A field of Red Dead-Nettle at the end of May was full of *muscorum* queens, since when they have been generally common. Their appearance is mysterious, as there is no definite evidence of migration in *Bombus*. *B. lapponicus* was very common also; I took several on Gooseberry and Red Dead-Nettle at low elevation within the city boundary. It is probable that this species and *muscorum* had a successful upland season in 1930, and my captures represent an overflow into the lower districts this year. *B. lapidarius* and *terrestris* were common this spring and *B. pratorum* almost rare. The remainder show no variation. *B. jonellus* I took late on 26th June on the moors in Kincardineshire.

It is interesting to note that *B. terrestris* and *lucorum* workers take longest to appear. *B. agrorum*, *pratorum*, and *muscorum* workers are earlier. Possibly the queens spend

longer in choosing a nesting site. By the end of May very few queens of either were in evidence; later in June they commence to reappear, after incubating the first brood.

Many small queens may be seen about the end of May; these would come late out of hibernation, and are little bigger than normal workers, but obviously must be large enough for impregnation or they would not survive a winter. It is impossible to ascribe some such to either class when, later in the season, normal workers are numerous as well.

Variations.

White-haired varieties of *B. pratorum* and *lucorum* workers were taken. In the *pratorum* specimen the basal half of the thorax was quite white and the abdominal band pure white also. This band was not a bleached yellow as the specimen was fresh. The *lucorum* specimen had the sides of the pronotum and all the metanotum and propodeum clothed with white hairs. The symmetry of the variation excludes any theory of pupal injury, but Sladen notes that cold sometimes produces the same effect. The end of May was very cold, even for Aberdeen, this year.

Bombus lapponicus shows an interesting and fairly constant variation. Thus there are normal smaller sized queens with fine even coats and normal colouring, with deep red abdomen, and larger sized individuals with more shaggy coats, resembling *agrorum* in texture, the red more tawny, and the first abdominal segment clothed with yellow hairs instead of black. These characters go together but occasional intermediates occur.

In connection with *agrorum* and *muscorum*, the latter is unmistakable even at a distance, but the majority of examples of *agrorum* here are very pale, the characteristic black abdominal hairs being often not more than three a side. The black hairs on abdomen and corbicula in *agrorum* constitute the chief distinction between pale *agrorum* and *muscorum* queens; but the corbicular hairs form an unconstant character, many *agrorum* having pale corbicular hairs, and hairs at any rate dark at the base being often mingled with pale in the case of *muscorum*. Since hybridism has been

admitted in the case of *terrestris* and *lucorum*, is it not more than likely that these *agrorum* specimens approximating to *muscorum* both in colour and coat texture may be cases of hybridisation? Typical dark *agrorum* is found here but the pale type predominates. It would be interesting to hear other views on the subject.

That there is an intermediate form between these two good species in the North and West, I am certain. What its position systematically may be—whether a hybrid or a Northern race of one or the other—I am unprepared to say.

Additional food plants noted are :—

Vinca minor—*B. terrestris* and *lucorum* ♀.
Flowering Currant—*Psithyrus bohemicus* ♀.
Gooseberry—*B. lapponicus* ♀.
Red Campion (*Lychnis dioica*)—*B. muscorum* ♀.

Red Dead-Nettle (*Lamium purpureum*) is a general favourite. The field above mentioned showed nine species together in one hour—*B. pratorum*, *lucorum*, *terrestris*, *lapponicus*, *lapidarius*, *ruderarius*, *hortorum*, *agrorum*, and *muscorum*, and a week later, *B. distinguendus*.

The flowers of Curly Kale (*Brassica*) attracted *B. lucorum lapidarius*, *agrorum*, *muscorum*, *ruderarius*, and *pratorum*.

A rare Ichneumon-Fly (*Rhyssa persuasoria* L.) in Roxburghshire.—An example of this, perhaps the handsomest and most striking of the British Ichneumonidæ, was sent to the Royal Scottish Museum for identification by A. J. Rintoul, Esq., on the 5th September last. In his accompanying letter Mr Rintoul stated that two of these insects had been secured on a cottage door at Ancrum a few days previously. Since this species is a parasite of *Sirex gigas*, the Giant Wood-Wasp, it is likely to extend its distribution in Scotland and to be more often noticed, as is its host. We have, up to the present, notes of the occurrence of this Ichneumon in the counties of Roxburgh, Berwick, Haddington, Edinburgh, Perth, Kincardine, Elgin, Nairn and Argyll (Kintyre). Mr Rintoul has kindly presented the specimen now recorded to the Royal Scottish Museum.—Percy H. Grimshaw, Edinburgh.

Hedge Sparrows in Perthshire.—I have just been spending August and September at Bridge of Gaur, at the west end of Loch

Rannoch, and I was very surprised at the great scarcity of Hedge Sparrows. By about the middle of August I realised that I had not yet seen one there, so I began to look for them more carefully, and in the whole of the two months I only saw two in that district. In Glen Lygon (10 miles to the south) I did not see any, but I was not specially looking for them, and I was cycling. One day, however, I was cycling leisurely from Ben More to Crianlarich (about 20 miles south of Rannoch), and in that short distance of about $2\frac{1}{2}$ miles, I saw no less than three.—D. S. Falconer, Edinburgh.

Variety of Meadow Brown Butterfly from East Lothian.—I have read with interest the "Notes on the Peculiarities of some Lepidoptera," by Dr Wild in the July-August number of the Scottish Naturalist, and think it may be of interest to say that in my collection of East Lothian Lepidoptera there is one specimen of *Epinephele ianira* L. ♀ which has orange markings on the hind wings nearly as conspicuous as the one, illustrated, from Canna. This is the only one I have noticed with this marking. It was caught some sixty or seventy years ago, and before I began labelling my specimens, but even then I always kept East Lothian collections carefully separated from any others.—Alice Balfour, Whittingehame, Haddington.

Abnormally Plumaged Birds in Lanarkshire and Dumfriesshire.—The following records of abnormally plumaged birds which have been observed locally may be of interest:—

Carrion Crow.—A partial albino was shot at Capenoch (Dumfriesshire) on 20th July. It was one of a family of five of which one other appeared to be in a similar plumage. These birds were known to have been reared in a neighbouring wood and had been seen in the vicinity for some time.

Grouse.—A pale coloured bird was shot at Allershaw (Lanarkshire) on 18th September 1931, and was presented to the Royal Scottish Museum by Major W. Chill. This bird had been seen for some time: another, even paler in plumage, is said to be on the beat; neither of these birds is known to have been bred locally.

Meadow Pipit.—Two birds, reported to me as "White Larks," on the upland farm of Rivox (Dumfriesshire) were probably Meadow Pipits. If so it is curious that three white Meadow Pipits were hatched out at Allershaw (Lanarkshire), some five miles distant, in the spring of 1927.

Swallow.—A white Swallow was seen near Newtonairds (Dumfriesshire) on 11th September 1931.—Hugh Gladstone, Thornhill, Dumfriesshire.

THE OCCURRENCE OF A RARE SNAIL (*SUCCINEA OBLONGA*) IN EAST LOTHIAN AND STIRLINGSHIRE.

By D. K. Kevan.

Succinea oblonga (Drap.) has a very local distribution throughout the British Isles, and, as far as Scotland is concerned, has only been officially recorded (*Journal of Conchology*, vol. xvi., No. 6) from three counties, *i.e.* Ayr, Linlithgow, and Perth. Ellis in *British Snails*, however, mentions that it also occurs at Bathgate in Lanark.

On 4th July, while searching marshy ground by the Peffer Burn near Whitekirk (East Lothian), I was fortunate enough to find *S. oblonga* in moderate numbers, and it appears to be distributed over most of the area in question, living on the ground among decaying herbage, from which it is not readily distinguishable by reason of the coat of dirt usually covering the shell. An occasional specimen can be found a short way up a stem, but normally it does not appear to ascend the plants among which it lives—even after rain, as in the case of *S. putris* and *S. pfeifferi*, whose shells are usually clean in consequence—but seems to prefer a "low" life among rotting stems and leaves.

The flora in association consisted mainly of *Salix sp.*, *Juncus sp.*, *Spiræa ulmaria*, *Urtica dioica*, *Iris pseudacorus*, and *Valeriana officinalis*, while the Molluscan *fauna* was well represented, i.e. *Arion intermedius*, *Agriolimax lævis*, *A. agrestis*, *Cepæa nemoralis*, *Goniodiscus rotundata*, *Punctum pygmæum*, *Trichia hispida*, *Oxychilus cellarius*, *O. alliarius*, *Retinella nitidula*, *R. radiatula*, *Euconulus fulvus*, *Cochlicopa lubrica*, *Carychium minimum*, and *Columella edentula*.

In one of the damper parts of the area *Planorbis spirorbis* and *Pisidium personatum* also occurred with *S. oblonga*.

On 24th July Mr A. R. Waterson and I were out "hunting" in Stirlingshire and he discovered S. *oblonga* in a damp sunken situation (overhung by trees) on the bank of the River Forth near Stirling, where the river closely

approaches the road to Doune at Craigforth. We subsequently found the snail to be fairly plentiful on the ground amid decaying leaves, etc., and covered with mud as was the case in East Lothian. The flora in association, however, was not so varied in this instance and consisted chiefly of *Glyceria fluitans*, with *Urtica dioica* and *Spiræa ulmaria* interspersed, while the other species of mollusca noted were: *Agriolimax lævis*, *Euconulus fulvus*, *Cochlicopa lubrica*, *Carychium minimum*, *Vitrea crystallina*, and *Limnæa truncatula*.

Ellis in *British Snails* mentions that *S. oblonga* lives "as a rule in the neighbourhood of the sea," but this hardly seems to apply to the presently known Scottish distribution. The locations given are: Dalry (Ayr), mouth of River Avon (Linlithgow), Bathgate (Lanark), Braendon Quarry near Thornhill (Perth), and Bank of Forth opposite Craigforth (Perth).

The East Lothian location now described is at least 1½ miles from the sea, and that in Stirling (which is apparently only separated from the last-mentioned Perthshire location by the River Forth) is removed from all tidal influence, as *Pisidia spp.* were taken from the river adjacent. The River Avon (Linlithgow) is tidal for some distance, and the statement may therefore apply in this instance, but all the other localities are inland and it would hardly appear that *S. oblonga* finds the neighbourhood of the sea essential or even preferable.

A note of interest is that neither in East Lothian nor Stirling was any other species of *Succinea* found in association with *S. oblonga*.

SPECKLED WOOD BUTTERFLY (*PARARGE EGERIA*) IN WEST INVERNESS.

By Kenneth J. Morton, F.E.S.

When in West Inverness last summer (1930) I spent part of the afternoon of 1st July on the shores of Loch Morar, where I saw, but failed to capture, a beautifully fresh example of this butterfly. Before leaving the district I decided to visit Morar again and on the afternoon of 30th July found that *P. egeria* was comparatively common there, although at that date the majority were rather worn. This occurrence may or may not be of much significance: I am tempted to record it as it was the first time I have ever met with *egeria* in Scotland. I did not observe the species in, or in the neighbourhood of Glen Mamie, in the district of Arisaig, where I collected daily for four or five weeks; there my attention to the butterflies may have been rather casual.

Others, very likely, have been more fortunate in their experiences with *P. egeria* without publishing the facts. I am not sure, however, that the actual status of the species in Scotland at present is known with any degree of certainty. The statements in the handbooks are too general to be very helpful: South, for example, says it is local in Scotland and rare north of the Caledonian Canal. Meyrick (1895) puts the Caledonian Canal as the northern limit; Tutt gave Perthshire, northern part of Argyllshire and the Isle of Skye, while Barrett said much the same, without Skye, but with the addition of two examples from Aberdeenshire. The Skye record is of interest; I do not know its original source. There seems to be a remarkable absence of definite Scottish records in the Entomological Magazines during the last thirty years or more, although my search may not have been quite exhaustive.

It is pretty safe to assume that *P. egeria* has lost ground like some of our other butterflies. My friend the late William Evans, writing in the *Annals* in April 1897, said

that thirty or thirty-five years before, he used to meet with *egeria* in a plantation at Biel, but had not since found it anywhere in the Lothians. I do not think he ever found it elsewhere in the whole Forth area. Even in Buchanan-White's time it was a very local butterfly in Perthshire and never abundant: it would be interesting to know how it stands in that favoured county to-day. I am disposed to think that such strongholds as it may now have are probably mainly in the West. Old records exist from Cadzow, Lanarkshire, and Ballochmyle, Ayrshire, which may require conformation. Mr A. M. Stewart of Paisley kindly informs me that he saw it in August 1929 in Arran, that he captured it at Tayvallich, Argyllshire, in August 1900, and that he has a specimen taken in Mull by the late William Smith, Paisley, about thirty years ago. There is good reason for believing that it still exists in other Argyllshire localities but further information regarding the distribution of the species generally, based on recent data, is much to be desired.

CURRENT LITERATURE

Common Buzzards breeding in South Uist.—The Hon. Guy Charteris, in *British Birds*, August 1931 (pp. 80-81), records the occurrence of a nest of this species on Stulaval, while two others are reported from a different part of the island.

Red-headed Bunting—a new British Bird—in Orkney.—This interesting addition to the list of British birds is recorded and described in *British Birds* for August 1931, pp. 66-69, by Lt.-Col. G. Eardley Todd and the Editors. Its scientific name is *Emberiza icterica* Eversmann. This bird is to be regarded as an accidental visitor, since its breeding range is Central Asia to Persia and Baluchistan, while on migration it extends to the Nilgiris, India, and has occurred in China, Italy (twice), Belgium (once) and Heligoland (twice). The example recorded on the present occasion was an adult male in brilliant plumage. It was secured on 19th June and presented to the British Museum.

Garden Lepidoptera in North Lancashire.—Dr R. C. Lowther, F.E.S., *The Entomologist*, June 1931, pp. 128-135. In this paper a list is given of 301 species of Macro-Lepidoptera (9521 individuals) netted in a garden of about one acre in extent, in the centre of the town of Grange-over-Sands in North Lancashire. Most of the moths were taken at a single electric light over the front door of the house. The species taken in the greatest numbers were *Acidalia aversata* (617 specimens), *Xylophasia monoglypha* (544), *Xanthorhoë montanata* (454) and *Agrotis exclamationis* (380). The author states that the only nocturnal species which consistently ignores light is *Camptogramma bilineata*.

Arctic Skua in Argyllshire.—In *The Field* of 27th June 1931, J. H. Barrett publishes a note and photograph of this bird at the nest, obtained in June at a certain locality (not precisely indicated) in Argyllshire.

British Gall-Flies (Cynipidæ).—In the *Entomologist* for July 1931 (pp. 150-153), Claude Morley, F.E.S., F.Z.S., publishes the first instalment of "A Synopsis of the British Hymenopterous Family Cynipidæ." This paper, which promises to be a most useful one, commences with a key to the sub-families, based on characters easy of recognition. The first sub-family, Ibaliinæ, contains only one British species, which is parasitic on *Sirex* and somewhat rare. The sub-family Cynipinæ contains some fourteen genera, for the identification of which a key is given, while three species of *Rhodites*, which form galls on Roses, are dealt with at the conclusion of this instalment. We shall look forward to the continuance of this helpful memoir.

Recent Additions to the List of British Beetles.—In the August number of the *Entomologist's Monthly Magazine* (pp. 169-175), H. St J. Donisthorpe, F.Z.S., concludes his very useful summary of the species of Coleoptera which have been discovered in the British Islands since the publication of the Supplementary Volume of Fowler's standard work on the subject. We note that the complete paper is being published separately, containing 102 pages and 8 coloured plates at the very moderate price of 10s. 6d. net. Many of the species are briefly described and 70 species are figured.

The Rev. William McConachie, D.D.

We deeply regret to announce the death, on 3rd October 1931, of the Rev. WILLIAM MCCONACHIE, D.D., minister of Old Church, Lauder, and for a long period of years a valued contributor to our pages. An accomplished general naturalist, Dr McConachie devoted most of his attention to ornithology, and his love of birds found expression in the garden attached to his manse, which has been described as a veritable sanctuary. He was the author of several charming volumes dealing with natural history and kindred subjects, among which may be mentioned *Close to Nature's Heart*, *The Glamour of the Glen* and *The Lap of the Lammermoors*. A few years ago he was elected President of the Berwickshire Naturalists' Club and in 1921 received the degree of Doctor of Divinity from the University of Aberdeen.

NOTE

Blackbird Nesting in Highland Showyard.—This year, (1931) the Scottish Women's Rural Institutes had a large hut at the Highland Show, Edinburgh. In the corner of one window inside the hut a Blackbird made a nest of shavings and string, and when we came to unpack on Monday 22nd June there were six young birds in it. The hen was very tame, hunting for worms on the floor of the hut, among our feet; in fact on one occasion she picked up the end of my shoe-lace. The cock was much more timid, only feeding the young twice that day, on each occasion having first sat at the end of the hut and called for the hen to support him and escort him to the nest. During the four days of the show thousands of people passed through the hut; but the hen continued to feed the young regularly, taking no notice of the crowd, many of whom assembled to watch her feed her babies. On these days the cock did not enter the hut but continued to collect worms outside; these he brought to the roof and gave to the hen who fed the babies with them. On Saturday, when we were packing up, the babies flew and were a great anxiety, as one had to be so careful not to stand on them. This day the cock reappeared inside the hut and helped to feed the young. The fearlessness of the female bird and her total disregard of the thousands of people who passed almost within arm's length of her was very remarkable.—EVELYN V. BAXTER, Largo, Fife.

BOOK NOTICE

A History of Fishes. By J. R. NORMAN, F.L.S., F.Z.S. London: Ernest Benn, Limited, 463 pp., with 9 plates and 147 text-figures. Price 28s. net. British libraries already possess three outstanding general works on Fishes, viz., Günther's *Introduction to the Study of Fishes* (1880); Goodrich's *Cyclostomes and Fishes*, forming Part ix., fascicle 1, of Ray Lankester's *Treatise on Zoology* (1909); and Boulenger and Bridge's *Fishes*, forming Vol. vii. of the well-known *Cambridge Natural History* (1910). Norman's volume strikes a new line of treatment, and is more readable than any of the works mentioned. It is a veritable mine of information, while its numerous excellent illustrations render it unusually attractive. The early chapters give an excellent account of the general form of fishes, and show how well and variously these creatures are adapted to their environment, while the sections dealing with their internal anatomy are also considered in relation to their general conditions of life, structure and function being discussed together in telling fashion, so that the various anatomical details are readily assimilated by the general reader, while their associated functions are easily remembered. There is an interesting and important chapter on distribution and migrations, in which the various factors controlling distribution, such as temperature and ocean currents, are adequately dealt with. The subject of classification is confined to a single chapter of some 18 pages, the last few of which are necessarily of a less readable nature than the rest of the book. The fossil forms are discussed in an unusually interesting manner; but for the general reader we should judge Chapters xix. and xx. to be the most important, dealing as they do with "Fishes and Mankind." Here we find an excellent account of the value of fishes as food, the fishing industry of Great Britain, the various methods of catching, preserving, and curing fish, and the many useful by-products obtained from this class of animals. Myth and legends are related in the following final chapter, while a list of books and an excellent index complete a work which we can heartily recommend to the notice of our readers. It is a thoroughly up-to-date volume, carefully and accurately prepared, well printed, and attractively illustrated.

INDEX

NOTE.—*No attempt is made to index in detail the species mentioned throughout articles.*

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CONTENTS

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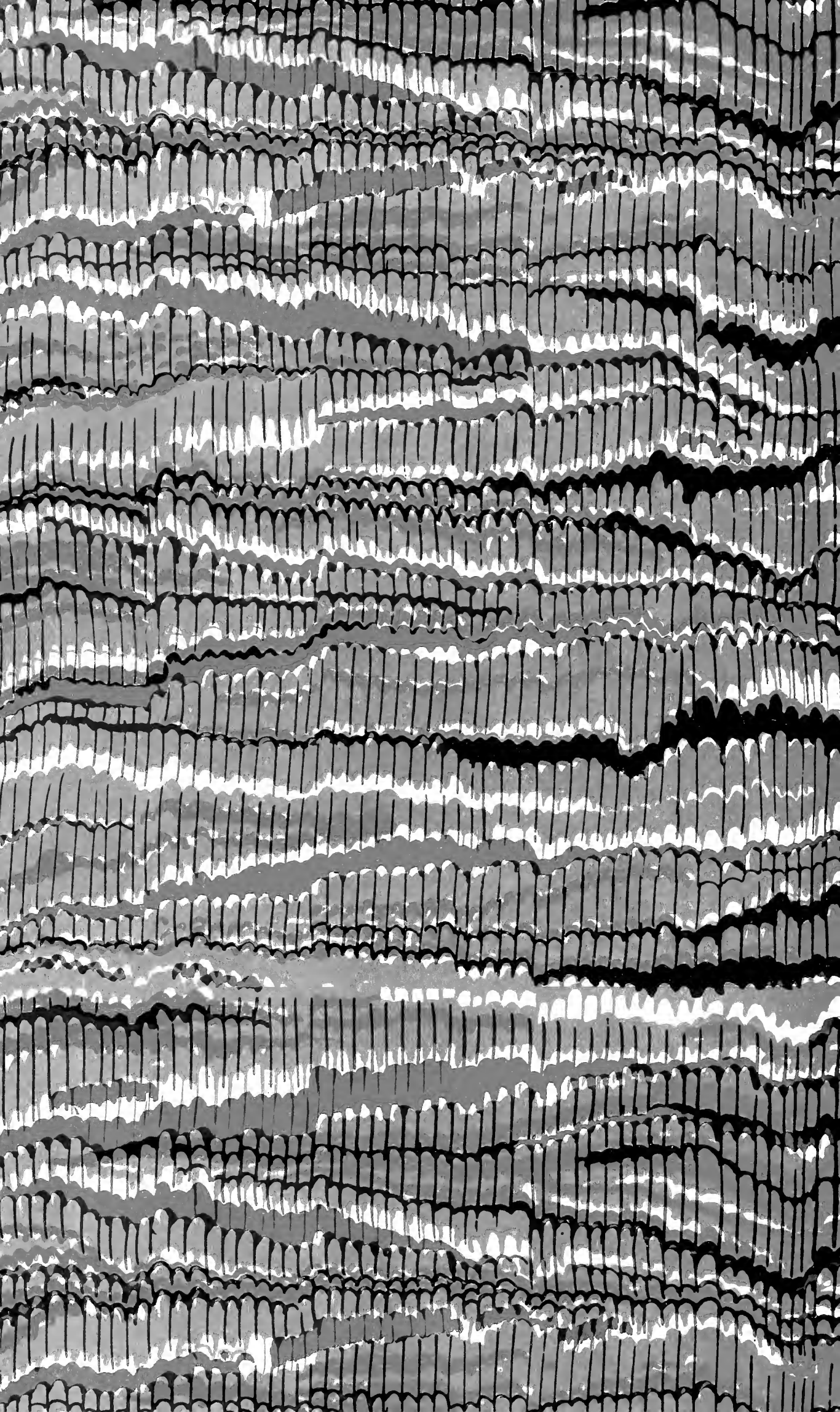

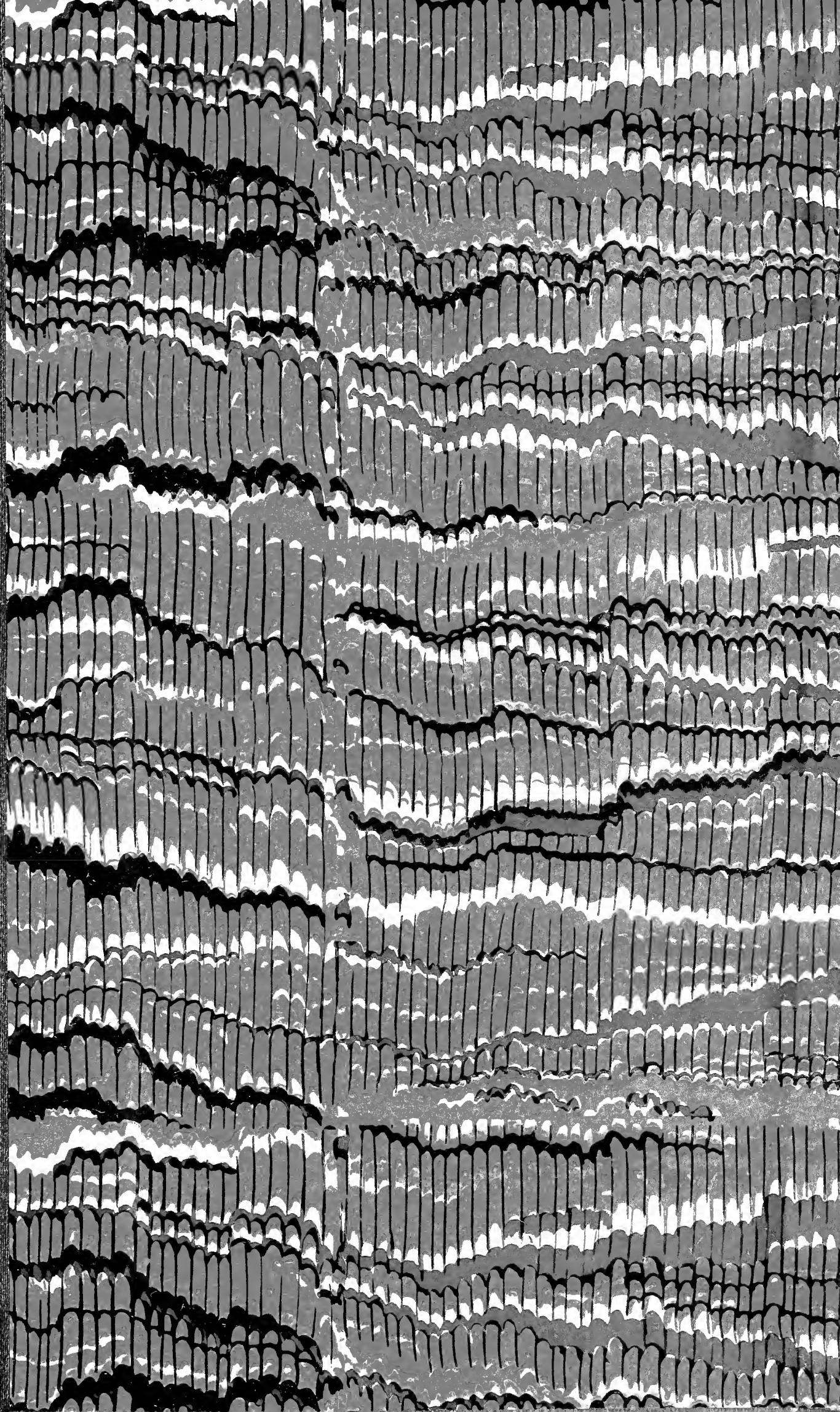

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