The Annals

OF

Scottish Natural History

A QUARTERLY MAGAZINE

WITH WHICH IS INCORPORATED

"The Scottish Naturalist"

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1896

EDINBURGH

DAVID DOUGLAS, CASTLE STREET

LONDON: R. H. PORTER, 7 PRINCES ST., CAVENDISH SQUARE

LIST OF PLATES

Faunal Areas thus —— County Boundaries thus . . .

Scale of English Miles

0 10 20 30 40 50 100

DATES = First Records of Breeding. } = Resident Distribution
× = Breeding, First Dates unknown. }
North of lat. 56°. rare at all seasons on West Coast.

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No. 17] 1896 [JANUARY

UNCOMMON CETACEANS IN SCOTTISH SEAS.

By JAMES SIMPSON,
Anatomical Museum, University of Edinburgh,

THE COMMON DOLPHIN (*Delphinus delphis*) IN SHETLAND.

ON the 5th of February 1895 I received a telegram stating that a specimen of this uncommon species had been captured in Urafirth Voe, and, instructed by Sir William Turner, secured it for the Anatomical Museum of the University of Edinburgh. It proved to be a male, was 5 feet $8\frac{1}{2}$ inches in length, and its skeleton now forms part of the Cetacean collection in the University Museum.

Regarding its capture, Mr. Thomas Anderson, Hillswick, writes: "A little boy eleven years old saw it splashing in the shallow water at the head of Urafirth Voe. He ran down with his father's stick and hooked the crook into the blow-hole, and so hauled it as far as he could. He says he then felled it with a stone, and got his sister to help him up with it, as all the men were at sea."

[This species does not appear to have hitherto been recorded for the British coasts north of the Firth of Forth on

the east coast,[1] or north of Isle of Mull[2] on the west coast. And though it is *said* to occur off the Scandinavian and Greenland coasts, its precise range in the Northern European Seas has still to be ascertained, for it has to some extent been confounded with allied species. It is not uncommon in the Atlantic, except the north, being frequent on all the coasts of France, and occurs now and then in the English Channel. Regarding its presence in the Seas of North-Western Europe, Van Beneden doubts its occurrence in the high north and the shores of Greenland, and remarks that it is positively rare on the coasts of Scotland and Denmark, and that it is also rare in the North Sea. According to Lilljeborg and Reinhardt, however, it is occasionally met with on the coasts of Denmark and Norway.—ED.]

BOTTLE-NOSED WHALE (*Hyperoodon rostratus*) ON THE SOUTH-EAST COAST OF SCOTLAND.

Since the publication of Sir Wm. Turner's account of this species in Scottish seas ("Proc. Roy. Phys. Soc.," 1885-86, vol. ix.), the following specimens have occurred.

A specimen about 26 feet long was stranded $2\frac{1}{2}$ miles to the west of Bo'ness, on the south shore of the Firth of Forth, on the 12th October 1895. Eight days afterwards I saw the animal lying on the shore, but it was so much mutilated that I could not make out the sex from external appearances.

On the morning of 1st November 1895 a young female, 15 feet 10 inches long, was found dead on the shore, perfectly fresh, about a quarter of a mile east of the Redheugh Coastguard Station, and $4\frac{1}{2}$ miles eastward from Cockburnspath, Berwickshire. Except the belly, which was of a dark gray colour, the rest of the animal was black. It was advertised for sale by the Receiver of Wrecks of H.M. Customs, but failed to find a purchaser. It will therefore be cut up and buried near where it came ashore.

In March 1894 a male specimen of *H. rostratus*, not quite so long as the above, was stranded at Grangemouth, Firth of Forth.

[1] "Trans. Roy. Phys. Soc. Edinb.," vol. ix. p. 346.
[2] "Ann. Scot. Nat. Hist.," 1893, p. 112.

THE TUFTED DUCK IN SCOTLAND—ITS INCREASE AND DISTRIBUTION.

By J. A. Harvie-Brown, F.R.S.E., F.Z.S.

Plate I.

As introductory to the direct subject of this paper, we propose to give some idea of the Continental and English and Irish distribution of this species. This we have taken from Saunders' excellent "Manual of British Birds" (1889). There we find that the Tufted Duck is said to have bred in the Færoes, and is found in small numbers in the rivers and lakes of Norway in the summer months, becoming more abundant in Sweden, Finland, and Russia. Southward it nests in suitable localities down to about lat. 50°, while over the rest of Europe it is found on migration and in winter. In summer it frequents the temperate regions of Asia. In England a tolerable and increasing number remain to breed with us, and nowhere more abundantly than in Nottinghamshire. Nests have also been found in Yorkshire, Lancashire, Northumberland, Norfolk, Sussex, Dorset, and some other counties which afford suitable resorts. In Ireland it annually frequents Loughs Neagh and Beg, and some waters in County Monaghan in summer, being generally distributed in winter.

It is not necessary for us to go very far back in our annals in order to trace the history of this species in Scotland. To preserve, however, some uniformity in our method of treating this and similar subjects, we refer first to the "Old Statistical Account of Scotland." In the case of the Tufted Duck we do so only in order to record the *negative* evidence, because no passage therein can be said to refer directly to the species. But in the "New Statistical Account" we find a few—very few—references as far north as Argyle in the parishes of Killean and Kilchenzie (vol. vii. p. 381) and parish of Ardchattan (p. 482), which, as will appear later, is an early date for our west coast, and at that time they were in all probability first winter pioneers.

An almost as early date, however, comes to be noticed here, viz. :—Thompson ("Birds of Ireland," vol. iii. p. 147) "saw a few of these birds (some of which were adult males) frequenting two small lakes on the moor above Ardimersy Cottage, in the island of Islay, where they are well known by the name of 'douckers.'" This was in the month of January 1849.

The older authors are unanimous in their opinion that the Tufted Duck was only a winter visitor to Scotland, and that it "probably bred in the Arctic regions." Also their records make it apparent, although it was a regular winter visitor to the coasts and estuaries of England, it only was seen in Orkney and Shetland after severe weather. Few of

these authors refer to it as even frequenting inland waters, Selby, however, speaking in more general terms of its distribution in 1832. MacGillivray, twenty years later, only speaks of it as "arriving in October and departing in April," and adds: "Beyond the Firths of Clyde and Tay becomes of less frequent occurrence" ("Water Birds," vol. iv. p. 125). MacGillivray also repeats the assertion that "it retires to the *Arctic* regions to breed, although some, according to M. Temminck, remain in the temperate climates."

The above remarks, as regards its "probably breeding in Arctic regions" and only appearing in the northern districts of Britain "after severe weather," "although a regular winter visitor to the coasts and estuaries of England," does *not* seem a strong argument in favour of its high-Arctic origin; and Temminck's remark appears to us distinctly of value, as rather indicating an Eastern origin; and we think this is borne out by the sketch of its Continental distribution as given by Mr. Saunders, and by the observations of other naturalists who—prior to the date of MacGillivray's remarks and accentuation of earlier writers, such as Fleming, Jenyns, etc.—have left their records.[1]

Coming now to the date of Gray's "Birds of the West of Scotland" (1871), the Tufted Duck is spoken of as occurring in great abundance in the Clyde during winter, but as rare in the Outer Hebrides, though seen there occasionally in *autumn* and *winter* (*loc. cit.* p. 387); and he adds: "In very severe winters the Tufted Duck is much more frequently obtained than in open seasons," and "limited numbers are also shot on some of the inland lochs and ponds from October to March." Nothing, however, in the text of Gray's book is said as regards any having remained anywhere to breed; but in a pencil note in his own handwriting, in my interleaved copy, the nest taken in Fifeshire and the two instances in Perthshire are referred to (1875, 1876, and 1878).

We next take up the Scottish section of the "Migration Reports," only, however, as in the case of the "Old Statistical Account," to record the *negative;* as, upon a re-examination of these nine reports, dating from 1879, we do not find *one* mention made of the species—a result after all not perhaps to be surprised at, all circumstances considered. We mention this *negative* principally to save other people time and trouble.

Since the greater part of the following account had been written out and mapped for other areas of Scotland, we have been favoured by the generous assistance of Mr. Wm. Evans, who placed at our service his current notes upon the species in the south-east of Scotland, ranging between the years 1883 and the present time, 1895.

[1] We should state here, however, that not owning nor having access to Temminck's valuable work, we have *not* had an opportunity of consulting his details.

These notes have enabled us to fill up many blanks and details of dispersal, and we thank our friend for the use of them.

We now take up the thread of our ascertained facts and the actual increase and extension of range of the Tufted Duck.

Beginning in the south of Scotland on the west side, records do not take us very far back. In 1843 Jardine found it "only in small parties together," and spoke of it in similar terms to other earlier observers as appearing on fresh water only when the weather was severe ("The Naturalist's Library," vol. xiv. p. 143). In 1887 Mr. Robert Service wrote ("Zool.," Sept. 1887) that he "very seldom saw it previous to 1880, and only in certain favoured localities," but observed it "in small parties of half a dozen or more every winter on almost all the lochs of this district." And further, Mr. Service "cannot say that any corresponding increase in numbers has been noticed on the Solway Firth. On the Kircudbrightshire Solway it is very uncommon."

On the south side of "Solway" we have the Rev. H. A. Macpherson's account equally carefully given. By this latter it appears that, while rarely seen upon the estuary before 1888 by punt-shooters, still the species had been admissible to the fauna of Lakeland for "upwards of fifty or sixty years" as a winter visitant. Since about 1888 or a little later, a gradual increase appears to have taken place, and some evidence seems to have been obtained of its nesting at an inland locality (Monkhill Loch) by Rev. H. A. Macpherson himself ("Fauna of Lakeland," p. 287); but up to the present time, as we are informed by him (*in lit.*), it has not been proved to breed there yet, "though," he adds, "it is very likely to have bred in one or two quiet nooks."

Mr. Service (*op. cit.*) continues: "Last year (*i.e.* 1886) I observed two pairs of Tufted Ducks frequenting Lochrutton, a loch a few miles west of Maxwelltown, during May and June. . . . On the 23rd May of last year I saw a pair on Loch Ken. This year there were three on Preston Merse, below Southerness, on 15th May, and two pairs remained on Lochralton after the other species of ducks—Goldeneyes and Pochards—and bulk of the Tufted Ducks had left. These pairs appeared to be preparing to nest by the 24th, but only one pair remained and did so, producing a brood of eight young." Thus Mr. Service records the first known instance of the species having bred in his district of Solway.

Mr. R. H. Read tells us that he had for some years—1888 to 1891 inclusive—considered the Tufted Duck a common breeding species in suitable lochs in East Renfrewshire,—*e.g.* the lochs around Eaglesham, Mearns, and Neilston—and that the keepers told him they had first noticed that it remained to breed about four or five years previous to 1894 (*i.e.* previous to Mr. Read's record in "Annals of Scottish Natural History" in October 1894), say 1890.

Mr. J. Paterson—who is giving his attention to the fauna of the "Clyde" area—also records that in Wigtownshire, in the first week of June 1894, a friend and himself found a nest, putting the duck off. Up to this date he assures us Mr. R. Service had no record of their nesting in Wigtownshire. Later again, referring to Mr. Read's notes, Mr. Paterson, in the same journal (1895, p. 123), tells us that he has visited many localities in the S.W. which are not yet colonised by the species, and illustrates the negative fact thus :—"I visited, in June 1893, Loch Moan in Ayrshire, Loch Trool in Kirkcudbrightshire, without seeing it; while in June 1894 I was at Lochs Ken, Harrow, Dungeon, and Munnoch in Kirkcudbrightshire, and Mochdrum and Castle Lochs in Wigtownshire, and in only one instance did I find any evidence of its presence" (see *antea*). And he adds, "This is a great contrast to what obtains in East Renfrewshire."

Mr. Robert Service now takes up the tale, and in a letter to us dated 27th August 1895 makes the following remarks :—"The increase seems to have reached here from a directly north-easterly point. Since I first announced ("Zoologist," 1886, p. 342) its breeding here, a few years ago, it has increased steadily, if slowly. It is now breeding in something like half a dozen localities that I might name in the Stewartry of Wigtownshire. I cannot say that it has actually bred yet in Dumfriesshire, but there can be little doubt that it has done so. *The species is one of those that arrive and depart from here in a N.N.E. or E. direction, and I never noticed it going or coming with the great majority of our birds from the direction of the Hebrides.*" [We have here placed Mr. Service's notes in italics.] It is significant to find that the lochs of Wigtownshire, or those nearer to the coast line, are *not* the first to have become populated by breeding birds. Are the individuals arrested by the more favourable localities visible to them, first on their autumn N.E. to S.W. migration, or does the occupation follow only upon their second or spring observations? *i.e.* are they arrested and induced to breed more by the amenities of the place in spring than autumn? We incline to the former belief, and that they are "brought up" or arrested in spring by the unsuitability of the areas beyond. Once acclimatised, or once they have reared young, the wave of dispersal, as it were, rolls back upon itself over the "lines of least resistance," and localities formerly passed over become occupied. This we consider is a well-founded belief built upon the facts we are able to bring forward not only here but in other areas we shall treat of.

Finally, and to date, we are indebted to Mr. J. Paterson, who has sent us the most careful particulars of their movements and present winter and summer distribution, which we consider to be well worthy of reproduction in the form offered in the following table :—

Renfrewshire.

E. Mearns Muir Lochs . ff. 4.3.94.
Neilston and Mearns Lochs ff. 10.3.94.
Brother Loch, Mearns, sm. ff. 17.3.94.
Mearns Lochs, ,, a few 29.4.94.
Dunevan Dam, Eaglesham, nest 24.5.94.
Binend Loch, ,, absent ,,
White Loch, Mearns nesting 17.5.94.
Brother Loch, ,, a few 2.12.94.
Black Loch, ,, absent ,,
Balgray Dam, ,, a few ,,
Glen Dam, ,, a number 16.12.94.
Glen and Balgray ,, 30.12.94. 1895.
Harelaw Loch, Mearns . 26 6.5.95 counted, *fide* H. B. Watt.
Brother ,, ,, a few 18.5.95.
Harelaw ,, ,, ,, 13.6.95.

W. Gryffe Reservoir . absent 5.5.94.
Loch Thom . . ,, 4.5.95.
Castle Semple . ,, 31.3.94.

Winters in open seasons on the latter, and there was a young brood of 5 or 6 last season, *i.e.* 1895. Mr. Shand *in lit.* 14th September 1895, thus :—

Castle Semple . . . nestd. 1895

Mr. Paterson adds (*in lit.* 20.9.95.) that the Tufted Duck has established itself in East Renfrewshire, and during the last decade "has altogether eclipsed in numbers the Mallard and Teal." In 1894 at least a dozen nests were reported to him in Eaglesham and Mearns Lochs, and "there would be, no doubt, as many more in these Parishes and in Neilston. In 1895 very few nests were found, as the dams and lochs were phenomenally low," etc.

Lanarkshire.

Possil Marsh, ♀ and 6 young, nest. 20.7.95.
Douglas Castle, North Loch ♂ (1) 23.5.95.
,, ,, absent vi. 95.

The lochs at Douglas Castle abound with Mallard, and are strictly a sanctuary for wild-fowl.

"On the 16.5.95. Mr. Paterson had seen a pair on Possil Marsh and suspected they would be breeding. This was practically confirmed by a young observer in Clyde (Mr. Robert Wilson, who knows the Tufted Duck well in East Renfrewshire), who visited the Marsh on 20.7.95 and saw a ♀ and 6 juv."

Stirlingshire.

Dougalston, Milngavie absent 25.3.93.
Reservoir above Gavel prob. nesting, a few seen 12.5.94.

[Our friend Mr. G. Ripley Kerr of Dougalston, however, informs us that he has seen Tufted Ducks on his ponds since 1879, but that as yet they have not bred there (*in lit.* 12th Oct. 1895).—J. A. H. B.]

Dumbartonshire.

Baker's Dam, Kilpatrick Hills, abs. 11.6.92.
Loch Cochno ,, ,, 6.5.93.
Lily Loch ,, ,, 11.5.95.
Loch Humphrey ,, ,, ,,
Luss, Loch Lomond . many 10.2.95.

Estuary of the Clyde at Cardross.
——— numbers 24.1.94.
——— ,, 24.2.94.

Mr. John Lang of Greenock writes, 18.9.95 :—"Unless greatly disturbed by Dumbarton gunners, you are certain to find them at all times during the winter (except very rough weather, when they are to be found above West Ferry on the other side) in the Bay about a mile below Dumbarton Castle. I may say I have seen them there in hundreds nearly any time I was in that neighbourhood."

To these particulars he adds (*in lit.* 20th September 1895): "Of its occurrence well down the Firth in winter I know nothing." And then he makes the following excellent remarks, with which, in all such chronological work, we thoroughly agree; and we would desire strongly to urge their importance. "I consider it important," says Mr. Paterson, "in a case like the present, that the result of visits paid to localities in which the bird has been *sought for* and *not observed* should be chronicled. How else can its spread as a nesting species be adequately ascertained? Such data, in my opinion, becomes of special value in the case of a bird which in the day-time habitually exposes itself to view while resting on the water! You will see from the above table that in West (East?) Renfrewshire and at Possil Marsh in Lanarkshire it may now be considered a nesting species. It is satisfactory to be able to get information of first appearances, and I think we are entitled to believe that the Castle Semple and Possil instances now put forward are such. There can be little doubt, I think, also that the Kilpatrick Hills lochs will shortly be colonised, and it will be interesting if we can trace the beginnings there of what may become, as here (Renfrewshire), a great movement."

We have a much earlier record, however, for West Stirlingshire than those relating to the Kilpatrick Hills lochs. Mr. James Lumsden of Arden writes us he can vouch for their having bred on Loch End, Caldarvon, every year since 1882 (and probably earlier). This loch is about three miles east of Loch Lomond, and the ground is very suitable, and about five pairs, more or less, nest there every year. They are regular winterers on Loch Lomond, but Mr. Lumsden has never seen *a pair* together on the latter loch, nor has he heard of them being seen in summer.

We were inclined at first to say that this record was more likely due to an extension from eastward; but having awaited precise information from other likely localities in the Vale of Menteith, we have found that the reverse is probably the case, notwithstanding the long gap between the record by Mr. James Lumsden and those of the moor lochs of Kilpatrick parish adjoining. As will be seen later, an equally, or nearly as long a gap occurs between Mr. Lumsden's record of nesting (1882) at Loch End and their first appearance at the Lake of Menteith (J. Stirling, 1890) and at Loch Ruskie (1893). As lochs at lower elevations are taken up first, as a rule, the 1882 record predates the higher moor lochs of Kilpatrick. It is difficult, therefore, to say whether Loch End owes its first breeding pairs to an extension from Clyde or from Forth—at least so far as our statistics go.

As regards the islands at the mouth of the Firth of Clyde, Mr. W. Evans records seeing numbers on one of the lochs in Bute in January 1895 ("Annals," 1895, p. 145).

Tweed and Forth.

And now, in similar sequence from South to North, we take up the parallel accounts of its appearances and history from Tweed northwards on the East Coast as far as the Firth of Forth; and in doing so, endeavour to compare dates upon East and West waterways, and institute a comparison between "Solway" and "Clyde" on the one side and "Tweed" and "Forth" on the other: as a probable test also of the correctness of Gray's remarks as to a certain direction of the migrating flight of another species (the Shoveller) between the same Firths of Solway and Forth, and also to compare dates of first records with the first records in Perthshire.

As early as 1876 Mr. Andrew Brotherston gives us interesting particulars of the Tufted Duck's appearance in the South-East of Scotland. He relates that in 1877, as late as 2nd May, he "counted about fifty Tufted Ducks on Yetholm Loch," and on 26th May, "I saw," he goes on to say, "eight pairs on the same loch. On Hoselaw Loch, on the same day, there were a large number." He had been led to visit these localities "from seeing two—male and female—of these birds on Yetholm Loch, 27th May 1876." Later he records the certainty "that three—perhaps four—pairs remained to breed there in 1877," the old males being seen on the loch alone on 4th July, and "four old Tufted Ducks, accompanied by between twenty and thirty young ones," having been seen on the following Saturday by Mr. Clarke. As will be observed, these records very closely correlate with records in Perthshire (1875) and the subsequent record from Fifeshire, also for 1875 ("Zoological Notes" by Mr. A. Brotherston: "Proc. Berwickshire Naturalists Club," 1876-78—published 1879—pp. 180 and 521). We have also to compare these South-East records with the earlier instances in Solway and Clyde.

But even as far south as Duns, certain localities apparently favourable to the species do not seem readily to be taken up by them. Thus, on 29th May 1895, Mr. J. Ferguson, Duns, informed Mr. Evans "that there are several on Duns Castle Lake now, and that they have bred there for two or three years past." Mr. Evans continues: "In a letter dated 4th November 1895, Mr. Ferguson sends me the following particulars: 'The Tufted Duck has been on Duns Castle Lake for four seasons. It was first seen in 1892, when one pair and their brood were observed. In 1893 three pairs and broods were seen. The following season, 1894, the breeding pairs had fallen to two; and this year, although I have noticed at least two pairs, I cannot say that I have seen any young, and the keeper recently made a remark to me to the same effect. The nest has never been discovered. I am unable to assign any probable cause for the failure to breed this year."

Mr. E. S. Marshall records in the "Annals of Scottish Natural History" for January 1893, p. 46, that he put a duck of this species off her nest near Fauldonside, Selkirkshire, which he considered as the first record of its having actually nested in the district. This dates July 1892, and Mr. Wm. Evans, in the same journal (April 1893, p. 115), tells us he saw six Tufted Ducks on one of the upland lochs in the district of Ettrick and Teviot, Selkirkshire, on 14th June 1889, and he felt convinced that the birds were breeding there at that time, judging from the actions of two males which were swimming singly on the loch.

Since these notes (above given) were written, we have received Mr. Wm. Evans's notes, and now include the salient points contained therein. Mr. Evans writes: "In addition to the resident birds, many no doubt still come from Northern Europe and winter with us. During this portion of the year (autumn to spring) there is scarcely a sheet of water of more than a gun-shot across on which at least a few do not make their appearance for a longer or shorter period. On Duddingston Loch and Linlithgow Loch, for instance, half a dozen to as many as a score, or thereby, may be seen almost any day from autumn to spring, some of them lingering even into May, but none ever remaining, so far as I know, to breed. In the "Forth" area the headquarters of the Tufted Duck as a breeding species are in the counties of Fife and Kinross. In the Lothians its breeding haunts are as yet few; and the same has to be said of the upper part of the valley. At no time of the year does it appear to be common on the lochs about Callander. In the end of April and beginning of May I have looked for it in different years (1892 and prior) at Loch Lubnaig, Loch Vennachar, Lake of Menteith, etc., without detecting one. Mr. J. J. Dalgleish informs me it is not known to occur on the lakes at Tulliallan, near Kincardine on Forth."

At Kingside Loch, Selkirkshire, Mr. Evans saw six birds, as already noted above, which were probably breeding there ("Annals," 1893, p. 115). On 21st February 1895 Mr. D. Bruce, Dunbar, told Mr. Evans "that in June 1893 he saw a Tufted Duck followed by a young brood on the Spott Reservoir on the Lammermoors, East Lothian. This is the first instance of the breeding of the species in East Lothian that has come to my knowledge" (Mr. Evans, *in lit.*). At Bonaly Pond, Midlothian, the discovery of the nest was first made by Mr. R. Godfrey, Edinburgh, from whom, partly, Mr. Evans obtained the facts as follows:—"In 1891 (April and May) I (*i.e.* Mr. Evans) observed a pair on Bonaly Pond; so, it seems, did Mr. Godfrey. I last saw them on 24th May; he on 25th May. In 1892 Mr. Godfrey saw a pair on Bonaly Pond on 21st May and 4th June; and on 2nd August he saw 'the female with a brood of eight young only a few days old.' In 1893 he noted two pairs

on the pond in May (9th, 22nd, and 27th), and a single bird on 26th August."

In 1894 he noted three pairs on the same pond (Bonaly). They were first seen on 17th April, and on 13th June he discovered a nest with seven eggs. This brood was safely led off on 10th June. A duck with nine young was observed on 25th July. Mr. Evans continues: "In the summers of 1892, 1893, and 1894 I was not near the Pentland ponds, being then very much from home. This year (1895), as I have already mentioned to you, a pair made their appearance on Bonaly Pond in the spring, but left by the end of May. Godfrey saw them on 2nd April; they were not there, he says, on 29th March." Also: "Like myself, Godfrey has seen a pair or two (in 1894, 20th April, there were no fewer than five pairs) on Thriepmuir and Harelaw Ponds (Pentlands) in April and May [Mr. Evans's earliest year is 1884], but neither of us has been able to discover that they have bred there yet: I am inclined to think they have. I was round Thriepmuir, Harelaw, etc., ponds on the Pentlands to-day (*i.e.* 23rd November 1895), and there was not a Tufted Duck on them. They are, however, practically only spring visitors to these higher lochs. In the winter they frequent chiefly the reedy and sedgy lochs in the lowland districts. Up to 1889 or 1890 I was often at Harper-rig and Cobbinshaw Ponds at the foot of the Western Pentlands in summer, and never saw Tufted Ducks on either of them. On 30th August 1884, however, I noticed two on Harper-rig. Since 1889 or 1890, I have only been to these ponds in winter. In March 1894 there were none on Cobbinshaw, nor were there any on Harper-rig a month ago (*i.e.* previous to 23rd November, the date of Mr. Evans's letter to us). In July 1890 I did not see any at Slipperfield Loch, near West Linton; but Godfrey says he saw a pair at Marfield Loch, near Carlops, in May 1894, and two pairs in May 1895."

Mr. Evans also, under date of 7th June 1885, gives negative evidence as regards Rosebery and Edgelaw Reservoirs, because they can hardly be considered "as yet suitable habitats." Farther to the westwards he also walked round Hillend Reservoir, between Bathgate and Airdrie, on 18th June 1885, "but could see no ducks of any kind on it" (compare under Renfrewshire and Clyde).

On 7th June 1885 Mr. Evans saw "six on Gladhouse Reservoir, Midlothian. Four were paired (♂ and ♀), and two fine drakes were flying anxiously up and down the pond—no doubt their mates were on nests, most likely on the island." He has since seen eggs taken there in June 1889. On the neighbouring Portmore Loch thirty-two were counted by Mr. Evans on 23rd November 1885.

Of its occurrence in Stirlingshire our own notes go back as far as 1860.

Stirlingshire may be looked upon as the connecting link between Forth and Clyde, but the Central Hills of the county act rather as a check to the advance of many species beyond, as we have before pointed out, except along the east foothills and over Falkirk Kerse, and the depression between Forth and Clyde, which reaches an altitude of only 120 feet above sea-level,—and northward *via* the Blane Valley, and again *via* Loch Lomond and the Firth of Clyde. The next connecting area is on the north side of the Central Hills,—*e.g.* Campsie Fells, Denny Hills, Gargunnock and Boquhan, and Fintry Hills,—and is represented by the drainage of the Forth river and the low watershed between the Forth and Loch Lomond, across the mosses of Blairdrummond, Flanders, and Bucklyvie. Thus it will be seen that it is natural to expect considerable similarity in the general faunas of Clyde and Forth, where they may be said to "join hands" south and north of the Central Hills; but that considerable differences may be looked for if the drainage areas in their entirety be looked to, and the configurations and consequent characters of the two faunal areas be studied. The Central Hills of Stirlingshire, however, can only be regarded as *insular in significance*, feeding as they do tributaries of "Forth"—Carron, Bonny, and finally Forth—and to an almost equal degree feeding "Clyde"—Endrick, Blane Valley, Keltie, Kelvin, etc., both on the north and south, west and east.

The earliest records I can find in my old journals are both referrible to winter occurrences, viz. one ♀ bought from Small of Edinburgh about 1866, and two ♀s received from Mr. Samuel Berry Singer,—long time punt-shooter at Kincardine on Forth,—shot there by himself, and sent to me as "rarities" on 18th January 1867; but in September of the same year (1867) I find I had made a note in the "Zoologist" (p. 904): "Tufted Duck plentiful in the Firth: more males than females"; but it is only in very severe weather that I have ever found these birds ascending our River Carron when still able there to find open reaches or spots of calm water. On one occasion, I remember our keeper and myself shooting four out of five which were stalked when asleep on the ice at the edge of a deep pool, and another time our obtaining a similar number at the entrance of the Pow Burn, near Higginsneuk on the Forth, opposite Kincardine on Forth.

On the Carron Dams, close to this spot from whence I write, "Tufted Ducks first appeared in any numbers about nine or ten years ago" (say 1884 or 1885), as we are obligingly informed by Mr. Robert Baillie, Manager's Department, Carron Iron Works (*in lit.* 14th September 1895), and "one had been shot in the vicinity some years previous." "A nest of eggs given to the late Dr. Leslie of Falkirk[1] was taken in 1887. Since then I am aware of one

[1] This "clutch" is now in our collection at Dunipace, along with all Dr. Leslie's local (Forth) collections, and his notes.

small brood having been hatched out, but as a rule they do not breed here. In winter they are plentiful, but as the summer approaches they leave."

On the Lake of Menteith—a place apparently admirably suited to them—they have only appeared recently. Mr. Stirling of Garden saw a pair on 19th March 1890, also a pair on Loch Ruskie, 4th April 1893; and the Cardross keeper has only noticed "the Black Ducks" on Lake of Menteith for about three years. None have been shot, nor have they bred that he knows of (1895).

Turning now to areas north of the Firths of Forth and Clyde, we find we are able to continue our records with considerable exactness, what with our own series of Scottish faunas and other materials at our command to refer to.

West Coast and Islands.

Beginning in the southern areas *north of Clyde*, Captain Gould shot a Tufted Duck in Tiree (one of the Inner Hebrides) in the winter of 1887, and since then we have the record that more than one pair bred in Tiree in 1892, and it had also become a regular winter visitor to most of the islands of the Inner group of the Hebrides—Mull at Lochbuie (The Maclean *in lit.*) in winter; rarer in Islay (H. Evans). In Islay and Jura there are suitable haunts (reedy lochs, etc.), but which are not yet taken up. The Tufted Duck only visits Skye as a straggler, as we are informed by Rev. H. A. Macpherson.

Not until the winter of 1894-95 has Mr. Bisshopp, naturalist, Oban, ever found Tufted Ducks abundant. Before then he occasionally received specimens, mostly from the Outer Hebrides, sent of course as rarities. But we have the early record of the "New Statistical Account" for Ardchattan Parish along the shores of Loch Awe (1845). We have ourselves observed the birds on Loch Gown, on the watershed between East and West Ross, in June; and Rev. H. A. Macpherson has met with it also on one of the Ross-shire lochs between Strome Ferry and Dingwall (see Moray).

But in the Outer Hebrides we have no records of its nesting up to the date of the publication of that volume, viz. 1889; nor have we obtained any since that time till now, when the record still remains that "it occurs sparingly in winter."

Perth and Fife.

Passing now to the northern portions of the "Forth" area,—viz. Fife, Kinross, Clackmannan,—and to the south of the watershed, we find an almost startling difference in the population of the species, in fact, as Mr. Evans says, this is "its headquarters in the breeding season." This is curious and worthy of attention in connection with

the earliness of recorded dates. We purpose giving here our own notes as already written, taking Perthshire and Fife, or "Tay" and "Forth," together.

First, however, we have to mention the earliest date at our command—which is afforded by Sir Wm. Jardine—of its occurrence at Loch Leven, viz. "April last" (1843) ("Naturalist's Library," vol. xiv. p. 143); but, as MacGillivray has said as late as 1852 ("British Birds," vol. v. p. 125), from Clyde and Forth estuaries northwards, "it becomes of less frequent occurrence on both sides of the island," Sir Wm. Jardine's record at Loch Leven must be classed as an exceptional circumstance, if an early one, and correlates with others given north of the parallel of 56° N. lat. previous to MacGillivray's date of 1852.

There had been evidence for a considerable time of the Tufted Duck frequenting Loch Tay as a winter visitor along with other species, and we find it recorded that in 1879-80, or, to be more exact, between October 1879 and September or October 1880, "most of the duck tribe appeared on Loch Tay earlier than usual by a month" (including the Tufted Duck) "and continued in unusual numbers all the winter" ("Proc. Nat. Hist. Soc. of Glasgow," vol. iv., April 1880, p. 320). Indeed during that season ducks were unusually abundant both on our coasts and inland, excepting the Wild Duck, which was *as unusually* scarce.

Mr. Duncan Dewar, the well-known naturalist-gamekeeper (whose fine local collection has lately been acquired by the Perth Museum, and who afforded me the above information in 1880), writes us recently that the Tufted Duck is still only a winter visitor on Loch Tay. This no doubt arises from local causes, the shores not affording the requisite peaceful shelter and herbage. The first Mr. D. Dewar ever recognised was in the spring of 1880—a dozen in Remony Bay.

The only pair of Tufted Ducks which are in the Perth Museum are labelled February 1878, and were from Methven Loch.

The earliest record is that given in the "Ibis," at Butterstone Loch in Perthshire (*op. cit.*, 1875, p. 514).

We ourselves have usually visited Loch Leven for fishing at the time when the numbers of the young would be added to those of the parents, and this was the time of year when, by the permission of Sir Graham Montgomery, Mr. Malloch and Mr. J. G. Millais went there to shoot. Our friend Mr. J. G. Millais, who visited Loch Leven twice anually for ten years, first in 1879, puts the number seen by him in 1880 "at over 100 females with young; and in each succeeding year in which I visited Loch Leven," he continues (*in lit.*), "in August and September I saw increasing numbers of Tufted Ducks which had bred there." This estimate agrees with our own, and we certainly would consider that they could only be counted by

the hundreds. We have also visited Loch Leven in April, when the numbers were also astonishing. Mr. Malloch speaks (*in lit.*) of seeing "scores of broods," and also adds that in 1894 "there must have been over 1000" (meaning thereby old and young *birds*, not pairs). It matters little perhaps whose estimates are exact,—1000 as Mr. Malloch puts their numbers at, or 300 which represents Mr. Evans's estimate,—and it is perhaps sufficient for our purpose to prove that Loch Leven is at all events, *facile princeps, the* greatest centre of their present reproduction in Scotland. It should, however, be considered at the same time that Loch Leven, with scarcely any doubt, becomes also a refuge—owing to its great extent and feeding qualities—to many other broods not necessarily born on its margins or on its islands; and this might well favour the larger estimate.

The Tufted Duck has become established at a good many other localities in Central and South Perthshire, and Mr. Rowley Jex Long records a nest taken at Methven Loch three years after the discovery recorded in the "Ibis," viz. in 1878 ("Proc. Nat. Hist. Soc. of Glasgow," 25th February 1879).

Mr. Malloch gives us (*in lit.* 13th September 1895), writing from memory, a very similar account, but appears to claim earlier dates for their first nesting at Methven Loch. All the evidence, however, points to the "Ibis" record of 1875 as the undoubted first record for Scotland. Mr. Millais first heard of their breeding in Perthshire about the year 1877, and adds: "Mr. Malloch shot a pair (which I saw) and took nest and eggs on Methven Loch, near Perth, about this date"; and Colonel Drummond Hay, whom we look upon as the best informed authority for "Tay," writes us as follows: "The first we ever got were from the present Colonel David Smythe of Methven, ♂ and ♀, shot on Methven Loch, dated February 1878; these, I think, were mounted for the Society by Malloch. All that we have are winter birds—a ♂ from Gask on the Earn, and a ♂ and ♀ from Loch Tay, January 1880. The first nest (or I may say the only one, for we would not have wished to take another) was from Methven Loch, taken by Colonel D. Smythe, with eleven eggs, in weedy ground among thick herbage, chiefly *Carex rostrata*, in June 1888." Finally, in reply to our inquiry of Mr. R. Jex Long, that gentleman writes us (5th December 1895): "Mr. Malloch was the party from whom I received the Tufted Duck and eggs. They were got on Methven Loch in a Swan's nest, and he said it was the only one he had seen. I understood from him he had never previously seen or heard of this species breeding in Scotland. The bird and eggs are still in my possession."

Perhaps our earliest record for its occurrence on inland waters of the south-west of the county is that given by my friend Mr. John Hamilton Buchanan in his paper "On the Birds observed at

Callander," where he says: "Rare. Females are sometimes shot on Loch Vennacher" ("Proc. Roy. Phys. Soc. Edin.," March 1879, p. 61).

Of its arrival and stay at Loch Mahaick on the Braes of Doune in South-West Perthshire—drainage area of "Forth"—my friend Col. Duthie writes: "On the 18th April 1889 I first saw this species on Loch Mahaick, a duck and drake. I went up there a day or two later with Winter" (upwards of forty years gamekeeper at Doune Lodge) "and showed them to him. He had never seen the duck before. In every succeeding year these birds have been present at the loch. In some springs I have seen six or seven birds, and a pair at least remains to breed. I have seen them as late as July, but have never found the nest. On the 3rd August 1891 an old duck and a young 'Tuft' were flushed, and the young one shot, when I was present." Mr. Winter confirms the above, and adds: "And it seems that one was shot about the same time (*i.e. supra* 1889) on Loch Watson, on Gartencaber ground, south of Doune."

The earliest positive record I can refer to of the Tufted Duck actually nesting on Loch Leven in Kinross-shire, is that clutch taken there in 1875 and brought to Mr. Herbert, who hatched them out under a hen, watched the growth of the young birds, and thus identified the parents ("Proc. Roy. Phys. Soc. Edin.," iv. p. 73). At the present time they simply *swarm* on Loch Leven; indeed it is the greatest nursery of the species in Scotland.

They also breed on the Loch Lindores in the north of Fife, within two and a half miles of Newburgh.

Another more recent expansion in Fife has taken place at Ballo Reservoir, on the southern slope of the Lomond Hills. They have been there at least three or four years. Ballo ponds are the reservoirs for Kirkcaldy, and lie at a considerably higher elevation than Loch Leven. At the present time, and since 1879, as we are informed by Mr. J. J. Dalgleish, Tufted Ducks have nested on Loch Glow and other lochs among the Outh Hills.

Mr. Evans, who has paid special attention to this district of his area, frequently visited Loch Leven and other localities frequented by the birds between 1883 and 1895. He found them breeding in greater or less quantity on the occasion of each visit, and saw numerous birds on Loch Leven; their numbers varying, however, slightly from season to season, until his last visit to Loch Leven in June 1894, "when their numbers did not seem to be greatly different from what they were when I first was among them twelve years ago." By 1895, as we know from Mr. Malloch's notes (*supra*), a rapid or abrupt decrease became at once apparent after the severe frost and late winter of that year.

Amongst localities presently or up to 1895 occupied by the species, Mr. Evans mentions Loch Leven (1875); Loch Gelly, Fife (common

in 1885, first nest seen 1883); Cleish Hills lochs (1885) [Mr. J. J. Dalgleish's date (1879) as first record here comes in]; Loch Fitty, Fife (breeding abundantly by 1885); Otterstone Loch, Fife (three broods, 1890); and Burntisland Waterworks (a reservoir about two miles north of Aberdour, Fife), where he observed at least eight or nine pairs on 9th April 1893, and "had little doubt a few of them breed on its margins." Also at Raith Lake, near Kirkcaldy, "whilst collecting *mollusca*," Mr. Evans "observed nine or ten Tufted Ducks on it on 23rd August 1890, some of them apparently young birds not yet fully grown." On 6th March 1887 he "saw thirty-five to forty on Camilla Loch, also in Fife."

There are doubtless other sheets of water, large or small, frequented by the birds in winter and summer, but the above are sufficient to quote for our present uses. They are not considered as yet to visit the ponds about Tulliallan by Mr. J. J. Dalgleish, but we have ourselves repeatedly shot birds on the adjoining tidal water of the River Forth (see under Stirlingshire).

It appears, therefore, that Perthshire and Fife still own the earliest definite records of the nesting of the Tufted Duck in Scotland, and those in the valley of the Tay and north coast of Fife (Loch Lindores) and Loch Leven, so far as we are able to know.

Forfar and Strathmore.

In Forfarshire and Strathmore we are informed by Mr. P. Henderson of Dundee (*in lit.* 27th August 1895), that for many years it was only a winter visitor, but "I have had it frequently brought for stuffing in the summer time during the last eight years, mostly from the Forfar[1] district. The estate of Inshewan" (with which we were also acquainted during August of 1886—H. B.), "which has several small lochs, is a favourite place, but there are many more small lochs frequented by it." Mr. Wm. Evans has observed it also "on several occasions within the last eight or nine years on Rescobie Loch, near Forfar, in the months of May and June."

Kincardine.

Mr. Sim of Aberdeen, who has traversed a considerable portion of this county, had, up to the date of August 1895, "not seen nor heard anything of the Tufted Duck," and adds, "this may be accounted for by the want of proper breeding-ground" (*in lit.* 17th August 1895).

Dee.

This now brings us to "Dee," and our friend Mr. George Sim supplies the following short abstract of his observations during most

[1] *I.e.* the district around the town of Forfar.—H. B.

of a lifetime spent in a study of that area, during which period he has personally inspected almost every part of it from the sky-lines to the coast, *i.e.* east of the watersheds between Dee and Moray, and north of the sky-lines of the Southern Cairngorms which separate "Dee" on the north from "Tay" and the Vale of Strathmore on the south.

At the present time this duck is a regular nesting species in Aberdeenshire. Its nest was first found in the Loch of Park by Mr. Wm. Evans in 1887 ("Zool.," 1887, p. 465), and previous to this it had probably nested on Loch Skene, as recorded by Mr. William Borrer, who was informed that these birds had bred there for three years, say 1884-87, and that in the latter year, as the gamekeeper assured him, there were five or six broods ("Zool.," 1887, p. 427). Mr. Borrer visited the loch on the 11th August of that year.

It appears from a note by Rev. H. A. Macpherson, which follows Mr. Evans's (*op cit.* p. 465), that he had visited the loch of Skene early in July—or a month sooner than Mr. Borrer—and himself saw "several broods," thus satisfactorily verifying that gentleman's observations. We may safely consider the year 1884 as the approximate date of first occupation of Loch Skene, and it is quite likely it may have nested also a year or two earlier than Mr. Evans found them on Loch of Park.

Mr. Sim now adds the information that in winter the Tufted Duck is to be found at the mouths of Don and Ythan, and also far up these rivers and on inland lochs, but not in great numbers (*in lit.* 24th August 1895). This information was in reply to my inquiry as to the actual winter distribution of the species in "Dee." The Rev. Mr. Serle also writes us from Peterhead as to its presence on the Ythan—where we ourselves have also seen it as late as April—and on Fyvie Loch, which is close up to the obstruction of the watershed between "Dee" and "Moray."

Here also it has bred. We are informed of the fact by Mr. Geo. Muirhead, who writes me (25th August 1895): "I am glad to be able to tell you the Tufted Duck has bred on the Lower Lake (*i.e.* at Haddo)—an artificial sheet of water extending to about thirteen acres in the midst of woods—within the policy grounds of Haddo House during the last two seasons. A pair was observed with young in the summer of 1894; and this year, I think, several pairs have nested there"; and Mr. Muirhead adds, "The Tufted Duck has been noticed during the late autumn, winter, and spring in small numbers for a few years back." These notes are very satisfactory as showing strong comparison between "Dee" and "Moray" dispersals, and the importance of watersheds as faunal boundaries as opposed to rivers or valleys, similar data in other places also showing the same (see Solway, Forth, and elsewhere).

Moray Basin.

Coming now to our area of the "Moray Basin," *i.e.* north of the great dividing range of the Cairngorm Mountains, and east of the watershed between Dee and Ythan and Don and Moray, we find a strange and perhaps unaccountable blank in the history of the species, and the positive records of presence, even in winter, strangely deficient in number. Throughout the whole area of the Moray Basin the scarcity is quite phenomenal. But as early as 1860 Captain Dunbar Brander, of Pitgaveny obtained a stray specimen on Loch Spynie in December, and again in 1878 he got another *during very severe weather*, and another in February 1880. The Tufted Duck has never, to Captain Dunbar Brander's knowledge, bred on Loch Spynie. Now, going further back, St. John ("Nat. Hist. and Sport in Moray," ed. of 1872, D. Douglas, Edinburgh, p. 136) says it "is rare" and "the Tufted Duck is wholly a winter visitor," and no other reference is made to the species; and Dr. Gordon in his "Fauna of Moray," in the 1889 edition, which was published in Elgin, and contains appendices to date, only quotes the above records of Captain Dunbar Brander (*op. cit.* p. 53, footnotes).

Also Mr. J. G. Millais writing to Buckley (7th September 1895), says: "I do not know any place where the Tufted Ducks breed in Morayshire or Nairn, though I strongly suspect it is doing so on the Loch of the Clans—an ideal duck place on Kilravock near Fort George. Close to this there is a small open sheet of water known as Loch Flemington. On this lake I killed several, both old and young (only recently able to fly), in the autumn of 1891; so I suspect they breed somewhere near, particularly so as I know Pochards breed on the Loch of the Clans. I never could understand why Tufted Ducks do not breed on Loch Spynie, but I know they do not." Later, however, we again hear from Mr. Millais, in addition to the above, that though he has punted regularly in the Moray Firth, it is of comparatively rare occurrence there, and he also has been unable to make out that it has positively bred anywhere in Moray. Our own notebooks and MS. of our forthcoming volumes on the Moray fauna entirely bear this out; and Mr. M'Leay designates it as of rare occurrence, and only very seldom sent into his hands. With the few exceptions we will presently mention, we have never met with the bird during twenty years' or nearer thirty years' experience of Scotland north of the Grampians, nor anywhere within the whole area of the Moray Basin. The exceptions are:—we have once met with a small party of Tufted Ducks close to the watershed of West Ross, viz. upon Loch Gown, and the Rev. H. A. Macpherson affords us the information also that he has seen it "on one of the lochs between Strome Ferry and Dingwall" in September 1895.

We would like to have had more precise locale, or at least ascertained on which side of the backbone of Scotland he observed it. Our own observation was made in midsummer. At the latest date we can give (September 1895), it still continues of as great rarity as ever in the Moray Firth, as we are assured by Mr. M'Leay of Inverness.

But in the extreme north of the area of the Moray Basin, Buckley has met with them on one loch "in considerable numbers all through the summer," but does not record any instance of its nesting. This appears to be an outlet at present from Caithness across the low range of rolling hills, which only offers a very slight impediment to their movements as compared with ranges of higher elevation; and a tendency is indicated by this expansion to a future populating of the whole (*true*) Sutherland faunal area.

Along the depression of the Great Glen it is equally scarce. One was shot at Lochletter on Loch Meiklie, Glen Urquhart, in 1878, *in severe weather*. Loch Meilkie, which is known to ourselves personally, is fairly well suited, especially at its upper end, for final occupation; but at present the 1878 bird can only be classed as a rare (some people would call it accidental!) occurrence, as we consider it as yet quite to the right or left, or "out of the tracks," of the direct influence of the bird's regular "fly-lines." All accounts agree that it is *only in severe winters* they occur (or nearly so at least).

The Tufted Duck being of sedentary disposition after occupancy of new centres, no doubt finds the whole great Moray Basin so hemmed in by the highest mountains of Scotland round such a large portion of its circumference that the return journey—let us say if such occurs at all—finds obstacles and checks to its progress at every point, and up to this point of the dispersal of the species prefers to follow lines of less resistance, viz. to the south of Geikie's great Geological Fault, and again north of Scotland by the Pentland Firth and the lower lands of Caithness, as we have found on a previous occasion to have been the case with the Starling. As, however, in time, dispersal, expansion, extension caused by increase of numbers takes place (even in the same ratio as in the past twenty years it has done, accelerated no doubt by the wise Act which saves many wild-fowl from destruction, and which was passed in 1880), both ends of the Great Glen will become populous, as the line of least resistance to future colonists, first as a winter resort, and finally as a permanent residence.

Sutherland and Caithness.

Lewis Dunbar, in our "Vertebrate Fauna of Sutherland and Caithness," when referring to this species at the time as "breeding but rarely," far up the country amongst flows and "dhulochs" around Strathmore Lodge, really referred to Scoters. It is, so far as we know, not the habit of the present species to nestle far up the

country in such situations. It is only at one locality, so far as Dunbar knows, even at the present time, that the Tufted Duck breeds in Caithness, viz. on Stemster Loch. He gives the additional information, writing to Buckley under date 11th September 1895: "I have never known it as a winter visitor here. I think it must winter in the south of Scotland, but now I am positive that it has bred on Stemster Loch seventeen years ago, and every season since. I am not aware of it breeding on any more of the inland lochs in Caithness, and have never known it to be found on the sea anywhere hereabouts."

Later than Dunbar's earlier communication, and than the supposed earliest occupation, which would be about 1878 (*i.e.* seventeen years ago) (the first identified nest was taken, however, by Buckley at Loch Stemster on 7th June 1889), this record is supplemented by Buckley in the "Annals," 1892, p. 163. He tells us the Tufted Duck has "spread enormously in the last three or four years, but not yet recorded as breeding from Sutherland: very abundant in Caithness." To this we may add further that Dunbar and Harvie-Brown found many nests, often close together, on the islands and shores, amongst dense beds of reeds and nettles, of Loch Stemster, where they had been breeding as early as May, and quite a fortnight earlier than in previous seasons, as Harvie-Brown was assured both by Dunbar and by Mr. Beaton, the gamekeeper, who accompanied them in their search.

Orkney.

In Orkney we find evidence of its appearance as early as 1828, though rare and only in severe winters (Fleming). Again in 1881, in a letter, dated 28th December 1881, from Mr. W. Irvine Fortescue, writing from Swanbister, that gentleman says he shot, amongst other things, "a Tufted Duck, which appears to be not uncommon."

Mr. Allan Briggs, when residing in North Ronaldshay, and who had had previous years' experience of the same locality, saw and shot his first Tufted Duck on 10th October 1892, and another in January 1893, and a third at an intermediate date, as recorded in the "Annals" (1893, p. 74), and as also recorded by Hinxman, (*loc. cit.* p. 159). There is a previous record, however, where it is stated to be very common in Orkney as a winter visitant, frequenting the Lochs of Harray and Skail; and Millais is said to have found it breeding in Orkney ("V. F. of Orkney," March 1891).

In Orkney in 1894 Messrs. Maloch and Millais found a nest on one of the islands of Loch Harray, and in 1895 Mr. Maloch saw several pairs.

Shetland.

In Shetland, while Saxby in 1874 spoke of it as an "uncertain winter visitor" and staying till spring, our further records are at

present incomplete or meagre; but a pair of these ducks stayed for some time on a loch even as far out to the west as Foula in November 1892. In September 1892 Harvie-Brown saw four in Quendale Bay, but had not observed any during a previous residence there in 1891; so far fitting in with Briggs's experience on the opposite side—Ronaldshay in Orkney—and Mr. Traill's record of two in Foula.

At the present time the summer residency and the winter occupancy between say Caithness and Tiree are only joined by fly-lines. But the time will, we believe, come when the residential areas will dominate the winter, and *permanent residency* of the species will take place at all likely points between, just as the process appears to be in evidence now between Solway, Clyde, and Forth—or shall we say between Ireland and Tiree and Caithness, or between Ireland and Solway and Forth?

THE BIRDS OF THE ISLAND OF BARRA—ADDITIONS AND NOTES.

By John MacRury, M.B.

Since I wrote the list of the birds of the island of Barra for the "Annals" (1894, pp. 140-145 and 203-214), the following additional species have been observed on the island:—

Garden Warbler, *Sylvia hortensis*, Bechst. — This is another visitor I am able to add to the list of the birds of our island. I secured one on the 25th November 1895. It was a solitary bird, and was picking up flies among the bent at the sea-shore.

Lesser Redpoll, *Linota rufescens*, Vieill.—Mr. J. Peel assured me he saw a Redpoll at North Bay about the middle of November 1894. It was a solitary bird, and was sitting quite close to him at the time, so that he got a good view of it. Mr. Murdo Macgillivray saw several Redpolls in the garden at Eoligary many years ago, early in the winter, and secured one of them. They were, he says "very like the Twite, but with a red star in the forehead." He never met them on the island except on that occasion. A pair of those birds—a

male and female—appeared in my garden on the 16th November 1895, and I think they are still (30th November) about the place.

TURTLE DOVE, *Turtur communis*, Selby.—On the 27th September last I secured a Turtle Dove near the place where I got the Pintail Duck the previous week. I observed it flying from east to west rather low, when it was suddenly pounced upon by a Merlin, and when trying to escape from one enemy by hiding under the bank of a small stream, it fell into the hands of another, as I was able to get up to the place before the Falcon could get at it. It proved to be a young male in the autumn plumage; and although its crop was quite empty, it was in good condition. I think this is the first of the species seen here.

PINTAIL DUCK, *Dafila acuta* (L.).—I observed a pair of these birds in full breeding plumage on the 16th May 1895, in a narrow bay of the sea on the east side of Barra, and they remained in the same locality for over a week, being quite tame. This is the first time I have met with the species in Barra, but as Mr. Harvie-Brown had found them breeding at the island of Canna, which is not far distant, I was not much surprised to see them. A female of this species—a solitary bird—was shot by me on the 20th September 1895, on the Rev. Archibald MacDonald's glebe, which is on the west side of the island.

POCHARD, *Fuligula ferina* (L.).—A couple of these birds were shot by Mr. Peel, shooting tenant, early in September 1894, on St. Clair Loch, which is close to the sea.

Mr. Finlayson, the schoolmaster of the island of Mingalay, tells me that he has met with the Redstart (*Ruticilla phœnicurus*) and Goldfinch (*Carduelis elegans*) on that island; and he also saw a year or two ago, in the summer, "a bird nearly as yellow as a Canary, and about the same size and shape," which may perhaps have been a Yellow Wagtail (*Motacilla raii*), although this species was not seen here before. The House Sparrow (*Passer domesticus*, L.) seems to have bred at Castlebay this summer, as I have often met with a family of

young birds at the schoolhouse there, and they are still about the same place. I think this is the first season the species has bred on the island. Several pairs of Blackbirds (*Turdus merula*, L.) have reared broods this season, probably all the birds hatched on the island last year; and they all took very kindly to the berries, and even apples, in my garden, and they seem also to have taught the Thrushes to try the same diet—at any rate I never noticed the latter species touch gooseberries or currants till this year, when they were almost, if not quite, as bad as the Blackbirds themselves.

One nest of the Whinchat (*Pratincola rubetra*), with six eggs, was got in the island by Mr. Proud of Bishop-Auckland, and several broods of young birds were observed by myself.

The Rev. James Chisholm tells me that he saw a pair of Bullfinches (*Pyrrhula europæa*) near Castlebay in September last. This is a species not recorded in my former list.

ORNITHOLOGICAL NOTES FROM THE TAY DISTRICT OF PERTHSHIRE.

By Col. H. M. Drummond Hay, C.M.Z.S.

The Nuthutch in the Carse of Gowrie.

An individual of this rare species for Scotland was distinctly seen by Mr. Niel Richardson creeping up one of the large timber trees in the park at Pitfour Castle on the 24th of January of the present year, 1895. His attention was attracted by a loud tapping on the bark, when he noticed the bird, which was quite close, and being well known to him in England, he had not the slightest doubt of its identification; and, as it were in confirmation of the fact, either the same bird or another of the same species was noticed only a few months afterwards by Mr. W. T. Calman, of the University College Museum, Dundee, climbing one of the trees close to him on the top of Kinnoull Hill on the 11th of September last, a distance at the most in a straight line from the forementioned spot of scarcely three miles.

The only previous notice of this bird in Perthshire is one seen many years ago at the head of Loch Tay, near Killin.

Goldfinch in Strathtay.

This bird's hold in Strathtay (one, if not its last in Perthshire), which Mr. Horn, writing of it about the end of the seventies, found tolerably numerous about Aberfeldy in the summer months, has been carefully watched by me ever since, as to its gradual spread throughout the district; and, though receiving a somewhat severe check by the premeditated robbery of a nest with young birds from the woods above Aberfeldy in the summer of 1889, and the taking of another nest at the foot of Loch Tay in June 1892 by a lad who was not aware at the time what kind of nest it was, it was with much satisfaction that I was informed by Atholl MacGregor, Esq., of Eastwood, Dunkeld, that in the winter before last, 1893, he had seen a flock of fifteen of these birds feeding on the banks of the Tay near Dalguise, one of which he shot for identification. I am further glad to find, by the last number of the "Annals," that a pair (which it is to be hoped may be one of many in the district) had been noticed this summer at Ballinluig by Mr. Bruce Campbell, who we trust, though he states his not being fortunate enough to find the nest, would, even if he had, never have had the heart to have taken it; and it is earnestly to be hoped that these birds will be under the protection of all visitors coming to the district at least for some few years to come, till their re-establishment is secured. I may mention that the nest taken by accident at the foot of Loch Tay in 1892 fortunately fell into the hands of Mr. Duncan Dewar, head keeper at Remmony, whose extensive knowledge of the birds of the district is well known, by whom it was presented, along with two eggs, to the Perthshire Museum—a beautifully formed nest of its kind, copiously lined with seed-down of the creeping willow (*Salix repens*).

Razorbills and Guillemots.

Strange to say, for the season of the year, an extensive invasion of these birds took place both on the Tay and

Tummel about the first week of September of this year in a starved and exhausted condition, though one correspondent mentions some having been seen in small parties of two and three, to the amount perhaps of a dozen or more, on the Tay at Dalguise as early as August. There had been previously, at the end of that month, much rain and heavy gales from the westward, from whence in all probability they came, having wandered inland in the same way as described by J. Gilmour, Esq., of Montrave, Fife, in a most interesting letter to the Rev. Dr. Stewart of Ballachulish, which appeared in the "Inverness Courier" of the 29th of November, descriptive of a similar invasion at the head of Loch Leven in Argyleshire on the 30th of August, where many of these birds were found in an exhausted condition. This the editor, ably commenting, attributes to the excessive rainfall on the West Coast during that month, causing the waters of the Loch to be brought into a condition of brackishness and turbidity so unusual as to have forced the fish out of it into the pure water of the open sea. The fish disappearing, the birds, starved and dazed from want of food, had stupidly wandered, instead of seawards, inland to the head of Loch Leven, which in a direct line from the watershed of the Tummel would be from 10 to 11 miles, and from 15 to 20 from the nearest point of Loch Etive (which may have been affected in the same way) to that of Loch Tay, and not more than 30 to the Loch itself. This visitation, however, seemed to reach from Pitlochry downwards to the Tay; numbers having been met with at Dunkeld and Stanley, as well as on stations between, coming by the Tummel and not by Loch Tay. Many were picked up dead, floating on the water, and others stupid and in a half-dazed condition. Those which came under my special notice were young birds, which I suspect them all to have been, and which I think must have come from the head of Loch Leven; for though Mr. Dewar of Remmony Lodge (*in lit.* 10th December 1895) informs me that he also noticed these birds, of which the Guillemots were the more numerous, to have visited Loch Tay on the 6th of September for a fortnight, they were comparatively in good condition. These, I take it, may have come from Loch Etive, as the Tummel and Tay

birds, having made their appearance almost at the same time, would probably be a distinct flight from those on Loch Tay, which Mr. Dewar further informs me is not an unusual thing on the Loch at that season of the year ; birds having been seen at Stanley and elsewhere as late as October before the rod-fishing closed, so tame and close to the boats as to allow the rods and lines to pass over them. These may probably have been augmentations from Loch Tay that had dropped down the river seawards.

Pomarine Skua.

A bird of this species was caught on the 24th of November last in a very exhausted state in the kitchen garden at Inchyra House, in the Carse of Gowrie, near this, a short half mile in a direct line from the Tay. It was supposed to have been wounded, but on dissection was found to be perfectly sound, but in a starved condition. This is the first time that the Pomarine Skua has ever been known to me to have been seen so high up the river, and the first record I have of it in Perthshire.

At all times, with the exception of the autumn of 1879, when there was a remarkable irruption of these birds on the lower part of the Tay, it may be considered a very rare visitant. The bird in question proved to be a female of the first year, much resembling the young of the Arctic Skua, a much more common bird to the Tay, but to be distinguished at a glance, not only by the white shafts of the wing and the inner white webs, but by the vivid colouring of the legs and feet, the former being of a pale steel blue with a yellow tinge at the hinder part of the knee. The anterior part of the toes and webs yellow, with the exception of the outer toes, which, with the rest, along with the webs, are deep black, claws very dark brown, hinder toe yellow, claw white—the blue of the legs soon fades to a brownish yellow.

Variety in the Plumage of the Male Teal.

It may be of interest to record a very beautifully plumaged Teal drake shot on the Tay near this on the 5th instant ; the whole plumage not only being exception-

ally bright (not being in the nuptial dress) at this season, but with the additional ornament of a broad white gorget separating the neck from the breast, with a very pale buffish white pear-shaped spot, three-eighths of an inch in length, immediately behind each eye, strongly contrasting with the broad dark patch of glossy green on which it rests. Of the hundreds of Teal that I have handled, both in decoys and elsewhere, I have never come across a similar marked specimen. This, together with specimens of all the fore-mentioned Palmipedes, will shortly be placed in the New Perthshire Museum.

ON SOME COLEOPTERA FROM THE SUMMIT OF BEN NEVIS, COLLECTED BY MR. W. S. BRUCE.

By the Rev. Alfred Thornley, M.A., F. Ent. Soc., F.L.S.

[Introductory Notes by Mr. Bruce.—In May 1895 I was asked to take charge of the Observatory on the summit of Ben Nevis; and, having accepted the offer, I made the ascent on the 10th of that month. Before starting, my friend Mr. W. Eagle Clarke, of the Edinburgh Museum of Science and Art, advised me to look out for insects on the summit. I was not disappointed, I was even amazed at the host of insect life to be met with on the summit. Here is an extract from my log which may be illustrative:—

"*6th June* 1895.—Another splendid day for insects. . . . The difficulty yesterday and to-day, insect hunting, was to drag oneself away from one spot, so numerous were the insects. . . . I had not time to collect any number of the commoner insects."

Contour.—Ben Nevis, the highest mountain in the British Isles, along with the northern Carn Dearg, forms an irregular semilunar-shaped mass, the concavity of which faces the north-east and the convexity of which faces the south-west. The lower north-western half of this mass is the Carn Dearg, and the loftier south-eastern half Ben Nevis. Ben Nevis itself rises as a rather steep slope from Glen Nevis from the south, and drops perpendicularly as a precipice 1500 to 2000 feet in height towards the north. To the west it continues as the north-westerly lying Carn Dearg; to the east it runs into a north-easterly ridge which unites it to the Carn Mor Dearg.

I will here define what is meant by the term *summit* when used in this paper. It is all that part of the hill which is above 4350

feet, the Ordnance Cairn at 4406 feet marking the extreme elevation. This portion of the hill is an elongated plateau more than one-third of a mile in length, averaging about seventy yards in width, and nearly eleven acres in extent. The Ordnance Cairn lies almost exactly halfway between the two extremities; the Observatory lies close to, and to the south of, the Cairn. The broader and more regular portion lying to the west of the Observatory I have termed *West End;* the portion divided into three parts by two great gullies, *East End.* These two gullies are known as the *First Gorge* and *Second Gorge* respectively, according to their proximity to the Observatory. Passing from the Observatory to the First Gorge, the Hotel lies to the left, situated on the southern edge of this plateau.

Water.—Just beyond the southern edge of the summit, lying S.S.E. of the observatory, flows a small spring, Wragge's Well, sixty-six feet below the Ordnance Cairn. During a dry season this spring fails, being supplied merely by rain falling or snow melting upon the summit. Excepting this small spring, where a tank holding 150 gallons of water has been placed this year, there is no other water until, travelling westward, Buchan's Well is reached at an elevation of 3600 feet, and even its supply is scanty. Lower down at 3350 feet is Chrystal's Well, also scantily supplied. The Red Burn has a fair supply of water at 2300 feet. And below the contour of 2000 feet is a fairly large lake nearly two miles from the Observatory. Small streams flow from the south-west side into the Nevis, and at the base of the great northern cliff is a burn containing a considerable volume of water at 2500 feet. We may safely say that there is no substantial amount of water above 2500 feet.

Geology.—Ben Nevis rises as a pink granite mass through the Dalriadian crystalline schists. In the centre of this granite mass is a plug of dark porphyry. For the lower 3000 feet or so of the ascent one traverses this pink granite, the higher portions of which are more finely grained than the lower. After the granite comes the dark porphyry of which the last thousand feet or so of the mountain is composed.

Botany.—The ordinary unobservant individual would say that the last 2000 feet of the Ben was devoid of vegetation; but on examination it is found that there is scarcely a rock which is not more or less covered with lichens of one or more kinds, whilst there are also numerous mosses growing wherever there is a suitable nidus. This is true even on the summit plateau, where the disjointed masses of porphyry, with their strangely brecciated surfaces, form so striking a feature. In some places round the edges of the cliff these mosses grow quite luxuriantly, as well as one or two phanerogams.

Meteorology for May to December 1895.—Very fine weather prevailed during May and June, but during July and August it was very bad. This bad weather continued until the last week of

September, when very fine warm weather was experienced. This suddenly ended on 1st October; the mean temperature for that day being 48.1° F., and only 26.8° on 2nd October, there being a fall of 30° in twenty-nine hours. Very heavy snow fell, and the summit has not been clear since.[1] In September I went down to the Low Level Station, and, except for one week, did not return to the summit until 19th November; so that since August I have practically collected nothing. I will therefore give a brief abstract of the weather of May and June and of July and August, and these will show some rather striking results when compared with the collections.

May and June.

1. There were 288 hours of sunshine, being 55 above the mean.

2. The percentage of cloud was 6% below the mean, being 72.5%.

3. The mean temperature was 2° above the mean.

4. The rainfall was only slightly above half the mean.

5. In May the wind force was slightly above the mean, but in June only about one-third the mean.

July and August.

1. There were 49 hours of sunshine, being 77 below the mean—by far the lowest amount ever recorded on Ben Nevis for these months.

2. The percentage of cloud was 6.5% above the mean, being 94.5%.

3. The mean temperature was normal.

4. The rainfall was only slightly above the normal, *but rain fell on* 59 *days out of the* 62.

5. The wind was slightly above the mean.

The greatest number of insects seen during the summer was probably on the 6th of June. Taking squares on the snow measuring 2 × 2 feet, I calculated that there must be many hundreds of living insects on each such square. Now on the 23rd May I marked out nine such squares and counted all the insects within them. There was an average of 29 in each, 6 of which were dead, and only 1 of which was not an Aphis. Therefore there must have been about 400,000 Aphides upon the summit on that day. Think of the varied myriads that there must have been on the 6th of June! On that day a small hand basin of water which had been standing outside near the Observatory for not more than thirty-six hours contained at least 300 flies, etc. The mountain top was buzzing with life. I was especially busy that day, and could not do much collecting. Had I collected on that day alone I could have captured thousands (literally) of insects! All these insects are not indigenous to the mountain top, but must be carried up by warm currents. It is in the neighbourhood of the First and Second Gorges that insects are most plentiful, and they are doubtless swept up by the strong draughts peculiar to these gullies. Among other species I saw a small Tortoise-shell Butterfly.

[1] Snow fell during every month in 1895 except September.

I have carefully examined the débris on a few occasions upon remaining patches of snow, and found it to be composed almost entirely of insect remains. The snow has for many days been quite blackened by such débris, as if covered with soot; but although this may partly account for the blackness, yet, on the few occasions I made an examination, soot proved to be quite a minor factor. On the morning of the 24th of May I made a round of the squares marked out on the 23rd, and found that 93 per cent of the insects had perished. The surface of the snow was crisply frozen.

This great slaughter takes place during the night, for in the day-time the cold does not appear to have any great effect upon them. Many of these insects are very active on the snow, and often appear to be as lively upon it as upon a window-pane.

I have seen wasps at the summit, but could not catch them.

The Snow Buntings which reside near at hand are quite aware of the abundance of insects on the snow, and resort to the patches to feed.]

THROUGH the kindness of Mr. Eagle Clarke, F.L.S., etc., I have had the opportunity of examining a number of beetles collected at or near the summit of Ben Nevis by Mr. W. S. Bruce, a member of the Observatory staff. Mr. Bruce collected with great assiduity all insects that came in his way for about four months of the year; but the greatest number of Coleoptera were procured during the last half of May and the first half of June. Whether this was due to the influence of better weather, or is to be looked upon as the "season" on Ben Nevis, remains to be shown by further observation. It is important to notice that all the insects, with very few exceptions, were taken at or near the summit—understanding by this last term "all that portion of the mountain which exceeds 4350 feet." On this fact depends the interest of this paper; for most of the insects recorded are widely distributed lowland forms. A singular testimony to the universal distribution of about thirty out of the fifty-two recorded species is the fact that they can be found commonly in (or close to) my own parish, which is situated in the Trent valley and on the Keuper marl. Again, it is doubtful if a single species recorded can be looked upon as a true mountain species, if by this term we mean a species which is only found as a straggler at low levels. Even of sub-mountainous species there are very few. In this respect a

mountain flora betrays much more specialisation than a mountain fauna. The late Mr. H. W. Bates, F.R.S., commenting upon the rich collection of insects brought by Mr. Whymper from the slopes and summits of the higher Andes of South America, remarks upon the altitude at which tropical lowland species were found—even as high as 9000 or 12,000 feet. The difference in this case between the upper and lower environment must be enormous, yet but little variation was perceptible. In the light of these facts we need not be surprised at the altitudes at which so many of our common insects can be found. What is much more remarkable is the presence in numbers on the bare rocky summit of some particular species whose ordinary mode of life would seem to be ill adapted for such an environment. We are therefore obliged to have recourse to some other explanation than the pressure of the struggle for existence. Such species as *Donacia discolor*, *Adimonia suturalis*, *Serica brunnea*, and several others (some of which were taken in numbers), must have been involuntarily carried to the summit through the agency of winds or strong upward currents of air. It is an admitted fact, I believe, that the steering power of beetles is not great, whilst the horny elytra act as vans, putting the insects at the mercy of strong winds. In connection with this subject we may consider the fact that many beetles which are winged more or less perfectly on continental areas, lose their wings or possess them only in an atrophied condition when localised at high altitudes or in oceanic islands,—such a resource serving better to preserve the species in relation to those particular environments. Mr. Bruce found quantities of insects on the snow. Is it possible that the white glistering snow-cap has some power of attracting insects? Or is it simply due to the fact that insects are very clearly shown up on the sheet of snow, and numbers killed by the low temperature of the snow wind? The thanks of all are due to Mr. Bruce for the great efforts he must have made, during the intervals of arduous work, to get together such an interesting collection of insects. It is hoped that shortly papers will appear on the other insects collected by this gentleman.

Before enumerating the species, I wish to acknowledge

much valuable personal help received from Canon Fowler M.A., F.L.S., to whose great work on Coleoptera I am indebted for most of the notes on distribution.

The collection contained nearly 600 specimens—representing 52 species or thereabouts, 36 genera, and 11 great groups.

GEODEPHAGA.

1. Carabus violaceus, *L.*—One example. 2700 feet. Typical form. A common species in England and Scotland. Rather local in Ireland.

2. Notiophilus biguttatus, *Fab.*—A fragment. Abundant throughout the kingdom.

3. Notiophilus aquaticus, *L.*—Two examples. A common and widely distributed species.

4. Nebria Gyllenhalii, *Sch.*—Seventeen examples. Four of the form with reddish elytra. In most of the specimens the legs are more or less reddish, and in two examples particularly so. This species was found on one or two occasions inside the observatory on the summit. The species is widely distributed and common in mountainous districts, even in the valleys.

5. Loricera pilicornis, *F.*—Three examples. According to Canon Fowler, this species is common and widely distributed throughout the kingdom, except in the extreme north of Scotland. I, however, found it not uncommonly in the Thurso district in 1892.

6. Anchomenus parumpunctatus, *F.*—One damaged example. A common species throughout the kingdom.

BRACHELYTRA.

7. Homalota (?)—A fragment. Too much damaged to determine.

8. Mycetoporus lepidus, *Grav.*—One damaged example. A widely distributed species.

9. Mycetoporus punctus, *Gyll.*—One damaged specimen. There seems little doubt that the fragment represents this species, which occurs rarely in England, and has been reported from the lowlands of Scotland.

10. Tachinus elongatus, *Gyll.*—Two examples. A very local species, but widely distributed. Rare in Scotland, but found both in Lowlands and Highlands.

11. Tachinus rufipes, *L.*—One example. Abundant throughout the country.

12. Philonthus marginatus, *F.*—One example. A common species throughout the kingdom.

13. Philonthus varius, *Gyll.*—Two examples. Very common everywhere.

14. Philonthus laminatus, *Creutz.*—A single example of this commonly occurring species.

15. Oxytelus rugosus, *Grav.*—One example. A common species.

16. Platystethus arenarius, *Fourc.*—Locally abundant throughout the kingdom.

17. Lesteva longelytrata, *Goeze.*—One example. Common and widely distributed.

18. Acidota crenata, *F.* (rufa, *Grav.*, pulchra, *Mots.*).—A fine series of one hundred and fifty-seven examples of this rare and local species. Both colour and size vary, many examples being almost rufous. None of the examples approach in size a pair taken by me at Ilkley; and it is probably a small mountain form.

CLAVICORNIA.

(*Palpicornia.*)

19. Helophorus rugosus, *F.*—Two examples. A subaquatic species. Not very common, but found in both England and Scotland.

20. Helophorus æneipennis, *Thoms.*—A species widely distributed throughout the kingdom, and exceedingly variable. One example.

21. Cercyon flavipes, *F.*—A common and widely distributed species in dung.

(*Silphidæ.*)

22. Silpha opaca, *L.*—One example. Taken at the low-level station. A very local species in England, but much commoner in Scotland.

(*Coccinellidæ.*)

23. Coccinella hieroglyphica, *L.*—Sixteen examples. One with the spots rather confluent. Apparently common in the South of England, but much more local in the north, and in Scotland and Ireland.

24. Coccinella 10-punctata, *L.* (variabilis, *Ill.*).—Six examples of this ubiquitous and most variable insect.

(*Byrrhidæ.*)

25. Byrrhus fasciatus, *F.* } Seventeen examples. As all the
26. Byrrhus pillula, *L.* } specimens were more or less abraided, it was a little difficult to distinguish between these two species. Most were undoubtedly *fasciatus*. Three by their size and shape seemed as if they should be referred to *pillula*. Both species are apparently common in Scotland.

27. Byrrhus dorsalis, *F.*—One example. Reported rare in Scotland, and very local in England, but widely distributed.

28. Cytilus varius, *F.*—Two examples. The species is said to be common in Scotland. It is local in England.

LAMELLICORNIA.

29. Aphodius punctato-sulcatus, *Sturm.*—Two examples of this abundant species. They are under the average size, with the dark marking very clear.

30. Aphodius fimetarius, *L.*—Three examples of this common species.

31. Aphodius lapponum, *Gyll.*—Seventeen examples. Nearly all the red variety, nearly as red as *fimetarius*. Size sometimes very small. The species is rare in the mountainous parts of England, but common in such situations in Scotland, in sheep dung.

32. Serica brunnea, *L.*—One example from the summit. The species is apparently widely distributed throughout the kingdom. I have already reported it from Caithness.

33. Phyllopertha horticola, *L.*—Fifteen examples. One of the dark pitchy variety. Generally distributed throughout the kingdom.

34. Geotrupes sylvaticus, *Panz.*—Two examples. A common species on hills and moorlands.

STERNOXI.

35. Cryptohypnus riparius, *F.*—One example. A northern species, and not uncommon. Apparently does not occur in the south of England.

36. Athöus vittatus, *F.*—Sixteen examples. These vary much in size and colour. Locally common in England, but more common in Scotland.

37. Athöus hæmorrhoidalis, *F.*—Two examples of this universally distributed insect.

38. Corymbites cupreus, *F.*, *var.* æruginosus, *Germ.*—Twelve examples of this pretty insect. All males. The type form was not taken. According to Canon Fowler, this species does not occur in the London district or the south of England, but is common in the north on moors, and has been taken as far south as Norwich and Lincoln. Whether these remarks apply to the type or the variety, or both, I am not quite certain.

39. Corymbites quercus, *Gyll.*, with *var.* ochropterus, *Steph.*—Four examples, with one of the variety. Not common in the south of England, but common from the Midlands to the extreme north of Great Britain. The variety occurs sparingly with the type.

MALACODERMA.

40. Dascillus cervinus, *L.*—One hundred and fifty-six examples. This species, with *Acidota*, was by far the most abundant. Quantities were taken off the snow. This is interesting, as the insect appears to be local throughout the country. It seems to prefer hilly districts.

41. Telephorus figuratus, *Mannh.*, *var.* scoticus, *Sharp.*—Three examples of this very local species. The type form did not occur.

42. Telephorus lituratus, *Fall.*—Six examples of a small form which gave great trouble. The examples were small enough for *figuratus*, but did not satisfy the description, nor could any impressed lines be discerned, even under a high power, on the antennæ.

43. Telephorus paludosus, *Fall.*—Twelve examples of this very local species, which is confined to mountainous and hilly districts.

44. Ragonycha limbata, *Thoms.*—Two examples. A common and widely distributed species.

PHYTOPHAGA.

45. Donacia discolor, *Panz.* (comari, *Suff.*)—Thirty-six examples of this beautiful species. The range of colour was very limited, most being bronze. The species is found in "high boggy districts." Canon Fowler relates that it was discovered in this country first in Perthshire by Mr. Foxcroft in May 1854. Local in England, common in Scotland.

46. Gastroidea raphani, *Hbst.* (viridula, *De G.*).—Four examples of this common and pretty little species. Locally abundant throughout the kingdom, even as far north as Orkney (Fowler).

47. Lochmæa suturalis, *Thoms.*—Forty-one examples. Apparently common in the northern parts of the kingdom, where it seems to replace *L. capreæ*, which is possibly a southern form of the same insect.

48. Haltica pusilla, *Duft.*—Four examples. This genus is a very difficult one, and there seems great confusion about the species, so that this determination must be received with caution. The species is widely distributed throughout the kingdom, but not very common.

LONGICORNIA.

49. Rhagium inquisitor, *F.*—Four examples of this fine insect, which is not uncommon throughout the kingdom. It is difficult to account for its presence on the summit, except on the supposition that it has emerged from logs carried to the top.

RHYNCHOPHORA.

50. Polydrusus cervinus, *L.*—Four examples of this common weevil.

51. Hypera pollux, *F.*—One example of this local species. The only Scotch record I know of is that of Mr. Douglas in the "Annals of Scottish Natural History" for April 1892, where it is recorded from Orchardton, 1888. At the date of publication of Canon Fowler's book it had not yet been recorded from Scotland.

HETEROMERA.

52. Salpingus æratus, *Muls.*—One example of this local species. Canon Fowler remarks that the records of this insect are greatly confused with those for *S. ater*, Payk., which species many coleopterists regard as a variety of *æratus*. The species in question seems to occur rarely in the Tweed district of Scotland.

NOTES ON THE NINTH EDITION OF THE LONDON CATALOGUE OF BRITISH PLANTS.

Compiled by F. J. HANBURY. (London: G. Bell & Sons, 1895. Price Sixpence.)

By G. CLARIDGE DRUCE, M.A., F.L.S.

THIS Catalogue, indispensable to every working botanist, exhibits considerable improvement over the last edition, the results of the systematic work at British Botany being fairly well represented in its pages. In the eighth edition 1858 species were enumerated; in this no less than 1958 species are included. These figures, moreover, do not quite represent the additions, since many hybrids which were formerly numbered are now placed under one of their supposed parents. The names adopted for many plants differ from those given in the preceding Catalogue; but the change is in almost all cases caused by following the only safe guide, *i.e.* the law of priority of nomenclature. To this there are, however, some exceptions, which shall be alluded to later on. British botanists are greatly indebted to Mr. Hanbury for supplying them with such a well-printed and useful work at so small a cost. Any remarks which I may make of a critical character, it need scarcely be said, are made with this feeling of indebtedness ever before me; and my only reason in writing at some length about the Catalogue is that my suggestions will have to run the gauntlet of criticism before they are accepted, if indeed they be worthy of adoption. It must be understood by every one that the subject of the nomenclature of our British plants bristles with difficulties, and that it is almost impossible to avoid mistakes, so that any which I refer to are not pointed out in a carping spirit. My only object is to make if possible a little improvement in the method of citing certain names, and if possible to advance the usefulness of the Catalogue, by giving such suggestions as have struck me during my work at the British flora; and these suggestions are not made in an *ex cathedra* manner, as I well know that to some of them exception may be taken.

As a short notice of the Catalogue has already appeared in your pages, I must ask the indulgence of your readers in again bringing it under their notice.

The clerical errors in the new edition of the Catalogue are very few in number :—"*Bursa Bursa-pastoris*" should be *Bursa pastoris*, "*Juncus obtusifolius*" should be *J. obtusiflorus*, "*Carex vulpinoides*" should be *C. vulpinoidea*. In No. 1220*c* "Borkh" should be Borckh. In No. 1616 "Rosk." should be Rostk. In No. 1807*e* "*coarclata*" should be *coarctata*, and for this variety brackets are not needed. In No. 658 "Wallr." should be Walt. In No. 648 "Screb." should be Schreb. Hudson wrote "*Rumex Hydrolapatheum*"; Villars wrote "*Epilobium alsinifolium*" and "*Brassica Cheiranthos*"; and Presl wrote "*Sagina Linnei*."

In the preface to the Catalogue it is stated that the generic order used by Bentham and Hooker in the "Genera Plantarum" is followed. It would be well also to adopt the generic limitations used by the same authors; and that this would appear to be the intention of the compiler of the Catalogue is evidenced by the adoption of *Anaphalis* instead of *Antennaria margaritacea* of the eighth edition.

In order to bring the Catalogue into agreement with the "Genera Plantarum," it will be necessary to put the plant which appears in the Catalogue as *Erysimum perfoliatum* into the genus *Couringia* of Adanson (the *Conringia* of Heist, who named it before 1753). In this genus its name will be *Couringia Perfoliata* (it was the *Perfoliata siliquosa* of Gerard). *Dianthus prolifer* should be placed in the genus *Tunica*, Scop., as *T. prolifera*, Scop. *Alisma ranunculoides* should be *Echinodorus*, Rich.; and the species should be *E. ranunculoides*, Engelm., with var. *repens* (Davies) and var. *zosterifolius* (Fries). *Festuca rotbœllioides*, Kunth, should be *Demazeria loliacea*, Nyman. Dumortier is the authority for the genus. It may be stated that in the "Genera Plantarum" the order *Fumariaceæ* is merged in *Papaveraceæ*, and the order *Lobeliaceæ* in that of *Campanulaceæ*.

The following plants are printed with a capital letter for the specific name, but there does not appear to be any necessity for it :—*Scirpus Caricis*, which Retz spelt with a small letter, and *Prunus Avium;* while the following plant

would be more correctly spelled with a capital letter :— *Hippophæ rhamnoides*—*Rhamnoides* was the old generic name, as was *Lutetiana* for *Circæa*, *Linoides* for *Radiola*, and *Falcata* for *Medicago Falcata*.

Many of the names given in the Catalogue do not follow the law of priority. It would be well to carry out this law as far as possible. Among the names which appear to be antedated are *Alyssum calycinum*, Linn., which dates from the second edition of the "Species Plantarum"; but *A. Alyssoides* of the "Systema" is apparently earlier. *Schollera*, Roth, is antedated by *Oxycoccus*, Adans. ("Fam.," p. 16, 1763). The species is *Oxycoccus palustris*, Pers., as adopted in the "Index Kewensis." An older name for *Hypericum quadratum*, Stokes, is *H. acutum*, Mönch, "Meth." *Falcaria* is undoubtedly antedated by Adanson's genus *Prionitis;* and the plant should be *Prionitis falcata*, Delarb. The compiler of the Catalogue says he does not cite pre-Linnean authorities; but Rivinus, whom he cites for *Falcaria*, was certainly pre-Linnean. The writer who was the first to use the name *Falcaria* for the genus after 1753, according to the "Kew Index," is Host in "Fl. Austr.," 1827. Linnæus called the plant *Sium Falcaria*. *Goodyera* of Robert Brown, in Aiton's "Hort. Kew.," 1813, is antedated by *Peramium repens*, Salisb., "Trans. Hort. Soc.," 1812. The generic name *Centranthus* is obviously antedated by that of *Kentranthus*, which was used by Necker in 1790. Our plant should be *Kentranthus ruber*. *Carex alpina*, Swartz, 1803, appears to be antedated by the name of *C. Vahlii*, Schk., 1801, which is adopted in the "Index Kewensis." *Polygonum Raii*, Bab., was *P. Roberti*, Loisel., of the eighth edition. The latter name is also adopted in the "Kew Index." The authority for *Narthecium* is given as Moehring; but, strictly speaking, he is pre-Linnean, since he published this genus in 1742. Hudson was the first to use it after the date of 1753. *Damasonium stellatum*, Pers., should be *D. Alisma*, Miller, as given in the "Kew Index." In the Catalogue *Carex punctata* is replaced by the name *C. diluta*, Bieb.; but the older name is *C. pallidior*, Degl., in Lois. "Fl. Gall," ii. p. 299 (1807). Moreover, in "Index Kewensis," and in Richter's "Pl. Europeæ," *C. diluta* is retained as a distinct species from the plant

which we know as *C. punctata*. *Sisymbrium pannonicum*, Jacq., is antedated by *S. Sinapistrum*, Crantz. In the Catalogue we have *Mentha gracilis*, Smith, with a variety *cardiaca*, Baker. In the "Index Kewensis," the name *M. gracilis* is restricted to Robert Brown's Australian species, which is not found in Britain. The better arrangement would be to write *M. cardiaca*, Baker, with var. *gracilis* (Smith), if the latter be not really a distinct species. *Mentha aquatica*, Linn., 1753, is earlier than *M. hirsuta*, Hudson, 1762. *Agrostis alba*, L., 1753, is earlier than Hudson. *Orobanche elatior*, Sutton, is replaced in the "Kew Index" by the name of *O. major*, Linn. Many Continental authorities adopt this name. The oldest name, which is used in the "Kew Index" for the *O. major* of the Catalogue (which is the Broom-rape of the *Cytisus* and other Leguminous plants), is *O. Rapum-genistæ*, Thuill. A. Braun is an earlier authority for *Lolium linicolum* than Sonder. In the "Kew Index" this plant is put under *L. multiflorum*, not *L. perenne*, a much more natural arrangement. The better plan to follow would be to write—

L. multiflorum, Lamk.
var. *aristatum* (Schum.)
var. *italicum* (A. Br.)
var. *linicolum* (A. Br.)

The variety *sinuatifolia*, DC., 1824, of *Cakile* should probably supersede the var. *integrifolia*, Koch, 1837. Older names, *i.e.* var. *minor* and *major*, for the varieties of *Montia fontana* will be found in Allione's "Fl. Pedem.," 1785. An older name for the variety of *Hypericum humifusum* is, according to Mr. N. E. Brown, var. *magnum*, Batard. *Genista tinctoria*, var. *humifusa* (Dicks.), was reduced to var. *prostrata* by Professor Babington in 1843. *Lotus corniculatus*, var. *incanus*, S. F. Gray, 1821, is probably identical with the var. *villosus*, Seringe. *Lathyrus montanus*, var. *tenuifolius*, Reichb., is more correctly the var. *linifolius*, Ascherson. *Rubus Idæus*, var. *anomalus*, appears to be the earlier varietal name for the plant which we once knew as *R. Leesii*, and which appears in the Catalogue as var. *obtusifolius*, Willd.; but Willdenow described it as a species. The genus *Trinia* appears to be

antedated by *Apinella*, Necker, "Elem.," i. p. 191 (1790). Our plant would be *A. glaberrima* (Hoffm.). The genus *Sueda*, Forsk., 1775, is antedated by *Dondia*, Adanson, "Fam.," ii. p. 261 (1763). Our plants would be—

Dondia fruticosa (Forsk.) and
D. maritima (Dum.)
var. *procumbens* (Syme).

The genus *Fibichia*, Koel., "Gram.," 1800, is antedated by *Capriola*, Adans., "Fam.," ii. p. 31 (1763). Our plant should be *Capriola Dactylon* (Linn.). The "Kew Index" retains *Cynodon Dactylon*, Pers. Durand does not separate the genus *Cynodon* from *Fibichia*. Robert Brown's genus *Listera*, 1813, is antedated by Rafinisque's genus *Diphryllum*, published in 1808. Our plants are—

D. ovatum (Linn.)
D. cordatum (Linn.)

If Persoon's queried name *Gyrostachis* (see "Synopsis," ii. 511, 1808) be chosen instead of Richard's more recent one of *Spiranthes*, our plants will be *Gyrostachis autumnalis*, Dumort., *G. æstivalis*, Dum., and *G. Romanzoffiana* (Cham.). The generic name *Ibidium* of Salisbury is also, I believe, older than Richard's *Spiranthes*. If that be adopted, our plants would be *I. spirale* (L.), *I. æstivale* (L.), *I. Romanzoffianum*. The generic name *Anthriscus* of Bernhardi dates from 1800; but Link's genus *Cerefolium* was published in 1793, so our plants are *Cerefolium sativum*, Besser, *C. Anthriscus*, Beck., and *C. sylvestre* (Linn.). I hesitate to write Besser for the authority of the latter, since in "Index Kewensis" his *C. sylvestre* is referred to *C. sativum*. Kuntze claims that the genus *Spiesia*, Necker, 1790, should replace De Candolle's genus *Oxytropis* published in 1802, urging that while the characters drawn from the pod are not valid, yet his definition of the short keel of *Spiesia* and the emarginate one of *Astragalus* are definite enough; but the claims of *Spiesia* are not made yet sufficiently clear to warrant its adoption.

The following plants have wrong authorities given them: *Alyssum maritimum* should be Lamarck, not Linnæus; *Medicago minima* is Linnæus, not Desrousseaux; *Lysimachia*

thyrsiflora is Linnæus, not Aiton ; *Linaria purpurea* is Miller, not Linnæus, who called it an *Antirrhinum ; Equisetum limosum* should be Linnæus, not Smith ; *Narcissus major* should be Curtis, not Linnæus ; *Brassica Erucastrum* is Linnæus, not Villars (there is considerable doubt as to the identity of this with *Erucastrum Pollichii*) ; *Mentha arvensis*, var. *parietariæfolia* is Steudel, not Beck ; *Prunus institia*, Haas, should be Linn. ; *Eleocharis uniglumis* is Schult., not Reichenbach, according to the "Kew Index" ; *Poa annua*, var. *supina*, Gaud., should be var. *supina* (Schrad.), or var. *varia*, Gaud. ; *Silene Cucubalus*, var. *puberula*, Syme, should be Hooker fil. ; *Sagina apetala* is Arduini, not Linnæus ; *Pimpinella major*, var. *dissecta*, N. E. Brown, is antedated by my "Flora of Oxfordshire" ; *Cynoglossum officinale*, var. *subglabrum*, Syme, should be Bromfield, see "Phytologist," p. 571 (1849) ; *Iris fœtidissima*, var. *citrina*, Syme, should be Bromfield, see "Flora Vectensis." Syme was very negligent in citing authorities for varietal names. *Carex divulsa*, Good., would rather appear to be Stokes, see the second edition of Withering's "Arrangement." Hall., and Hall. f., are confusing abbreviations, especially when, as in some cases, a comma is used instead of a full stop. Haller might as well be written in full. *Alchemilla conjuncta*, Bab., is now entered as *A. argentea*, Lamarck ; but Daydon Jackson stated in "Journ. Bot.," 1887, p. 231, that Lamarck's plant is only *A. alpina*. In that case *A. argentea*, Don, would appear to be the available name.

The older names for our Elms are *U. campestris*, Miller's "Gard. Dict.," which is applied to our Wych Elm ; *U. campestris* of the "Sp. Plant." is also considered by many Continental botanists to refer to the same plant, and not to our second species, which Miller called in the same work *U. sativa*. The latter name also has precedence over *U. surculosa*, Stokes. Our plants will therefore stand as *U. campestris*, Miller, with var. *major* (Sm.) and var. *nitida* (Syme) ; and *Ulmus sativa*, Miller, with var. *suberosa* (Ehrh.) and var. *glabra* (Miller). *Anagallis fœmina*, Miller, is older than *Anagallis cærulea*, Schreb. ; and *Valeriana sambucifolia* is antedated by *V. excelsa*, Poir. In the "Index Kewensis," and in the "Supplement to English Botany," the name

Lavatera cretica, L., is chosen for the plant which in the Catalogue is called *L. sylvestris*, Brotero. *Potentilla Fragariastrum*, Ehrh., is retained ; but it is antedated by *P. fragariæfolia*, Gmel., "Fl. Bad." ; and *P. prostrata*, Moench. "Meth." *Scirpus maritimus*, var. *conglobatus*, Gray, 1821, antedates, Koch, I believe.

In the Catalogue brackets are used to enclose the names of some authorities for varietal names. They appear to be used when a writer has described as a species a plant to which is now given only varietal rank, or when a writer has placed it as a variety of a species which then bore a different specific or generic name from the one now employed.

Numerous exceptions to the rule will, however, be found. The following are among the instances where the name of the authority should be enclosed in brackets : — *Castalia speciosa*, var. *minor*, DC. ; *Draba incana*, var. *confusa*, Ehrh. ; *Cerastium triviale*, var. *holosteoides*, Fries ; *C. glomeratum*, var. *apetalum*, Dumort. ; *Arenaria verna*, var. *Gerardi*, Wahl. (it was the *Alsine Gerardi*, Wahl., see "Fl. Carp.," 1814) ; *Cytisus scoparius*, var. *prostatus*, Bailey (Bailey described it as a variety of *Sarothamnus*). Among the Roses, *R. pimpinellifolia*, f. *spinosissima*, L., was described by Linnæus as a species ; *R. glauca*, var. *Watsoni*, Baker, and var. *celerata*, Baker, and f. *Hailstoni* were described by Mr. Baker as varieties of *R. canina ;* and *R. obtusifolia*, f. *concinna*, Baker, and f. *Deseglisei*, Bor., were described by their authors respectively as a variety of *R. canina* and as a species. *Polygala serpyllacea*, var. *ciliata*, Lebel ; *Statice auriculæfolia*, var. *intermedia*, Syme ; *Festuca elatior*, var. *pratensis*, Huds. ; *Salix alba*, var. *vitellina*, Linn. ; *S. phylicifolia*, var. *nigricans*, Sm. ; *Brachypodium gracile*, var. *glabrescens*, Syme ; *Festuca rubra*, var. *fallax*, Thuill ; *Scirpus rufus*, var. *bifolius*, Wallr. ; *Carex flava*, var. *Œderi*, Retz ; *Lepidium hirtum*, var. *canescens*, Gren. et Godr. (of which more anon) ; *Ulmus surculosa*, Stokes, var. *suberosa*, Ehrh., and var. *glabra*, Miller ; *Carduus pycnocephalus*, var. *tenuiflorus*, Curtis ; *Agropyron repens*, var. *barbatum*, and var. *obtusum*, and *Narcissus Pseudo-narcissus*, var. *lobularis*, are other examples.

In the preface, as already alluded to, a statement is made that pre-Linnean authorities for genera are not cited.

It would have been better to make the statement more precise, and to have stated that the date whence the citation, either of species or genera, should commence is the year 1753, when the "Species Plantarum" was published,—the first work in which the binomial system of nomenclature was consistently adopted. As it is, in the present Catalogue the names of several authors which are cited are, strictly speaking, pre-Linnean; that is, they published the genera to which their names are attached before the issue of the "Species Plantarum." By citing authors before the date 1753 (and after the first edition of the "Genera Plantarum" in 1737) a host of genera are brought into competition with existing names, a danger which it would be well to avoid. Also the date 1753 received the assent of the late Alphonso de Candolle when the writer suggested it to him shortly after the publication of Kuntze's "Revisio Generum Plantarum," with its vast number of changes of plant names. Moreover, this date has been recommended by the Berlin Committee of Botanists, as well as by the Conference of Botanists which met at Genoa; and it is adopted by the majority of botanists in Europe and America.

The generic names to which exception may be taken for the above reason are *Myrrhis*, Linn., which should be Scopoli, since Linnæus called our *Myrrhis* a *Scandix; Helianthemum*, Haller, should rather be of Miller, as should *Fœniculum*, Linn.; *Anthemis*, Mich., should be of Linnæus. *Melilotus*, Haller, *Castanea*, Linn., *Neottia*, Linn., *Fagopyrum*, Haller, *Armeria*, Linn., *Onobrychis*, Linn., are other examples. *Hypopitys* is of Crantz, not of Scopoli, who named it *Hypopithys*.

The following name appears to be erroneous, viz. *Arenaria sedoides*, Froel. The true *A. sedoides* is confined to the Tyrol, according to Nyman and "Kew Index," where I do not think it has been recently gathered. Mr. Churchill tells me he sought for it in vain. Mr. N. E. Brown says that Froelich's plant was found to be *A. rubella;* but I do not know what authority he has for the statement. It is certainly allied to it. In the "Index Kewensis" *A. sedoides* is kept as a distinct species apart from either *A. rubella* or the plant formerly known as *Cherleria sedoides*,

Linnæus, which in the "Kew Index" is called *A. Cherleria*, Hook. fil.

The Channel Island *Bromus* appears under two names, *i.e. B. madritensis*, var. *rigidus* (Roth), and *B. rigidus*, Roth. The latter name is adopted by Nyman, and also by the authors of the "Kew Index." The var. *Curtisii* of *B. madritensis* should be deleted, as it is the type plant. *Bromus maximus*, Desf., is omitted altogether, as is *Poa cæsia*, Sm. This latter is given in the "Index Kewensis" as a distinct species. Professor Hackel named plants which I collected on Ben Lawers *P. cæsia*, Sm. They are allied to *P. glauca* and *P. nemoralis*.

The "Kew Index" might be followed in giving *Hordeum sylvaticum*, Huds., as *Elymus europæus*, Linn.

Festuca procumbens, Kunth, is placed under *Glyceria* in the "Kew Index," while *Mentha Pauliana* is put under *M. arvensis* in the same work, not under *M. gentilis* as in the Catalogue.

The grade of citizenship of certain plants must always be open to a difference of opinion. Certain plants which are treated as evident introductions in the Catalogue appear to be now sufficiently established to warrant printing their names in roman type, but prefixing an asterisk, that is, transferring them from the class of casuals or aliens to that of colonists or denizens. Among such are *Senecio saracenicus*, which is so completely naturalised in Somersetshire, etc.; *S. squalidus*, equally well established about Oxford; *Impatiens parviflora*, which covers acres of one of our Berkshire woods; *Sedum dasyphyllum*, which is abundant on walls over a considerable area of the Berkshire Vale; *Euphorbia Esula*, which occurs in wild-looking spots by rivers in Buckinghamshire and in Northamptonshire; *Trifolium hybridum*, *Chrysanthemum Parthenium*, *Melilotus arvensis* (the latter is starred, but italics are used for it), *Mimulus luteus*, *Chenopodium opulifolium*, *Alyssum calycinum*, *Cochlearia Armoracia*, *Geranium striatum*, and *Lupinus perennis*. On the contrary, I should star *Mentha alopecuroides*, which is given as a native plant. The var. *setosus* of *Cnicus arvensis* would be better starred, if not indeed italicised; and the var. *velutinus* of *Bromus secalinus* would perhaps also be

better if starred. *B. secalinus* itself is probably only a colonist.

The census numbers are brought as far as possible up to date: but would it not be well to put a note of interrogation after the figure in the cases of *Carex Davalliana*, which has long ago been extinct in its Somersetshire station; *Senecio palustris*, which is cited for eight counties; *Senecio paludosus*, which is recorded for three counties; *Holosteum umbellatum*, which is credited with the same number. *Poa laxa* and *Poa stricta* are recorded for three counties; are these correct? *Vicia lævigata* is starred, but I suppose there was no doubt of the plant being a native at Weymouth. It has long been sought for in vain. Probably *V. hybrida* was an introduction at Glastonbury, where it no longer occurs. I have had it sent me from one or two places as a cornfield weed in central England.

Why should the genus *Falcaria* and the genus *Fagopyrum* not be separately numbered? It appears to be the general plan when the plant or plants in a genus are starred to star the generic name also, but this is not done in the case of *Crocus*, *Panicum*, and *Setaria*.

No two botanists would probably agree as to what casual plants should be inserted in the Catalogue. Some of us think that when plants such as *Archangelica*, *Arabis Turrita*, *Prenanthes*, etc., are admitted, we need not be squeamish about finding a place for *Erysimum repandum*, *Silene dichotoma*, *Trigonella cœrulea*, and *Aster paniculatus*.

When we have varieties such as *Hippuris*, var. *fluviatilis*, Weber, admitted, it appears reasonable that many others might be added. Among these may be mentioned *Papaver Rhœas*, var. *Pryorii*; *Cardamine pratensis*, var. *palustris* (Petermann); *Malva sylvestris*, var. *lasiocarpa* (a hairy fruited variety which I have seen in three or four counties); a narrow-leaved form of *Vicia gemella*, which is often mistaken for *V. gracilis* (it may be distinguished as var. *tenuissima*); the ebracteate form of *Helianthum Breweri*, viz. var. *ebracteata*; *Crepis nicæensis*, var. *eglandulosa*, Crep.; *Geranium sylvaticum*, var. *parviflorum*, Blytt; *Crepis virens*, var. *agrestis*; *Zannichellia arvensis*, var. *repens* (Boenn.); *Anemone nemorosa*, var. *cœrulea*, DC.; *Sherardia arvensis*, var. *Walravenii*; the pubescent variety

of *Comarum palustre;* the form of *Potentilla Anserina*, with leaves green on the upper surface; the hairy-fruited form of *Medicago lupulina; Arum maculatum*, var. *immaculatum*, S. F. Gray; *Barbarea vulgaris*, var. *divaricata; Viola odorata*, var. *imberbis* (Leighton), Henslow.

An innovation in the Catalogue is the admission of forms under some of the genera. The bulk of the Catalogue will be greatly increased if this plan be carried out with any degree of consistency. While we have *Viola odorata*, f. *alba* (Lange) (Why should Lange's name be connected with it?), why should the lilac and purple forms, which are equally distinct, the white form of *V. hirta*, the white form of *V. canina*, the white form of *Trifolium incarnatum* (the var. *stramineum*), the white form of *T. pratense*, the yellow form of *Raphanus Raphanistrum*, the rose-coloured form of *Volvulus sepium*, the cream-coloured form of *Myosotis sylvatica*, the white-flowered form of *Geranium pratense*, of *G. molle*, of *G. Robertianum*, of *Erodium cicutarium*, of *E. maritimum*, and of numerous others, be omitted?

Among the hybrids which might be included are *Lychnis alba* × *dioica* and *Senecio squalidus* × *vulgaris*.

To one method of citation used in the Catalogue the writer must raise a protest, as it seriously threatens to hinder that uniformity of nomenclature which can be obtained only by adopting the law of priority. Mr. Hanbury himself in his arrangement of the Hieracia consistently and correctly uses the Linnean names of *Hieracium alpinum* and *H. murorum* in a more restricted sense than did Linnæus. In many other cases the Linnean names are now used in a restricted sense. For instance, *Callitriche verna*, L. (which was *C. vernalis*, K., in eighth edition), *Cardamine hirsuta*, *Polygala vulgaris*, *Rosa canina*, *Mentha sativa*, *Euonymus europæus*, *Festuca Myuros*, *Galeopsis Ladanum;* while *Mentha piperita*, *Potentilla verna*, and *Orobanche major* are cited as of Linnæus, although there is considerable diversity of opinion as to their being correctly applied to the plants in question. But unfortunately another practice, which is I think to be strongly deprecated, has been followed in some cases, which consists in giving up the older name which, according to the rule of priority should be adopted, for a more recent one,

because the species as first described is now considered to be made up of more than one species. We may instance such innovations as *Viola ericetorum*, which it is suggested should occupy the place of *V. canina;* of *V. Mikanii*, which occupies the place of *V. officinalis;* of *Epilobium adnatum* and *E. anagalladifolium*, which occupy the places of *E. tetragonum* and *E. alpinum* respectively. This appears to me a retrograde movement. All our British text-books and the majority of Continental floras use the well-known Linnean names in the restricted sense for the species in question. The earlier names of Linnæus are also adopted in the "Kew Index," which, as I think very wisely, ignores these later untenable names. The "Kew Index" also uses the earlier names of *Carex canescens*, *C. leporina*, and *C. saxatilis* instead of the later ones (which are adopted in the Catalogue) of *C. curta*, *C. ovalis*, and *C. pulla*, which were given by Goodenough forty years later than Linnæus. The avowed reason for the adoption of these more recent names is that they are the names which were first with certainty applied to the plants in question, while as to the Linnean names there exists some doubt, since various authors had given different interpretations of the Linnean description. To this may be opposed our practice with regard to the genera. As fresh discoveries are made, and our knowledge of plants increases, the definitions of the various genera are altered and improved, but we do not change the name of the genus for that reason. We do not cease writing "*Brassica*, Linn.," notwithstanding the genus as now understood is enormously different from what it was when Linnæus founded it. So when he described *Valeriana officinalis* as a species, and subsequent workers thought they discovered enough difference in one of its forms to warrant describing it as a new species (though the specific differences are not universally accepted) under the name of *V. sambucifolia* (but *V. excelsa*, Poir., Mr. Jackson says, is an older name), a botanist might modify the description of Linnæus's *V. officinalis* so as to correctly fit the restricted species, but he has no authority to coin for the Linnean species a fresh specific name, such as *Valeriana Mikanii*. *Hypericum quadrangulum*, Linn., of the last edition is also unnecessarily

changed to *H. dubium* and *Betula alba* to *B. verrucosa.* Respecting this practice we may quote Asa Gray. He says: "Before Linnæus introduced the binomial system, the names of species were at once names and characters. In separating these two things Linnaeus rendered a great service; and we should be careful to preserve this advantage." De Candolle says: "A name is a name; characters are characters; the succession of names is synonymy. To mingle such different ideas leads to confusion."

Mr. Hanbury himself very wisely rejects the more modern name of *Hieracium melanocephalum,* Tausch, and retains *Hieracium alpinum,* Linn., but gives to the latter in his monograph such descriptive characters as may prevent one from confusing the closely allied members of the Alpine group with it. In this therefore he has amended or enlarged the description of the Linnean species, but has not altered the name. It is to be hoped that in another edition Mr. Hanbury will keep a firm hand upon his coadjutors, so as to prevent departure from a consistent plan, such departure being a transgression of the laws of nomenclature.

The names of several genera can scarcely be retained if strict priority be enforced: for instance *Radiola,* Roth, *Specularia,* Heist., *Nasturtium,* Br., *Armeria,* Willd., can scarcely claim priority over *Millegrana,* Adans., *Legouzia,* Dur., *Roripa,* Scop., and *Polyanthemum,* Medik., 1791. Our plants would be *Millegrana Radiola* (L.), *Polyanthemum Armeria* (Willd.), and var. *planifolium* (Syme).

Among specific names which also have priority, but whose claim is not acknowledged in the "Kew Index," is *Carex diandra,* Schrank, 1782, which is older than *C. teretiuscula.* Why a new name is coined for *C. stricta* when there are others older available, I cannot understand. *C. elata,* All., or *C. melanochloros,* Thuill., might have been chosen. There is already a *Carex elata,* Lowe, from Madeira, which will require a new name (*C. Loweii* might be chosen) if *C. elata,* Allione, be adopted for *C. stricta;* and *C. turfosa,* Fr., will have to sink to a var. of *C. elata,* All., as var. *turfosa* (Fr.). At any rate *C. Hudsonii* can only exist as a synonym.

A better arrangement for the varieties which have been placed under *Ranunculus acris* would be var. *a Boræanus*

(Jord.), which is type *acris*, *β vulgatus* (Jord.), *γ Steveni* (Andrj.), and *δ pumilus*, Wahl. An authority for *Buda rupestris* will be found in the "Trans. Bot. Soc. Edin." for 1894. Is there really any specific difference between *Ranunculus pseudo-fluitans* and *R. peltatus*, var. *penicillatus?*

With regard to the specific rank of *Bromus racemosus* and *B. commutatus*, Professor Hackel says, after seeing a large series of specimens which I sent him, that he now considers that one is only a variety of the other, so that he would write *B. racemosus*, Linn., and var. *commutatus* (Schrad).

When referring to the substitution of modern names in the place of the old Linnean names, and protesting as I did against it, I said that the only excuse which could be urged in favour of the plan was that a greater degree of accuracy of identification was supposed to be attained. We have, however, one example in the Catalogue where a name to which we were getting accustomed has been ruthlessly changed for an older one, but on what grounds, either of priority or greater accuracy of definition, I am unable to imagine. I allude to the plant which was once well known as *Lepidium Smithii*, but which in the eighth edition of the Catalogue was called *L. heterophyllum*, Benth., var. *canescens*, Gren. et Godr. Now it has been altered to *L. hirtum*, Sm. (with a county census of 88 [1]), and a var. *canescens* which is attributed to Gren. et Godr., but for which they are certainly not responsible—they knew far too much of the French flora to unite Bentham's *L. heterophyllum* and De Candolle's *L. hirtum*. What is Smith's *L. hirtum?* In the "Compendium" it is described as having hairy fruits ("siliculis hirtis"), which is just what *L. heterophyllum*, var. *L. Smithii*, has not. It is true that in "English Botany" Smith described a *Thlaspi hirtum* which is evidently figured from a specimen of *L. Smithii;* but he has added a drawing of fruits covered with hairs which certainly never occurred on *L. Smithii*. Smith evidently did not know the essential differences between the

[1] Even if for one moment we assume that the nomenclature is correct, the census number is wrong: the type plant (if Mr. N. E. Brown be correct in identifying the Hants plant with Bentham's *L. heterophyllum*) is only known for one county. The 88 should follow the varietal name, which, if the present mode of nomenclature be adhered to, requires the author's name to be bracketed.

true *Lepidium hirtum* of De Candolle (then known as *Thlaspi hirtum*, Linn.) and our British plant to which he gave that name. It was indeed Smith's imperfect definition of the species that led Hooker to name the plant *L. Smithii.* Hooker may not have been aware how closely related this plant was to *L. heterophyllum* of Bentham, of which our British plant was subsequently made a variety by Grenier and Godron as var. *canescens*, a name which in my opinion still holds the field. It may be that the *Lepidium hirtum* of Smith's "Compendium" may be held to be a tenable name for the Continental plant (the *Thlaspi hirtum* of Linnæus), on account of the description "siliculis hirtis," but the reference in the "Compendium" to "E. B. 26, 1803," so far as the figure of the plant goes, is incorrect and applies only to the fruit figured on that plate; the plant figured being, as already stated, *L. heterophyllum*, var. *canescens.* De Candolle in the "Systema" gave a proper description of *Thlaspi hirtum* under the name of *Lepidium hirtum*, and this appears to be the first time that the plant was correctly diagnosed under that name.

No census numbers are given for *Cotoneaster* or *Agropyron acutum.* May I suggest that in future editions the names of plants which have been expunged should be appended. I have failed to find the following plants, which appeared in the eighth edition :—*Rosa systyla*, var. *Monsoniæ*, *R. arvensis*, var. *Briggsii*, *Lythrum Salicaria*, var. *canescens*, *Epilobium rosmarinifolium*, *Solidago Virgaurea*, var. *angustifolia*, *Veronica peregrina* and *V. repens*, *Plantago argentea*, *Carex præcox*, var. *capitata*, *Botrychium lanceolatum*, *Coronilla*, *Potamogeton polygonifolius*, var. *linearis*, *P. perfoliatus*, var. *lanceolatus*, *Taxus baccata*, var. *fastigiata*, and *Ophrys aranifera*, var. *fucifera.* The omission of these will probably not meet with much adverse criticism.

Appendix.

Notes on the Ninth Edition of the London Catalogue.—Since I wrote the foregoing notes, which were in type before the end of last September, the fourth volume of the "Kew Index" has appeared, and a Review of the "London Catalogue" has been printed in the Bulletin of the Torrey Club. It is stated in the latter publication

that in the American check list the names of *Peramium*, *Legouzia*, *Roripa*, and *Gyrostachis* appear respectively for the genera known to us as *Goodyera*, *Specularia*, *Nasturtium*, and *Spiranthes*. Those changes, it will be seen, are suggested by me in the foregoing notes.

A few other names are also changed, which shall be alluded to on some future occasion. I observe that an older name for the Cranberry than the one I have given is *Oxycoccus quadripetala*, Gilib., "Fl. Lith.," 1781; and I omitted to state that *Carex verna* Chaix, in Vill., "Fl. Delph.," 1784, is antedated by *C. præcox*, Jacq., 1778. From the "Kew Index" we learn that *Viola ericetorum*, Schrad., which I was sorry to see replaces *V. canina*, L., in the "Catalogue," is synonymous with *V. sylvestris;* while if there had been no other objection to the replacement of *Valeriana officinalis* by *V. Mikanii*, Syme, the latter name is untenable on account of there being a Guatemalan plant already named *V. Mikanii* by Lindley.—G. C. Druce, Oxford.

ARCTIC PLANT-BEDS IN SCOTLAND.

By James Bennie,
of the Geological Survey of Scotland.

The following extract from the Annual Report of the Director-General of the work of the Geological Survey for 1894 records the occurrence of another Arctic lake deposit in Scotland. At page 287 it is said:—

"Much interest attaches to the careful research on which Mr. Bennie has been engaged for some years among the glacial deposits. Last year he was specially employed in the examination of the bed of an ancient lake of the Ice Age which has been laid open during the construction of a new line of railway about half a mile from Auchtertool in Fifeshire. The lacustrine strata there seem to lie upon boulder clay for a distance of about 300 yards, and consist of the following members in descending order:—

(*d*)	Surface soil	1 ft.
(*c*)	Brown earthy silt with *Lepidurus* (*Apus*) *glacialis*, *Salix herbacea*, *Betula nana*	3 ft.
(*b*)	Marl with *Lymnea*, *Pisidium*, etc. .	1 ft. 5 in.
(*a*)	Running sand or mud . . .	4 to 5 ft.

The chief interest in this section centres in the bed of brown silt with its characteristic organisms. The plants preserved

in it include, besides many seeds not yet determined, the Arctic Willow and Birch, and with these are associated great numbers of a little crustacean Lepidurus or Apus,[1] which is now confined as a living form to the freshwater pools of Spitzbergen and Greenland, only thawed during the brief summer of these Arctic lands. It is manifest that this lake in Fife was silted up or drained at a time when an Arctic climate still reigned over Scotland."

Mr. Clement Reid has since determined the seeds referred to, and says of them: "There is no special remark to be made about the Dronachy plants, except that they are Arctic and almost the same set as was found at Corstorphine"; and has added two more species of Arctic Willows, viz. *Salix reticularis* and *Salix polaris*, the last being now extinct in Britain.

A number of the mosses found associated with the Arctic Willows in this old lake deposit were submitted by Mr. Clement Reid to Mr. Mitten, who thus reports on them: "The Dronachy lot have species which are here subalpine, but go very far north, and are there at sea-level. *Aulacomnion turgidum* is now a rare species, with its most southern stations that I know of in Scotland, where it has not been long known. *Distichium capillaceum* occurs as far south with us as South Wales, but is common in Alpine regions everywhere, going very far indeed into the Arctic regions. The bulk of the broken fragments seem to be made up of bits of the ubiquitous bog species *Amblystegium fluitans*.

To the animals also additions have been made. A little brown skullcap-like thing, fringed on one edge with short hair-like spines, was recognised by Mr. Scott as the headpiece of a spider which Mr. Evans has referred to the genus *Erigone*, And. in Sav. This the Rev. O. P. Cambridge confirmed, and suggested that if the palpi were found there would be no difficulty in making out the species. Additions have also been made to the crustaceans that once lived in this old Arctic lake. Three or four different forms of the epipha or winter eggs of the genus *Daphnia*, indicating as many species, have been found in the brown silt along with the Arctic plant leaves and the *Apus* remains. One seems identical with

[1] *Lepidurus glacialis*.

that of *Daphnia pulex*. But it is in the abundance of *Apus* remains that this old Fifeshire lake surpasses all the other old Arctic lakes yet known, they being literally in thousands—portions of the carapace, the labrum being often quite perfect, mandibles and maxillæ, right and left body segments and telsons, swimming-feet, and bits of the appendages.

Dronachy Loch has been adopted as a distinctive name for this ancient lake deposit. It is borrowed from a burn of that name which now drains the district in which it is situated, and from a deep narrow cleft through trap rock down which that burn now runs, which is known as Glen Dronachy. It is exceedingly probable that the overflow from the lake began to carve this glen out of the solid rock, as the lake became silted up by the growth of the brown silt accumulating in it gradually forcing the water to make an outlet for itself, which it did in the line of what is now known as Glen Dronachy.

There are now six places in Scotland where ancient lake deposits with Arctic plants have been found, viz. Hailes and Corstorphine near Edinburgh, Burnhead (R. Dunlop) and Faskine (W. Jack) near Airdrie, Crianlarich on the West Highland Railway (C. Reid), and now Dronachy near Auchtertool; and in three of these—Hailes, Corstorphine, and Dronachy—remains of *Apus* have been found.

Were even a cursory search made into old lakes where marl has been known to occur, it is more than likely that many more might yet be found. As an incentive to such search, it may be stated that it was almost by a peradventure that Dronachy was discovered to be an Arctic lake deposit. Our first knowledge of it was due to a piece of the marl felted with *Potamogeton* leaves and crowded with shells being brought from it by Mr. Duncan, attendant in the Museum of Science and Art, Edinburgh. Several visits were made, and portions of the deposit were washed and examined before the Arctic plants and the *Apus* remains were discovered. This arose from the fact that since at Corstorphine the Arctic bed lay between the marl and the boulder clay, it was sought for in the same position at Dronachy, and could not be found there. It was only on the third visit, when the bed of brown earthy silt which lay upon the marl

was sampled and washed, that the Arctic leaves and the *Apus* remains were found, and it became manifest that an Arctic lake once existed there, in which Arctic leaves had been drifted and the *Apus* swarmed in thousands in the later times of the Great Ice Age of Scotland.

OPENING OF THE NEW PERTHSHIRE NATURAL HISTORY MUSEUM.

On Friday, 29th November, the New Museum of the Perthshire Society of Natural Science, which has been in course of construction during the last three years, was formally opened to the public, the inauguration ceremony being performed by Sir William H. Flower, K.C.B., F.R.S., Director of the British Museum of Natural History. The event was one of more than local interest, as the Perthshire Society has long occupied an important place in the annals of Scottish natural history. It was fitting therefore that the function should have been combined with the annual gathering of the East of Scotland Union of Naturalists' Societies, and that zoologists, botanists, and geologists from all parts of Scotland should have assembled in the ancient capital to offer their felicitations to their Perthshire brethren.

For those of our readers who have not yet had an opportunity of inspecting the Museum for themselves, we may state that, both as regards construction and arrangement, everything has been devised and carried out on thoroughly scientific lines. This result has been achieved by a happy combination of voluntary and professional labour; the former representing the work of the group of naturalists who have formed the "inner circle" of the Society during the last quarter of a century, and the latter the efforts of Mr. Alex. M. Rodger, who was appointed Curator of the Museum about a year ago. It is right to add that Mr. Rodger has proved himself not only skilled in museum work, but an enthusiastic naturalist, and zealous for the wellbeing of the Society.

We hope in a future issue to give some detailed account of the collections, but in the meantime we can only give a bare outline of the arrangement. The new building consists of a lofty and well-proportioned hall, 44 feet long by 34 feet broad, lighted from the roof, and with a gallery running round it. The architectural details have been most carefully carried out, both with regard to the proper preservation and display of the collections, and also with regard to a pleasing general effect. The cases are of the most substantial

construction and present a handsome appearance. Those for the geological, entomological, and nest collections are from special designs. This new hall is devoted exclusively to the Natural History of Perthshire and the Basin of the Tay, the different sections being worked out with more or less completeness, according as the different members of the Society have been able to accomplish their self-allotted tasks. Thus the birds, the nests, the mammalia, the mollusca, and the mosses are all nearly complete, so far as the known Perthshire species are concerned. In the phanerogams space will only admit of each genus being represented, and the same applies to the vascular cryptogams. In the insecta, only a beginning has been made, but there is a very large amount of material in the Society's possession waiting to be arranged. The geology is well advanced, the collections in this department being arranged not altogether on stereotyped lines, but with a view to illustrate the dynamical and structural as well as the stratigraphical geology of the district. A good beginning has been made in the fishes, amphibians, and reptiles, and also in a collection of the indigenous trees of Perthshire.

All the Perthshire specimens have been removed from the old Museum Hall, which it is intended to devote to an Index or Type Collection, arranged according to the most recent biological principles. In connection with the Museum there is a well-equipped Laboratory and a Herbarium Room, as well as a Scientific Library and a Lecture Room. The Society has generously thrown the Museum open to the public entirely free of charge.

ZOOLOGICAL NOTES.

Daubenton's Bat in Glen Dochart, Perthshire.—In a previous note upon Daubenton's Bat (*Vespertilio daubentoni*) ("Annals of Scottish Natural History," 1894, pp. 193-195), I wrote regarding my observations at Loch Dochart during July 1894. This year I was living some distance from the loch, and had no opportunities of watching the bats at night. I however twice visited the rocks in the crevices of which the bats live, and on my first visit on the 6th of July found them in possession, as when observed the previous year. On this occasion there was considerable excitement in the colony, though I did not unnecessarily disturb them, but less commotion than in July 1894, when I visited their haunts later in the month and when the breeding season was more advanced. The rock at the entrances to the crevices was coated with a black, greasy-looking substance that either comes from the bodies of the bats, or is their excrement rubbed on to the rock from their feet as they

enter or leave the crevices. My next visit to the rocks was on 28th September, and I found no trace of any bats, and they had evidently left the crevices for the time being. I think they must have been away some time, as all the black greasy coating on the rock had disappeared, and even the smell of the bats, which is very strong, had almost gone. No droppings were to be seen, and after carefully probing the places in the crevices which I could reach with long twigs and the top joint of my fishing-rod I was forced to the conclusion that the bats were no longer there. The question has naturally occurred to me, are these bats migratory, and do they only frequent this upland station during the breeding season? Can any of your readers shed some light upon this matter?—Symington Grieve, Edinburgh.

Squirrel in Ardnamurchan.—On 4th September a Squirrel (*Sciurus vulgaris*) was seen among the young trees round the lodge at Kilchoan, and a few days afterwards one was seen in Corrievoulin coppice, two miles distant in the mainland direction. This is the first known appearance of Squirrels in these parts, and when the nut season is past they will probably draw back to the fir woods of Glenborrodale. Dr. Duncan informs me that they appeared there —twelve miles eastward—for the first time last year, and that two or three have been noticed frequenting the vicinity of the Castle this season.—A. Burn Murdoch, Edinburgh.

Mealy Redpoll and Great Gray Shrike in Berwickshire.—While driving in this parish on the 25th of November last I had a near view of a very rare bird, for this county at least, the Mealy Redpoll (*Linota linaria*). I got within three feet of the stranger, which was greedily feeding on the seed of the common stinging nettle. It was very tame, and allowed me to stand close to it for five minutes. The bird was in beautiful plumage, the fine red spot on the head and hoary under-plumage being very conspicuous. As this species has no place in Mr. Muirhead's "Birds of Berwickshire," I presume the Mealy Redpoll has not hitherto been recorded for the county. About the middle of October I had the good luck to see the Great Shrike at some outlying stacks in this parish also. I have more than once seen the Great Shrike in similar localities, where the bird was probably looking after mice.—Charles Stuart, Chirnside.

Garden Warbler in Perthshire.—With regard to the note in last number of the "Annals," 1895, p. 194, I observed the Garden Warbler (*Sylvia hortensis*) in Kincardine Glen, near Auchterarder, on 13th July this year; on the Earn at Millearn on the 15th; and on the same date I heard it singing among some fruit trees, while returning from Kinnoull Hill to Perth.—John Robertson, Thornliebank.

Marsh Titmouse in Perthshire.—On the 27th September, in a wood near Doune, I came across four if not five specimens of the Marsh Tit (*Parus palustris*). This is the first time I have seen this bird in this district. Mr. J. Hamilton-Buchanan, in his list of birds observed in the parish of Callander, Perthshire ("Trans. Roy. Physical Society, 1879), mentions having shot one on Loch Lubnaig side in May 1877.—H. M. Duthie, Doune.

Great Gray Shrike in Lanarkshire.—Mr. M'Culloch, taxidermist, Glasgow, received on 20th November last a Great Gray Shrike (*Lanius excubitor*) stated to have been shot some days previously at Blantyre.—John Paterson, Glasgow.

Common Buzzard in South Ayrshire. — Mr. Charles Berry, Lendalfoot, informs me he received on 17th September a female Common Buzzard (*Buteo vulgaris*) in the flesh, which had been trapped near Straiton.—John Paterson, Glasgow.

Red-breasted Mergansers on Speyside.—I see in the October number of the "Annals" that a nest of the Merganser (*Mergus serrator*) was found near Cromdale this year, probably for the first time. In the middle of July last I saw a Merganser duck on the Ballindalloch section of the Spey, with a large brood of young ones; and Mr. Pelham Burn, of Pitcroy Lodge, also saw on his water about the same time an old female bird with one young one. There were several pairs of Mergansers about here the whole breeding season.—Walter M. Stopford, Ballindalloch.

Red-legged Partridge in Forfarshire.—On 19th September of this year there was brought to me a specimen of the Red-legged Partridge (*Caccabis rufa*); this was the first indication to me of the existence of the species in Forfarshire. It was taken in a net two nights previously, by one whose modesty prevents me from mentioning by his name. On 26th September a second specimen reached me, which had been shot on the uplands of Carmyllie by Mr. Falconer, W.S., Edinburgh. On making inquiry, I was informed by the Rev. Mr. Adams, Inverkeillor, that during the nesting season several eggs of the Red-legged Partridge had been found in Pheasants' nests on Lord Northesk's estate of Ethie. From the Hon. Douglas Carnegie I subsequently learned that in at least two Pheasants' nests were eggs of Red-legged Partridge found to have been laid. Two or three of these eggs were taken, and the others were presumably hatched. The birds killed were respectively two and five miles distant from the site of the nests. A short notice of the occurrence in the local paper elicited from Mr. Jalland, Ochterlony (an estate some seven miles inland from Ethie) the following information:—"I turned out several Red-legged Partridges in the summer of 1894, and they remained here, in 'packs,' until the deep snow in February last, when they all suddenly disappeared. I have no doubt the birds

mentioned are some of these: it shows a marvellous instinct their making towards the sea." So far as I can gather from inquiry from keepers on other estates in the neighbourhood, no Red-legged Partridges have been introduced into the district except those mentioned by Mr. Jalland.—THOMAS F. DEWAR, Arbroath.

Spotted Crake in Argyle.—I am indebted to Mr. J. Marshall, Kilmartin, for information regarding a Spotted Crake (*Porzana maruetta*) in his possession, which was shot about the middle of August 1893, on the marshes along the banks of the river Add. To satisfy me as to its identification, Mr. Marshall has kindly sent me the bird, which proves to be a young one.—JOHN PATERSON, Glasgow.

Great Snipe and Gray Plover in East Renfrewshire.—I have already to record two additions to the list of East Renfrewshire birds published in the last number of "Annals." On 27th September last Mr. Allan Gilmour, Yr., shot a young male Great Snipe (*Gallinago major*) on an irrigated meadow on his Eaglesham property. The bird was a perfect ball of fat, and weighed, I am informed, $9\frac{3}{4}$ ozs. I exhibited it at the October meeting of the Natural History Society of Glasgow. It is now in Mr. Gilmour's collection. In a letter to the "Glasgow Herald" dated 3rd October Mr. Gilmour stated that he had killed over 4000 Snipe in the past 28 years, and during that period had only twice seen this species shot before—"one a young bird, in July 1869, on Eaglesham; and another, also a young bird, on 13th September 1880, on Dunstaffnage. Both were too badly shot to preserve." A Gray Plover (*Squatarola helvetica*) was observed several times by Mr. John Robertson at Balgray Dam in the end of September and early October last.—JOHN PATERSON, Glasgow.

Birds of Loch Lomond: A Correction.—I find in the recently published "Guide to the Natural History of Loch Lomond" that there is a very stupid mistake in the heading to note on the Ruby-crowned Wren at page 28. By some inexplicable mistake it has been printed "Ruby-crowned Wren or Fire-crested Wren, *Regulus ignicapillus* (Brehm.)." It should have been Ruby-crowned Wren, *Regulus calendula* (Linn.). I shall be glad if you will insert this correction in the "Annals."—JAMES LUMSDEN, Arden.

The Sandwich Tern and the Whimbrel on the Berwickshire Coast.—On several occasions during the first fortnight of September 1895 I observed three or four Sandwich Terns (*Sterna cantiaca*), evidently a family group, flying to and fro just off the coast between Eyemouth and St. Abb's. Once or twice I saw them alight on some rocks that were uncovered at low water. During the same fortnight Whimbrel (*Numenius phæopus*) were also several times observed passing south along the coast—the unmistakable call always serving to draw my attention to them. On the 2nd of September I watched one come

into a small bay about a mile north of Eyemouth, and settle among the seaweed-covered rocks. Mr. Muirhead in his recently published "Birds of Berwickshire" does not mention the Sandwich Tern, and mentions only one instance of the occurrence of the Whimbrel within the county boundaries.—William Evans, Edinburgh.

Tychus niger and Cryptocephalus moræi in Ayrshire.—On the 12th April 1895 I took two males of *Tychus niger*, Payk., on Carrick Hill, near Ayr. Mr. Morris Young has also secured four specimens in the Paisley district, which are now in his collection in the Paisley Museum. This species, although included in Murray's "Catalogue of the Coleoptera of Scotland" on the authority of the Rev. W. Little, does not appear in Dr. Sharp's list in the "Scottish Naturalist"; and Canon Fowler in his "Coleoptera of the British Islands" says regarding it: "I cannot find any record further north than Manchester, and it does not appear to occur in Scotland." Its occurrence at Paisley and Ayr in the "Clyde" area may have some interest as bearing upon the above.

While sweeping at Shewalton Moss, near Barassie, on the 27th July 1895, I obtained two specimens of *Cryptocephalus moræi*, L., both females. This beetle does not appear to have been recorded for "Clyde" before.—Anderson Fergusson, Ayr.

The Death's-head Hawkmoth (*Acherontia atropos*, Linn.) **in Scotland.**—In view of the numerous records of the occurrence of this moth in England during the last few months, it may be interesting to note the following captures in Scotland as having come under my personal notice:—On the 18th September a specimen was taken by Mr. W. Burn at an electric lamp in Princes Street, Edinburgh; in the same month one was captured in Mr. A. Burn Murdoch's house at Ardnamurchan; in October a specimen was taken at Upper Kidston, Peeblesshire, by Mr. David Graham, and another at Newport, Fife, by Mr. Wm. Berry. Lastly, Mr. Morris Young reports the capture of a fine specimen at Bishopton, near Paisley, on the 10th September, by Mr. Robert Angus.—Percy H. Grimshaw, Museum of Science and Art, Edinburgh.

Occurrence of Cephenomyia rufibarbis, *Meigen*, **in the Cairngorms.**—This Bot-fly, which was only recorded as British for the first time in July last ("Ann. Scot. Nat. Hist.," 1895, p. 155), has during the past summer been found quite on the other side of Scotland. My friend Mr. L. W. Hinxman, the discoverer of the Ross-shire specimens, was so fortunate as to capture three specimens, two males and one female, on the slopes of Cairngorm, Glenmore Forest, in June last, at a height of between 2500 and 3200 feet above sea-level. The male specimen shows a remarkable deviation from the typical coloration of the species, and should more specimens be captured similarly marked, it would seem to prove that there is in this district a

very distinct local race, possibly sufficiently well marked to form a new species. It should be mentioned that the Ross-shire specimens are males, and not females, as stated on the first page of my article referred to.—Percy H. Grimshaw, Museum of Science and Art, Edinburgh.

Echinus acutus, *Lamk.*, off the Aberdeenshire Coast.—In the "Annals" for October last I had the pleasure of recording this form as having been found off Aberdeen. Since then other specimens have been obtained much nearer land—one twenty-seven miles off Aberdeen, in twenty fathoms water, while another was found nine miles off in twelve fathoms. For these specimens and the information regarding them, as well as of those formerly recorded, I am indebted to my friend Mr. Herbert Howell, whose keen and active powers of observation it would be well for others having similar opportunities to take example from.—G. Sim, Aberdeen.

Maraenobiotus vejdovskyi, *Mrazek*, a new British Copepod, in Loch Vennachar, Perthshire.—During a flying visit to the Trossachs in September last I took the opportunity to collect a few hand-net gatherings of the micro-invertebrates of Loch Vennachar, Loch Achray, and Loch Katrine. I intended to publish a record of the result of the examination of these gatherings later on, but meanwhile it may be of interest to state that among several interesting things that have turned up in the gathering from Loch Vennachar are a number of specimens of the Copepod mentioned above. This species has not yet been recorded for the British Islands, and is therefore an addition to our freshwater crustacean fauna. It differs from other British Harpactids in having both branches of the first pair of swimming-feet two-jointed: there are other differences, but these are the most obvious.—Thomas Scott, Leith.

Corycæus anglicus, *Lubbock*, in the Firth of Forth.—A specimen of this interesting Copepod was obtained in the Firth of Forth, off the Wemyss, in October last. So far as I know it has not yet been recorded for Scotland. It has been obtained by us on two previous occasions, also in the Firth of Forth, off St. Monans, but not reported.—Thomas Scott, Leith.

Lichomolgus maximus, *I. C. Thompson*, in the Firths of Forth and Clyde.—This fine Copepod was described a few years ago by Mr. Isaac C. Thompson, F.L.S., of Liverpool, from specimens obtained by him in Liverpool Bay. They were found within the valves of a living *Pecten maximus* (or large scallop-shell). The species appears to be "semiparasitic" in its habits. I am now able to report its occurrence in the Firth of Forth, and also in the Firth of Clyde. The Forth specimens I obtained from the common Echinus, *E. esculentus*, in October last; the Clyde specimens were obtained from *Pecten maximus* and *Pecten opercularis*. This is an addition to the Scotch marine Copepod fauna.—Thomas Scott, Leith.

Cheirocrates intermedius, *G. O. Sars*, a new British Amphipod, in the Firth of Forth.—This species of Amphipoda has been in my possession for a considerable time (since 1893), but has only lately been identified with *Cheirocrates intermedius*—an Amphipod described by Professor G. O. Sars in his recently published Monograph. Its most distinctive character appears to be the peculiar form of the second gnathopods, which in the shape of the hands differ very remarkably from those of the other species of *Cheirocrates* described by Sars. I do not know of any previous record of its occurrence in Britain.—THOMAS SCOTT, Leith.

Xylophaga dorsalis, *Turton*, in the Firth of Forth.—While trawling near the Bass Rock in October last, a small piece of partially decayed wood was brought up in the trawl-net. This piece of wood was examined, and was found to be crowded with living and dead specimens of this curious burrowing mollusc. I cannot find any previous record of the occurrence of *Xylophaga dorsalis* in the Firth of Forth.—THOMAS SCOTT, Leith.

Many friends of the late ALEXANDER G. MORE wish to see a short Memoir of him published. Any one having letters or papers of interest would greatly oblige by lending them for selection to his sister, Miss More, 74 Leinster Road, Rathmines, Dublin.

BOTANICAL NOTES AND NEWS.

Elatine hexandra, *DC.*, in the Outer Hebrides.—Mr. W. S. Duncan has sent the above plant from a small loch in Glen Laxadale, in North Harris, where it occurred among the rejectamenta (with *Subularia* in fruit) on the loch shores. It is recorded from Perth, Aberdeen, and Kincardine; also in "Topographical Botany" for "101, Clyde Isles"; but I think this should read "Cantyre," the number being correct, the name not so. It is interesting to note that *E. Hydropiper*, L., is much the commoner species in Scandinavia, and reaches much farther north. *E. triandra*, Schkr., which differs principally from *hexandra* by its sessile flowers, is also more frequent in Scandinavia than *hexandra*. It should occur with us. It may be of interest to state that the *Carex* Mr. Duncan found in Harris is thus remarked on by Dr. Almquist of Stockholm, to whom I sent specimens:—"You are quite right in saying it is near *C. spiculosa*, Fries., and I believe is, with it, a hybrid between *C. salina* and *C. Goodenoughii*." Unfortunately Mr. Duncan did not observe the other *Carices* near, but believes *C. Goodenovii* was near;

but hopes to look this plant up next year. At present it seems impossible to rightly determine it, until its surroundings are carefully observed. Dr. Almquist s engaged on the genus *Carex* for the twelfth edition of Hartmann's "Scandinavian Flora."—ARTHUR BENNETT, Croydon.

Scotch Hieracia.—Mr. F. J. Hanbury has recently examined some Hawkweeds which I collected some years since in Scotland. Among the interesting records are *H. callistophyllum*, F. J. Hanb., from Glen Callater, South Aberdeenshire, in July 1878, and named for me in that year by Mr. G. J. Baker *H. pallidum*. *H. Sommerfeltii*, Lindeb. This is the *H. pallidum* from Glen Ennich, Easterness, 1887, recorded in "Journ. Bot.," 1888, p. 21. *H. clovense*, Linton; Glen Callater, July 1878, South Aberdeenshire. This was named *H. cæsium* by Mr. J. G. Baker during the year. Neither *H. callistophyllum* nor *H. clovense* had, at the time I got these specimens, been described.—G. C. DRUCE.

Melaneonium Pandani has been recorded ("Trans. Bot. Soc. Edin.," xx. p. 413) as destructive to *Pandanus tenuifolius*—a Rodriguez plant—in Edinburgh Botanic Garden. It had not been recorded previously from Scotland, though destructive in gardens elsewhere.

New Records of Marine Algæ from Scotland.—(1) Mr. E. A. L. Batters ("Journ. Bot.," Sept.) records the following additions from Scotch localities:—*Ochlochæte ferox*, Herb., from Cumbrae; *Acrochæte parasitica*, Oltm., on *Fuci* from Berwick-on-Tweed; *Blastophysa rhizopus*, Pike, in *Enteromorpha compressa*, from Cumbrae; *Tellamia contorta*, Batters, from Cumbrae and Berwick; *Ulonema rhizophorum*, Foslie, on *Dumontia filiformis*, at Berwick-on-Tweed; *Gobia baltica*, Rke., from Dunbar; *Lithoderma fatiscens*, Aresch., on a shell, dredged from eight to ten fathoms depth, near Cumbrae; *Symphyocarpus strangulans*, Rosenv., on shells and stones, between tidemarks, at Berwick-on-Tweed; *Phæostroma frustulosum*, Kck., on *Laminaria saccharina*, var. *Phyllitis*, and on *Zostera*, at Cumbrae and at Berwick-on-Tweed; *Ectocarpus clandestinus*, Sauv., on *Fucus*, at Berwick-on-Tweed; *E. œcidioides*, Rosenv., on *Laminaria saccharina*, var. *Phyllitis*, at Cumbrae; *Myriotrichia densa*, Batters, at Cumbrae and Arran.

(2) Mr. G. W. Traill records ("Trans. Bot. Soc. Edin.," xx.) the following ten additions to his list of Algæ of Orkney, all found by him on the coast of North Ronaldshay in August 1894:—*Dictyosiphon chordaria*, Aresch., forma *gelatinosa*, Rke.; *Codiolum pusillum*, Foslie; *Hydrocoleum lyngbyaceum*, Ktz., forma *rupestris*, Ktz.; *Ceramium circinnatum* (Ktz.), J. Ag.; *Cladophora utriuscula*, Ktz.; *Enteromorpha minima*, Nag.; *Phyllophora Traillii* (Helm.), Batt.; *Ectocarpus erectus*, Ktz.; *E. terminalis*, Ktz.; *Polysiphonia pulvinata*.

Botanical Exchange Club of the British Isles—Report for 1894, by Rev. Wm. R. Linton, M.A. There are comparatively few notes on Scottish plants. These are as follows :—*Caltha radicans*, Forst. Mr. Druce contributes a note on examples found by him near Little Loch Broom, in West Ross. He considers this to be only a marked variety of *C. palustris*. *Draba incana*, L., from Cnochan Rocks, West Ross; *Cochlearia micacea*, E. S. Marshall, from Unst; *C. officinalis*, L., var. (? *C. pyrenaica*, DC.), from Ben Creachan, Argyle, at 2800 feet; *Rubus gratus*, Focke, near Obe, South Harris; *Alchemilla vulgaris*, L., vars. *alpestris* (Schmidt) and *filicaulis* (Buser), form Moffat; *Hieracium Schmidtii*, Tausch, from Harris; *H. Schmidtii*, Tausch, var. *crinigerum*, Fries, from Harris and Benbecula; *H. caledonicum*, F. J. H., from Harris; *H. Oreades*, Fr., var. *subglabrum*, F. J. H., from North Uist; *H. scoticum*, F. J. H., from Barra.

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—October-December 1895.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

The Long-tailed Field Mouse of the Outer Hebrides: a proposed New Species. By W. E. de Winton. *Zoologist* (3), vol. xix. pp. 369-371 (October 1895), and p. 426 (November 1895).—Described under the name of Mus hebridensis, and afterwards altered to Mus sylvaticus hebridensis.

The Field Mouse of the Outer Hebrides. J. Steele Elliott. *Zoologist* (3), vol. xix. p. 426 (November 1895).—Claims priority in description over Mr. de Winton.

Distribution of the Alpine Hare in South-West Scotland. Robert Service. *Zoologist* (3), vol. xix. p. 375 (October 1895).

The Avifauna of Buchan. By Rev. W. Serle, M.A., B.D. *Trans. Buchan Field Club*, 1895.—A useful annotated list, comprising 183 species, and introductory remarks.

The Distribution of Birds included in the Avifauna of Perthshire. By Lieut.-Col. Campbell. *Trans. and Proc. Perthshire Soc. Nat. Sci.*, vol. ii. pt. iii. (1894-95), pp. 101-119.

The Marsh Tit in Scotland. By J. A. Harvie-Brown. *Trans. and Proc. Perthshire Soc. Nat. Sci.*, vol. ii. pt. iii. (1894-95), pp. 97-100.

Capercaillie in Argyleshire. "Caper." *The Field*, 9th November 1895, p. 786.—Three specimens shot on the Ormidale Estate, Loch Ridden, Argyleshire, on 28th October.

Solitary Snipe in Renfrewshire. "Allan." *The Field*, 5th October 1895, p. 590.—Specimen killed on 27th September.

Fulmar at the Inner Hebrides. James Baxter. *The Field*, 12th October 1895, p. 619.—A male picked up on the east coast of Tiree on 10th September.

List of the Pelagic Ova, Larvæ, and Young Fishes procured by the s.s. "Garland" and boat "Dalhousie." By H. Chas. Williamson, M.A., B.Sc. *Rep. Fish. Board Scot.* (1894), part iii. pp. 258-270.—Contains a record of the ova and young fishes captured by tow-nets in the Firth of Forth and St. Andrews Bay from January to June 1895, and in the Moray Firth in July 1894.

Additions to the Fauna of the Firth of Forth. Part VII. By Thomas Scott, F.L.S. *Rep. Fish. Board Scot.* (1894), part. iii. pp. 165-173, Plates III. and IV.—The additions comprise one species of Fish, twenty-eight of Copepoda, and one species of Trematoda.

The Shell Slug in Scotland. Robert Service. *Zoologist* (3), vol. xix. p. 436 (November 1895).—Refers to specimen found some time ago in Sang's nursery in Kirkcaldy.

Notes on Collecting, etc. *Ent. Record*, vol. vii. pp. 86-94 and pp. 112-113 (15th November and 1st December 1895).—These notes include numerous records of Lepidoptera from Shetland, Kincardine, Braemar, Forres, Aberdeen, Perth, South Argyleshire, Rannoch, Forres, Montrose, etc.

Orkney Lepidoptera. Richard South. *Entomologist*, vol. xxviii. pp. 298-300 (November 1895).—Six species of Rhopalocera and eighteen of Heterocera are here recorded.

Cœnonympha Typhon in the West of Scotland. A. Adie Dalglish. *Entomologist*, vol. xxviii. p. 277 (October 1895). The specimens described were taken in North Knapdale, Argyleshire.

Sphinx convolvuli in Aberdeenshire. J. Salter. *Entomologist*, vol. xxviii. p. 281 (October 1895).—Specimens caught at Strichen on 31st August and 9th September.

Variation of Hepialus humuli and Emmelesia albulata in Shetland. J. J. F. X. King. *Ent. Record*, vol. vii. p. 111 (1st December 1895).

Euchelia jacobææ in Roxburghshire. A. Elliot. *Ent. Mo. Mag.* (2), vol. vi. p. 241 (October 1895).—A male captured on 1st June at Caverton.

Additional Notes on increasing Melanism in British Geometridæ. By the late W. H. Tugwell. *Ent. Mo. Mag.* (2), vol. vi. pp. 225-226 (October 1895).—Melanic forms of Larentia multistrigaria (Aberdeenshire) and Eupithecia castigata (Paisley) are mentioned.

Amara alpina at Rannoch. R. W. Lloyd. *Ent. Mo. Mag.* (2), vol. vi. p. 265 (November 1895).—Two specimens (♂ and ♀) captured in July on the summit of Grayvel (or Meall Phuill) near Loch Rannoch. Miscodera arctica was found on the same mountain.

Bembidium virens, Gyll., an addition to the British List. By G. C. Champion. *Ent. Mo. Mag.* (2), vol. vi. pp. 263-264 (November 1895).—Found not uncommonly on 6th July 1892 on the shores of Loch Maree, Ross-shire.

Neuroptera observed in Glen Lochay. By Kenneth J. Morton. *Ent. Mo. Mag.* (2), vol. vi. pp. 260-263 (November 1895).—Fifty-seven species are recorded.

Salda Muelleri, Gmelin, an addition to the List of British Hemiptera, with notes on Allied Species. By Edward Saunders. *Ent. Mo. Mag.* (2), vol. vi. pp. 236-238 (October 1895).—Specimens are recorded from Ballinluig and Aviemore.

Boreus hiemalis at Clova. J. C. Willis. *Ent. Mo. Mag.* (2), vol. vi. p. 240 (October 1895).—A female found on 5th April 1895.

Supplement to "A Synopsis of British Psychodidæ." By the Rev. A. E. Eaton. *Ent. Mo. Mag.* (2), vol. vi. pp. 245-250 (October and November 1895).—The following Scottish records are given: Pericoma gracilis at Loch Maree, June and July 1890, and P. trivialis at Loch Lomond and Loch Maree (J. J. F. X. King).

A List of Phalangidea (Harvestmen) and Chernetidea (False Scorpions) collected in the neighbourhood of Edinburgh. By George H. Carpenter and William Evans. *Proc. Roy. Phys. Soc. Edin.*, vol. xiii. (1894-95), pp. 114-123.—Fourteen species of Phalangidea are here recorded, of which seven are additions to the Scottish list, and one species of Chernetidea.

Weight of Lobsters. H. Holmes. *Zoologist* (3), vol. xix. p. 385 (October 1895).—Three lobsters taken in Loch Seaforth last August, weighing 7 lbs. 5 oz., 8 lbs. 9 oz., and 9 lb. 8 oz. respectively.

The Invertebrate Fauna of the Inland Waters of Scotland. Part V. By Thomas Scott, F.L.S. *Rep. Fish. Board Scot.* (1894), part iii. pp. 237-257, Plates IX. and X.—This paper is devoted to the results of the examination of fifteen lochs in the Outer Hebrides and seven lochs on the Mainland. Tables are given containing the names of all the species identified, and showing their distribution in the various lochs.

The Inland Waters of the Shetland Islands. By Thomas Scott, F.L.S., and Robert Duthie. *Rep. Fish. Board Scot.* (1894), part iii. pp. 174-191, Plate V.—Section II. of this paper gives an account of the Mollusca and Crustacea obtained in gatherings from the various lochs of Shetland, and a table is given showing the distribution of all the species.

On some New and Rare British Copepoda. By Thomas Scott, F.L.S. *Ann. and Mag. Nat. Hist.* (6), vol. xvi. pp. 353-362, Plates XV.-XVII. (November 1895).—Descriptions and figures given of Stenhelia Blanchardi, sp. n., from Arisaig, Argyleshire; Thalestris peltata (Boeck) from Firth of Forth; Dermatomyzon gibberum, T. and A. Scott, from Firth of Forth; and Alcyonicola fusiformis, gen. et sp. n., from Firth of Forth and Moray Firth.

BOTANY.

Notes from the Royal Botanic Garden, Edinburgh. *Trans. Bot. Soc. Edin.*, xx. part ii., issued in December:—

1. *Report on Temperature and Vegetation during July* 1894, by Robert Lindsay (pp. 286-287).

2. *On Vegetation*, by Robert Lindsay, during the months of August, September, and October (pp. 288-289), November (p. 335), December (p. 346); 1895, January (p. 378), February (p. 408), March (pp. 419-420), April (pp. 426-428), May (pp. 433-434), June (p. 452).

3. *Meteorological Observations* recorded in 1894 and 1895, by A. D. Richardson. From July to October (pp. 290-293), November (p. 336), December, (p. 347), Abstract for 1894 (pp. 348-350), January (p. 379), February (p. 409), March (p. 421), April (p. 429), May (p. 435), June (p. 452).

4. *On Plants from the Plant-houses*, by R. L. Harrow. 1894, August to October (pp. 294-296), November, (pp. 339-340), December (p. 351); 1895, January (pp. 380-381), February (pp. 410-411), March (pp. 422-423), April (pp. 430-431), May (pp. 436-437), June (pp. 454-455).

5. *On Variation of the Leaves of the White Beam Tree* (*Pyrus Aria*, L.), by A. D. Richardson (p. 350).

Notes on a Book of Photographs and Measurements of Remarkable Ayrshire Trees, presented by Mr. George Paxton to the Library of the Royal Botanic Garden, Edinburgh. By Dr. D. Christison. *Trans. Bot. Soc. Edin.*, xx. pp. 384-391.

Notes on the Morphology of Some British Leguminosæ—II. Melilotus officinalis. By James A. Terras. *Trans. Bot. Soc. Edin.*, xx. 413-419.

Excursion of the Scottish Alpine Botanical Club to Tyndrum in 1894. By Wm. Craig, M.D. *Trans. Bot. Soc. Edin.*, xx. pp. 374-378.—Several localities were visited, and a number of the alpine plants found, but none are new records.

New Westerness Plants. By W. F. Miller. *Journ. Bot.*, November, p. 345).—Adds a number of county records.

Rosa mollis, Sm., var. glabrata, Fr. By Symers M. Macvicar. *Journ. Bot.*, November, pp. 344-345.—A form collected at Strome Ferry by Rev. E. F. Linton, and named as above by Scheutz, was gathered also by Mr. Macvicar, and sent by him to Crepin as a variety of *R. tomentosa*, was confirmed as *tomentosa*. Hence *R. mollis* var. *glabrata* is not known as Scottish.

Carex Notes. By Arthur Bennett. *Journ. Bot.*, September, pp. 282-283.—Notes occurrence of *C. fusca*, All. (see *Ann. Scot. Nat. Hist.*, iv. p. 247), from Arisaig, West Inverness, and of a curious form, much like *C. glauca*, Scop., var. *acuminata*, but with two stigmas, sent from Harris by Mr. Duncan.

Carex salina, Wahl., var. By Arthur Bennett. *Journ. Bot.*, October, p. 315.—The second form mentioned above proves to be a form of *salina*, smaller than the Caithness *kallegatensis*, Fr.

Varieties. By W. H. Beeby. *Journ. Bot.*, October, pp. 315-316.—*Glyceria distans*, var. *prostata*, Beeby, from Shetland, retains its characters in cultivation.

Cystopteris montana, Bernhardi, in Stirlingshire. By A. Somerville, B.Sc., F.L.S. *Trans. Bot. Soc. Edin.*, xx. pp. 285-286.—This relates to the same discovery as is recorded by Mr. Somerville in our own pages (iv. p. 50).

Notes on the British Characeæ. By H. and J. Groves. *Journ. Bot.*, October, pp. 289-292, pl. 350.—Several county records are added from Scotland.

Some New British Marine Algæ. By E. A. L. Batters, B.A., F.L.S., etc. *Journ. Bot.*, September, pp. 274-276.—For new Scotch records see this journal, 1895, p. 70.

Supplementary Notes (No. 2) on the Marine Algæ of the Orkney Islands—North Ronaldshay. By George Wm. Traill. *Trans. Bot. Soc. Edin.*, xx. pp. 341-345.—Ten species are recorded as additions to the list for Orkney, bringing the total now on record to 253.

Obituary Notice of Hugh F. C. Cleghorn, M.D. By Andrew Taylor. *Trans. Bot. Soc. Edin.*, xx. pp. 439-448.

Obituary Notice of Dr. Thomas A. G. Balfour, M.D. By Andrew Taylor. *Trans. Bot. Soc. Edin.*, xx. pp. 449-451.

REVIEWS.

The Life of Joseph Wolf, Animal Painter. By A. H. Palmer. Pp. 328. 54 Plates and 13 Woodcuts. (London: Longman and Co., 1895.)

Until quite lately, naturalists had hardly begun to recognise to what extent their interest in mammals or birds has been developed by a study of the works of good zoological artists. To realise how important this influence is, one has but to observe the visitor to the Bird Gallery of the Natural History Museum in London, and to note the very evident interest that an inspection of the pictorially mounted birds exhibited there arouses in the minds of even the uneducated visitor. No one can doubt that a large number of those who see these things feel, perhaps for the first time, more or less desire to know something of these and other birds in a state of nature. For much the same reason, a casual inspection of a really good zoological picture has again and again awakened an interest in animal life which has afterwards developed into a life-long devotion to science. It would probably be difficult fully to estimate the influence which Landseer's works have exercised in this direction, and the same is true in various degrees of many others, such as Paul Meyerheim in Germany, as well as various British Artists.

But, as regards the influence of museums in this direction, even better results may some day be looked for. At present, even the best-stuffed mammal or bird does little more than suggest an imperfect resemblance to the living creature, chiefly because the taxidermist of to-day has but little real knowledge of the living aspects of the creatures whose skins he manipulates; and what knowledge he has is generally obtained at second-hand from the zoological draughtsman, who, in turn, may know only a little more of his subject than the bird-stuffer. It is therefore obvious that it is mainly to the zoological draughtsman that we have to look for the popular diffusion of any real interest in living animals.

To be successful as an animal painter a man must be not only competent as a draughtsman, he must be exact down to the most minute detail, he must possess indomitable perseverance in studying wild animals under every possible aspect, and, lastly, he must be one whose mind can, so to speak, enter fully into the minds of the animals under notice, and be in entire sympathy with them and their being under all possible conditions. Little wonder under these circumstances that but few men have ever arisen to the first rank as zoological artists. Landseer may be said to have come near the ideal artist, but even Landseer's work was limited in its scope, and was confined to artistic delineation of a few of the better-known mammals. Only one man ever attained to the first rank, and that man was Joseph Wolf, the subject of the biography under notice.

How Wolf, forty or fifty years ago, began to interest and delight people with his zoological pictures, and how step by step since then he has arisen to the eminent position as a teacher of zoology as well as an artist of the first rank, is set forth in the most charming manner by Mr. Palmer in the book before us. The author's clear and pleasant style, and his well-founded enthusiasm for every particular relating to the life of the distinguished artist of whom he writes, combines with the many and fine illustrations and the excellent get-up of the book to make it one of the most fascinating works on biography that has appeared for many years.—J. G. G.

The Birds of Berwickshire. By George Muirhead, F.R.S.E., F.Z.S. Vol. II. (Edinburgh: David Douglas, 1895.)

Mr. Muirhead is to be heartily congratulated on the appearance of his handsome volume, which completes his "Birds of Berwickshire." Slowly but surely the areas and counties of Scotland are being surveyed by naturalists, and Mr. Muirhead, as the latest historian of a county avifauna, has laid ornithologists under an obligation to him, and we desire to express our due appreciation of his good offices. In the book under consideration he has given us all that is known to him on the subject through long residence in Berwickshire, and he has added thereto what is contained in the chronicles bearing on the past. In addition, he has given much information of a popular and general nature, which will be appreciated by those who know little about birds, and also by those interested in folk-lore. We confess, however, that we regard with very mixed feelings, the desirability of treating the general subject of British ornithology in a faunal work.

The subject of the Birds of Berwickshire is not yet, however, an exhausted one. It is evident that much yet remains to be done in the way of observations on the migratory birds and casual visitants that visit this county, and in this connection we may mention that the Whimbrel has only once come under notice, while in this number of our journal we are enabled to record additions to the county avifauna in the Mealy Redpoll and Sandwich Tern.

The book is nicely got up, and is very prettily illustrated, many of the pictures (including a number of nests) being from the skilful pencil of Mrs. Muirhead.

The Natural History of the Banks of the Tay: being a Series of Papers read before the Perthshire Society of Natural Science. (Perth: The Society, 1895.)

The Perthshire Society of Natural Science is one of the most vigorous, flourishing, and useful institutions of its kind in Britain. Not only has it raised a new museum and filled it with well-arranged specimens,—a work of which it may be justly proud,—but it also issues Transactions which are appreciated beyond the mere circle of its own members. It has recently issued the neat little volume

under consideration, wherein is given an excellent and concise account of the Tay Valley—Physical, Geological, Zoological, and Botanical—written by specialists associated with the club.

Part III. of the second volume of the Transactions of this Society, which has just reached us, also contains contributions of interest and value.

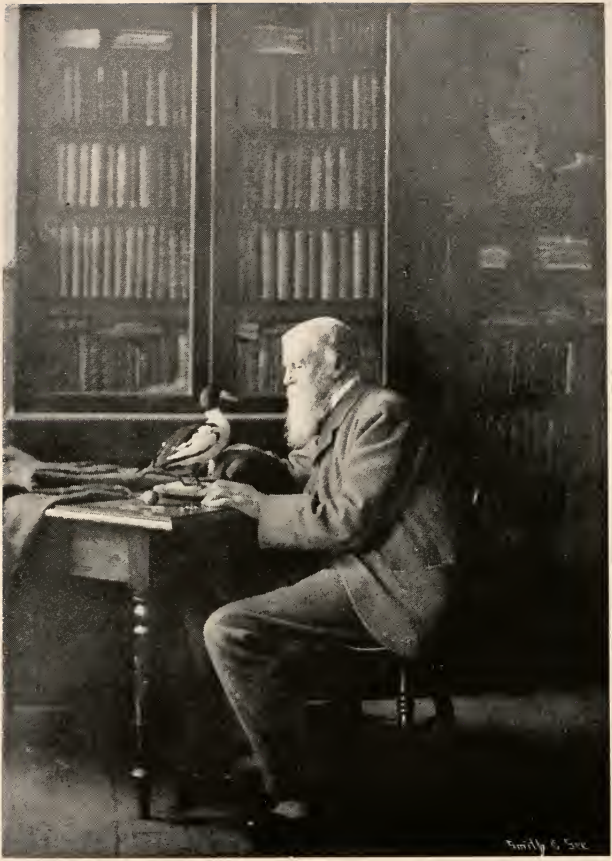
We congratulate the Society on its activity and usefulness, and we trust that other Scottish Societies having similar aims may be induced to follow its most excellent example.

A Guide to the Natural History of Loch Lomond and Neighbourhood: Mammals and Birds, by James Lumsden; Reptiles and Fishes, by Alfred Brown. (Glasgow: David Bryce and Son, 1895.)

This little work is intended by the authors as a guide to the Natural History of Loch Lomond and the surrounding district, the information being conveyed in as short and concise a manner as possible—the lists of Mammals and Birds by Mr. James Lumsden, Reptiles and Fishes by Mr. Alfred Brown. Amongst the Mammals, the Wild Cat, Pine Marten, and Polecat may be considered extinct; and the Mountain Hare, Rabbit, and Squirrel, all formerly unknown, are now abundant. The list of Birds, as might be expected from the very varied character of the scenery,—water, mountain, moor, and woodland,—is larger. The loch, 22 miles long and 5 broad, with an area of 21,000 acres, in the winter swarms with various wild-fowl; and many species of Waders, Gulls, and Terns, generally only found on the sea-coast, also abounding. All kinds of Hawks, owing to the continued persecution of gamekeepers, are becoming scarcer; so likewise Magpies, Hooded and Carrion Crows—the two latter interbreeding. Black Game have decreased, the probable cause, as the author suggests, being the hill-draining, which has changed the character of the undergrowth. The Common Redstart has increased very much in the last ten years. No Golden Eagles nest now near Loch Lomond, and the Kite, common fifty to seventy years since, has vanished.

Mr. Brown enumerates twenty species of fish belonging to Loch Lomond waters. These comprise several coarse sorts, and almost all the admitted species of the true Salmonidæ found in Britain.

This little volume is neatly got up and well printed, it has an excellent index, and will be found a very useful and necessary handbook for naturalists visiting the district. There are two illustrations representing a hybrid, the only one recorded anywhere, between the Capercaillie and Pheasant.—J. C.



COLONEL H. M. DRUMMOND HAY.

The Annals
of
Scottish Natural History

No. 18] 1896 [April

THE LATE COLONEL H. M. DRUMMOND HAY, C.M.Z.S.

With Portrait.

Henry Maurice Drummond Hay, of Seggieden in Perthshire, was a true naturalist in the best sense of the word. Experiencing a keen enjoyment in the study of animals and of plants, and especially in becoming familiar with them in their native haunts, he was at all times most ready and pleased to place his wide and accurate knowledge ungrudgingly at the service of all interested in the like pursuits. He spared himself no labour to extend his own knowledge, or to aid in bringing the knowledge of the works of creation within the reach of others. To the very end of a long life he showed an interest as lively, and an industry as great, in the study of the fauna and flora of Perthshire, and in the building up of the admirable museum belonging to the Perthshire Society of Natural Science, as he could have manifested in his greatest bodily vigour.

Born in 1814, he was the son of Admiral Sir Adam Drummond and of Lady Charlotte Murray, daughter of the fourth Duke of Atholl. He himself married the only

daughter and heiress of Captain Hay, of Seggieden, assuming the name of Hay. He entered the army, and joined the 42nd Regiment in 1832, rising to the rank of captain in it. Most of his time in the army was spent in foreign service—in Malta, the Bermudas, and Nova Scotia. Leaving the army in 1851, he returned to Perthshire, and joined the Perthshire Militia with the rank of major; and from 1854 to 1872, when he finally retired, he commanded the Perthshire Rifles. For years he took an active share in the public work of the county of Perthshire, acting as a member of administrative bodies, though latterly he found it necessary to restrict such labours to the Parish Council and the School Board of Kinfauns, of which latter body he had been chairman since its formation. He was an ardent golfer and curler. His death, on Friday, 3rd January 1896, was felt as a public loss; and the high esteem in which he was held was manifested by the very large number of mourners that attended his funeral in Kinfauns churchyard.

Possessed by a strong love of all kinds of nature-knowledge, and endowed with keen powers of observation, he made use of the opportunities afforded by foreign service in the army to gain an acquaintance with the fauna of the Mediterranean area and of the North American coast, of which he frequently made good use in future years, especially in regard to the habits and migrations of birds. While in the Bermudas he made a series of notes and drawings of the fishes of the islands. These he communicated in 1860 to the American Fishery Commission, from which they received high commendation. But it was especially by his earnest efforts to promote the investigation of the fauna and flora of his own county of Perthshire (though also extended to other parts of Scotland), and to strengthen the Perthshire Society of Natural Science, that he peculiarly earned the gratitude of all who recognise the interest of such studies and their value in education. To these ends he devoted much attention and labour alike in personal investigation in the field and in the study, fortunately rendered possible by excellent health even till advanced age, by the personal publication of the results achieved, by the free communication to others of the materials collected or the information

acquired by himself, and by much assistance, given most gladly and freely, in the formation of the Museum of Natural History. As honorary curator, he aided very greatly in making that museum a model of what a local museum should be. He took almost exclusive charge of the collections of birds and of nests and eggs, and bestowed the utmost care on their selection, preparation, and labelling. His active assistance was given in many other parts of the museum also, to those members of the Society that more especially undertook the several groups. The land and freshwater mollusca of the area, and the flora, especially the flowering plants and the mosses, had all been studied by him with productive results. The extension and advancement of the museum was an object very dear to him; and it was with great pleasure that he witnessed the successful completion of the recent enlargement in memory of his friend, Dr. F. Buchanan White, and the installation of the collections in their new home in the course of 1895.

He was an active member of the Society during twenty-five years, frequently communicating papers to its publications. He was President from 1882 to 1884, and acted as Honorary Curator of the Museum during the rest of the time.

He was Reporter on Ornithology in the East of Scotland Union of Naturalists' Societies, and contributed a very valuable report in 1886 on the birds of the counties (Fife and Perth to Aberdeen) in the Union. He was also an original member of the British Ornithologists' Union, founded in 1859.

His published contributions on the Natural History of Scotland are largely comprised in the publications of the Perthshire Society of Natural Science, and in the "Scottish Naturalist," of which he was, from its commencement in 1871, a warm supporter. These contributions relate chiefly to the birds and to the flora of Scotland. Of the latter may be noted:—"An Improved Method of Preparing Plants for the Herbarium" ("S. N.," 1872, pp. 270-272); "On the Flowering Plants of the Carse of Gowrie" ("S. N.," 1874, pp. 254-263); "Notes of a Botanical Excursion to the

Breadalbane Mountains" in August 1874, with Dr. White ("S. N.," 1875, pp. 18-20); "Effects of the Past Winter (1878-79) and Present Summer (1879) on Hard-Wooded Plants in Gowrie" ("S. N.," 1879, pp. 162-167, and 1880, pp. 221-228).

On the fauna his more important papers are:—"On Migration" ("S. N." from July 1877 to July 1878, extending to about 48 pages); "Notes on the Birds of the Tay and its Tributaries" ("S. N.," April 1879 to January 1881, extending to about 62 pages); "Storm Petrels (2 *T. Leachii* and 1 *T. pelagica*) found in Perthshire," on 22nd November 1881, after a violent gale from south-west ("S. N.," 1881, pp. 206-209); "Report on the Ornithology of the East of Scotland, from Fife to Aberdeenshire inclusive" ("S. N.," Oct. 1886, pp. 355-380); "Notes on some rare Perthshire Birds lately placed in the Museum" ("Trans. P. S. N. S.," i. pp. 1-15, 1887); "Notes on some Additions to the Birds and Nests recently placed in the Museum" ("Trans. P. S. N. S.," i. pp. 91-98, 1889).

He also contributed several short notes on the birds of Perthshire to the "Scottish Naturalist"; and the publications of the P.S.N.S. contain similar notes, and also reports on the condition of the Museum.

He is survived by his widow, two sons, and four daughters.

A LIST OF THE BIRDS OF BERWICK-ON-TWEED, WITH SPECIAL REFERENCE TO "THE BIRDS OF BERWICKSHIRE," AND NOTICES OF THE OCCURRENCE OF SOME OF THE RARER SPECIES IN THE ADJOINING DISTRICTS.

By George Bolam, F.Z.S., etc.

The borough of Berwick-on-Tweed contains, according to the Ordnance Survey, 7047 acres. It extends to about four miles north by nearly the same distance west of the town upon the north side of the Tweed, and on the south side

takes in the townships of Tweedmouth and Spittal. It has a coast-line of nearly five miles, and its situation at the mouth of a large river no doubt places it in a favourable position in respect of migration.

The completion of Mr. Muirhead's long-looked-forward-to work on the "Birds of Berwickshire" may perhaps be regarded as a not inopportune time to give a list of the birds of the borough ; and something of this kind may be the more useful to ornithologists inasmuch as Mr. Muirhead has confined himself strictly to the limits of his county, and has not touched upon the little corner lying to the north of the Tweed, which is comprised within the "Liberties of Berwick." In going over my notes of the last nineteen years, I am also enabled to add a considerable number of species to the Berwickshire list ; and, for the sake of comparison, reference will likewise be made in this paper to the occurrence of some of the rarer birds in the surrounding districts.

That such species as the Merganser, the Turnstone, the Sclavonian Grebe, and several others of the sea and shore birds, are not included in Mr. Muirhead's book, is no doubt owing to his having a more minute personal acquaintance with the interior of the county than with its sea-board ; while the fact that such birds have not been referred to in publications like "The History of the Berwickshire Naturalists' Club" is rather apt to be misleading to any one seeking information upon the avifauna of the district, although it no doubt arises in many cases from their being regarded as common, and not, therefore, requiring any special notice.

LIMICOLÆ.

Cream-coloured Courser, *Cursorius gallicus* (J. F. Gmelin).—This rare British bird has twice occurred on the Northumberland coast only a few miles south of our limits—viz. on 9th November 1846, when one was shot at Cheswick, and is preserved in Mr. Brodrick's collection ; and in the first week in November 1870, when another was obtained at Goswick, and is now in the Berwick Museum. These—our only records—are both well known, and are referred to in "Yarrell" and most other recent works on ornithology.

Golden Plover, *Charadrius pluvialis*, Linnæus.—A common winter visitant to the borough ; breeding on the moors on both sides of the border.

Grey Plover, *Squatarola helvetica* (Linnæus).—A regular autumn and winter visitant; not unfrequent in September and October about the mouth of the Tweed, and on the beach at the back of the pier; often singly, but sometimes in parties of half a dozen together. These are mostly young birds, as shown by their much-spotted plumage, and the yellow tints on the tertials and upper parts. On the adjoining coast, especially towards Holy Island, the bird commonly remains throughout the winter, and I have there shot examples in the much plainer plumage of maturity. Occasionally it lingers till late in spring, or perhaps we are then visited by birds which have wintered farther south, and are on their return journey northwards; and at this season I have sometimes met with full black-breasted birds.

Dotterel, *Eudromias morinellus* (Linnæus).—Lamberton Moor, which adjoins us upon the north, is one of the well-known spring resorts of this species in the district. A specimen in my collection, which was picked up there with a broken wing, on 17th April 1884, and kindly given to me by Mr. James Mein, has scarcely begun to assume the summer plumage; two others which I saw, and which had been shot near the same place a few days previously, had almost completed the change.

Scremerston, upon our south boundary, is also mentioned by Selby, as a "locality where they always appear in considerable numbers," but I am not aware that any have been noticed there for some years past.

Ringed Plover, *Ægialitis hiaticula* (Linnæus).—A resident. A common bird about the mouth of the river during winter, and breeds on the coast a few miles to the south. It seems occasionally also to nest on the gravel beds higher up the Tweed, where I have seen it during summer, above Coldstream in Berwickshire, and about Carham.

Peewit, *Vanellus vulgaris*, Bechstein.—An abundant and well-known resident.

Oyster-catcher, *Hæmatopus ostralegus*, Linnæus.—Is heard passing over Berwick, on migration, every year, and a few may generally be found upon the rocks during autumn, from the pier northwards. In winter they are less frequent here, but abundant to the south, particularly in the neighbourhood of Holy Island, where a pair or so sometimes manage to rear their young in safety.

I have frequently seen the Oyster-catcher upon the rocks between Lamberton and Eyemouth, and mention this as Mr. Muirhead does not refer to it there, though recording it as sometimes seen in the neighbourhood of Redheugh and at Siccar Point.

Turnstone, *Strepsilas interpres* (Linnæus).—A regular winter visitant. Occasionally seen upon the rocks here during autumn, but,

like some of its congeners, is much more frequent to the south of the Tweed than round the cliff-girt coast of Berwickshire. I have, however, seen it in the latter county about Lamberton and near the village of St. Abbs.

Mr. Muirhead's collection should contain an immature example, which I shot flying over the Magdaline fields, close to the old Berwick walls, early in the morning of 21st August 1879.

Grey Phalarope, *Phalaropus fulicarius* (Linnæus).—A rare winter visitant. A specimen in my collection was shot in the autumn of 1877 upon the coast, at Goswick, about five miles south of our boundary; and it is mentioned in Gray's "Birds of the West of Scotland," upon the authority of the Earl of Haddington, as having occurred at the mouth of the Tweed: this would be prior to 1871.

In Northumberland it has occurred several times in winter; and I have one, killed by a boy with a catapult, near Wooler, in June 1889, which is in winter dress, but has acquired a few of the red feathers of its summer plumage.

Red-necked Phalarope, *Phalaropus hyperboreus* (Linnæus).—A very rare winter visitant, our only occurrence being a specimen in immature plumage, which is in my collection, and which was shot on the Tweed, near New Water Haugh, on 26th September 1893, and brought to me the same afternoon. It has only been recorded two or three times previously for Northumberland, and nowhere to the north, that I am aware of, until we reach the neighbourhood of Dunbar.

Woodcock, *Scolopax rusticula*, Linnæus.—A well-known winter visitant, I have sometimes seen it flying over the town, and disturbed it from gardens in autumn. It breeds in the adjoining districts, on both sides of the Border, much more frequently now than was the case a few years ago.

Great Snipe, *Gallinago major* (J. F. Gmelin).—A rare autumn or winter visitant to the district, but has been recorded many times from both the adjoining counties, chiefly in September. Spital House, where one is mentioned by Mr. Muirhead as having been killed about 1865, is within a couple of miles of the borough.

Common Snipe, *Gallinago cœlestis*.—Common during autumn and winter, when, on Yarrow Slake, or at the mouth of the Whitadder, numbers are shot every year by our local gunners. In very hard weather I have more than once met with it below tide-mark amongst the rocks behind Berwick Pier. It nests in many places in the surrounding districts.

In the Museum we have a very fine specimen of the dark brown variety, formerly known as *Sabine's Snipe*, and which was shot at Marshall Meadows, within the borough, on 1st January 1875 (see "Hist. Berw. Nat. Club," vol. viii. p. 260). In February 1880 I

flushed an apparently equally dark-coloured bird upon Goswick farm, a few miles south of Berwick; and in the previous November I saw, in one of the game shops in the town, an unusually dark-coloured snipe, which was, in fact, nearly midway between a Sabine's, properly so called, and the common form: the whole of the under parts were more or less blotched with brown, and the pale margins to the feathers of the back and scapulars were altogether wanting. It was rather an unusually small specimen, and had been killed in the neighbourhood.

Jack Snipe, *Gallinago gallinula* (Linnæus).—Not so frequent as the common species, but occurs regularly in the same places every autumn. It generally appears in the first days of October. On the 3rd of that month, in 1891, I saw Mr. A. H. Evans shoot one, which we flushed from a heap of sea-weed lying upon the sands at high-water mark.

Sanderling, *Calidris arenaria* (Linnæus).—Not very numerous, but a few are always to be found running about the water's edge on the sandy shores a few miles south of Berwick during autumn and winter. They arrive in July and August, the adults then retaining more or less of their worn and faded summer dress: those which spend the winter with us seem to be mostly young birds, the full adult winter plumage not being very often obtained.

The Sanderling loves a wide stretch of sand, and is consequently not likely to tarry about the Berwickshire coast; but I have sometimes met with it at the mouth of the Tweed—one occasion being on 23rd August 1883, when my brother picked up a dead example behind the pier, and we saw several others flying about with the Ring Dotterels and Dunlins.

In spring it sometimes lingers until the complete summer plumage has been attained. On 20th May 1884 I saw a flock of not less than a couple of hundred of them, besides several smaller companies, upon the sands at Holy Island; some of these, which I watched through a glass, being in full breeding dress. On the same day there were also present three Gray Plovers with full black breasts, a Whimbrel, many Turnstones, Godwits, and Curlews, besides flocks of Dunlins and Ring Dotterels.

Curlew Sandpiper, *Tringa subarquata*, Güldenstädt.—An autumn visitant, which only appears for a few days on migration in September. Previously to 1884 I had not detected it here, and only once or twice on the adjoining coast of Northumberland, but since then it has not been unfrequent. There are several examples in my collection which have been shot at the mouth of the river, on Callot Shad, and behind the pier.

When flying, the Curlew Sandpiper is easily distinguished from a Dunlin by its white rump; and, seen in a mixed flock upon the sands, will be observed to stand perceptibly higher upon its legs.

Knot, *Tringa canutus*, Linnæus.—Very abundant as a winter visitant on the coast in the neighbourhood of Holy Island. The flocks come in September, a few old birds occasionally arriving nearly a couple of months sooner, and then retaining more or less of the red plumage of summer.

At Berwick I have only seen it as a straggler about the mouth of the river, but, as might be expected, a few turn up there every autumn; and it is frequently heard passing over, on migration, at night.

Dunlin, *Tringa alpina*, Linnæus.—A very common species from autumn to spring, known to our boys and local shooters as "*Stints*," which term, however, is used in a generic sense, and covers all the small waders of about this size, no distinction being recognised. Specimens in summer plumage, with breasts more or less black, are not uncommon, either in spring or autumn.

Purple Sandpiper, *Tringa striata*, Linnæus.—A winter visitant. A rock-loving species, which is common on the Northumberland coast. At Berwick we generally see a few every autumn, about the beginning of October; and in very stormy weather in winter I have occasionally seen one or two of these birds running about on the pier. This is one of the tamest, and most unsuspicious, of shore birds, and may sometimes be approached within a few yards.

Like most of the kindred species, the Purple Sandpiper takes to the water quite naturally; and I have often watched them, when wading about the pools on the rocks, swim across from side to side wherever the water was of too great a depth to admit of their touching the bottom. In like manner I have seen Dunlins, Redshanks, and Oyster-catchers, swimming without hesitation when they chanced to get out of their depth; and of course, as is well known, all those birds, including the Common Sandpiper, swim and dive with considerable power should they happen to fall into the water with a broken wing.

Temminck's Stint, *Tringa temmincki*, Leisler.—Has occurred several times in Northumberland, but not noticed here.

Little Stint, *Tringa minuta*, Leisler.—An autumn visitant, occurring rather irregularly upon the Northumberland coast in September, very often in company with the Curlew Sandpiper, and remaining only for a short time. In many years it does not come at all, or is not noticed, while in others it is seen in considerable flocks. At Berwick we have met with it pretty frequently of recent years, on the shad at the mouth of the river, and behind the pier. Like the Curlew Sandpiper, it seems to be of decidedly more common occurrence now than formerly.

Ruff, *Machetes pugnax* (Linnæus).—An occasional visitant in autumn. There is a specimen in my collection, which was purchased

from a game shop in the town, on 4th September 1878, and which I was informed had been shot at the mouth of the Tweed. I have two or three others killed within five or six miles south of Berwick; a female, shot on 12th October 1877, having almost attained the winter plumage. The last mentioned is the only specimen in that state which I have seen here, all the others being young birds in first plumage.

The two specimens from Lennel in September 1881, referred to in "The Birds of Berwickshire," p. 249, I have little doubt would be young birds, and not "in winter plumage" as stated. I have at various times seen immature birds in the late Mr. Brotherston's shop, but never an adult in winter dress, and I know that he used to regard the immature plumage as that of the adult in winter.

Bartram's Sandpiper, *Bartramia longicauda* (Bechstein).—The specimen in my collection, which was shot on the Northumberland coast, near Boulmer, on 21st November 1879, and recorded in the "Hist. Berw. Nat. Club," vol. ix. p. 167, is the only occurrence for the district.

Green Sandpiper, *Totanus ochropus* (Linnæus).—An occasional autumn visitant, frequently seen as early as July, and on 29th June 1880, I saw one at Spindleston, near Belford. Of late years it has occurred several times in the depth of winter, even during very hard weather. One in my collection was shot near the coast, on 7th March 1894; and I saw another, which had been killed by Mr. Orde, at Grindon, about the 10th of January 1893. At Berwick I have several times noticed it in September; and have seen several specimens shot about the mouth of the Tweed.

I saw the bird referred to by Mr. Muirhead (vol. ii. p. 253), as having been shot at Ninewells, in January 1891, and can vouch for its identification. Another was brought to me during the first week in August 1895, which had been obtained a day or two before at Ferneycastle, in Berwickshire.

Wood Sandpiper, *Totanus glareola* (J. F. Gmelin).—As is well known, Northumberland is the only county in the British Islands in which the nest of this species has been found; but the only authentic record of its occurrence in this district, known to me, is the specimen which was shot by my friend, the late Mr. C. M. Adamson, at Holy Island, on 16th August 1877, and recorded by him in the "Hist. Berw. Nat. Club," vol. ix. p. 362.

Common Sandpiper, *Totanus hypoleucus* (Linnæus).—A well-known summer visitant; it haunts the mouth of the Tweed, and sea coast, for a few days in August and September, preparatory to leaving the country, but seldom, if ever, manages to nest actually within the borough.

Redshank, *Totanus calidris* (Linnæus). One or two may often be seen about the mouth of the Tweed during autumn and winter, but it is a shy bird, and impatient of the constant risks of being shot at in such places. Along the coast it is always present at this season, sometimes gathering into considerable flocks. Two or three pairs nest in boggy ground on Lamberton Moor, just north of our limits, and there are several breeding stations in Northumberland, at no great distance from the town.

Dusky Redshank, *Totanus fuscus* (Linnæus).—A rare autumn visitant, has occurred two or three times upon the coast, within seven or eight miles of the south of the borough: a specimen in my collection was shot by the side of a pond near Barmoor, in Northumberland, about November 1891.

Greenshank, *Totanus canescens* (J. F. Gmelin).—A regular autumn visitant, in small numbers, to the Northumbrian coast in the neighbourhood of Holy Island, and sometimes winters there. About the mouth of the Tweed, or passing over Berwick, in September, I have seen it on perhaps half a dozen occasions during the last nineteen years, but have more frequently been attracted by its clear wild whistle as the birds flew over the town in the darkness.

As an unusually late date to meet with this species hereabouts, I may mention a pair which passed close to me near the railway station on 11th May 1884.

Bar-tailed Godwit, *Limosa lapponica* (Linnæus).—An autumn and winter visitant; frequents the mud flats at Holy Island in immense flocks, and straggles along the coast-line singly, and in small parties. Occasionally appears in August in the red summer dress, and I have met with it in spring as late as the third week in May.

I have several times seen and shot it on the shad at the mouth of the Tweed, and on the rocks northwards; and scarcely an autumn passes in which we do not recognise its peculiar call notes as the birds pass over the town on migration at night.

Black-tailed Godwit, *Limosa belgica* (J. F. Gmelin).—There are three specimens in my collection, obtained upon the sands between Goswick and Holy Island, in September, since 1883, and others have occurred there, but we have no nearer record. It seems to vary in size quite as much as the common Godwit. Upon the ground it may readily be distinguished from that species by its conspicuously longer legs and greater bulk.

Curlew, *Numenius arquata* (Linnæus).—A well-known and common visitant to our shores during autumn and winter, though of course not numerous in the immediate vicinity of the town.

Whimbrel, *Numenius phæopus* (Linnæus).—A regular spring and autumn visitant, most numerous in August and September, at which season, amongst the *Limicolæ*, it may certainly be regarded as one

of "the common objects of the sea-shore" along the coast of the borough, and the adjoining parts of Berwickshire. It is generally found in little parties of from two or three to half a dozen individuals, but not unfrequently twice or thrice that number may be seen together, while considerable flocks are often heard passing over the town at night.

It is usually one of the first of the autumn migrants to put in an appearance, and is also seen very late, sometimes, on the return journey in spring. Thus I find from my note-books that several were noticed about the rocks behind the pier, from the 8th to the 11th June 1887; while, in the same year, southward-bound birds were heard passing over as early as the 21st July. In 1893 Captain Norman and I listened to the call notes of numbers of Whimbrels, and Godwits, flying over his house in Castle Terrace, late in the evening of 19th May; and on 23rd June following I saw three Whimbrels at Newton-by-the-Sea, in Northumberland. On 26th May 1895 a single bird was frequenting a field near Scremerston. It seems unnecessary to particularise further; but, as Mr. Muirhead regards the Whimbrel as such a rare bird in Berwickshire, I may add that, in addition to its regular appearance on the coast about Lamberton, and Burnmouth, I have also met with it at Eyemouth, Coldingham, and near East Castle.

GAVIÆ.

Black Tern, *Hydrochelidon nigra* (Linnæus).—A rare visitant on migration in autumn. On 9th October 1878, I shot an immature specimen in the harbour here, and it is still in my collection. On 11th September 1886, my brother saw an adult at the same place, hawking about after floating refuse, along with the gulls, and it several times passed so close to him, as he stood upon the quay, that identification was assured. Three, in immature plumage, were observed at Holy Island for about a fortnight at the end of September 1892, and two of them, which were shot from a punt on the 5th October, are preserved in the Newcastle Museum. Another, also a young bird, was observed there in the second week in August in the following year.

Mr. Muirhead records one, from the MS. notes of Dr. Johnston, as having been obtained near Coldstream, on 9th May 1851.

Caspian Tern, *Sterna caspia*, Pallas.—The only record for the district is by Mr. J. H. Gurney, in a paper giving a *résumé* of the occurrences of the Caspian Tern in England ("Zoologist," 1887, p. 458), and is referred to as "One, Farne Islands, 6th June 1880, seen by Mr. E. Bidwell, but not obtained."

Sandwich Tern, *Sterna cantiaca* (J. F. Gmelin).—A summer migrant, which breeds plentifully at the Farne Islands, and still

sometimes attempts to do so on some parts of the adjacent mainland. It appears regularly off the mouth of the Tweed, from spring to autumn, and I have on many occasions seen it along the coast of Berwickshire. It is not included by Mr. Muirhead.

Roseate Tern, *Sterna dougalli*, Montagu.—A spring to autumn visitant, a few pairs nesting annually at the Farne Islands, where, on 14th September 1885, I watched a flock of quite twenty or thirty, old and young birds together, fishing off the Megstone Island.

I have frequently identified it off the coast in autumn, and on 5th August 1881, shot one a few miles to the south of Berwick. If closely looked for, it would, no doubt, sometimes be found amongst the flocks of Terns of the three common species, which visit the mouth of the Tweed.

Arctic Tern, *Sterna macrura*, Naumann.—A summer migrant, nesting plentifully at the Farne Islands, and rarely upon the mainland. It occurs commonly off the mouth of the Tweed, along with the Sandwich and Common species.

Although the Arctic Tern is not included by Mr. Muirhead as a Berwickshire bird, I have no doubt that it occurs every autumn along with the next species. I frequently see flocks of Terns off the coast, and about the harbour at Eyemouth, at that season; but I have never had an opportunity of handling a specimen, and must confess my inability to discriminate between the two species, when upon the wing, except under the *most* favourable conditions.

Common Tern, *Sterna fluviatilis*, Naumann.—A summer migrant, nesting at the Farne Islands, and occurring commonly here, and along the coast, together with the last species.

Mr. Muirhead says he has sometimes observed it near St. Abb's Head, and that it "may be easily distinguished from the gulls by its smaller size and forked tail," but he does not tell us how it is then to be separated from the last species.

Little Tern, *Sterna minuta*, Linnæus.—Many years ago this species used to nest upon the coast near Holy Island, but it now only occurs in the district as an occasional migrant, generally in autumn. Three examples, one adult and two young birds, were shot by my brother off the rocks at Scremerston, just outside the boundary of the borough, on 15th August 1890, and are in my collection. Two or three others have occurred in the district at this season: one killed at Ancroft in August 1877, is in the Berwick Museum; and another, at Goswick, in September 1890, is preserved by Sir William Crossman, at Cheswick House. On 14th June 1889, a solitary Little Tern was observed by my brother, flying about the harbour at Holy Island.

A year or two ago, an attempt was made to reintroduce the Little Tern as a breeding species, by placing some eggs, obtained

from other stations, in the nests of the Common, or Arctic Terns, on the Farne Islands, but I am not aware that the experiment has been attended with success.

Sabine's Gull, *Xema sabinii* (Joseph Sabine).—No record for the district. A young bird, shot three miles off North Berwick, on 2nd October 1877, is recorded by the late Mr. Robert Gray, and is in the possession of Dr. Crombie of that town. ("Hist. Berw. Nat. Club," vol. viii. p. 355.)

Little Gull, *Larus minutus*, Pallas.—Occurs as an occasional visitant in autumn, or winter, upon the Northumberland coast, and has frequently been obtained about Dunbar, and in the Firth of Forth.

Two specimens are recorded from Coldingham Loch: one in December 1869, and the other on 16th August 1877.

Black-headed Gull, *Larus ridibundus*, Linnæus.—An abundant resident, present about the harbour at all seasons, but of course most numerous from autumn to spring.

Notwithstanding all that has been written to the contrary, I have not the slightest hesitation in saying that here, at any rate, the assumption of the black head in spring is due to a regular moult, and not to any actual change in the colour of the feathers themselves; and a similar moult from black to white takes place in autumn. I have examined many gulls with a view to establishing this fact, and every specimen killed at the seasons of change has shown unmistakable evidence of moulting. This renewal of the feathers on the head is not even peculiar to the Black-headed Gull, for several, indeed most, of the other common species undergo a partial moult of those parts at the same seasons. While it is almost, if indeed not altogether, impossible to suppose that many of the statements, which have been published to the contrary, can have been made upon anything short of absolute proof, it is yet very difficult to believe that the change is brought about by a moult in some cases, and by a change in the colour of the feathers themselves in others.

The black hood is assumed very early in the year by some individuals. I have more than once seen it here apparently completed by the second week in January, and by the middle of February it becomes quite common. I have also upon two or three occasions seen specimens, which still retained the black band upon the tail, and a few of the brown feathers of immaturity about the scapulars, but which had attained perfect black heads. One instance of this occurred at Barrow Lake, in Northumberland, in May 1894, when many of the nests contained eggs, and the gull in question was apparently a breeding bird.

Several small examples of this species, corresponding in size to the Masked Gull, *Larus capistratus*, of some authors, have been seen or obtained here.

Common Gull, *Larus canus*, Linnæus.—Abundant throughout the year, although it does not, of course, breed anywhere in the district.

Herring Gull, *Larus argentatus*, J. F. Gmelin.—Another abundant species at all seasons. A few pairs only nest at the Farne Islands, but along the coast of Berwickshire it is by far the most numerous gull during the breeding season. Mr. Muirhead states that the most southern nesting station in the county is at the "Gull Rock," "about a mile north of Burnmouth Village"; I have, however noticed a few pairs sometimes breeding to the south of the village, and within about a mile and a half of the limits of the borough.

Lesser Black-backed Gull, *Larus fuscus*, Linnæus.—This is also a common resident, visiting the harbour and lower reaches of the Tweed at all seasons. As a breeding species it occupies exactly the opposite position to the Herring Gull, being abundant on the Farne Islands, almost to the exclusion of *Larus argentatus*, and a mere interloper upon the cliffs of Berwickshire.

Great Black-backed Gull, *Larus marinus*, Linnæus.—A pair or two of these most handsome birds may usually be seen about the harbour, and, as it occurs occasionally in summer, it must be considered a resident species. It is most numerous during winter, and in early spring, sometimes assembling in flocks of a dozen or even more together, particularly upon the sands from Scremerston southwards. It haunts the Tweed in pairs between Berwick and Kelso, and, together with the two last-mentioned species, levies a somewhat heavy toll upon the descending smolts in spring. Flying at an elevation of a few feet above the water, the Gulls descend head foremost upon the little fish, and with sufficient force to frequently disappear entirely from view beneath the surface. More commonly only the head and fore part of the body go under; while, when the dive is of medium depth, the tips of the wings, which are always thrown backwards at nearly their full expanse, are the only parts visible, looking then like a couple of small branches, about a foot apart, sticking up above the water.

Glaucous Gull, *Larus glaucus*, O. Fabricius.—An irregular winter visitant, appearing not uncommonly in some years; birds in the first plumage being most prevalent, adults much scarcer, and the intermediate stages rarer still. An adult in my collection was shot on Yarrow Slake, in December 1878, others were observed here in December 1879, and one on 15th October 1881. On 10th February 1895, I saw the remains of a very fine one upon the sands at Scremerston, and another was caught alive at Spittal about the same time. These were all adults, and several others might be mentioned. In March 1895, I found a dead example, in the second

or third year's plumage, near Berwick, and saw one, in a somewhat similar state, which had been shot along the coast in the winter of 1893-94.

This species is familiarly known to the people upon the coast by the name of the "Bass Gull."

Iceland Gull, *Larus leucopterus*, Faber.—A rare winter visitant. An immature example flew quite close past me, in company with some of the common species, on the sea banks near Berwick, on 3rd November 1878, and on 25th January 1885, I saw one, also in immature plumage, on the Cheswick sands, two or three miles south of the borough. There are several records for the Holy Island district; and there is one in the Museum, at Newcastle, which was shot at Howick burn mouth, in Northumberland, in December 1892, and which is in the rare, nearly white phase of the third or fourth year.

Kittiwake, *Rissa tridactyla* (Linnæus).—Breeds plentifully at the Farne Islands, and may rank as a resident, though the greater number appear to migrate southwards, in autumn.

It keeps more to the open sea than any of our other gulls, and is only occasionally seen inshore. After a storm large flocks may sometimes be observed, busily engaged dipping in amongst the angry breakers, on some stretch of beach where sea-weed and other refuse is being cast ashore.

Ivory Gull, *Pagophila eburnea* (Phipps).—An adult specimen, shot at Cessford, in Roxburghshire, in the spring of 1883, and now in the Kelso Museum, is the only record for the district. It has occurred once, at any rate, upon the Northumberland coast.

Great Skua, *Stercorarius catarrhactes* (Linnæus).—A rare autumn and winter visitant; has occasionally been shot upon the coast of Northumberland. I am not aware of any specimen having been actually obtained at Berwick, but on 5th October 1880, I had a good view of one which passed over me, near Tweedmouth, and of whose identity I have no doubt. A very large Skua, which appeared amongst the gulls in the harbour during the gale of 21st September 1891, must also have belonged to this species; and one or two other instances, where identification was not quite so certain, have occurred.

Pomatorhine Skua, *Stercorarius pomatorhinus* (Temminck).—An irregular autumn visitant, not very uncommon upon the coast, and in some years appearing in considerable numbers. It is most frequently seen in October, but a specimen which was shot here about the end of January 1891 is in the possession of Mr. Peter Cowe, at Oldcastles.

In the autumn of 1879, quite an irruption of this species occurred all along the eastern sea-board of the country; and on 14th October of that year great numbers visited this district, some dozens being

killed at Berwick. Exactly thirteen years later, viz. on 14th October 1892, I witnessed a remarkable migration of these birds on the coast at Holy Island. Rather a strong wind from the north and north-east had been blowing for three or four days previously, and the sea was stormy in consequence; and during the five or six hours I was upon the rocks, Pomatorhine Skuas were continually passing. The first flock consisted of thirteen individuals, while in others there were as many as twenty or thirty, and between these many smaller lots of from three or four to half a dozen birds. They all flew wild, and rather high over the water, and were, curiously enough, pursuing a course almost due north. White-breasted and dark forms seemed to be nearly equally numerous, and, out of the whole number which passed near enough for observation, not more than two or three were seen with the long tail-feathers in a perfect state: no immature birds noticed. They all passed in silence, and for the most part seemed intent only upon the accomplishment of their journey, very few of them stopping to pursue the Gulls and young Gannets which chanced to come in their way.

Richardson's Skua, *Stercorarius crepidatus* (J. F. Gmelin).—An autumn visitant, not uncommon along the coast about September, and appearing pretty regularly off the mouth of the Tweed.

Buffon's Skua, *Stercorarius parasiticus* (Linnæus).—Only an irregular visitant in autumn, and the rarest of the skuas. I saw a fine adult, which had been shot at Eyemouth about the first week in November 1879, the year of the great visitation of Pomatorhine Skuas; and several have occurred in Northumberland. When on our way home from the Farne Islands, on 14th September 1885, a beautiful adult bird passed the boat, about half-way on the journey to North Sunderland, and since that date I have seen two immature examples procured upon the coast.

PYGOPODES.

Razorbill, *Alca torda*, Linnæus.—A resident, abundant on the coast in autumn, and winter, and frequent about the mouth of the Tweed. A pair or two usually breed on the Farne Islands, and numbers round St. Abb's Head. A heavy mortality occurs during winter, when, after every storm, dead Razorbills and Guillemots may be found cast up at high-water mark.

Guillemot, *Uria troile* (Linnæus).—A common resident, breeding abundantly on the Farne Islands, and at St. Abb's Head. The Ringed variety occurs not uncommonly at both these stations, and has frequently been obtained upon the coast. The extent to which the white bridle is developed varies very considerably in these specimens.

The Guillemot not unfrequently comes into the river, where I have sometimes seen it as far up as New Water Haugh.

Black Guillemot, *Uria grylle* (Linnæus).—A winter visitant. It seems to keep well out to sea, and is very seldom seen here. There is a young example, in first plumage, in the Museum, which was shot at the mouth of the Tweed, by Mr. Thomas Darling, on 29th November 1879.

On 27th February 1896, I saw two specimens off the rocks at Holy Island, one of which was in full breeding plumage, the other being in the usual spotted winter state.

Little Auk, *Mergulus alle* (Linnæus).—An irregular winter visitant. Confining oneself strictly to the borough, I find from my note-books that several occurred here in January 1879; two or three in January 1885, one being shot near the mouth of the Whitadder and another picked up at Castle Hills; and a great many in 1895. From 30th January, in that year, up to 10th February, upwards of thirty Little Auks occurred here, and I saw considerably more than double that number, from other parts of the coast; many of these being dead examples, which had been washed up by the tide.

On 30th January, upon which date they seemed to have arrived here, there were numbers of them diving about the river, from the town up to as far as West Ord, several of them of course falling victims to the gun.

The only example in summer plumage, which I have seen in the district, was picked up by one of the workmen in the Duke of Northumberland's park, at Alnwick, on 7th May 1892: it had quite completed the change. My earliest record in the autumn, is 20th October 1894, when I found a fresh specimen washed up upon Cheswick sands.

Puffin, *Fratercula arctica* (Linnæus).—A resident, breeding at the Farne Islands. It is supposed that those which nest here move southwards in autumn, and that our shores are visited during winter by birds which have bred farther north. However this may be, the Puffin is certainly not uncommon upon our coast, during the winter months, and may frequently be found washed up upon the beach after stormy weather, along with Guillemots, and Razorbills. As tending perhaps to prove their northern origin, some of the specimens, which occur at this season, appear to slightly exceed our summer birds in size. An example in the Newcastle Museum, which was obtained near Holy Island, early in 1895, measured fourteen inches in length, and has a wing measurement of seven inches. I do not think that this bird is larger than others I have seen here, but unfortunately no note of their dimensions seems to have been kept.

Great Northern Diver, *Colymbus glacialis*, Linnæus.—A winter visitant, usually appearing towards the end of October. It rather inclines to fish in deeper water than its smaller congeners, and seldom ventures so near the shore, but a few are seen off the mouth of the Tweed, and along the coast, every year.

White-billed Northern Diver, *Colymbus adamsi*, G. R. Gray. —Has occurred upon the Northumberland coast, but not yet detected here. Some of the Northern Divers which I have seen here have, however, been very large birds; but owing to their shyness and astonishing powers of diving, opportunities seldom occur for examination at close quarters, and this is a species which is very likely to be overlooked.

Black-throated Diver, *Colymbus arcticus*, Linnæus.—A winter visitant, rather uncommon; but in the immature state, in which it most frequently occurs, it is not always discriminated from the "Speckled Diver" (the next species).

A young bird in my collection was shot off the mouth of the Tweed on 23rd October 1890, in which year several others were noticed here, up to the 10th December; and I have another, in winter plumage, which I picked up upon the beach, near Holy Island, on 7th March 1893. On 4th April 1886 I saw one, in full summer dress, diving about the rocks off Scremerston.

Red-throated Diver, *Colymbus septentrionalis*, Linnæus.—A common winter visitant. A female in my collection, in full summer plumage, was shot in the bay, on 23rd October 1890. I have seen several others in this state, but they are always sufficiently rare to attract attention.

Great Crested Grebe, *Podicipes cristatus* (Linnæus).—A winter visitor, which of late years has been noticed pretty regularly about the mouth of the river, and along the coast. It does not usually appear before October, but in 1889, I saw one here on 31st August. In spring it frequently remains until March. I saw one on 13th of that month, 1891, off the rocks at Lamberton; and on 30th May 1881, one was observed in the Tweed, near the Old Bridge. Many others might be mentioned. The birds which occur here are mostly immature, but I have seen several adults. It is sometimes met with a considerable distance inland, in the Tweed, as well as in some of our lakes, and ponds.

Red-necked Grebe, *Podicipes griseigena* (Boddaert).—Another winter visitant, not so frequent as the last, and generally appearing only in stormy weather, and not until late in the winter. In 1891, it was unusually numerous, many specimens occurring between 16th January, and 22nd March, in company with kindred species. Two were killed on Spittal beach, in February 1895, and others seen during this and the following month; and, were it necessary, many other instances might be given.

The plumage of the breast and under parts is often so much flecked with brown as to present quite a dark appearance, especially when viewed from the side; and the head and neck frequently retain traces of the stripes of immaturity, even in birds which are

killed in spring, and which have already begun to assume the summer dress.

Sclavonian Grebe, *Podicipes auritus* (Linnæus).—A pretty regular winter visitant, and the most common of the Grebes upon the coast. A few are generally seen about the mouth of the Tweed every season. I have frequently met with it here up to about the middle of March, but only in winter plumage. A specimen in my collection was shot on 17th February 1883, on the reservoir, at New East farm, close to the boundary between England and Scotland.

I have frequently seen it during February, and March, off the rocks on the coast of Berwickshire, where it may be ranked as an annual visitant, in small numbers.

Eared Grebe, *Podicipes nigricollis*, C. L. Brehm.—A winter visitant, far from being common. One was killed in the dock, by a boy with a stone, at the end of February 1880; and on 7th March in the following year two specimens, which had been obtained in the river, near the Old Bridge, came into my possession, one of them being the bird referred to by Mr. Muirhead (vol. ii. p. 317). In addition to these I have seen, and obtained, several others upon the coast, chiefly in the neighbourhood of Holy Island.

On 19th March 1891, I saw two of these Grebes at Holy Island, one of which was still in winter plumage, while the other appeared through the glass to have quite completed the change to summer plumage, and is the only example in this state, which I have met with in the district.

Little Grebe, *Podicipes fluviatilis* (Tunstall).—A resident, occasionally met with about the lower reaches of the Tweed, in autumn and winter; less frequent in salt water than any of the family, but I have sometimes seen it off the coast at the latter season. In summer it breeds in most of the larger lakes in the district, and even in some of the smaller ponds, as, for instance, about Scremerston, where its nest may be found in the disused limestone quarries.

TUBINARES.

Fulmar, *Fulmarus glacialis* (Linnæus).—A casual visitant in winter, and then generally found washed up dead upon the beach. Two specimens were picked up by my brother in this way at Goswick, on 15th October 1887, one of which was yet alive, though in a weak and sickly condition; and we found another near Holy Island, on 1st March 1888. These three birds are now in my collection. I have a fourth specimen, which was caught on board one of the Eyemouth fishing-boats, some miles off that village, and sent to me alive, on 26th October 1892. Others have occurred.

Several of the specimens obtained here belong to the dark form, while others seem to be intermediate between this and the ordinary white-breasted bird.

Notwithstanding the strong and peculiar smell of the Fulmar, it appears to be rather relished than otherwise as an article of food by crows and gulls: all the breast and fleshy parts of the Holy Island bird, above alluded to, had been devoured, while a "Corby" was disturbed in the act of picking the bones of another.

Sooty Shearwater, *Puffinus griseus* (J. F. Gmelin).—Has been obtained three or four times upon the Northumberland coast, but not nearer to Berwick than the Farne Islands. It has also occurred near North Berwick.

Mr. H. A. Paynter has informed me that in the early autumn of 1893, and again in 1894, he saw several birds, which he took to be of this species, when fishing in the vicinity of the Farne Islands; and I have had other, apparently well founded, reports of Shearwaters seen upon the coast.

Manx Shearwater, *Puffinus anglorum* (Temminck).—Except the specimen recorded by Selby from the Farne Islands, and figured in his "Illustrations of British Ornithology," I know of no instance of the capture of this bird in the district.

Storm Petrel, *Procellaria pelagica*, Linnæus.—A casual visitant, sometimes met with off the shore, and has occasionally been picked up dead at high-water mark. One was thus found by the late Mr. C. M. Adamson, on Goswick sands, on 10th September 1876, and is the nearest record to the borough which we have.

Fork-tailed Petrel, *Procellaria leucorrhoa*, Vieillot.—Another casual visitant, which has occurred almost as frequently as the last-named species. There is no record for the borough itself, but in the district one was obtained at Branxton, in Northumberland, on 3rd December 1885; another at Fowberry Tower, on 15th October 1891; and a third near Alnwick, on 31st of the same month.

(*To be continued.*)

NOTES ON THE BIRDS OF WEST ROSS-SHIRE.

By A. H. Evans, M.A., F.Z.S.

The following notes, derived chiefly from the writer's personal observations in the Loch Maree district, but containing occasional references to Mr. J. H. Dixon's more complete list in his "Gairloch in North-West Ross-shire" (1886), may be found of interest as supplementing those of

Messrs. Hinxman and Eagle Clarke ("Proc. Phys. Soc. Edin.," xii. pp. 377-415). It should be mentioned, moreover, that it was only through Mr. Dixon's kind help that it was possible to visit many of the localities concerned, and to carry out the investigations, which must be considered as mere additions to his valuable work. In most cases the exact spots at which the birds breed are not particularised, for obvious reasons; while it may be noticed that many of them are situated on forest ground or carefully preserved moors, to which access can only be gained by leave from the proprietors.

PHYLLOSCOPUS RUFUS. Chiff-chaff.—Fairly common near Loch Maree, but not mentioned in Messrs. Hinxman and Clarke's list.

PARUS MAJOR. Great Tit.—I have heard this bird's note close to Gairloch, but never at Poolewe or Loch Maree.

PARUS BRITANNICUS. Coal Tit.—Breeds very commonly in the district, being more plentiful than the Blue Tit. The note differs decidedly from that heard in the south, being sharp, ringing, and much more distinct.

ACREDULA CAUDATA. Long-tailed Tit.—Possibly this has been omitted by accident from Messrs. Hinxman and Clarke's list, as it is quite common near Inveran, where I have several times seen nests, with eggs or otherwise, in April.

MOTACILLA LUGUBRIS. Pied Wagtail.—Fairly common in suitable places.

MOTACILLA ALBA. White Wagtail.—Apparently bred at Poolewe on at least one occasion, *cf.* J. H. Dixon, "Gairloch," p. 245.

MOTACILLA MELANOPE. Gray Wagtail.—Not uncommon on rocky river sides.

ANTHUS TRIVIALIS. Tree Pipit.—It does not follow from the fact that neither Mr. Dixon nor I have noticed this species in Gairloch parish, that it is not a summer visitor there; but it would be interesting to clear up the point, as it is said to be fairly abundant in the south of the county.

ORIOLUS GALBULA. Golden Oriole. — Mr. Dixon states that Mr. O. H. Mackenzie saw one at Coile Aigeascaig on 25th May 1884, and that another was shot at Gruinard about 1870. Messrs. Hinxman and Clarke date Mr. Mackenzie's example 1883, and record a bird as shot at Loch Broom some years previously. The date in 1884 is no doubt correct, while the Gruinard and Loch Broom records may perhaps refer to the same specimen.

CHELIDON URBICA. House Martin. — Formerly common near Poolewe, and still breeding there, at least occasionally.

COTILE RIPARIA. Sand Martin.—Very abundant.

LIGURINUS CHLORIS. Greenfinch.—Appears to be more common at Loch Maree than Shieldaig, but not known to nest there.

PYRRHULA EUROPÆA. Bullfinch.—Has become plentiful of late years.

LOXIA CURVIROSTRA. Crossbill.—Certainly breeds in the parish of Gairloch, though possibly not with absolute regularity.

PLECTROPHANES NIVALIS. Snow Bunting.—As stated by Messrs. Hinxman and Clarke, this bird occurs in summer on the highest hilltops of the district; but my statement probably rests on the same authority as theirs, and gives no fresh information.

STURNUS VULGARIS. Starling.—Plentiful. Nests at times in heaps of stones and holes in the ground, as in Shetland.

CORVUS CORONE. Carrion Crow.—I saw a specimen shot at Inveran, on Loch Maree, about 20th April 1891, which was apparently breeding in the vicinity.

CORVUS FRUGILEGUS. Rook.—Rookeries exist at Kinlochewe, Poolewe, and Kernsary, besides the localities mentioned by Messrs. Hinxman and Clarke.

SYRNIUM ALUCO. Tawny Owl.—More common than the Barn Owl, though both nest in Gairloch; the eggs of the former being not unfrequently found in old rabbit-holes.

BUTEO VULGARIS. Common Buzzard.—This species is, I am glad to believe, rather more plentiful than in former years; owing, no doubt, to increased protection by the proprietors.

AQUILA CHRYSÆTUS. Golden Eagle.—The same may be said of this bird as of the last-named; but in the present case there is no doubt that it holds its ground well and is efficiently protected, while the district may be considered one of its chief strongholds and sanctuaries in Scotland.

HALIAETUS ALBICILLA. Sea-Eagle.
PANDION HALIAETUS. Osprey.
} Excellent notes on local breeding-stations formerly used by these birds will be found in Mr. J. H. Dixon's "Gairloch," p. 241.

ACCIPITER NISUS. Sparrow-Hawk.
FALCO ÆSALON. Merlin.
} Not uncommon, nesting in the Loch Maree district.

PHALACROCORAX CARBO. Cormorant.—Has bred very near Poolewe, and possibly still does so.

ANSER CINEREUS. Graylag Goose. — Messrs. Hinxman and Clarke consider that geese nest in this neighbourhood only on Loch Maree, but there is no doubt that they still breed in at least one other locality in the immediate vicinity.

FULIGULA CRISTATA. Tufted Duck.—Not yet reported in summer from Gairloch, though it will probably spread to these parts, judging from its increase elsewhere.

CLANGULA GLAUCION. Golden Eye.—I have seen a spot where this duck is said to have nested, and where supposed young were observed; but no further proof is as yet forthcoming.

MERGUS MERGANSER. Goosander. — It is now so well known that this species breeds in Ross-shire, as well as in other parts of North Scotland, that it is only necessary to call attention to the fact that it seems commonly—if not invariably—to nest in holes in the ground, either among heather or moss. These holes are often on stony banks or among roots of trees; and I suspect that the preference for cavities in trees shown

by the Goosander elsewhere is to a great extent a secondary habit.

COLUMBA PALUMBUS. Ring Dove. — Not very plentiful. The nest may be occasionally found on the ledge of a rock.

TURTUR COMMUNIS. Turtle Dove.—Recorded for 1880 by Mr. J. H. Dixon, "Gairloch," p. 248.

TETRAO TETRIX. Black Game.—Fairly abundant in the district.

GALLINULA CHLOROPUS. Moor-hen.—Not uncommon.

ÆGIALITIS HIATICULA. Ring Plover. — Breeds on Loch Maree, as well as on the sea coast.

NUMENIUS ARQUATA. Curlew.—Common on the moors.

NUMENIUS PHÆOPUS. Whimbrel. — Not so common a visitor as formerly.

LARUS RIDIBUNDUS. Black-headed Gull.—Nests on fresh-water lochs in several places in Gairloch parish, though not so plentifully as the Common Gull.

LARUS ARGENTATUS. Herring Gull.—A few pairs breed on the islands of Loch Maree, accompanied by large numbers of the Lesser Black-back; on the sea coast they are, of course, the most common.

LARUS MARINUS. Greater Black-backed Gull.—The same may be said of this species as the last, but it is decidedly less abundant.

PROCELLARIA PELAGICA. Storm Petrel. — Reported to breed, or have bred, on the islands of Foura and Longa.

URIA GRYLLE. Black Guillemot. — Not uncommon at suitable places on the coast.

COLYMBUS GLACIALIS. Great Northern Diver.—Probably as common in this district as anywhere else in Britain; it is nearly always to be seen on Gairloch or Loch Ewe, while not unfrequently two or three may be observed in company.

COLYMBUS ARCTICUS } Apparently becoming more
COLYMBUS SEPTENTRIONALIS } scarce, and certainly absent from some places tenanted a few years ago in summer. This is one of the cases where further protection may alter the state of affairs.

BIRD-MIGRATION AND INSECT LIFE IN THE SOLWAY DISTRICT IN THE AUTUMN OF 1895.

By Robert Service.

Bird-Migration.—The principal feature amongst the bird movements of the past autumn was the prolonged stay of such species as the Willow Warbler (*Phylloscopus trochilus*) and the Chats. No doubt this was induced by the extremely fine weather of September and the first half of October. The last Swallows (*Hirundo rustica*) were noted on the morning of the 16th October, and a few days thereafter very keen frost set in, and so hard was it that at Wanlockhead curling was engaged in—a thing unprecedented during at least a century past. The setting in of this severe weather was coincident with a very well-marked rush of birds to the southwards. Wagtails (*Motacilla*), Thrushes (*Turdus musicus*), Starlings (*Sturnus vulgaris*), Chaffinches (*Fringilla cœlebs*), Greenfinches (*Ligurinus chloris*), Robins (*Erithacus rubecula*), Skylarks (*Alauda arvensis*), Tits (*Parus*), amongst the small birds, and Lapwings (*Vanellus vulgaris*), Curlew (*Numenius arquata*), Barnacle Geese (*Bernicla leucopsis*), amongst the larger species, were very conspicuous in migrating flocks, more especially on the 15th to 18th October. They were either sitting or flying about in the first few hours of the day, and almost all gone off again by midday. During November and up till now very unusual numbers of Heron (*Ardea cinerea*) have been noticed all over our area. This is a species fast decreasing as a breeding resident, and the recent outcry against its fish-destroying habits in this district —unreasonable and unfounded as I think these allegations are in many respects—will tend to still further lessen its numbers. Remarkably large flocks of Common and Herring Gulls (*Larus canus* and *argentatus*), together with many Lesser Blackbacks (*L. fuscus*), have resorted to inland fields these last few weeks, no doubt driven off the sea-shore by the tempestuous weather in the Solway Firth and more open

parts of the Irish Channel ; but these movements amongst the Gulls can hardly be classed amongst the ordinary migration phenomena.

Insect Life.—On the 23rd, 26th, and 28th August respectively, specimens of *Sphinx convolvuli* caught in the neighbourhood were brought to me. They were all in a deplorable state of dilapidation. On 20th September a specimen of *Acherontia atropos* in the very finest condition was received. Personally, I have no doubt that these large Lepidopterous insects had been wafted to this locality on some migration wave. Their flight is certainly swifter than any of the small birds, and it seems at the same time to be performed in a far more easy and lighter way, so far as muscular exertion is concerned. The Red Admiral Butterflies (*Vanessa atalanta*) that were so numerous in all the gardens here, revelling upon the perennial asters, and upon dahlias and other flowers, feeding upon the juice of the fallen plums, and showing off their magnificent colours in the brilliant sunshine of an unsurpassed September, in numbers that I have never, in all my experience, seen equalled or even approached, were probably all of local origin. The same cannot be said, I confidently believe, of the myriads of *Plusia gamma* that abounded everywhere during the splendid weather that characterised a September that will be long referred to in meteorological annals. Within a few minutes' walk of my house there is a ten-acre field of clover that had failed in June owing to the hot, dry weather that prevailed then. It made up partially for this failure by growing and flowering luxuriantly in September. The myriads of *Plusia gamma* that frequented the clover flowers in this field for more than a week were beyond calculation. The whole field appeared to be in a constant movement with the flight of the moths from flower to flower. It would be very hard indeed to believe that such vast hordes of a particular species as were to be seen here could have originated from anything else than a great immigration.

SUPPLEMENT TO DAWSON'S "MOLLUSCA OF ABERDEEN AND THE NEIGHBOURING SEA."

By James Simpson.

A QUARTER of a century has now elapsed since the late Robert Dawson of Cruden communicated a paper to the Aberdeen Natural History Society on the "Mollusca of Aberdeen and the Neighbouring Sea." This admirable list was afterwards published by the Society, and is still of great use and value to those who take an interest in the distribution of our marine fauna.

Since the commencement of the trawling industry at Aberdeen thirteen years ago, a number of new species and varieties have been added to the list, chiefly from fishing-grounds sixty to a hundred miles off, which grounds Dawson was unable to reach.

Great caution must be exercised as to what one records as being found off Aberdeenshire, owing to the fact that the trawl and great line-fishing boats pursue their industry from Iceland on the one hand to the Dogger Bank on the other. For example, *Buccinum undatum*, var. *zetlandica*, *Buccinum humphreysianum*, *Fusus islandicus*, and others, have been from time to time found at Aberdeen. These can in no way be called local species. These remarks apply equally to other marine species, both vertebrate and invertebrate.

To make my supplement as complete as possible, I have looked through current literature, and also obtained records from other local collectors. To the latter my thanks are due.

My best thanks are also accorded to Mr. Marshall of Torquay for his unfailing courtesy in naming any species or variety about which I was in doubt; and to Mr. Herbert Howell for the ready way in which he supplied me with information regarding localities of any species he brought into port.

In the matter of names I have here followed Jeffrey's "British Conchology" in preference to Canon Norman's later, but not so well known, nomenclature.

PECTEN OPERCULARIS (*L.*), var. LINEATA, *Da C.*—Mr. Kelly obtained a specimen of this variety in 1892 on board a trawl-boat at Aberdeen. He was informed that the boat had been fishing from 20 to 30 miles off.

PECTEN TIGRINUS, *Mull.*, var. COSTATA, *Jeff.*—Very common in stomachs of flounders along with the type.

MYTILUS EDULIS, *L.*, var. PELLUCIDA, *Penn.*—On piles at Don mouth, and on stones at the north breakwater, Aberdeen.

MONTACUTA BIDENTATA (*Mont.*), var. TRIANGULARIS, *Marsh.*—"Aberdeen," Mr. J. T. Marshall in "Journal of Conchology" for October 1893.

AXINUS CROULINENSIS (*Jeff.*).—Recorded as having been found off Lossiemouth during the observations made on board the "Garland" in 1889. ("Fishery Board Report," 1889, part 3, p. 210.)

ISOCARDIA COR (*L.*).—Mr. Thomas Scott, F.L.S., obtained in the Moray Firth "two large specimens—one living and one dead" ("Fishery Board Report for 1889," part 3, p. 332). This species has also on various occasions been brought into Aberdeen by trawlers fishing in the Moray Firth, and given to Mr. Sim, A.L.S., to myself, and to other local collectors. I have been informed by the fishermen that they were generally found in 35 fathoms of water, about 40 miles off Buckie.

CYPRINA ISLANDICA (*L.*), var. CRASSIOR, *Jeff.*—Specimens referable to this variety are often found on Aberdeen beach after heavy gales from the north-east.

ASTARTE SULCATA, *Da C.*, var. SCOTICA (*M.* and *R.*), has been brought in by trawl-boats from the Buchan deeps. Var. FUSCA, *Poli.*—Frequent from deep water. Var. MULTICOSTATA, *Jeff.*—A number dredged about 80 miles off Aberdeen.

ASTARTE COMPRESSA (*Mont.*), var. STRIATA (*Leach*).—Mr. J. T. Marshall informs me that all the specimens of this species he has seen from this district are of this variety.

VENUS GALLINA, *L.*, var. LAMINOSA, *Mont.*—Six perfect specimens and a number of detached valves were dredged by me in 1893, 80 miles off the Aberdeenshire coast. Var. ALBA, *Somer.*—Found occasionally along with type on Aberdeen beach.

TELLINA BALTHICA, *L.*, var. MINOR, *Jeff.*, and var. NIVEA, *Jeff.*—Both varieties common on Aberdeen beach after storms. Another form of *T. balthica*—small, thin, orbicular, and inflated near the umbones—occurs at Aberdeen, amongst the mud which was dredged from the channel of the Dee during the time the harbour was being made. Although obtained

dead, it has not the appearance of being a fossil form. On submitting it to Mr. J. T. Marshall of Torquay, he was inclined to think it was a distorted form. Although I think it is quite as much entitled to rank as a variety as many other British "forms" until it can be examined alive and *in situ*, it will be quite enough to note its occurrence.

Donax vittatus (*Da C.*), var. albida, *Marsh.* (described by Mr. Marshall in "Journal of Conchology" for October 1893).—On submitting some *Donaces* to Mr. Marshall, he informed me that they were of this variety. It appears to be very abundant off Aberdeen, and could have been picked up in hundreds after the great gale in January 1895.

Mactra stultorum, *L.*, var cinerea, *Mont.*—Quite as common as the type on Aberdeen beach after heavy gales.

Scrobicularia alba (*Wood*).—A distorted form is often cast upon the beach at Aberdeen.

Solen siliqua, *L.*, var. arcuata, *Jeff.*—On rare occasions on Aberdeen beach.

Saxicava norvegica (*Spengl.*).—A single valve in the late T. Edward's collection of Moray Firth shells. Mr. Dow found on board a trawler at Aberdeen, which he says was fishing off Peterhead, a dead specimen in September 1893.

Saxicava rugosa (*L.*), var. minuta (*L.*).—On Corallines from deep water off Aberdeen. Var. præcisa (*Mont.*).—Common on *Laminaria* roots along the whole coast.

Teredo norvegica, *Spengl.*, var. divaricata, *Desh.*—A mass of tubes, 26 inches long, of this variety was brought into Peterhead in 1893 by a long-line fisherman, who found it attached to his lines in the Moray Firth. It is now in the Peterhead Museum.

Patella vulgata, *L.*, var. picta, *Jeff.*, and var. depressa, *Penn.*—Both forms are common on rocks south of Aberdeen.

Helcion pellucidum (*L.*), var. elongata, *Jeff.*—Dead specimens frequent on the beach.

Tectura testudinalis (*Müll.*), var. pallida, *Verk.*—In the rock pools at Girdleness.

Tectura virginea (*Müll.*), var. lactea, *Jeff.*—Rock pools on the Kincardineshire coast.

Trochus millegranus, *Phil.*, var. pyramidata, *Jeff.*—Dead specimens of this variety are often brought in from deep water by trawl-boats.

TROCHUS ZIZYPHINUS, *L.*, var. ELATA, *Jeff.*—This variety has been brought into Aberdeen by trawl-boats on several occasions, but in no case have I been unable to obtain precise information as to where they had been fishing.

RISSOA PARVA (*Da C.*), var. INTERRUPTA, *Ad.*—Common amongst littoral seaweeds.

RISSOA VIOLACEA, *Deom.*—Several dead specimens found on the beach at Peterhead.

RISSOA STRIATA (*Ad.*), var. ARCTICA, *Lov.*—Alive on the roots of *Laminaria* and other littoral seaweeds.

TURRITELLA TEREBRA (*L.*), var. NIVEA, *Jeff.*, and var. GRACILIS, *Jeff.*—Dead specimens common on trawl-boats when fishing in deep water.

ODOSTOMIA INTERSTINCTA (*Mont.*), var. TEREBELLUM (*Phil.*).—Mr. Marshall found several dead in dredged sand sent to him by me in 1893.

STILIFER TURTONI, *Brod.*—Six specimens of this rare shell were obtained by me in 1892 during a trip with a steam trawler. They were brought up in the trawl, attached to the spines of *Echinus esculentus*. At the time, we were trawling 80 miles off Aberdeen in 40 fathoms. Since then, numbers from various districts have been found on our local trawl-boats.

NATICA GRŒNLANDICA (*Gm.*).—Very common between the "Long Forties," and the "Great Fisher Bank." Generally dead, but quite fresh.

In reference to our Northern form of *N. grœnlandica*, Mr. Marshall says: "They have the shape and spire of *N. montacuti*. The Dogger Bank specimens usually have a more globular shell, with a small depressed spire."

NATICA ALDERI, *Forb.*, var. LACTEA, *Jeff.*, and var. SUBOVALIS, *Jeff.*—Both varieties are often obtained from deep water off Aberdeen.

PURPURA LAPILLUS (*L.*), var. MINOR, *Jeff.*—On stones at the north breakwater at Aberdeen.

BUCCINUM UNDATUM, *L.*, var. STRIATA, *Penn.*—On forwarding Mr. Marshall a specimen of what I took to be this var., he replied that although it was not a well-marked example, he would still regard it as referable to this form. Var. PELAGICA, *King.*—A large number of this fine variety have been brought into Aberdeen by trawl-boats. The largest I have seen measured $6\frac{1}{2}$ inches. Both varieties are found together, between the "Long Forties" and "Fisher Bank."

Amongst the *Buccina* brought into Aberdeen is sometimes an albino specimen. I see no reason why this form should not be called var. "*alba*," the same as other white varieties.

Trophon truncatus (*Str.*), var. alba, *Jeff.*—Found in deep water off Aberdeen.

Fusus antiquus (*L.*), var. alba, *Jeff.*—Brought in occasionally, from deep water, by trawlers. Var. ventricosa, *Jeff.*—This variety appears to be not uncommon in the deep channel between the "Long Forties" and "Fisher Bank."

Fusus norvegicus (*Chem.*).—Two damaged specimens found by Mr. Sim, A.L.S., in January 1893. Since that time a large number have been brought into Aberdeen. They appear to be principally found from 80 to 100 miles off.

Fusus turtoni, *Bean.*—A fine live specimen was obtained by me in 1892, while on board a trawler fishing 70 miles east of Aberdeen in 40 fathoms. Others have been brought in, but none of them nearer the shore than the one just mentioned.

Fusus gracilis (*Da C.*), var. convoluta, *Jeff.*—Dead shells on rare occasions on line-boats.

Nassa incrassata (*Str.*), var. minor, *Jeff.*—Very abundant below stones between tide-mark all along our coast.

Columbella nana (*Lov.*).—One found by me in 1888, another by Mr. Kelly in 1892, and a third by me in 1893. The last one was found on a trawl-boat which had been fishing about 30 miles off Peterhead.

Pleurotoma nebula (*Mont.*), var. elongata, *Jeff.*—Dead shells sometimes brought in from off Rattray Head.

Pleurotoma rufa (*Mont.*), var. lactea, *Jeff.*—Several dead specimens from the beach at St. Fergus.

Utriculus obtusus (*Mont.*).—A few dead specimens from shell sand collected near Girdleness.

Scaphander lignarius (*L.*), var. alba, *Jeff.*—One found by Mr. Kelly on board a trawl-boat which had been at work upon the "Aberdeen Bank." This fishing-ground lies about 20 miles from shore.

Philine catena (*Mont.*).—Several, dead: from shell sand at Aberdeen.

Philine nitida, *Jeff.*—One, alive: found by Dr. Chester of Southport amongst some Laminarian roots sent by me in 1893.

ON SOME NEUROPTERA FROM THE SUMMIT OF BEN NEVIS, COLLECTED BY MR. W. S. BRUCE.

By Robert M'Lachlan, F.R.S., etc., Treas. Ent. Soc.

As a continuation of the series of articles on the insects collected at or near the summit of Ben Nevis, commenced by the Rev. A. Thornley (*ante*, pp. 28-37), I now give a list of the *Neuroptera* so far as I am able to determine them. There were about 120 examples in all, belonging to about 13 species. It is a significant fact that, with the exception of the aphidivorous *Hemerobius*, all are insects that pass their preparatory stages in water, and the greater part of them in running water, and that it is necessary that the supply of water be not intermittent. It is evident from Mr. Bruce's introductory remarks (p. 29) that most of them must have been carried up nearly 2000 feet. Viewing them as a whole, they are remarkable for the numerous individuals of small *Perlidæ* and the extreme scarcity of *Trichoptera*, a condition of affairs somewhat inexplicable, considering that the preparatory requirements as to water are so similar in both.

The following is a list of the species observed :—

Div. TRICHOPTERA.

Limnophilus griseus, *L.*—One example, 5th June.

Brachycentrus subnubilus, *C.*—One example, 3rd June.

Div. PLANIPENNIA.

Sialis lutaria, *L.*—About 18 examples, on various dates early in June. This generally common insect was probably bred in the lake below 2000 feet, alluded to in Mr. Bruce's introductory remarks. It is of weak power of flight, and I should think quite incapable of being transported voluntarily to any considerable height.

HEMEROBIUS NERVOSUS, *F.*—10 examples, from 10th May to 30th June. These must almost certainly have come from at or below the tree line.

DIV. PSEUDO-NEUROPTERA.

PERLIDÆ.

CHLOROPERLA GRAMMATICA, *Poda.*—About a dozen in June.

ISOPTERYX TRIPUNCTATA, *Sc.*—More than a dozen in June.

I. BURMEISTERI, *Pict.*?—Three examples in June possibly belong here.

TÆNIOPTERYX RISI, *Morton.*—Two examples may be referred to this species, which has quite recently been separated from *T. trifasciata*, Pict., 26th May and 6th June.

LEUCTRA, *sp.*?—Nearly 20 specimens of a small species that it is inadvisable to refer to under any particular name in the present uncertain condition of the genus. End of May and beginning of June. One is indicated as found alive on the snow.

NEMOURA MEYERI, *Pict.*—Two specimens presumably belong here: they are in bad condition.

EPHEMERIDÆ.

RHITHROGENA SEMICOLORATA, *C.*—Nearly 40 examples, mostly in beginning of June. The habit of soaring, mostly in swarms, so common in *Ephemeridæ*, especially in the males, would render these insects especially liable to be carried away by sudden inrushes of warm air. But a certain small percentage of the individuals are still in the sub-imago condition, and in that state could not have voluntarily taken any lofty flight.

SIPHLURUS, *sp.* ??—One example, 2nd June, *may* pertain to this genus, but its condition precludes precise definition.

ODONATA.

PYRRHOSOMA MINIUM, *Harris.*—One male example, 5th June. This is the only dragon-fly in the collection.

THE LONDON CATALOGUE OF BRITISH PLANTS. 9TH ED.

[MR. DRUCE'S paper in our last issue (Jan. 1896) has elicited criticism from two of those most competent to discuss such vexed questions, and Mr. Druce has himself forwarded a few corrections and supplementary remarks. All these we print; but a discussion of the subject would tend to occupy so much of our space, while lying outside the limits of Scottish Botany, that we cannot resume it in further issues. The importance of reaching a well established and generally recognised nomenclature is acutely felt by all interested in systematic Botany and Zoology; but as to how best to secure it opinions differ widely. Let us never forget in the pursuit that the true aim of classification is to ensure accuracy in our work and true conceptions of the relationships of the objects of our study; and that while it becomes necessary at times to abandon familiar names, to do so except on very clear evidence of the necessity only introduces uncertainty and adds to difficulties already sufficiently formidable.—EDS., A.S.N.H.]

NOTES ON THE LONDON CATALOGUE. 9th ed. See "Ann. Scot. Nat. Hist.," pp. 38-53 (1896). G. C. DRUCE.

I find that there are a few misprints which I omitted to correct in my paper of the above date which it will be well to rectify. P. 42, l. 13, for "Rafinisque" read "Rafinesque"; p. 43, l. 8, for "Haas" read "Huds."; p. 47, l. 2 from bottom of page, for "*arvensis*" read "*palustris*"; p. 50, l. 24, *Legousia* is an older spelling of the name *Legousia* than *Legouzia*.

On p. 41, lines 17-18, for "this plant" read "*L. aristatum*." In the "Kew Index" *Lolium linicolum*, A. Br., is placed under *L. perenne*. Richter keeps it as a distinct species, but gives an earlier name, *L. complanatum*, Schrad, "Neues Journ.," iv. p. 73; but the date is 1810 according to the "Kew Index," not 1799. Nyman keeps it distinct both from *L. perenne* and *L. multiflorum*, as *L. remotum*, Schrank. P. 52, lines 9 and 10 from bottom, *Potamogeton perfoliatus*, var. *lanceolatus*,

should not have been mentioned here, as it is in the ninth edition, though it was not in the eighth. A few other changes, I find, will still have to be made if we adhere to the law of priority :—

The genus *Wahlenbergia*, Schrad (1814), appears to be antedated by *Cervicina*, Delile, "Fl. Egypt" (1813). Our plant will be *C. hederacea*.

Pubilaria, Rafinesque, "Fl. Tell.," ii. 27 (1836), antedates *Simethis*, Kunth, "En. Pl." (1843). Our plant is *P. bicolor*, Rafn., *l.c.*

Horkelia, Reichb., *ex* Bartling, "Nar. Ord.," 76 (1830), appears to be earlier than *Wolffia*, Hork., in "Linnæa," xiii. p. 389 (1839). Our plant would be *Horkelia arrhiza* (L.). It was the *Lemna arrhiza* of Linnæus.

Santia, Savi, in "Mem. Soc. Ital. Mod.," viii. (1798), is earlier than *Polypogon*, Desf., "Fl. Atl." (1800). Our plants are *Santia monspeliensis*, Parl., "Fl. Pal.," i. 73, and *S. littoralis* (Smith).

Coronopus Ruellii, All. (1785), is antedated by *C. procumbens*, Gilib.

Ulex Gallii, Planch., "Ann. Sc. Nat." (1849), p. 213, is antedated by *U. provincialis*, Le Gall, "Fl. Morb.," 128. Loiseleur's *U. provincialis*, which is earlier than Le Gall's, is now merged in *U. parviflorus*.

Poterium officinale, A. Gray (1868), is earlier than Hook. f. The "Kew Index" adopts the name *Sedum pruinatum* for *S. Forsterianum*, Sm. It is a little doubtful if the plants are quite identical.

Chrysanthemum Parthenium, Bernh., is earlier than Persoon.

Crepis succisæfolia, Tausch, "Fl.," ix. (1828), is antedated by *Crepis hieracioides*, W. et K., *ex* Willd., "Sp. Pl.," iii. p. 1601 (1800).

C. hieracioides, Ledeb., "Fl. Alt." (1833), is a different plant, for which another name will have to be adopted.

Sonchus asper, Hoffm., should be *S. asper*, Hill, "Herb. Br.," i. 47.

Utricularia major, Schmidel, "Ic. Pl.," is adopted in "Kew Index" for the plant known by us as *U. neglecta*, Lehm.

Mr. Druce's Notes on the London Catalogue of British Plants. 9th ed. 1895. By Arthur Bennett, F.L.S.

In the article by Mr. G. C. Druce in the January "Annals" there are a few matters that require to be modified respecting genera that I was responsible for. I do not pretend to discuss many of the controversial matters, as there is no finality to some.

Mr. Druce suggests that *Carex Vahlii*, Schkur ("Riedgr.," 87, 1801), is older than *C. alpina*, Swartz. I do not see how this can be, when Swartz's name appeared in Liljeblad's "Utkast till en Svensk Flora," ed. 2, 28, 1798. The date of 1803 I do not understand.

With respect to *Carex punctata*, Gaud., I presume, from Mr. Druce saying that *C. pallidior*, Degl., is the oldest name, that he has seen a specimen so named by Degland? if not, the name is not worth anything. As to *C. diluta*, Bieb., and *C. punctata*, Gaud., being the same; I have seen the original specimens of Gaudin, and also specimens named by Bieberstein, and they are absolutely identical! The fact of their being kept separate in Richter's work and in the "Index Kewensis" is nothing, as Mr. Jackson has often personally repudiated any idea of so dealing with many species, always saying, "This must be left to monographers."

Mr. Druce says that Robert Brown's genus *Listera* is antedated by Rafinesque's genus *Diphyllum;* if he will refer to my friend Morong's "A new species of Listera," in "Contributions from the Herbarium of Columbia College," No. 33, 1893, he will see how utterly untenable his position is, and that *Listera* must be retained.

Why should a note of interrogation be put after the census numbers of *Carex Davalliana* (1 Co.), *Senecio paludosus* (3 Co.), *S. palustris* (8 Co.), and *Holosteum umbellatum* (3 Co.), because they are extinct in some of the counties? A flora should show this, not a catalogue. There is no question of the occurrence of the first, notwithstanding the doubts that have been expressed. Of the second there are specimens in herbaria from the three counties (!), and it still probably

occurs in one.[1] Of the third there are specimens in herbaria from six counties (!), and it still exists in three. Of the last, specimens are extant for West Suffolk (!) East Suffolk, and Norfolk (!) where it still occurs, though happily not to be got at.

With respect to varieties, no one is responsible for introducing more to the British Flora than Mr. Druce himself, though no one has the opportunity of verifying them, and he does not even give his brother botanists references.

Under *Carex* the three names *canescens*, *leporina*, and *saxatilis* are again named as older. The reasons Mr. Druce gives as to genera are obviously inapplicable to species, the one made up of many units, the other of one or few, and so far more plastic.

He says: "Why a new name is coined for *Carex stricta*, Sm., when there are others older available, I cannot understand." Mr. Druce suggests *C. elata*, All. Has he seen a specimen? Because there is some reason to believe that Allioni's plant was a form of *acuta*. I reject his name of *C. melanochloros*, Thuillier. I have seen no specimen, and, if one may judge by other local species of Thuillier, it is not safe to accept it without a specimen.

Professor Hackel's determination that *Bromus racemosus* and *B. commutatus* are varieties of one species was long ago anticipated in a paper by G. F. Schultz in "Flora Apl.," 21, 1849 (translated in the "Botanical Gazette" for January 1850), where he remarks that Gaudin in his "Flora Helvetica" had described them as one species under the name of *B. simplex*. This paper bears evidence of careful *work*.

In saying "*Carex diandra*, Schrank, 1782, which is older than *C. teretiuscula*, Good." (1794), Mr. Druce may be correct, though I much doubt whether it is from any other information than the synonymy given. If this were always accepted, what a nice muddle it would lead us into. For example, in the genus *Potamogeton* take only Smith's names. Of these, I can vouch that three names, under three different

[1] It may save me trouble if I here record a note respecting a rare British species. Some years ago I had the pleasure of seeing some 25 specimens of *Orchis Simia* in full flower in Oxfordshire. I mentioned this in a natural history journal, and within the next fortnight I received 45 letters asking for the exact place where I saw them. I need hardly say none were answered.

species, mean the same thing! because after many years I have seen the actual specimens.

Mr. Druce says that (among many other names) he has failed to find *Potamogeton perfoliatus*, L., var. *lanceolatus;* but in *my copy* of the "London Catalogue" it is 1595*b*. Surely this was a slip on his part. Nowithstanding this, I am in accord with him in wishing that the plants now expunged, but included in the last edition, had been somewhere noted. Of course, reasons for their exclusion could not have been given. As to *Carex præcox*, var. *capitata*, I now think that this must be regarded as a monstrosity (simulating *C. capitata*, L.) rather than as a variety; while *Potamogeton polygonifolius*, var. *lincaris*, Syme, is a state only of *P. natans*, L.

In his "Appendix," Mr. Druce notes that *Carex præcox*, Jacq. (1778), is earlier than *C. verna*, Chaix, in Vill., "Fl. Delph." (1784). This is perfectly correct; only there is an earlier *C. præcox*, *i.e.* of Schreber, in "Spec. Fl. Lips.," 1771, which is reported to be the same as *C. Schreberi*, Schrk. (1789). If it is so, why Schreber's name is suppressed I do not know.

The "London Catalogue" doubtless has many defects, but what is required is careful work, and correlation of specimens, as well as hunting through books for older names.

Mr. Druce's Notes on the London Catalogue of British Plants. 9th ed. By Edward S. Marshall, F.L.S.

My friend Mr. Druce, in his recent exhaustive notes (pp. 38-53), has adversely criticised some changes made in the nomenclature of the *Epilobia*. Being personally responsible for these, I may perhaps be allowed briefly to show cause for what has been done.

1. The "*E. alpinum*" of Linné's herbarium is the Scandinavian *E. lactiflorum*, Hausskn., which does not occur in Britain. In face of this fact, it seems only reasonable to adopt *E. anagallidifolium*, Lam., the meaning of which is undoubted.

2. Again, the "*E. tetragonum*" of Linné's herbarium is

E. roseum, Schreb., and certain Continental authors have actually discarded the latter name in consequence; besides which, the confusion so long existing between *E. tetragonum* (auct.), *E. obscurum*, and *E. Lamyi*, renders the retention of the old aggregate name wholly undesirable.

3. *E. rosmarinifolium* was omitted in consequence of a communication from the late Dr. Buchanan White, who concluded that the alleged Glen Tilt station was erroneous. I am not aware that it has become permanently established anywhere in Britain.

4. Mr. Druce states (p. 39) that "Villars wrote '*Epilobium alsinifolium*.'" Haussknecht gives references to Vill., "Prosp.," 45 (1779), and "Hist. Dauph.," iii. 511 (1789). Mr. Britten, of the British Museum, has kindly informed me that the library there does not contain the first-named work, but that the second reference reads thus:—"Epilobium alsin*e*folium, 'Prosp.,' 45." The monographer appears, therefore, to be correct.

What field botanists have most to complain about nowadays is the ceaseless and kaleidoscopic changing of names, purely for the sake of change: a course of which Mr. Druce is one of the most industrious exponents. We are continually being called upon to abandon familiar titles, in accordance with the law of priority; and, in many cases, no sooner has the latest fashion been painfully acquired than we are jauntily told that the correction needs re-correction. Life is too short for the continual repetition of such a process, and many of us are heartily sick of it. If there is to be alteration, let it be deliberate, authoritative, and final. The state of chaos into which we are rapidly drifting threatens to make our science a laughing-stock. Apparently, names were not made for plants, but plants for names. I, for one, am sorry, seeing to what a position we have been driven, that the suggestion made (ten years ago) by one of our most accurate British botanists, viz. that Nyman's "Conspectus" should be followed, has been discarded. A fairly good standard is better than (practically) no standard at all; and that would, at least, have kept us in touch with Continental practice.

RECORDS OF SCOTTISH PLANTS FOR 1895, ADDITIONAL TO WATSON'S "TOPOGRAPHICAL BOTANY," 2nd Ed. (1883).

By Arthur Bennett, F.L.S.

I fear that the small number of records this year is rather to be attributed to my own want of energy, than to any "lapses" on the part of my correspondents.

The abbreviations, etc., are the same as in former records, viz. "Ann. S. N. H." = "Annals of Scottish Natural History"; "J. B." = "Journal of Botany"; "Trans. E. B. S." = "Transactions of the Edinburgh Botanical Society"; *sp.* denotes that a specimen was sent me, and ! denotes that I have seen a specimen from the county.

73. Kirkcudbright.

Sagina subulata, Avena pubescens } *J. M'Andrew*, in August 1895.

74. Wigtown.

(Records by *Mr. J. M'Andrew*, in August 1895.)

Hieracium gothicum.
„ auratum, Fr.
Cladium Mariscus (confirmation).
Carex lævigata.
Calamagrostis Epigejos.
Hymenophyllum unilaterale.

75. Ayr.

(Records by *Dr. Fullerton.*)

Spergularia rubra, *sp.*
„ rupestris, *sp.*
„ media, *sp.*
Hieracium boreale, *sp.*
Salvia Verbenaca, *sp.*
Calamintha Clinopodium, *sp.*
Lamium Galeobdolon, *sp.*

86. Stirling.

Cystopteris montana, *A. Somerville!*

88. Mid-Perth.

Rubus Rogersii, Linton, *C. Bailey* (1888, "J. B.," p. 86, 1895).

95. Nairn.

Callitriche autumnalis, *R. Thomson* ("Ann. S. N. H.," p. 257, 1895).

97. Westerness.

(Records by and *sps.* from *Mr. W. F. Miller.*)

Thalictrum dunense, Dum.
Cakile maritima.
†Lychnis alba.
Sagina apetala.
Medicago lupulina.
Vicia sylvatica.
Rubus villicaulis, Selmeri (Lind.)
Rosa rubiginosa.
Galium uliginosum.
Latuca muralis.
Campanula latifolia.
Veronica agrestis.
†Veronica peregrina.
Lamium intermedium.
Stachys arvensis.
Samolus Valerandi.
Atriplex laciniata.
Potamogeton rufescens.
Scirpus Savii.
Carex Boenninghauseniana.
,, fusca, All. (Buxbaumii).
,, lævigata.
Festuca elatior, t. *Hackel.*
Triticum caninum.

(The following are recorded by *Mr. S. M. Macvicar.*)

Hieracium rivale, Hanb.
,, Sommerfeltii
,, Schmidtii, Tausch.
,, scoticum, Hanb.
,, sparsifolium, Lindeb.
,, murorum, L.
} t. *Hanbury.*

Rhynchospora fusca, in five localities.

104. Ebudes, North.

(All recorded by *Mr. S. M. Macvicar.*)

Ranunculus Ficaria.
Dryas octopetala (apparently no record since Lightfoot's).
Rubus plicatus
,, pulcherrimus, New.
,, gratus, Focke.
,, insulare, Aresch.
,, Selmeri, Lindeb.
,, radula, Weihe.
} t. *Moyle Rogers.*

Mentha arvensis.
Ajuga pyramidalis.
Rumex domesticus (personal record).
Orchis incarnata.
Alisma ranunculoides.
Potamogeton lucens.
Carex curta.
Asplenium viride.

106. Ross, East.

Pyrus latifolia, *Marshall*, in "J. B.," 1895, p. 155.
Linnæa borealis. Refound in 1888 by Mr. H. Miller. Sutherland, in "Ann. S. N. H.," p. 62 (1895). Reported to the Committee of the British Association extinct in the old station.

107. Sutherland, East.

Pyrola uniflora, Sutherland, in "Ann. S. N. H.," p. 63, 1895. Personal authority, and confirmation of an old record.
Rubus Rogersii, Linton, *Marshall*, "J. B.," 86, 1895.

110. Hebrides.

(All records by and examples from *Dr. Shoolbred*, except *Elatine*).

Cochlearia "grœnlandica."
Elatine hexandra, *W. S. Duncan, sp.*
Rubus villicaulis, insularis, F. Aresch.
Valerianella dentata.
Spergularia rupestris.
Hieracium clovense, f. Linton
„ Schmidtii, Tausch.
„ caledonicum, Hanb.
„ Oreades, Fr.
„ Orarium, Fr.
„ stenolepis, Lindeb.
„ rubicundum, Hanb., *var.* Boswelli, Linton
„ lasiophyllum
} t. *Hanbury.*
Carex Œderi, Ehrh. (non auct.)

111. Orkney.

(Recorded by *Dr. H. H. Johnston* in "Ann. S. N. H., pp. 173, 181, 1895.)

Ranunculus heterophyllus, Fries.
„ radians.
„ Baudotii.
Saxifraga oppositifolia, confirmed
Fœniculum vulgare, "native."
Hieracium scoticum, Hanb.
„ britannicum, Hanb.
„ auratum, Fries.
„ strictum, Fr., *var.* amplidentatum, Hanb.
} t. *Hanbury.*
Petasites vulgaris
Primula veris
} confirmed as native plant.
Salix Myrsinites (as *var.* procumbens).
Phleum pratense, "native."

112. Shetland.

Cochlearia micacea, *Marshall*, in "J. B.," p. 152, 1895.

NOTES ON SCOTTISH ROSES.

By William Barclay.

In the beginning of 1894 I was asked to enter into correspondence with Professor Crépin, of Brussels, with the view of supplying him with selected specimens of our Scottish roses. To that request I gladly acceded; for, having paid some attention to roses for several years, I had found their study to be full of interest certainly, but also full of difficulty. It was therefore with much pleasure that I welcomed the opportunity of obtaining the opinion of such an authority as Professor Crépin upon many points concerning which I was in great doubt.

In April of that year I sent him a first parcel of about 100 specimens, duplicates from my own herbarium; and in the following autumn I forwarded a second parcel of about 240 specimens, gathered in the summer of that year, and of which I also retained numbered duplicates. Then in the autumn of 1895 I forwarded a third parcel of over 100 specimens gathered in the previous summer. On each of these parcels I received a full report from Professor Crépin; and in the sequel I purpose to state the chief points of these three reports, combining them as far as possible into one. The classification of species is, of course, that of Professor Crépin; and the translation of his notes is put within quotation-marks to distinguish it from any remarks of my own. I have inserted also the number of specimens sent by me of each species and variety, and the localities in which these were gathered; but it must be understood that in giving localities I do not profess to give anything like an adequate idea of the distribution of any form, and that nothing is to be deduced as to its abundance or rarity from the number of specimens collected and sent by me.

I cannot conclude these introductory remarks without mentioning the great kindness and courtesy which I have received from Professor Crépin during our correspondence. He has presented me with copies of many of his valuable

writings on roses; and to his generosity I also owe a fine collection of species from the Alps.

R. PIMPINELLIFOLIA, *Linn.*

6, from Mid Perth, West Perth, and Fife.

Var. *spinosissima*, Linn.

5, from Mid Perth and Fife.

R. INVOLUTA, *Sm.*

9, from East Perth, Mid Perth, West Perth, Arran, and Ayr.

In his first report Professor Crépin says: "I consider most of the forms of which I formerly constituted the group of *Sabiniæ* to be *R. pimpinellifolia* × *tomentosa*. Four of your Nos. have probably for their second parent *R. tomentosa*. With regard to No. 22 (Auchterarder Station), in which the sub-foliar glands are very abundant, these glands extend likewise to the upper surface of the leaflets. Can the second parent of this last hybrid be *R. tomentosa?* It is perhaps doubtful.

"I advise you to observe closely what are the species that exist in the neighbourhood of all the bushes of *R. Sabini* that you know of, in order to ascertain what are the parents of these hybrids.

"Many varieties of *Sabiniæ* have been figured or described; but it is very difficult to recognise them in nature, because of the variations which bind them to each other.

"During the coming season, make an attentive study of all your forms, and prepare good specimens of them in flower and in fruit."

This I did, and sent numerous specimens from nine different stations. Professor Crépin, in reporting on them, said that he considered all of them to have *R. tomentosa* for their second parent. With regard to the Auchterarder form mentioned above, he wrote, in his "Excursions Rhodologiques" for 1894, as follows:—"A second form to which I wish to draw attention has been observed by Mr. W. Barclay at Auchterarder, in the county of Perth. It is truly remarkable that I have seen nothing like it from

the Continent or from other localities in the British Isles. Its leaflets are profusely glandular below, and have many glands also on the upper surface; but what is extraordinary is that there are numerous long, stiff bristles clothing the pedicels and receptacles. At first sight one would imagine it to be the hybrid *R. pimpinellifolia* × *rubiginosa* (*R. echinocarpa*, Rip.); but this idea cannot be entertained when we look at the prickles, which are straight or but slightly curved. Moreover, *R. rubiginosa* is not found in the immediate neighbourhood. On the other hand, there is found growing beside the hybrid a form of *R. tomentosa* with leaflets glandular on both surfaces, and with pedicels and sepals thickly hispid-glandular. Let us not forget to add that the axes of this hybrid have quite the armature of the ordinary varieties of *R. Sabini*, Woods, that its receptacles have ripened, quite full of achenes, and that its sepals are persistent."

Another of the Perthshire bushes of *R. Sabini* was but poorly represented in the gathering of 1894, because when I visited it a heavy thunderstorm came on, and it was "cut and run." This year I sent numerous specimens of it in fruit, and gave the following reasons for thinking that it is the hybrid of *R. pimpinellifolia* × *mollis*, not *R. pimpinellifolia* × *tomentosa* :—

1. It grows between two clumps of *R. pimpinellifolia* and *R. mollis*, so close that the branches interlace.
2. Its prickles are straighter and more slender than in our other forms of *R. Sabini*.
3. Its sepals are much less appendiculate.
4. The pedicels are shorter than in the other forms, and the fruits are mostly solitary.

In reply to these reasons Professor Crépin, in his third report, says: "The reasons you mention are in favour of the idea that it is *R. pimpinellifolia* × *mollis*. It may be added that the stipules and their points are more dilated. Try to gather this No. with flowers."

On at least one other of our Perthshire forms I should like to reserve my opinion as to whether the second parent is *tomentosa* or not.

R. MOLLIS, *Sm.*

38, from Mid Perth, East Perth, West Perth, Forfar, Fife, Stirling, and Selkirk.

Professor Crépin has not attempted to subdivide the specimens of *R. mollis* into groups of varieties. He says in the first report: "Your Nos. are variations of *R. mollis*, Sm. *R. mollis*, Sm., is a synonym of *R. mollissima*, Fries, *non* Wildenow. What Wildenow has described under this name is *R. tomentosa*, Sm. I have seen the authentic type of this author."

R. TOMENTOSA, *Sm.*

I. Teeth composite-glandular, veins on under surface of leaves (nervures secondaires) glandular, pedicels hispid-glandular.

12, from East Perth and Mid Perth.

(*b*) Veins of under surface without glands, or appearing to be without glands.

4, from Mid Perth and West Perth.

II. Teeth broad, often with one or two delicate glands on their lower edge, glands which at length disappear so as to render the teeth quite simple. No glands on under surface of leaves.

2, from Mid Perth.

"You have named these last two Nos. var. *subglobosa*, Sm. This variety, as generally known, has the serrations of the leaflets more or less compound. Your two specimens tend to approach *R. cinerascens*, Dumt.

"Your No. 36, which you also name var. *subglobosa*, Sm., has the serrations more or less compound, and may be referred to the group of variations described by M. Baker under the name of var. *subglobosa*, Sm."

It was only the first parcel of *R. tomentosa* that Professor Crépin analysed in the manner given above. Of the gatherings of 1894, which consisted of 43 Nos. from localities in East Perth, Mid Perth, West Perth, and one or two Nos. from Arran, he wrote:—

"Your rich series of *R. tomentosa* is extremely interesting. If I had time I could make abundant remarks upon it; but that will be for a later date. I shall limit myself to a few short observations.

"No. 145 is remarkable for the numerous glands on the upper surface of the leaves.

"Nos. 143 and 160 are similar to it in this respect.

"No. 147 is a variety with leaflets *simply* serrate belonging to the group *R. cinerascens*, Dumt.

"No. 157 belongs to the same group.

"No. 149 has the teeth almost all simple, a few with one or two glands.

"No. 158 has the teeth irregular, simple, double, or with two 'denticules.'

"No. 140. In this form the flowering branchlets and certain parts of the branches are 'heteracanth.' This would seem to indicate *R. involuta*, Sm., but I think it is only a simple variety of *R. tomentosa.*

"No. 153 is probably what you think it, a var. of *R. tomentosa;* but, singular enough, the serration is irregular.

"Nos. 178 and 179 have a resemblance to certain forms of *R. coriifolia*, with leaflets glandular below."

The parcel of 1895 consisted of 43 Nos. from localities in Mid Perth, Fife, Stirling, Roxburgh, Selkirk, and Cheviotland. Professor Crépin reports on it as follows:—"All these Nos. have given 82 inflorescences one-flowered, and 79 many-flowered, which almost gives the proportion 1 to 1, as in my statistical work on this subject.

"All these numbers constitute a very fine series of variations. I have not sought to classify these variations. I shall wait, before doing so, till I find a satisfactory basis of classification, which I hope to be able to establish at a later date.

"In comparing your specimens of *R. mollis* with those of *R. tomentosa*, one can easily recognise the characters proper to each species—characters based on the form of the prickles, the shape of the stipules, the mode of erection of the sepals and their shape, the date of ripening, etc.

"I have already put forth the idea that there may exist a hybrid of *R. mollis* and *tomentosa.* Perhaps this hybrid has

heretofore not been recognised, or has been classed in herbarium collections either as *R. mollis* or as *R. tomentosa.* But how can we distinguish it? It is probable that we can do so only on the living bush. For this, a fortunate conjunction of circumstances would be necessary—a colony of *R. mollis* growing along with a colony of *R. tomentosa,* amongst which we should find a form intermediate between these two types. Look out for this in localities where *R. mollis* and *R. tomentosa* grow beside each other."

(*To be continued.*)

ZOOLOGICAL NOTES.

The Tree Sparrow in Midlothian and in the Forth Area.—On the 29th of December last, between Morningside and Comiston, and about half a mile beyond the southern limits of the city of Edinburgh, I observed a small flock of Tree Sparrows (*Passer montanus*). The party consisted of about a dozen birds, which were feeding, in company with about as many Greenfinches, in a stubble-field. While thus engaged they allowed a close approach, and when disturbed flew to a hedge near by, where again I had a most excellent sight of them. On the 28th of December there had been heavy snow for several hours from the east, and it may be that these birds were driven before it; for the Tree Sparrow has not hitherto, it would appear, been recorded for the county.

My friend, Mr. Wm. Evans, who has a master-knowledge of the avifauna of the district, has kindly communicated to me some interesting notes on this bird as a member of the avifauna of the Forth Area, which are well worthy of publication. They are as follows:—

"The Tree Sparrow has been known as an inhabitant of the eastern, that is the seaward, portion of East Lothian (the neighbourhood of Dunbar and North Berwick), and of the east of Fife (near Leuchars), for the last forty years; and what appear to be migratory flocks have been observed in the same counties on various occasions. The late E. T. Booth states that he met with them on two or three occasions late in autumn, flying along the links near Dirleton, and between Canty Bay and Dunbar; and they were repeatedly observed at the Isle of May, both in autumn and spring, between 1882 and 1886. In February 1889 a large number made their appearance near Kinghorn, Fife, two of which I obtained alive. Lastly, during the fierce north-east gale of 18th November 1893, Mr. G. Pow

observed a flock, estimated at about 200, sheltering behind the sea-wall at Belhaven, near Dunbar, and secured a couple which he kindly forwarded to me. This flock was still in the same neighbourhood in the beginning of January 1894.

"I am not aware that the Tree Sparrow has ever been noticed in the 'Forth' area to the west of the localities above mentioned till you detected the small flock at Comiston, in the heart of Midlothian, on 29th December last. Your record is therefore of great interest. I may mention that at the very time you saw the species near Edinburgh, I was looking for it to the east of North Berwick, about the farms where I have seen it nesting within the last ten or twelve years, but failed to discover a single bird."—WILLIAM EAGLE CLARKE, Edinburgh.

Chough in the Outer Hebrides.—On the 13th of September last I shot, near Stornoway, a Chough (*Phyrrocorax graculus*), a fact which may be worth recording since it is the first and only one, so far as I know, that has ever been killed or seen here. Last year, however, about the same time and at the same place, I saw a bird which I took to be a Chough, and was quite satisfied as to its identity at the time.—D. MACKENZIE, Stornoway.

Greenland Falcon in Shetland.—On 8th October 1895, a Greenland Falcon (*Falco candicans*) was shot at Peatsetter, Unst. It was brought alive to Mr. C. Arthur, Baltasound, who tried to keep it alive, as it appeared to be only slightly wounded. However, it died the next night, and the bird was sent on to me, and proved to be a male in immature plumage.—T. E. BUCKLEY, Inverness.

Gray Lag Goose in the Solway Area.—Mr. Turner, game-dealer, Dumfries, sent me an example of the Gray Lag Goose (*Anser cinereus*) on 7th November. This is quite the rarest of the gray geese in Solway. It is the only specimen that has passed through Mr. Turner's hands this winter.—ROBERT SERVICE, Maxwelltown.

Gadwall in Shetland.—Mr. T. Henderson, Spiggie, Dunrossness, Shetland, writes me that his son shot a Gadwall (*Chaulelasmus streperus*) on Loch Spiggie on 21st October 1895, "rather an unusual visitor."—T. E. BUCKLEY, Inverness.

Scaup Ducks in the Clyde Estuary in August.—On the 3rd August last I received from Mr. John Lang, Greenock, a female Scaup Duck (*Fuligula marila*) which he had shot in the estuary of the Clyde on the morning of the 1st August. Two others were observed in the company of the one dropped and now in my possession. There appears to be little or no evidence, with proof, of the occurence of this species in Scottish waters at that date, but Mr. Macpherson in his "Fauna of Lakeland" gives some interesting particulars of its appearance in the end of July and early August on the English side of Solway.—JOHN PATERSON, Glasgow.

Long-tailed Duck in the Solway Firth.—Until this winter we have not seen or heard of the Long-tailed Duck (*Harelda glacialis*) in the Solway Firth, since a small flock visited us in the early part of November 1887, and were mostly all shot in, or near, the estuary of the Esk. A pair in my collection formed part of this flock, and they were procured for me by the late Mr. Tom Duckworth of Carlisle. On 7th November last I was delighted to receive a Long-tailed Duck from Mr. Robert M'Call, who had shot a couple the previous day at Carsethorn. Mr. M'Call kept the other one for his own interesting little collection of local birds.—Robert Service, Maxwelltown.

Hybrid between Capercaillie and Pheasant.—Since the arrival and settlement of the Capercaillie (*Tetrao urogallus*) in Strathdon, many crosses between it and the Black-game (*Tetrao tetrix*) have occurred; but a hybrid between the Capercaillie and Pheasant (*Phasianus colchicus*) has not turned up until a most peculiar and interesting one was shot at Monymusk, the property of Sir Arthur Grant, Bart., at the end of the past year. The bird is much above the usual size of the Pheasant. The form of the head, beak, and feet is like that bird. The tail, in shape and marking, is also like the Pheasant, but not so long. The feathers of the back are marked like the Capercaillie, but tinged with the golden brown of the Pheasant. The neck, breast, and abdomen are wholly coloured as in the Capercaillie; and the tarsus is feathered for half its length. This is an unusual combination in hybridism, and I know of only two other instances of it.—G. Sim, Aberdeen.

Spotted Crake in Kirkcudbrightshire and Dumfriesshire.—A fine example of this scarce though resident species was presented to me on 2nd October by Mr. Tootal Broadhurst, who had shot it at Terregles on that date. The bird is an adult male, and its stomach contained several medium-sized shells of *Limnæa peregra* and one of *L. truncatula*, together with many seeds of the Water Plantain and a quantity of triturated shells and grit. Another Spotted Crake (*Porzana maruetta*) killed itself against the telegraph wires at Cummertrees in Dumfriesshire on 18th October, and was mounted by Mr. Harkness, Newfieldburn.—Robert Service, Maxwelltown.

[Captain Clark-Kennedy informed Mr. Harting that he had taken the nest of this species in Kirkcudbrightshire—an interesting fact, for a knowledge of which we are indebted to the last-named gentleman.—Eds.]

Spotted Crake in the Clyde District.—A Spotted Crake (*Porzana maruetta*) was killed at the Pladda Lighthouse, off the south-east coast of the Isle of Arran, on the night of the 24th October last, and its wings and legs were sent to us by Mr. R. M'Harrie, the Light-keeper.—J. A. Harvie-Brown and W. Eagle Clarke.

Iceland Gull at Stornoway.—Mr. M'Culloch received for preservation, on 28th November last, a young female Iceland Gull (*Larus leucopterus*), shot at Stornoway.—JOHN PATERSON, Glasgow.

Black Terns in Kirkcudbrightshire.—A Black Tern (*Hydrochelidon nigra*) was shot by Mr. Robert M'Call on the 18th October, in a field behind the village of Carsethorn. The species has not occurred in Solway for many years. There was an unusually strong migration of many species on the 16th, 17th, and 18th October.—ROBERT SERVICE, Maxwelltown.

Streaked Gurnard off the Kincardine Coast.—A beautiful specimen of the Streaked Gurnard (*Trigla lineata*) was brought to me by Mr. Herbert Howell, on 13th January last. The fish was caught by trawl eight miles off Stonehaven, and is the first of its kind known to have occurred on the north-east coast of Scotland. Dr. Day in his "British and Irish Fishes" records only two previous instances of its occurrence in Scottish waters, and these are both for the West Coast.—GEO. SIM, Aberdeen.

Sting Ray in the Solway Firth.—This rare species of Skate (*Trygon pastinaca*), so far as I know, has not hitherto occurred in our local waters. Early in July last Mr. John Hyslop, Carsethorn, sent me the tail and "sting" from an example of this species found lying on the shore. Some person had evidently cut off these appendages and thrown them away. They were quite fresh, having apparently only been a few hours detached from the fish. We therefore feel warranted in claiming this species of Skate as an addition to the fauna of the Scottish Solway.—ROBERT SERVICE, Maxwelltown.

Char in Loch Lomond.—In the recently published "Guide to the Natural History of Loch Lomond and Neighbourhood," the author says regarding the fish of the lake that "the most notable absentee is the Char," and tries to explain its absence. My impression is that the Char (*Salmo alpinus*), although not plentiful, does exist in Loch Lomond. In September 1891, when fishing in the Fruin, a tributary of the loch, an angler showed me in his basket a fish caught somewhere above Luss Bridge, which proved to be a very fine specimen of the Char in breeding costume. Judging by appearance, it must have been well over a pound in weight; and although my acquaintance had angled in the Fruin from boyhood, he had never captured in it a fish of the kind before. The river was somewhat in flood at the time, and the fish took a sea-trout fly and gave excellent sport. It is obvious that this Char must have travelled up from Loch Lomond, and it is probable that if one existed in it there must be more. In Loch Dochart, which is pretty near the upper end of Loch Lomond, the Char is fairly common, and I have often captured it there with the fly. It is possible that the few specimens of Char taken in Loch Lomond may have been mistaken for trout by careless observers.—G. BIDIE, Cheltenham.

Large specimen of Mytilus modiolus in the Firth of Forth.—Mr. J. J. Weir has kindly shown me a very fine specimen of the "Horse Mussel," measuring $7\frac{1}{4}$ inches in length and 10 inches in girth, which he caught in August last, on an ordinary haddock-line baited with herring, mid-way between May Island and Anstruther, in about 20 fathoms of water. Not only is the specimen considerably above the usual size of this species,—though examples over 9 inches are on record,—but the singular fact of its having entirely swallowed a baited hook is interesting, and calls to mind Pennant's assertion that it "often seizes the bait on the ground-lines," which statement, by the way, is ridiculed by Gwyn Jeffreys, but is substantiated nevertheless by Mr. Weir's capture, which had to be opened to recover the hook. —Wm. Eagle Clarke.

Silver-striped Hawk-moth in Ross-shire.—On the evening of 15th September 1895, at Tulloch, Dingwall, I captured a fine specimen of the Silver-striped Hawk-moth (*Chærocampa celerio*) whilst it darted on to a white trumpet-lily. This moth is rare in Britain, and especially in the north of Scotland, and its occurrence in Ross-shire may be worthy of record in the "Annals of Scottish Natural History."—Duncan Davidson, of Tulloch.

Cristatella mucedo, *Cuvier*, in the Lochs of Shetland.—This curious and interesting polyzoon is, when living, one of the most beautiful objects we can have under the microscope. But its beauty is not the only thing that makes it interesting: it has the power of locomotion, and can wander about on the stems of aquatic plants by a kind of crawling movement. I have not found the creature itself in material collected in the Shetland lochs; but the *statoblasts* which are so characteristic of this and of no other known British species occurred in one or two gatherings sent to me from Shetland. I found it, living, many years ago in a little loch near Rothesay. The *statoblasts* of *Cristatella* are round, compressed, and of a dark brownish colour, having usually round the circumference a fringe of small rod-like appendages barbed at the outer ends.—Thomas Scott, Leith.

Scottish Newts Wanted.—With a view to ascertaining the distribution of the various species of Newts in Scotland, I desire to receive specimens for examination from all parts of the country. All assistance will be fully and gladly acknowledged. They travel well alive in a little damp moss.—William Eagle Clarke, Museum of Science and Art, Edinburgh.

BOTANICAL NOTES AND NEWS.

First Records of Flowering Plants in Scotland.—In Mr. W. A. Clarke's enumeration of "First Records" ("Journ. Bot.," Feb.) are the following from Scotland :—

Luzula arcuata, Wahlb., 1824.—"Summits of Cairngorm and others of the Grampian Mountains. Professor Hooker."—Sm., "Eng. Fl.," ii. 183.

L. spicata, DC., 1787.—"On the very summit of Ben Lomond. Dr. J. E. Smith."—With., "Bot. Arr.," ii. 365.

Sparganium affine, Schinzl., 1851.—"In lakes, Island of North Uist, and Galloway, Scotland."—Bab., "Man.," ed. 3, 338.

Potamogeton Zizii, Koch, 1879.—"Found in Cauldshields Loch, near Melrose, N.B., by Mr. A. Brotherston."—"Bot. Exch. Club Rep.," 1878, 19 (1879), and "Journ. Bot.," 1879, 252.

P. Sturrockii, Ar. Benn. (in "Scot. Nat.," 1883, p. 27), 1883.—"Marlee Loch, Perthshire. Discovered by Abram Sturrock."

P. filiformis, Pers., 1843.—"Lakes in Forfarshire."—Bab., "Man.," ed. 1, 326.

Zannichellia polycarpa, Nolte, 1875.—"Kirbister Loch, Orphir, Orkney, July 1874. William Fortescue."—"Bot. Exch. Club Rep.," 1872-74, p. 41, and "Journ. Bot.," 1875, 376. First found there by Syme in 1849.

Scotch Hieracia in Fielding Herbarium at Oxford :

A specimen labelled "*Hieracium cæsium*," collected by J. Backhouse from Glen Fiadh, Clova, Forfar, in Fielding Herbarium at Oxford, is *H. rivale*, F. J. H.

"*H. nigrescens*," from Cairntoul, South Aberdeen (J. Backhouse), is *H. curvatum*, Elfst.

"*H. anglicum*," from Ben Lawers (Professor Lawson), is *H. cerinthiforme*, Backh.

"*H. murorum*, var. *rotundatum*," from Canlochan in Forfarshire (J. Backhouse), is *H. murorum*, var. *variicolor*, Dahlst.

"*H. anglicum*" and "*H. iricum*," collected by Professor Lawson in Skye, are correctly named. Mr. Hanbury has named the above. —G. C. Druce.

Set of British Salices, Fasc. iii. (Nos. 51-75), issued by Rev. Ed. F. Linton and Rev. W. R. Linton.—This fascicle is not inferior in interest, or in excellence of the specimens, to the earlier two, and the accompanying notes add much to its value, indicating clearly the views of the able specialists by whom it is issued. Most of the examples in it are of Scotch origin, though a number of them have been cultivated for some time in England, chiefly by E. F. Linton at Bournemouth. The latter are distinguished below by an asterisk, the locality given for each being the original source of the plant.

The following notes on the fascicle will be of interest to our readers. No. 52, *S. sesquitertia*, F. B. White (*aurita* × *phylicifolia* × *purpurea*), from the bush at Thornhill from which the form was originally described. *No. 54, *S. Lapponum*, L., from Ben Lawers and rocks near it; a form with broad leaves, greener than usual, and some obscurely serrated. No. 55, *S. Caprea*, L., with conspicuous style, from Thornhill, Dumfriesshire. *No. 56, *S. aurita* × *nigricans*, Heidenr., from Clova. *No. 57, *S. aurita* × *Myrsinites* × *nigricans* (?), from high up the slopes of Meall Garbh, Mid Perth; determined as this hybrid by F. B. W., and shown to be so by cultivation. No. 58, *S. ludificans*, F. B. W. (*aurita* × *phylicifolia*), from New Loch, Thornhill, in which *aurita* preponderates. *No. 59, *S. ludificans*, from Clova, in which *phylicifolia* predominates, as usual. No. 60, *S. ambigua*, Ehr. (*aurita* × *repens*), (1) from Lochsie Burn, Glen Shee, and (*2) from Clova, the latter with broader leaves, rounded, and only shortly mucronate at tip. No. 63, *S. subsericea*, Doll., from Sutherland coast near Armadale, cultivated in a garden in Derbyshire; this was regarded by F. B. White as *Caprea* × *repens* (Revision, p. 394), but after six years of careful study the Messrs. Linton feel convinced that it is *cinerea* × *repens*, and believe that Dr. White's *cinerea* × *repens* (Revision, 393-394) is only strong *repens*. *No. 64, *S. nigricans*, Sm., two *leiocarpa* plants—one from Clova, the other from Meall Garbh. *No. 65, *S. nigricans*, Sm., from high level on Ben Lawers, low-growing, green and glabrous, believed to show *by foliage* a remote strain of *Arbuscula*. No. 66, *S. phylicifolia*, L., a *leiocarpa* form from Lybster in Caithness, cultivated in Derbyshire. No. 67, *S. simulatrix*, F. B. White (*Arbuscula* × *herbacea*), from Meall-na-Saone. Nos. 68-71, an interesting set of forms of *S. repens*, L., showing uselessness of even varietal names. *No. 73, *S. Myrsinites*, L., from Glen Fiagh, Forfarshire; a curious form which may owe shape and size of leaves to a strain of *nigricans*. *No. 74, *S. punctata*, Wahl. (*Myrsinites* × *nigricans*), from Glen Fiagh. No. 75, *S. sobrina*, F. B. White (*herbacea* × *Lapponum*): (1) from rocks north of Ben Lawers, where it was found with flowers of both sexes in fair quantity; (2) the same, smaller, as cultivated in Derbyshire.

Juncus supinus, *Mœnch.*—It would be interesting to know which is the prevailing form of this plant in the west of Scotland. I have examined several hundred specimens on the west coast of Inverness-shire, and have found in every case, with I think three or four exceptions, that the plant had six stamens, with filaments nearly twice as long as the elliptical anthers, being, I suppose, the var. *Kochii*, Bab. This refers to the land form, which occurs up to at least 2800 ft. alt. I think, however, that the hill plant has filaments relatively shorter to the anthers than the low-ground form. All the specimens I have examined in Skye, Eigg, and the north of Mull,

have resembled the mainland plant with six stamens and long filaments. As the floating form has only occasional chances of flowering, I have examined comparatively few specimens, but the great majority had stamens and length of filaments in the same proportion as the land plant; though I have noticed on a few occasions three stamens, and filaments and anthers of about equal length. The submerged capillary-leaved form which grows in large masses at the bottom of lochs very rarely has a chance of flowering, but the few examples I have seen in flower have all had six stamens with filaments longer than the anthers. This last form is very unlike a *Juncus*. *Scirpus fluitans*, L., which grows in similar patches on the bottom of lochs and stagnant pools, resembles it a good deal, as in such situations it also has long capillary leaves.—Symers M. Macvicar.

Algæ new to Scotland (Cyanophyceæ and Florideæ).—In a paper in the "Journ. Bot." for January, Mr. E. A. L. Batters notes several additions to the British lists. Those found in Scottish localities are as follows:—

Lyngbya (*Leibleinia*) *Meneghiniana*, Gomont.—Firth of Forth, opposite Caroline Park, August 1887.

Phormidium tenue, Gom.—Muddy estuary of the Tweed, October 1883.

Ph. ambiguum, Gom.—In deep rock pools near high-water mark, Cumbræ, August 1891.

Ph. uncinatum, Gom.—In muddy estuary of the Tweed, 1884. Ballachulish in 1885. Muddy estuary of the Tweed, July 1894.

Ph. persicinum, Gom.—On old solen shells dredged from six to eight fathoms, Cumbræ, August 1891.

Colaconema, new genus.—Thallus microscopic, living in cell-walls of algæ, of rose-red, creeping, irregularly-branched, jointed filaments, often anastomosing, sometimes loosely united laterally. Monosporangia formed from portions (*a*) of terminal cells of the principal axes, or (*b*) of short, swollen, one-celled or few-celled branches, or (*c*) of cells in the continuity of the filaments, the undifferentiated basal portions of the cells forming cup-like bases for the sporangia.

C. Bonnemaisoniæ, n. sp.—In *Bonnemaisonia asparagoides*, at Berwick-on-Tweed.

Chantransia microscopica, Foslie.—On *Porphyra*, at Berwick-on-Tweed, bearing monospores, cystocarps, and antheridia, in June 1895.

Peyssonnelia Rosenvingii, Schmitz.—Near low-water mark, Berwick-on-Tweed, February 1888.

The following species, also mentioned by Mr. Batters as new to Britain, though not yet detected from Scotland, should be looked for on our coasts, where at least some of them will be found:—*Lyngbya*

Agardhii, Gom., on *Polysiphonia nigrescens* (Margate); *L. Rivulariarum*, Gom., in sheaths of *Microcoleus chthonoplastes* (Studland and Swanage); *Phormidium corium*, Gom., in crevices of rocks near high-water mark (Swanage); *Erythrotrichia Boryana*, Berthold (Eastbourne); *Colaconema chylocladiæ*, n. sp., in *Chylocladia ovalis* (Torquay and Plymouth); *C.? reticulatum*, n. sp., on *Desmarestia Dudresnayis* (Moville); *Chantransia cæspitosa*, on *Codium tomentosum*, *Fuci*, etc. (Swanage); *C. mirabilis*, on *Desmarestia aculeata* (Swanage); *Rhodochorton pallens*, Hauck. (Seaton, Devonshire, with tetraspores in July); *Callithamnion lepadicola*, J. Ag., on limpet shells (Swanage); *Bonnemaisonia hamifera*, Hariot (Falmouth); *Rhododiscus pulcherrimus*, Crn., on an old *Solen* shell (Plymouth); *Peyssonnelia* (*Cruoriella*) *rubra*, J. Ag.—the examples from Birturbui Bay, described by Harvey as *P. Dubyi*, prove to be *P. rubra*; *P. atropurpurea*, Crn. (Penzance); *Cruoria rosea*, Crn., on old shells (Plymouth).

It is further noticed that Professor J. G. Agardh, in his recent "Analecta Algologica," continuatio ii., records three new species of *Ceramium*, viz. *C. Crouanianum*, *C. fruticulosum*, and *C. arborescens*, from Britain (probably from materials sent to him from Devonshire or Cornwall by Mrs. Griffiths), and raises to specific rank *vimineum*, *corymbosum*, and *botryocarpum*, formerly ranked as varieties of *C rubrum*.

A new genus is established for the plant formerly known as *Spermothamnion Turneri*, f. *intricata* (Holmes and Batters' "Revised List"); the discovery of its tetraspores (by Mr. G. Brebner, in October 1895, at Plymouth) having shown it to be generically distinct from all known *Ceramieæ*. The name selected is in honour of Mr. G. W. Traill.

Trailliella, n. g.—Fronds of monosiphonous branching jointed filaments; the primary filaments procumbent and attached to substratum by disc-shaped cells—the secondary arising from the primary and erect and branching. Tetraspores immersed, irregularly cruciate, formed from a portion of contents of cells in the continuity of the filaments (formed like monospores of *Rhodochæte*, see Bornet in "Les Algues de P. K. A. Schousbœ," p. 361). Cystocarps and antheridia unknown.

The "Journal of Botany" has been enlarged from 32 to 48 pages per month, and its price is now 16s. instead of 12s. per annum. The enlargement has been rendered necessary by the pressure of matter waiting for space. The decease of *Grevillea* has added to the papers on Cryptogams forwarded to the "Journal of Botany."

British Hieracia.—The Revs. W. R. and E. F. Linton propose to issue a set of specimens to illustrate the numerous forms of this most perplexing genus that have been in recent years detected within

the British Islands. Of the 214 forms that are included in the last edition (9th) of the "London Catalogue," about one-half will be represented, as four fascicles will be issued (at 21s. each), of not less than 25 numbers in each. The numbers will each "commonly contain a wild and a cultivated specimen; or a wild only, if such can be procured to represent the species well; or cultivated only, if the wild are not procured in sufficient quantity." All communications to be addressed to Rev. W. R. Linton, Shirley Vicarage, Derby. It is unnecessary to say more than that the excellence of the sets of *Salix* and of *Rubus* issued by the Messrs. Linton guarantee the value of the new series in a perhaps yet more difficult genus.

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—January-March 1896.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

Measurements of Marten. C. Kennard. *The Field* (22nd February 1896).—Specimen from Glenely measured 2 ft. 10 in.

Long-tailed Field Mouse of the Outer Hebrides. J. Steele Elliott. *Zoologist* (3), vol. xx. p. 76 (February 1896).—A reply to Mr. De Winton (*Zool.*, 1895, pp. 446, 447).

Waste Ground and Suburban Bird-Life: A Glasgow Study —II. By John Paterson. *Ann. Andersonian Nat. Soc.*, vol. ii. pt. i. (1896).—Observations on bird-life in a limited area within the city's boundaries, with a list of sixty-nine species.

Local Birds nesting in Perthshire. J. B. Dobbie. *Zoologist* (3), vol. xx. p. 23 (January 1896).—Seven species are mentioned, including the Garden Warbler, Yellow Wagtail, and Grasshopper Warbler.

Tunny Fish in the Solway Firth. H. A. Macpherson. *Zoologist* (3), vol. xx. p. 103 (March 1896).—Specimen weighing 28 stones stranded near Silloth on 24th February.

Scabbard Fish off Aberdeenshire. "G. M." *The Field*, 8th February 1896, p. 184.—Specimen 26 in. long landed at Cullen.

On the Variation of certain Noctuides occurring near Montrose. By Montagu Gunning, M.D. *Ent. Record*, vol. vii. pp. 220-221 (15th February 1896).—Considers variation in Tæniocampa gothica, Noctua glareosa, Xylophasia rurea, Dianthæcia conspersa, and Miselia oxyacanthæ.

Micro-collecting in 1895. J. J. F. X. King. *Ent. Record*, vol. vii. p. 156 (15th December 1895).—Notes on Aphelia osseana, Pamplusia monticolana, Glyphipteryx thrasonella, and Sciaphila colquhounana, from Unst.

Micros in Scotland in 1895. A. Horne. *Ent. Record*, vol. vii. pp. 204-205 (1st February 1896).—Twenty-nine species recorded from various localities.

Ten Weeks collecting Lepidoptera in Unst (Shetland). By James J. F. X. King, Percy M. Bright, and Wm. Reid. *Ent. Mo. Mag.* (2), vol. vii. pp. 5-9 (January 1896).—Sixty-seven species are recorded, of which thirteen are new records for Shetland.

Notes of the Season—Glasgow. A. Adie Dalglish. *Ent. Record*, vol. vii. p. 159 (15th December 1895).—Twenty-four species of Moths recorded from the head of Loch Lomond, captured in September.

Notes of the Season—Aberdeen. A. E. Cannon. *Ent. Record*, vol. vii. p. 161 (15th December 1895).—Ten species of Moths recorded.

Early Spring Notes—Aberdeen. A. Horne. *Ent. Record*, vol. vii. p. 278 (15th March 1896).—Phigalia pedaria taken near Pitcaple on 22nd January.

Unusual Appearances [of Lepidoptera] in the Aberdeen District. F. W. Buchan. *Ent. Record*, vol. vii. p. 156 (15th December 1895).—Records of Euchelia jacobææ, Sphinx convolvuli, Dichonia aprilina, Miselia oxyacanthæ, and Hadena protea.

Unusual Appearances [of Lepidoptera] at Montrose, N.B. Montagu Gunning. *Ent. Record*, vol. vii. p. 156 (15th December 1895).—Records of Hadena protea, Dichonia aprilina, Euchelia jacobææ, and Sphinx convolvuli.

Acherontia atropos in Glasgow. J. J. F. X. King. *Ent. Record*, vol. vii. p. 204 (1st February 1896).—Two specimens captured in the city.

Sphinx convolvuli in Scotland. Rev. J. A. MacKonochie. *Ent. Record*, vol. vii. p. 204 (1st February 1896).—Specimen taken on 21st September at Douglas, Lanark.

Sphinx convolvuli in Caithness. Arthur Horne. *Ent. Record*, vol. vii. p. 204 (1st February 1896).—Specimen taken in October in Pulteney Town, Wick.

Early Appearance of Pœcilocampa populi. E. R. Bush. *Ent. Record*, vol. vii. p. 155 (15th December 1895).—A male taken at Perth (?) on 18th October.

Agriopis aprilina and Euchelia jacobææ in Perth. E. R. Bush. *Ent. Record*, vol. vii. pp. 205-206 (1st February 1896).

Crymodes exulis, var. assimilis, in Aberdeenshire. A. E. Cannon. *Ent. Record*, vol. vii. p. 233 (15th February 1896).—Specimen taken near Aberdeen in August.

Hypsipetes sordidata, ab. infuscata, Stdgr., on Sallow. J. W. Tutt. *Ent. Record*, vol. vii. p. 143 (15th December 1895).—Specimens taken at Loch Goil in August 1893.

Probable Specific Identity of Sciaphila penziana and S. colquhounana. By J. W. Tutt. *Ent. Record*, vol. vii. pp. 194-197 (1st February 1896).—Specimens from Scottish localities are considered and described.

Note on Argyresthia illuminatella, Zell. Eustace R. Bankes. *Ent. Record*, vol. vii. p. 200 (1st February 1896).—Note on the identity of specimens from Torres.

BOTANY.

First Records of British Flowering Plants—*continued*. By W. A. Clarke, F.L.S. *Journ. Bot.*, Feb. 1896, pp. 82-83.

Botanical Notes from Murthly. By Professor James W. H. Trail. *Trans. Perthsh. Soc. Nat. Sci.*, ii. part iii. pp. 127-131.—This includes various records of Phanerogams (among them a peculiar sub-aquatic form of a *Rumex* (*obtusifolius?*); of several Cryptogams new to the county (*Peronospora violacea*, Berk., and *Taphrina cærulescens*, M. and D., being new to Scotland), and galls new to Scotland, chiefly by mites, viz. on *Ornithopus perpusillus* and *Trifolium minus* the inflorescences were distorted, and on *Galium uliginosum*, *G. palustre*, and *Achillea Ptarmica*, the leaves were rolled into narrow tubes.

Westerness Plants. By G. C. Druce. *Journ. Bot.*, Feb. 1896, p. 87.—Criticises certain records in *J. B.*, 1895, p. 345, as not actually new; and records *Rubus villicaulis*, var *Selmeri*, from East and West Ross, Easterness, Nairn, Elgin, Argyle, Mid Perth, and Wigtown.

Some New British Marine Algæ. By E. A. L. Batters, LL.B. *Journ. Bot.*, 1896, pp. 6-11.—Describes several species new to the British flora, including two genera and four species new to science (see p. 128).

The Vegetable Origin of Parka decipiens. By James Reid. *Trans. Perthsh. Soc. Nat. Sci.*, ii. part iii. pp. 123-127.

Obituary Notices of Dr. F. Buchanan White. *Proc. Perthsh. Soc. Nat. Sci.*, ii. part iii. pp. xiv.-xlvi. and lv.-lxvi.—With a portrait, and enumeration of his very numerous contributions to the work of the Perthshire Society.

The Robert Brown Memorial. *Journ. Bot.*, 1896, pp. 26-29.—Gives an account of the unveiling of a bust of the celebrated botanist (gifted to his native town of Montrose by Miss Hope Paton, on 18th Oct. 1895), with extracts from the speech of Mr. Carruthers, F.R.S., and a good woodcut of the bust.

REVIEWS.

Peripatus. By Adam Sedgwick. Myriapods. By F. G. Sinclair (formerly F. G. Heathcote). Insects. Part I. By D. Sharp. Being Vol. V. of the "Cambridge Natural History," edited by S. F. Harmer and A. E. Shipley. 8vo. pp. xi. and 587. 371 Figures in text, and a Map. (London: Macmillan, 1895.) Price 17s. net.

This volume is the first in appearance, though second in order of three to be devoted to the Arthropods in the attractive Cambridge Series. By far the larger part is occupied by the first instalment of Dr. Sharp's account of the Insects, of which little can be said except in praise. It is the more to be regretted that serious blemishes, which might easily have been avoided, mar the short contributions of Messrs. Sedgwick and Sinclair.

Mr. Sedgwick is better qualified than any man in the country to write upon the Peripats, and it is needless to state that his account of the anatomy and development of these remarkable animals is complete and trustworthy, though marred for the general reader by a liberal use of unexplained technical terms. The figures, mostly from his own memoirs, are excellent, and a map of the distribution of the group is welcome. But the systematic portion of the chapter had far better have been omitted. It shows a deplorable neglect of recent work, and seems indeed to have been copied from the author's monograph of 1888, as the name of a species described at that time still bears the affix "n. sp."

Mr. Sinclair writes in an attractive style on Myriapods, and the student or the amateur will gain from his pages a fair knowledge of the structure and development of those animals. But for some inscrutable reason, the author deliberately neglects the work of recent writers such as Bollman, Pocock, and Lotzel on the classification of the group, and adopts the largely obsolete system of Koch. This is a very serious fault, and naturally leads one to inquire what the editors could have been about to allow such uneven treatment in a

work which will be regarded by many as the embodiment of the most recent research. It is specially astonishing to find in a clear and well-written discussion of the affinities of the Myriapods, that the author is apparently ignorant of the view put forward independently by Kingsley and Pocock that the class Myriapoda cannot be considered natural, and that the Centipedes are nearer to the true Insects than to the Millipedes.

Dr. Sharp's work is in most respects excellent. It is true that the author, like Mr. Sinclair, has a partiality for ancient classifications; for the arrangement of insect orders which he adopts differs but little from that of Linné. But he has given a summary of the schemes of Packard and Brauer, and states his reasons for preferring the old paths. Apart from arrangement, the chief question at issue is the retention or breaking up of the Linnean Neuroptera. Dr. Sharp does not consider the internal and developmental characters, upon which modern writers have divided the old group into several orders, to be sufficiently certain or important to warrant the innovation. Even those of us who do not agree with him in this view must admit that he offers his readers the alternatives, and leaves them to use their own judgment.

This first instalment of the Insects comprises the Aptera (*Collembola* and *Thysanura*), Orthoptera, Neuroptera (in the old sense), and part of the Hymenoptera, besides an introduction in which the external and internal structure, development, and habits of insects generally are discussed in the light of the most recent knowledge. Each branch of the subject receives its due share of attention, and the references to the literature, both old and new, are very full. The detailed accounts of the orders are also excellently compiled; and the student who consults Dr. Sharp's pages may rely upon finding a summary of what is known about any group of insects, and directions where to look for fuller information. The style is clear though concise, and notes on habits and other subjects of general interest alternate pleasantly with anatomical descriptions. The numerous figures, very many of them original, are excellent.

G. H. C.

British Birds' Nests: How, Where, and When to Find Them. By R. Kearton. Illustrated from Photographs by J. C. Kearton. Crown 8vo. (London: Cassell and Co.) Price 21s.

Ornithologists have for some time past been aware that a number of their confrères had laid aside their collecting impedimenta and gone into the field equipped with the photographic camera, using it upon nests with eggs or young: objects which especially lend themselves to their operations. Mr. R. Kearton, in the work under consideration, gives us the first-fruits of the application of photography to this branch of ornithology, and he is to be congratulated on the success he has achieved. His handsome volume

By Permission of Messrs. Cassell & Co *To face page* 134.

YOUNG GRAY LAG GEESE

gives picture-records—the chief scientific value of such work—of the nesting habits and haunts of more than one hundred species, many of which are both excellent and beautiful. There are, however, some inherent defects in the photographic process when applied to nest-subjects. The most obvious of these is a failure to realise, in many instances, all sense of scale, and hence there is difficulty in identifying the nest represented. We think that this serious defect would be overcome, to a considerable extent, if the pictures were reproduced on a larger and uniform scale.

The letterpress is sufficient for the purposes of a book of this kind, and consists of a concise description of the parents, the site for and structure of the nest, coloration and number of the eggs, the date of nesting, of each species of bird that breeds in Britain. In addition, a pleasant account, written in an enthusiastic vein, is given of the difficulties—often very great—under which his pictures were obtained.

The book is well got up in every respect, and to those interested in this aspect of British Ornithology will prove a welcome and very worthy contribution to the subject which it treats.

We have pleasure, through the kindness of the publishers, in reproducing one of Mr. Kearton's pictures—a fair example of his work. It represents a nestful of young Gray Lag Geese, and the scene is laid in the Outer Hebrides.

A Fauna of the Moray Basin. By J. A. Harvie-Brown and Thomas E. Buckley. Two vols. small 4to, with Map, Plates, and Cuts. (Edinburgh: David Douglas, 1896.)

Just as we were going to press there appeared the handsome and important volumes of the Scottish faunal series now under notice.

The great extent and varied nature of the physical features of the Moray Basin, and the richness too of its Vertebrates past and present, have necessitated the appearance of the work in two volumes.

To-day Moray is the home of some of the most interesting birds to be found in Britain. The Osprey, the Golden Eagle, the Crested Titmouse, the Snow Bunting, the Siskin, the Dotterel, the Greenshank, among other uncommon species, still reside in or seek annually its fastnesses. Though some of the rarer carnivorous Mammalia, such as the Marten, the Polecat, and the Wild Cat, are even there bordering on the very verge of extinction.

Dr. Traquair's chapters on the remarkable reptiles and fishes which in the remote past inhabited Moray and its waters are a special feature of the work. It is very proper to find these fossil forms introduced as members of the fauna, and not considered part and parcel of the rocks of the geological age through which they are distributed. This is a contribution of high scientific value, and is illustrated by a number of plates and figures in the text.

The importance of the area, the wealth and interesting character

of its fauna, the excellence of the work of the various authors, the beauty of the plates and their number, combine to make these volumes extremely acceptable and attractive; and the writer has no hesitation in saying that they are destined to become the favourites of the series.—W. E. C.

Random Recollections of Woodland, Fen, and Hill. By J. W. Tutt, F.E.S. (London: George Gill & Sons, 1895.) Second Edition. Illustrated.

This is an attractively written and well got-up little book. For the very modest sum of half-a-crown, reliable information is afforded, in the pleasantest possible manner, on a great variety of subjects, ranging from the "androconia" or scent-glands of male butterflies to the metamorphosis of the frog or fossil Echinoderms from the Kentish chalk-hills. As an example of the contents of the chapters, we may analyse Chapter V., entitled "Why the 'Negro' is Black." This a popular account, in Mr. Tutt's well-known style, of the phenomenon of "melanism." The chapter opens with a vivid description of early morning in the Western Highlands, and of the ascent of Ben Bheula. Then follows an account of the dark form of the Carpet-moth known as *Cidaria immanata*, found amongst the wet rocks. This leads the reader on to a consideration of the "negro" race of the Peppered Moth (*Amphidasys betularia*) found near large towns, and the light-coloured form of the same species of *Cidaria* from the chalk downs of the Isle of Wight. The curlew's note and mountain sheep are also alluded to, and the chapter closes with a beautifully written description of the view from the mountain summit. The illustrations, which number upwards of a hundred, are in the main good, though we must take exception to the drawing of the Peacock Butterfly (Fig. 27).

Altogether we can confidently recommend the book as a suitable present for boys and girls, especially as a school prize, and it would certainly be read by them with the keenest interest and much profit.—P. H. G.

Fauna of Moray: *Erratum.*—On the plate of Moray Naturalists, facing page xx, the portrait of John Martin appears over the name of "John Wolley." An erratum slip, for insertion in Vol. I., will be forwarded to subscribers to the work, on application to us, or to Mr. David Douglas.—J. A. Harvie-Brown and T. E. Buckley.

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of
Scottish Natural History

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REPORT ON THE MOVEMENTS AND OCCURRENCE OF BIRDS IN SCOTLAND DURING 1895.

By LIONEL W. HINXMAN, B.A.
Member of the British Ornithologists' Union.

I REGRET to have to report a great falling off in the number of schedules sent in for 1895. Twenty only have been received,—as compared with thirty-six for 1894,—of which ten are from lighthouses and coast-stations, the remainder coming from inland observers.

The important faunal areas of Moray, West Ross, and Tay, are this year almost entirely unrepresented; and it is obvious that a report based on such insufficient *data* can be but a very incomplete record of the bird-movements over the whole of the country during the year.

It is much to be desired that more observers, especially in the areas mentioned above, may be induced to record and send in their observations. Schedules for the purpose may always be had from Mr. Eagle Clarke, Museum of Science and Art, Edinburgh. All the Light Stations, however, have been furnished with schedules for 1896. In the meanwhile, hearty thanks are again accorded to all those who have so

kindly assisted in these inquiries; and also to Mr. T. G. Laidlaw for help in the forwarding of schedules.

The following list gives the names of observers from whom reports have been received. The localities are arranged under the different faunal areas, proceeding from north to south along the east and west coasts.

Northern Isles.

Shetland.

Locality.	*Name of Observer.*
North Unst L.H.	James Ferrier, Lightkeeper.
Scousbrough, Dunrossness	Thomas Henderson, jun.

Sutherland.

Thurso	Lewis Dunbar.

Moray.

Strathspey	Lionel W. Hinxman.

Dee.

Peterhead	Rev. W. Serle.
Rattray Head L.H.	R. Clyne and J. Gilmour.
Girdleness L.H.	John Gilmour.
Donmouth	Angus Fraser.

Tay.

Tayfield, Newport, Fife	William Berry.

Forth.

Dalmeny	Charles Campbell.
West Lothian	Bruce Campbell.
Edinburgh district	William Evans.

Tweed.

Chirnside	Charles Stuart, M.D.
Eyemouth	William Evans.

Outer Hebrides.

Island Ghlais L.H.	James M'Guffie.
Barra	John MacRury, M.B. (see Addenda).

Argyll and Inner Hebrides.

Tiree	Peter Anderson.
Skerryvore L.H.	John Nicol and William Charleson.

Clyde.

Various localities—Glasgow district	J. Robertson, J. Torrance, J. Paterson, J. Lang, H. B. Watt, and R. Wilson.
Arran	William Evans.
Ailsa Craig L.H.	William A. Tulloch.
Pladda L.H.	R. A. M'Harrie.

General Remarks.

The exceptionally severe weather of the early months of 1895 told severely on many of our soft-billed resident species. Thrushes, Dippers, and Wrens appear to have been the chief sufferers, and reports as to the scarcity or almost total extinction of the Song Thrush come from several widely separated localities.

The hard winter was followed by a warm and early spring, and the average dates of arrival of our summer migrants show no departure from the normal.

That there are no spring or autumn bird-movements of any importance to chronicle, is in great measure due to the scanty *data* available, especially from coast-stations.

The usual northern migration of the Whimbrel and White Wagtail (*M. alba*) was noticed at Tiree; and movements of *Turdidæ* at Pladda on March 10. A rush of birds—mostly Larks and Wheatears—occurred at Skerryvore on September 17-19, with W.S.W. gales; and smaller movements of *Turdidæ* and other birds at Pladda on November 19-21.

The principal, and perhaps the only, ornithological occurrence of note during 1895 was the great irruption of Little Auks (*Mergulus alle*) that followed the northerly gales of January and February. This visitation has been so fully described by Mr. Eagle Clarke in the pages of the "Annals" (April 1895, p. 97) that it has not been thought necessary to do more than mention the fact in this Report.

Turdus musicus (Song Thrush).

Dee—Girdleness L.H. and Peterhead, Jan. 20, in rush with other *Turdidæ*. *Tweed*—Very scarce on Eastern Borders. *Argyll and Isles*—Skerryvore, Mar. 12, Oct. 19; Tiree, Oct. 30. *Clyde*—Dunure, Jan. 1, many; Pladda L.H., Mar. 10, Nov. 20.

Turdus viscivorus (Missel Thrush).

Dee—Peterhead, Jan. 20, in flocks with other *Turdidæ*. *Tweed*—Chirnside, Oct. 10, migrating in flocks.

Turdus iliacus (Redwing).

Forth—Comiston, Oct. 24. *Tweed*—Chirnside, Oct. 20. *Argyll and Isles*—Tiree, Oct. 24. *Clyde*—Glasgow, Oct. 19.

Earliest observed Oct. 19, Glasgow.

Turdus pilaris (Fieldfare).

Dee—Girdleness, Jan. 20, in rush; Peterhead, Oct. 27. *Moray*—Strathspey, Oct. 17-April 24. *Forth*—Comiston, Oct. 24; in flocks flying W., Oct. 25. *Tweed*—Chirnside, Nov. 3. *Argyll and Isles*—Skerryvore, Sept. 28. *Clyde*—Queen's Park, Glasgow, Oct. 22; Pladda L.H., Oct. 16; Cowglen, April 19.

Earliest, Skerryvore, Sept. 28; latest, Strathspey, April 24.

Turdus merula (Blackbird).

Shetland—Lerwick, May 9. *Dee*—Girdleness and Peterhead, Jan., 20 in rush with other *Turdidæ*; Nov. 20, Dec. 8. *Argyll and Isles*—Skerryvore, Mar. 12, Oct. 29; Tiree, Oct. 21. *Clyde*—Pladda L.H., Mar. 10, 15, Nov. 20.

Saxicola œnanthe (Wheatear).

Shetland—Dunrossness, April 16. *Dee*—Girdleness, April 8; Peterhead, April 16-Oct. 7. *Tay*—Glengarry, April 6. *Tweed*—Eastern Borders, Mar. 30-Sept. 28. *Argyll and Isles*—Skerryvore, Aug. 11, 21; 28, in flock with Larks; Sept. 16-19, in rush with Larks and other birds W.; Sept. 23, 27, Oct. 3; Tiree, April 3. *Clyde*—Lendelfoot, Ayrshire, Mar. 18; Queen's Park, Aug. 29.

Earliest, March 18, Lendelfoot; latest, Oct. 7, Peterhead. Principal movements, Aug. 28, Sept. 16-19.

Pratincola rubetra (Whinchat).

Moray—Rothiemurchus, May 3. *Tweed*—Eyemouth, Sept. 4. *Clyde*—Hangingshaw, Glasgow, April 21; Crookston, Aug. 27; Brodick, May 1.

Earliest, April 21, Hangingshaw.

RUTICILLA PHŒNICURUS (Redstart).

Moray—Strathspey, April 23. *Forth*—Dalmeny, April 22. *Tweed*—Chirnside, April 23-Aug. 1. *Clyde*—Mearns, April 20; Brodick, April 23; Camphill, Sept. 4.

Earliest, April 20, Mearns.

SYLVIA CINEREA (Whitethroat).

Dee—Peterhead, May 13. *Forth*—Dalmeny, April 28-Sept. 14; Cowdenbeath, May 6. *Tweed*—Chirnside, May 3; Eyemouth, Sept. 22. *Clyde*—Giffnock, April 28; Ailsa Craig, Oct. 5.

Earliest, April 28, Dalmeny; latest, Ailsa Craig, Oct. 5.

SYLVIA ATRICAPILLA (Blackcap).

Forth—Dalmeny, May 5.

SYLVIA COLLYBITA (Chiff-chaff).

Tweed—Chirnside, April 12-Oct. 8. *Clyde*—Ballantrae, April 13; Brodick, April 22.

PHYLLOSCOPUS SIBILATRIX (Wood Wren).

Moray—Rothiemurchus, May 5. *Forth*—Dalmeny, April 20. *Tweed*—Chirnside, April 23. *Clyde*—Ailsa Craig, April 13, Oct. 5.

PHYLLOSCOPUS TROCHILUS (Willow Wren).

Dee—Pitfour, April 24; Girdleness, May 12. *Moray*—Strathspey, April 22. *Tay*—Newport, April 20. *Forth*—April 15-Sept. 8. *Tweed*—Chirnside, April 23; Eyemouth, Sept. 5. *Clyde*—Ballantrae, April 12; Cambuslang, April 15; Brodick, April 16; Ailsa Craig, Oct. 10.

Earliest, April 12, Ballantrae; latest, Oct. 10, Ailsa Craig.

ACROCEPHALUS SCHŒNOBÆNUS (Sedge Warbler).

Moray—Strathspey, May 10. *Clyde*—Glenderston, April 29.

LOCUSTELLA NŒVIA (Grasshopper Warbler).

Clyde—Giffnock, May 1.

LANIUS EXCUBITOR (Great Gray Shrike).

Dee—Mintlaw, Nov. *Clyde*—Castle Semple, Feb. 12.

Ampelis garrulus (Waxwing).

Forth—Gifford, E. Lothian, Jan. 10. *Tweed*—Bowhill, Selkirk, Feb. 7; Earlston, Feb. 8—all ♂.

Muscicapa grisola (Spotted Flycatcher).

Sutherland—Nesting at Tongue. *Forth*—Dalmeny, Sept. 15. *Clyde*—Old Kilpatrick, May 11; Brodick, May 1.

Hirundo rustica (Swallow).

Shetland—Dunrossness, May 7. *Dee*—Peterhead, April 17-Nov. 2. *Tay*—Newport, April 20-Oct. 13. *Forth*—Dalmeny, April 13; S. Queensferry, Nov. 27. *Tweed*—Chirnside, April 23-Oct. 22. *Outer Hebrides*—I. Ghlais, May 3. *Argyll and Isles*—Skerryvore, May 5; Tiree, May 6. *Clyde*—Nether Pollock, April 12; Stinchar, April 13; Brodick, April 24; Pladda L.H., "Swallows" (?), March 31.

Earliest, April 12, Nether Pollock; latest, Queensferry, Nov. 27.

Chelidon urbica (House Martin).

Dee—Girdleness, May 8. *Tay*—Newport, May 3. *Tweed*—Chirnside, May 6-Sept. 30. *Clyde*—Balgray, Mearns, May 3; Ailsa Craig, Oct 19.

Cotile riparia (Sand Martin).

Dee—Girdleness, April 29. *Moray*—Aviemore, May 1. *Tweed*—Duns Castle, April 12. *Argyll and Isles*—Skerryvore, Dec. 29 (!), eight, two killed at lantern.

Fringillinæ (Finches and Linnets).

Shetland—Dunrossness, March 31, Chaffinches in large flocks, N.E. *Dee*—Peterhead, Chaffinches in flock, Nov. 11; Greenfinches, Nov. 23. *Tweed*—*L. linaria* (Mealy Redpoll), Chirnside, Nov. 25. *Forth*—Brambling, Mid-Calder, Nov. 1. *Argyll and Isles*—Skerryvore, Bramblings, March 22, April 26; Chaffinches, Nov. 25. *Clyde*—Ailsa Craig L.H., March 23, Chaffinches and Bramblings; April 12, Bramblings; Oct. 19, 20, Chaffinches and Greenfinches.

Plectrophanes nivalis (Snow Bunting).

Shetland—N. Unst L.H., Sept. 12. *Dee*—Peterhead, Nov. 7. *Forth*—Braid Hills, Oct. 28. *Outer Hebrides*—I. Ghlais, Oct. 28. *Argyll and Isles*—Skerryvore, Oct. 14, April 10. *Clyde*—Ailsa Craig, Oct. 5.

Earliest, N. Unst, Sept. 12.

Motacillidæ (Wagtails).

Shetland—Dunrossness, *M. lugubris* (Pied Wagtail), April 29. *Tweed*—*M. melanope* (Gray Wagtail), Chirnside, March 15; *M. Raii*, (Yellow Wagtail), Eyemouth, Sept. 4. *Argyll and Isles*—*M. alba* (White Wagtail), Tiree, May 3, 5, in numbers passing N.; Skerryvore, "Wagtails," Aug. 22, 29, Oct. 28, Nov. 17. *Clyde*—*M. alba*, Clyde, April 14; *M. Raii*, Dalbeth, April 14; Queen's Park, Sept. 2.

Alauda arvensis (Skylark).

Shetland—Dunrossness, March 23. *Argyll and Isles*—Skerryvore, Jan. 28, Feb. 28, April 22; Aug. 28, in flocks; Sept. 17, in rush with Wheatears; 23, 27.

Otocorys alpestris (Shore Lark).

Forth—Dunbar, Jan. 15; Aberlady, Feb. 9, two.

Cypselus apus (Swift).

Shetland—Dunrossness, June 4. *Dee*—Girdleness, June 27-Aug. 2; Peterhead, May 11. *Moray*—Elgin, May 9; Aviemore, May 14. *Tay*—Newport, Sept. 1. *Forth*—Lochgelly, May 6. *Tweed*—Chirnside, May 9. *Clyde*—Hangingshaw, May 2; Thornliebank, Sept. 2.

Earliest, May 2, Hangingshaw; latest, Sept. 2.

Cuculus canorus (Cuckoo).

Dee—Peterhead, April 27; Girdleness, May 12. *Moray*—Strathspey, April 29. *Forth*—Dalmeny, April 25. *Tweed*—Chirnside, April 26. *Clyde*—Ballantrae and Greenock, April 18; Arran, April 23.

Earliest, April 18, Clyde.

Strigidæ (Owls).

Shetland—Dunrossness, *Nyctea scandiaca* (Snowy Owl) shot May 17. *Sutherland*—*Asio accipitrinus* (Short-eared Owl), Thurso, Nov. 11; Reay, Nov. 28; Altnabreac, Dec. 14. *Clyde*—*A. accipitrinus*, Possil, Oct. 28.

Anserinæ (Geese).

Dee—River Ugie, April 6-27, "Wild Geese" in flocks. *Forth*—Dalmeny, Oct. 4, "Geese." *Outer Hebrides*—*A. albifrons*, St. Kilda, June 6-22. *Argyll and Isles*—Tiree, White-fronted Geese (*A. albifrons*) left May 6.

ANATIDÆ (Ducks).

Shetland—20 Golden Eye (*Clangula glaucion*) on Loch Spiggie, June 12. *Dee*—Rattray Head, Long-tailed Duck (*Harelda glacialis*), Oct. 20, Nov. 11, 17, in flocks; Peterhead, *Harelda glacialis* in flocks, March 3; 2 Velvet Scoters (*Œdemia fusca*), Nov. 11; Golden Eye and Pochard very numerous all winter. *Moray*—Widgeon (*Mareca penelope*), Glen Feshie, May 18; Golden Eye on Loch Insh, May 20. *Tay*—Tufted Ducks, Tentsmuir, Sept. 4; Smew (*Mergus albellus*), ♂, Crieff, Feb. 7; do., Redhall, Slateford (*Forth*), Feb. 9; do., Tiree (*Argyll*), Aug. 23; Tufted Ducks nesting, Tiree.

CREX PRATENSIS (Land Rail).

Shetland—Dunrossness, May 13. *Moray*—Elgin, May 9. *Forth*—Dalmeny, May 11. *Tweed*—Chirnside, May 2. *Argyll and Isles*—Tiree, May 23; Skerryvore, Sept. 18. *Clyde*—Ballantrae, April 17.

RALLUS AQUATICUS (Water Rail).

Argyll and Isles—Tiree, Oct. 1. *Clyde*—Pladda L.H., Nov. 21;

PORZANA MARUETTA (Spotted Crake).

Clyde—Pladda L.H., Oct. 25.

STREPSILAS INTERPRES (Turnstone).

Dee—Peterhead, Oct. 7, numerous. *Clyde*—Cardross, Aug. 30.

SCOLOPAX RUSTICULA (Woodcock).

Clyde—Pladda L.H., March 10; Ailsa Craig, March 16.

GALLINAGO GALLINULA (Jack Snipe).

Moray—Kincraig, Strathspey, Oct. 27. *Clyde*—Pladda L.H., Nov. 20; Ailsa Craig, March 16.

CALIDRIS ARENARIA (Sanderling).

Clyde—Cardross, Aug. 30.

TRINGA CANUTUS (Knot).

Dee—Peterhead, Sept. 2; Oct. 7, flocks. *Forth*—Dalmeny, Aug. 31. *Clyde*—Cardross, Aug. 27.

MACHETES PUGNAX (Ruff).

Dee—Peterhead, Aug. 26. *Tay*—Tentsmuir, Sept. 2.

TOTANUS HYPOLEUCUS (Common Sandpiper).

Moray—Rothiemurchus, April 23. *Tweed*—Eyemouth, last seen Sept. 6. *Argyll and Isles*—Tiree, May 2. *Clyde*—Pladda, March 22 (?); Cambuslang, April 5; Arran, April 22; Balgray Dam, Sept. 1.

LIMOSA LAPPONICA (Bar-tailed Godwit).

Forth—Dalmeny, April 4, Aug. 30; Aberlady, July 9. *Clyde*—Cardross, Sept. 15.

NUMENIUS PHÆOPUS (Whimbrel).

Shetland—Dunrossness, May 8. *Argyll and Isles*—April 28, small flocks; May 1, plentiful. *Clyde*—Helensburgh, Aug. 17, two.

STERNINÆ (Terns).

Shetland—Dunrossness, "Terns" first seen May 2. *Dee*—Peterhead, "Terns," May 22-Sept. 10. *Forth*—Common Tern (*S. fluviatilis*), Inch Mickery, May 6; Burntisland, May 7. *Argyll and Isles*—Skerryvore, Common Tern, June 2; Tiree, Arctic Tern, (*S. macrura*), and Little Tern (*S. minuta*), first seen May 4.

LARINÆ (Gulls).

Sutherland—Glaucous Gull (*L. glaucus*), Thurso, Feb. 2. *Tay*—Little Gull (*L. minutus*), St. Andrews, Jan. 20. *Dee*—Ivory Gull (*Pagophila eburnea*), Fraserburgh, Dec. 3.

MERGULUS ALLE (Little Auk).

For occurrences of this species see "Annals" for April 1895, p. 97.

PODICIPEDIDÆ (Grebes).

Red-necked Grebe (*P. griseigena*), Feb. 5, 18, 19, Dunbar; Jan. 26, Feb. 17, 22, East Lothian. Peterhead and Loch Earn, Feb. Eared Grebe (*P. nigricollis*), Skye, Jan.; Dunbar, Jan. 12.

ADDENDA.

TURDUS ILIACUS (Redwing).

Outer Hebrides—Barra, Oct. 19, a flock.

TURDUS PILARIS (Fieldfare).

Outer Hebrides—Barra, Oct. 24.

Saxicola œnanthe (Wheatear).

Outer Hebrides—Barra, March 29, one; April 1, many; Oct. 19, last seen.

Pratincola rubetra (Whinchat).

Outer Hebrides—Barra, May 6.

Sylvia hortensis (Garden Warbler).

Outer Hebrides—Barra, Nov. 25, one. *First record.*

Phylloscopus trochilus (Willow Warbler).

Outer Hebrides—Barra, April 24, one.

Cinclus aquaticus (Dipper).

Outer Hebrides—Barra, Jan. 7, one, remained for winter (seen on Aug. 15 previous).

Motacilla alba (White Wagtail).

Outer Hebrides—Barra, April 30; Aug. 23, many on return.

Hirundo rustica (Swallow).

Outer Hebrides—Barra, May 3, one.

Fringilla cœlebs (Chaffinch).

Outer Hebrides—Barra, Oct. 24, one.

Ligurinus chloris (Greenfinch).

Outer Hebrides—Barra, Oct. 22, flock.

Emberiza citrinella (Yellow Bunting).

Outer Hebrides—Barra, Dec. 18, one.

Plectrophanes nivalis (Snow Bunting).

Outer Hebrides—Barra, Oct. 24.

Corvus frugilegus (Rook).

Outer Hebrides—Barra, Aug. 30, two.

Cuculus canorus (Cuckoo).

Outer Hebrides—Barra, April 29, one.

Bernicla brenta (Brent Goose).

Outer Hebrides—Barra, Nov. 23, four.

Bernicla leucopsis (Barnacle Goose).

Outer Hebrides—Barra, Oct. 16, many.

Cygnus (Wild Swan).

Outer Hebrides—Barra, Dec. 15, four.

Dafila acuta (Pintail).

Outer Hebrides—Barra, May 16, a pair (male and female); Sept. 20, female. *First records.*

Querquedula crecca (Teal).

Outer Hebrides—Barra, Aug. 3, one.

Mareca penelope (Wigeon).

Outer Hebrides—Barra, Sept. 3, one.

Clangula glaucion (Golden-Eye).

Outer Hebrides—Barra, Oct. 21, four.

Harelda glacialis (Long-tailed Duck).

Outer Hebrides—Barra, Oct. 21, many.

Columba palumbus (Ring Dove).

Outer Hebrides—Barra, May 10, one.

Turtur communis (Turtle Dove).

Outer Hebrides—Barra, Sept. 27, male. *First record.*

Crex pratensis (Corncrake).

Outer Hebrides—Barra, May 13.

Scolopax rusticula (Woodcock).

Outer Hebrides—Barra, Oct. 19, one.

Tringa canutus (Knot).

Outer Hebrides—Barra, May 17, one; Sept. 4, four.

Totanus hypoleucus (Common Sandpiper).

Outer Hebrides—Barra, May 3.

Totanus canescens (Greenshank).

Outer Hebrides—Barra, Aug. 13.

Sterna arctica (Arctic Tern).

Outer Hebrides—Barra, May 14, many.

Larus glaucus (Glaucous Gull).

Outer Hebrides—Barra, Feb. 6, two.

Colymbus glacialis (Great Northern Diver).

Outer Hebrides—Barra, Oct. 17.

Podicipes auritus (Sclavonian Grebe).

Outer Hebrides—Barra, Oct. 18, one.

SOME NOTES ON THE TUFTED DUCK (*FULIGULA CRISTATA*)

By William Evans, F.R.S.E.

Ornithologists are much indebted to Mr. Harvie-Brown for bringing together the information contained in his valuable paper on "The Tufted Duck in Scotland," which appeared in the January number of this journal.

Besides the published records referred to in that paper, I have a note of several others, some of which seem to me of sufficient interest to warrant their reproduction in these pages while the subject is fresh in our minds. The more important are :—

1. Pennant's statement in his "Sketch of Caledonian Zoology," prefixed to Lightfoot's "Flora Scotica" (first published in 1778), namely that it "frequents the Orknies in winter during a N. wind." This statement, Professor Newton tells me, "was no doubt derived from Low, who furnished all the Orcadian information—having been employed by Pennant to do so ; but in Low's own account as printed by Leach ("Fauna Orcadensis," p. 138, 1813) nothing is said about the Tufted Duck frequenting the islands *in a north*

wind. That was probably an earlier opinion conveyed to Pennant, but modified by later experience" (*in lit.* 10.11.95).

2. G. Don's record, published in 1813 in his list of the Plants and Animals of Forfarshire, appended to Headrick's "View of the Agriculture" of the County. The entry is as follows:—"*Anas fuligula;* tufted duck; in the lakes." Unfortunately we are not told at what season the species was observed, and whether it was common or the reverse. Looking, however, to what little we know of its early history as a British bird, we would scarcely be justified in regarding this record as applying to more than the winter half of the year.

3. In the first volume of MacGillivray's "History of British Birds" (pp. 302-306), published in 1837, there is a most interesting list of the birds to be seen around Edinburgh in the winter season; and among those specified as "frequently found" on Duddingston Loch is the "Tufted Pochard, *Fuligula cristata.*" In vol. iv. of the same work the author describes a specimen shot on this loch by his son in February 1841. Along with this should be read the same writer's general statement in his "Manual" (part ii., Water-Birds, 1842). He there writes: "The Tufted Scaup-Duck arrives in October, and departs in April. It is generally dispersed, frequenting lakes, pools, marshes, and the still parts of rivers, where it feeds chiefly on insects, testaceous mollusca, and worms, for which it dives. It is also sometimes met with in estuaries and on the open sea. It is more common in the southern than in the northern parts of Britain."

4. H. Osborne's remarks in his paper on the "Ornithology of Caithness," read at a meeting of the Royal Physical Society in January 1862, and printed in the "Proceedings" (vol. ii. p. 343). "It is almost certain," he wrote, "that the Tufted Pochard (*Fuligula cristata*) breeds in the vicinity [of Wick—Loch Stemster (?); but Loch Watten, according to Harvie-Brown and Buckley's 'Fauna of Sutherland, Caithness, etc.'], as specimens are observed constantly throughout the summer months." This is the first indication of the species breeding in Scotland. Though by itself merely presumptive evidence, it has received such ample confirmation from subsequent events as to amount now practically to a certainty.

I have a few other records by me, but they are not of much importance. Booth, in his "Rough Notes" (vol. iii.), says: "While staying for the punt-gunning at Tain, on the shores of the Dornoch Firth, in the winters of 1868 and 1869, I remarked that the flocks of Tufted Ducks took their departure about the end of March from Lochs Shin and Slyn as well as the other large pieces of fresh water on which they were usually to be found after the beginning of November"; and Edward, in his paper on "The Birds of Strathbeg," Aberdeenshire, printed in "The Naturalist" for 1854, mentions it only as a winter visitor to that loch. Mr. Harvie-Brown, I notice, says he has been unable to find any mention of the species in the Scottish section of the Migration Reports. There is, however, an entry in the Third Report (p. 12) recording its abundance on Loch Leven on 12th September 1881.

The conclusion I have arrived at is that the species has been a regular winter visitor to many of our Scottish fresh-water lochs for the greater part of this century—probably for a considerably longer period; and it seems to me Mr. Harvie-Brown regards Sir William Jardine's Loch Leven record in a wrong light when he says it "must be classed as an exceptional circumstance, if an early one." Here is Jardine's statement: "We saw several pairs upon Loch Leven in the month of April last (1843), where we understood that they continued during a great part of winter." Nor do I see how Jardine and other earlier observers can be said to have spoken of it "as appearing on fresh water only when the weather was severe"; on the contrary, their remarks seem to me to point all the other way (*cf.* Montagu, Selby, MacGillivray, etc.). Jardine's remark that the weather was always severe when the bird appeared on the river Annan was not inconsistent with the lacustrine character which he was aware it bore: the lakes freeze over first, and the birds, naturally, then take to the rivers and estuaries.

The first *proofs* we as yet have of the breeding of this duck in Scotland are no doubt the records of the two broods on Butterstone Loch in the beginning of July 1875, and the nest of ten eggs at Loch Leven on 29th May of the same year;

but we can hardly suppose that these were the first nests on Scottish soil. [Since this paper was put in type, I have, through the kindness of Mr. J. A. Young, Edinburgh, seen a Tufted Duck's egg taken from a nest on Dupplin Loch, Perthshire, in the summer of 1872, by a gentleman whose name I am not at present at liberty to mention. There can be no question as to the date. The birds were noticed on the loch one or two years prior to the finding of the nest.] Mr. Osborne's belief that the bird was nesting as far north as Caithness fourteen or fifteen years before, was, as shown above, probably well founded, and there can be little doubt, I think, that it bred regularly on Loch Leven for several years, at any rate, before the accidental discovery in 1875 of the nest recorded by Mr. Herbert. During the summers of 1885 and 1887 I made inquiries of boatmen and others engaged about the loch as to how long these black-and-white diving ducks had been observed to remain over the breeding season, and invariably got the reply, "As long as I can remember," or words to that effect. We cannot, of course, put much value on such evidence, but it indicates that the folks on the spot had not been struck by any sudden change in the habits of the birds. My first visit to the loch was in the autumn of 1876, but beyond the fact that Tufted Ducks were present I am unable to make any statement. I did not then know that the bird had bred in Scotland, and ornithology was not the object of my visit. My friend, Mr. P. Adair, tells me that on the occasion of his first visit to the loch in the end of April 1873 he took particular notice of the number of "Tufties" on it, especially along the southern shore.

At Loch Leven, and no doubt elsewhere, a pair or two—to take a very moderate view of the case—may be assumed to have in the first place occasionally abandoned the annual flight to Northern Europe, and remained behind to breed in their winter haunts; but for many years such occurrences would be the exception, not the rule. By 1875 or 1876, however, there was clearly a marked tendency to settle down in earnest in several districts, and the passing of the Wild Birds' Protection Act in 1880 must, of course, have greatly promoted its increase as a resident species throughout the country. The effect would have been still more marked had the eggs as well as

the birds been protected.[1] I have seen boys from Kinross with baskets systematically searching for these eggs along the shores of Loch Leven, and on more than one occasion I have seen from three to four dozen in the fishing-basket of a friend now deceased: the trout had not been taking, so he had wiled away the time by hunting for something else suitable for the breakfast-table. Again, at Loch Fitty in Fife in the end of June 1885 I counted about thirty birds, but only one brood was to be seen, and no wonder; for I was informed by a man in charge of boring operations close by that he saw between 50 and 60 of their eggs taken a fortnight before. Pike, too, which are usually present in the lochs most suited to the habits of the bird, no doubt make away with many of the young ones.

I found my first nests in May and June 1883, and since then I have examined many more. The details, now before me, of some 30 nests indicate that in ordinary seasons the majority of the eggs are laid during the last week or so of May and the first fortnight of June. My earliest date is 20th May—nest with 4 eggs. Nine is, perhaps, the commonest number of eggs in a set.

Fresh-water molluscs—*Cyclas cornea*, *Limnæa peregra*, etc. —seem to form the principal food of this duck: at any rate, I have found these and nothing else in the gullets of several I have examined from Loch Leven and Duddingston.

A short time ago I had occasion to look into the early history of the Tufted Duck as a British bird, and was surprised to find how little there was to fall back upon. The first definite recognition of the species as a British bird would seem to be furnished by its inclusion (under the name of "Tufted Duck," too, be it noted) in the "Catalogue of English Birds" given in "Willughby's Ornithology" (pp. 21-28), the well-known work which Ray edited, and published first in Latin in 1676 and then in English in 1678. Nothing in Sibbald's "Historia Animalium in Scotiâ" ("Scotia Illustrata," 1684), or in his "History of Fife and Kinross" (1710),—in which many birds are mentioned,—would lead us to suppose

[1] I do not wish it to be supposed that I underestimate the recent increase and spread of the species in Scotland during the breeding season. That these have been to an unusual degree both extensive and rapid is beyond question.

that he had any knowledge of the species; and we have apparently to pass on to Pennant's "Tour in Scotland" in 1769 and his "Sketch of Caledonian Zoology" (1778) for the earliest cited English and Scottish localities respectively, namely the East Fen, Lincoln,[1] and the Orkneys (see p. 148). Many Scottish lakes—including Loch Leven—were visited by Pennant during his 'Tours,' but no mention is made of the Tufted Duck having been seen on any of them; and it is worthy of remark that though he includes the species in his 'British Zoology' (first published in 1766), in no edition of that work is any locality given for it.

Not having access at the time to all the editions of the above works, nor to a number of other publications which it was desirable to consult, I sought Professor Newton's assistance, and was favoured by him with the following letter, which I am sure will be read with much interest by all who appreciate the historical side of ornithology. It is dated 7th November 1895, and runs as follows:—

"I am much obliged to you for calling my attention to the *history* of the Tufted Duck as a British bird, which I never before had occasion to investigate; and now that I come to look into the matter, it is curious how little seems to have been known about the species by various writers until, comparatively speaking, recent times.

"First, to clear the ground and in reply to your direct questions, I would say that I see nothing in Sir Thomas Browne's writings that can refer to the Tufted Duck, nor is it included in Merrett's "Pinax" (1666 or 1667),—the earliest list of British Birds we have,—whence we may, I think, conclude that it was unknown to the former, as his "Account of Birds found in Norfolk" was certainly written to supplement the information given by the latter.

"Willughby and Ray clearly knew the bird, and I think the natural inference from what they say, both in the original Latin edition and also in the later English one, is that they had met with it in this country, though they do not state where the specimen described was procured

[1] This record occurs in the very interesting passage relating to the birds of the Lincolnshire Fens:—"I have seen on the *East Fen* a small flock of the tufted Ducks; but they seemed to make it only a baiting place," are the author's words ("Tour in Scotland, 1769," ed. 1772, p. 11). Nothing is said as to the date on which they were seen. Lubbock ("Fauna of Norfolk") says it was in the beginning of July, but this is not borne out by a reference to the "Tour." On that occasion he appears to have done little more than stayed the night (of 27th June) in Lincoln. More likely it was in May 1768, when he was staying at Revesby, Banks's place in Lincolnshire, and when, as he tells us, he "made many observations on the zoology of the country" ("Literary Life," p. 8).

[see, however, further letter, p. 155, W. E.]. The example seen by them on the water in St. James's Park tells us nothing, for we know that Charles II. had many foreign fowls there. It is uncertain when Ray's "Synopsis" was composed, for it was not published till after his death. My own impression is that he kept on adding to the MS. so long as he lived; but that does not in this case signify, as he assigns no country for this species.

"Jonston gives us no help at all, for his work is little more than a compilation from Aldrovandus. You rightly suppose that nothing is to be learnt on this matter from the latter, from Belon or Gesner.[1]

"Albin figured the species, and must have had a fresh specimen to draw from; but he does not say where he got it, and indeed he adds scarcely anything to what Willughby had already said.

"So much for your direct inquiries.

"Charleton has been cited as mentioning this species in his "Onomasticon Zooicon" (1668). Here is what he says (p. 100), under the general heading "Boscas":—"4. *Glaucius* (ab oculorum colore), Gallis *Morillo*. Quænam avis sit, nondum compertum habeo; nisi eadem cum ille, quam vulgò *Pochard* vocant." The same passage is repeated in his "Exercitationes" a few years later, and I think not much can be made of it. Granted that *Morillo*(*n*) is the French name of the Tufted Duck, there is nothing to show that he had ever seen one.

"Pennant, in the first edition of his "British Zoology" (1766), includes the Tufted Duck and gives a figure of it. This is the earliest positive statement of its being a bird of this country that I can find, though, as I have above suggested, we may, I think, fairly conclude that Willughby and Ray meant it to be so accounted [see further letter, p. 155, W. E.], and we cannot doubt that Albin's figure was from an example obtained in England.

"From Pennant's time, of course, the species has been regularly enrolled, but authors have had singularly little to say about it—as you may see by looking at Bewick, Montagu, and others of less consequence. Hoy was certainly mistaken in the eggs he ascribed to it, one of which was figured by Hewitson in his first edition; and Yarrell's account of the bird in his first edition (1842) is meagre enough. It was not till 1849 that it was known to breed in England (on Malham Water, in the West Riding of Yorkshire—

[1] The species seems to have been first described by Belon and Gesner, independently, in 1555. The former tells us the French called it "un Morillon," and the latter says it was called "Rüsgen" by the people of Meissen in Saxony, thus showing that the bird was then well known both in France and Germany. Professor Newton (*in. lit.* 16.3.96) cites these authors as follows:—

"Petit Plongeon espece de canard," Belon, "Histoire de la Nature des Oyseaux," p. 175 (1555).

"Anas fuligula," Gesner, "Historiæ Animalium," Liber iii. p. 116 (1555).

"Anas cirrhata," *idem*, *tom. cit.* p. 117.—W. E.

see "Zoologist," 1850, p. 2879);[1] and though some of us had *tame* eggs, I think no *wild* eggs were seen here till 1853, when Mr. Wolley sent some from Lapland. It had long been known to the Scandinavian ornithologists to breed there, and was supposed to breed in some places in Northern Germany; but it was not, so far as I can find, until 1838 that the fact was proved by Naumann's shooting two hen birds from the nest on the Krakower Lake in Mecklenburg-Schwerin in that year.

"It is remarkable that this species alone among ducks that are common in this country should have had no peculiar name,[2] for "Black Wigeon" and "Magpie Duck" are obvious makeshifts. Whether it would be fair to infer from this that the Tufted Duck was not *anciently* known to people in England and Scotland I do not pretend to say, but it does seem to point in that direction."

Since the foregoing was put in type, I have received the following communication from Professor Newton, modifying in one important point his letter of 7th November: it is dated 30th May 1896:—

"I think that in a former letter I told you that it was only by inference that we could say that Willughby recognised the Tufted Duck as British; but I see that he actually included it in his 'Catalogus Avium Britannicarum' (Lat. ed., 1676, p. 23)—'*Anas* CIRRATUS. Querquedula cristata sive Colymbis Bellonii, the Tufted Duck,' and there is also a recognisable figure, Tab. lxxiii., lettered 'Anas fuligula prima Gesn.' In the English edition (1678) the corresponding passage stands (p. 28):—'6. The TUFTED DUCK, *Anas cirratus. Querquedula cristata sive Colymbis* Bellonii.' So there can be no doubt about the matter."

[1] As long ago as 1825, however, the late Mr. Girdlestone saw on one of the Norfolk Broads what he believed to be an old duck of this species and three young ones; and Mr. Southwell thinks it probable that it "has habitually nested" in that county "in small numbers" (*cf.* Lubbock's "Fauna of Norfolk," 1848, p. 115; 2nd ed., p. 158 (1879); and Stevenson and Southwell, "Birds of Norfolk," vol. iii., 1890.—W. E.

[2] Except the very local use of "Arp" mentioned by Girdlestone ("Trans. Norf. and Norw. Nat. Soc.," ii. p. 396; Stevenson and Southwell, "Birds of Norfolk," iii. p. 213), which must have been restricted to a very small area.—A. N.

THE LONG-TAILED DUCK (*HARELDA GLACIALIS*) ON THE SOLWAY FIRTH.

By Rev. H. A. Macpherson, M.A.

Some thirteen or fourteen years ago, this Arctic Duck was supposed to be a very unusual visitant to the waters of this estuary. The late T. C. Heysham of Carlisle, like his father before him, was a keen student of local ornithology. The elder Heysham commenced his practice in Carlisle in 1778. His naturalist son was born in 1791, and died in 1857. Their lives collectively covered an extended period. Yet the elder Heysham never met with the Long-tailed Duck, while his son only fell in with three specimens locally. The first was obtained in November 1834,—a young bird. The second and third examples that came under his notice were shot on the Eden, at a short distance from the Solway Firth. These last were killed together in October 1850. Two other immature specimens were killed on the rivers Derwent and Ellen, before the sixties. In 1879 Dr. Parker of Gosforth secured a bird which had been killed out of a flock of four at Ravenglass in November. These six specimens were the only examples of *Harelda glacialis* which had been obtained, to our knowledge, in *Cumbrian* waters, up to the time when the writer commenced his investigations into the "*Ornis*" of Lakeland in 1883. It was in January 1884 that he detected a male Long-tailed Duck upon the waters of a loch situated at an easy flight from the Solway. It was not in full dress, nor did it assume nuptial plumage prior to its death in the following March (when it was reluctantly shot for the local museum, which then existed in a pitiful form). Still, it was a handsome bird, with a very white head, and bold facial markings. In the autumn of 1884 the writer had the pleasure of recognising the flight of a small party of Long-tailed Ducks, as the fowl flew up the Esk side. No birds of this species are known to have visited the English Solway in 1885 or 1886. In 1887 came a memorable influx of Long-tailed Ducks. Many other parts of Britain were visited at the same time. Indeed, the writer

himself examined about fifty specimens in the flesh in the course of a few weeks. The local arrival of this bird appears to have been noticed first on the 3rd of October, when William Nicol observed three different parties of these Ducks near Silloth. He saw eleven birds altogether, that afternoon. In fine, about twenty birds were shot on the waters of the Solway, most of them being examined by the writer. Several immature males were included in the number, though the other sex appeared to predominate. No birds of this species are known to have been observed on the Solway in 1888. In 1889 a single female was shot in December. In 1890 a single bird was shot at, but missed, in November. In December that year the writer had a pretty view of another Long-tailed Duck, which passed within easy shot on the point of Burgh Marsh. It was shot a few days later, and proved to be a male by dissection. In 1891 another immature drake was shot on the 29th of October. On the 5th of November 1892 the writer saw an adult female a few minutes after it had been shot on the estuary; indeed, he received it wet and dripping from the hand of the punt-gunner. Its mate had been shot only the day before, a handsome male. In the following December an immature male was shot and brought to the writer. In 1893 another immature drake was shot *on a tarn* between Silloth and Allonby, in October. None appear to have been seen in 1894, but the writer was in too broken health to make any field observations. In 1895 several female birds were shot in October and November on the English side of the Solway. A male was reported as seen flighting up the Esk in November, by R. Raine, who had a shot at it but missed it. This may have been the bird which was shot on Rockliffe Marsh in January 1896 and sent to the writer. It will be seen, from the foregoing notes, that this Duck has *not* been rare on the English waters of the Solway Firth of late years. *Has* the species really begun to visit the Firth with greater frequency? Of course the punt-gunners now take an intelligent interest in looking out for strange birds, and preserve them, instead of sending them off unidentified to distant markets. There is a real enthusiasm on the subject, which did not exist when the writer commenced his

researches. A great deal of good can be done by enlisting the friendly offices of local gunners, and teaching them how to discriminate between allied species. But it does seem to be tolerably certain that *Harelda glacialis* visits the Solway Firth more often than was the case in bygone days. The facts seem to prove this substantially. Some few of the specimens of this Sea-duck which have fallen into the writer's hands, have been given away to friends. But the bulk of them are preserved in the Carlisle Museum. Some are mounted and others are in skin. The most interesting are perhaps the adult male in change, retaining the long rectrices, shot in November 1892, and the extremely juvenile male shot on the 29th of October. The latter is the only immature male that has been killed, to the writer's knowledge, on the Solway, which shows no vestige of white in the scapulars. Indeed, he was morally certain that it must be a female, until he dissected it. It should be noticed that no specimen of *Harelda glacialis* has, as yet, been shot, to the writer's knowledge, on the Solway, in perfect nuptial dress; though such a bird was shot in Morecambe Bay in February in 1884. A very interesting bird is the drake in breeding dress, with reddish scapulars, caught near Renwick in April 1889. The weights of the Long-tailed Ducks scaled by the writer vary from 1 lb. 1 oz. to 1 lb. 10 oz., the latter being the weight of two different drakes; but some old birds may possibly run up to a couple of pounds. The food of this bird consists of shell-fish and crustacea, at least when shot on the estuary. The birds shot on the Solway in 1887 were generally found to have been feeding on shrimps.

NOTES ON THE OCCURRENCE OF SOME RARE FISHES IN SCOTTISH WATERS.

I. THE PELAMID (*PELAMYS SARDA*, Bloch) ON THE EAST AND WEST COASTS.

By R. H. Traquair, M.D., LL.D., F.R.S., etc.

On the 20th June Mr. Robert Service presented to the Museum of Science and Art a specimen of the Pelamid or

Belted Bonito (*Pelamys sarda*, Bloch, sp.), which had just been obtained in the Newbie salmon-nets, Upper (Dumfriesshire) Solway. The specimen, which measured $26\frac{1}{8}$ inches in length and had a weight of 8 lbs., is being mounted for the Museum. Mr. Service informs me that this capture forms an addition to the list of Solway fishes for both sides.

It may also be mentioned that three years ago, on 7th July 1893, a smaller specimen of the same species, measuring $21\frac{3}{4}$ inches in length, and obtained in the North Sea, was presented to the Museum by Mr. James Watson, fishmonger, Edinburgh.

II. SIX-GILLED SHARK AT TIREE.

By R. H. Traquair, M.D., LL.D., F.R.S., etc.

There has just been submitted to me a letter written on 5th May by Mr. P. Anderson, Scarnish, Tiree, in which the capture of a peculiar fish by the fishermen fishing outside the Skerryvore Lighthouse is recorded. Mr. Anderson says that none of the native fishermen have ever seen a similar fish; but, from the rough sketch of the teeth contained in his letter, as well as from his statement that it had only one dorsal fin, and the tail "sloped away on one side," I have no doubt of its having been a specimen of the Six-gilled Shark (*Notidanus griseus*, Gmel.). The specimen is described as measuring 10 feet $9\frac{1}{2}$ inches from the snout to the end of the tail.

III. THE DEAL-FISH IN SHETLAND.

By R. H. Traquair, M.D., LL.D., F.R.S., etc.

On the 9th of June a fish which had been thrown ashore some time previously at Lunasting in Shetland was received at the office of the Scottish Fishery Board and sent to the Museum of Science and Art for identification. On examining it, I found it to be a specimen of the Deal-Fish or Vaagmaer (*Trachypterus arcticus*, Brünn), but in a sadly battered condition. The total length of the specimen, exclusive of the caudal fin, which has been lost, is 6 feet 7 inches.

Incredible though it may seem to the scientific mind, a notice of this specimen appeared in the "Shetland News" of 6th June, in which it is stated that "The animal appears to be a specimen of the *Hippocampus*, a genus of Lophobranch fishes, . . . but so far as is known this is the largest specimen which has ever been found here." Fancy a *Hippocampus* of over 6 feet in length! But the worst of it was that the notice was accompanied by a sketch apparently taken from some engraving of an actual *Hippocampus*, with two alterations, namely—the proper dorsal fin being replaced by a ragged contour, and the spiral enrolment of the tail being altered to a serpentine curve. And this drawing is actually given in the "Shetland News" as a representation of the fish which was cast ashore at Lunasting! The only comment that can be made on the matter is that if accuracy is so little valued in some quarters at the present day, need we wonder at the strange tales and pictures of fabulous animals which have come down to us from the past, and the, to say the least of it, highly improbable things which we are often at the present day asked to believe.

IV. THE DEAL-FISH IN ORKNEY.

By James W. Cursiter, F.S.A.

The Orcadian Seas seem to be the most favoured waters for the occurrence of British specimens of this very beautiful and rare fish, and a few notes upon the latest example may be worthy of record in your pages. Most of the information hitherto available has been derived from second-hand sources; the few remarks I have to furnish you with (however incomplete) are based upon an examination of the fish in possibly as fair a state of preservation as has ever been possible in this country.

Upwards of a dozen specimens have been recorded from Orkney, but I am not aware of any specimen being obtained here within the last half century, or, more correctly, since 1851.

On the 1st of April last I was met by Mr. David Milne

with the information that he had a most remarkable fish to show me which he had captured at Stembister that day, having noticed it stranded on the sea-ware at low tide, and still alive, and vigorous in its endeavours to escape him. On inspecting the fish, along with Mr. Angus Buchanan, none of us could recognise it at first; but on consulting various authorities, including Cuvier, Couch, and Yarrell, I came to the conclusion that the fish was the Vaagmaer or Deal-Fish (*Trachypterus arcticus*). The extreme tenderness and perishability of the fish prevented me making thorough examination, as I was anxious to have it forwarded to the authorities at the British Museum as quickly, and in as good a state as possible.

The extreme length of the fish was 6 feet 2 inches; depth, exclusive of dorsal fin, $14\frac{1}{4}$ inches; greatest height of dorsal fin, 5 inches; thickness, $3\frac{1}{4}$ inches. There was only one black spot on each side observable, which was situated on the anterior dorsal region, 17 inches from the mouth. The dorsal fin and tail were a good deal injured during capture, so much so that I am unable to give an opinion as to the true position of the latter. The colour of the specimen was of the brightest silver, varied only by its grayish head and brilliant ruby-red fins and tail. Along the posterior dorsal region, sloping downwards and forwards, could be observed rays of alternately spherulated and plain lustre. The body of the fish was covered with skin except the head, and on lightly touching the skin, silvery dust adhered to the fingers, leaving the surface duller. It had a well-defined lateral line, along which, and to a greater extent along its ventral surface, the skin assumed a slight warty or pimply appearance. The dorsal fin extended along the whole back of the fish and was highest about the centre of its length, and seemed to be composed of stout and tapering spines about a quarter of an inch apart covered by a continuous and very thin translucent membrane of ruby red.

The head was of a pearly gray colour. The eyes were about 2 inches in diameter. On pressing the maxilla between the finger and thumb it was possible to extend its peculiar truncated snout-like mouth to a length of 7 or 8 inches, giving it a grotesque appearance.

V. BANKS' OAR-FISH IN THE MORAY FIRTH.

A specimen of *Regalecus banksii*, 16 feet 3 inches in length, and weighing $1\frac{1}{2}$ cwt., was captured early in May last off the mouth of the Findhorn. It was observed skimming along the surface of the water by the salmon fishermen while proceeding to their nets, and a rope was passed round it. In the attempt to haul it on board the boat it parted in two; both parts were, however, secured. The fish is described as silvery coloured, with the skin rough like that of a shark, and having along the whole length of the back a row of dorsal spines connected by a red membrane.

This specimen was forwarded to the British Museum, where it was duly identified.

ON THE OCCURRENCE OF THE EDIBLE FROG, *RANA ESCULENTA*, IN SCOTLAND.

By Philip J. White, M.B., F.R.S.E.
Professor of Zoology, University College of North Wales.

Last March I paid a brief visit to Kincardineshire, staying for a few days in the parish of Fordoun. Soon after my arrival I went to examine a small isolated bog beside the Drumsleed Woods, and situated about a quarter of a mile from the village of Auchinblae. On reaching the ground I heard proceeding from it a continuous and somewhat sonorous croaking. As I advanced, the sound suddenly ceased, and the water was set in commotion by retreating frogs. I caught a few of the animals, and I at once saw that they were specimens of the Edible Frog, *Rana esculenta*. On the succeeding days I visited several places in the vicinity of Auchinblae, and I found this frog in the following localities:—In a small dam, and the ditches leading to it, between Auchinblae and Fordoun Station; in ditches on the top of the Harescha Hill, above Auchinblae; in pools beside the Bervie to the north of the Harescha. In the

place last named the frogs were fairly numerous. I also visited other localities, and although I saw plenty of spawn I failed to find frogs. The animals were exceedingly wary and difficult to secure. I saw no examples of the Common Frog, *R. temporaria*. Of the other species I caught eleven specimens.

The occurrence of *Rana esculenta* in Scotland is not without interest. Writing in 1839, Thomas Bell[1] says: "It has been long observed by several naturalists that a species of frog exists in Scotland, distinct from the common one; and it has generally been referred to the *Rana esculenta*, or Edible Frog, of the continent of Europe. Thus Mr. Don, in his account of the plants and animals found in Forfarshire, mentions the Edible Frog as to be met with in the lakes of that neighbourhood, although rather rare; and both Shaw and Pennant allude to it, the former as being 'rare in England,' the latter simply incorporating it amongst his British Reptiles, but without mentioning its locality; and Dr. Fleming merely observes that it is 'not so common as the preceding.' In July 1833 Dr. Stark exhibited at the Zoological Society a skeleton of the Scottish species, the following meagre account of which, occurring in the Proceedings of the Society, is all that remains of that gentleman's observations:—'Dr. Stark exhibited the skeleton of the Edible Frog, *Rana esculenta* (Linn.), and stated that this species is found in the neighbourhood of Edinburgh, whence his specimen was obtained. He pointed out some of the differences between its osseous structure and that of the Common Frog, *Rana temporaria* (Linn.).'"

Bell himself examined this skeleton and compared it with those of *R. esculenta* and *temporaria*, and concludes by saying: "I think there can be no doubt that the present species is distinct from the Common Frog, and that it is certainly not *R. esculenta*. I am not aware of any other species to which it can be referred, and I have therefore assigned to it the specific name of *Scotica* provisionally. In order, however, to afford an opportunity to Scottish naturalists of comparing perfect and recent specimens with a correct representation of *R. esculenta*, I give a figure of

[1] Bell, "British Reptiles," 1839, p. 102.

the latter species from one of the specimens sent to me by M. Bibron."[1]

It is a pity that Scottish naturalists did not follow up the suggestion of Bell, and supplement the meagre account given of this animal.[2] The fact, however, remains that frogs which seemed to be distinct from the common species were found in Forfarshire, in the county adjoining that in which I recently discovered them. Whether or not the specimens which I obtained are a distinct variety of *R. esculenta* or not, I am not prepared to say, but I shall place them in the hands of one more competent to judge.

Large numbers of the Edible Frog, together with quantities of spawn, were brought from the Continent to England by Mr. George Birney in 1837, 1841, and 1842. "These were deposited in the ditches and meadows at Morton, in some ponds at Hockering, and some were placed in the fens at Foulden, near Stoke Ferry."[3] There seems, however, to have been an impression that the frog already existed in England long before the introduction of Continental specimens.[4]

In a recent text-book of zoology[5] the Edible Frog is stated to be "not indigenous in Britain." How came the frog to be in Kincardineshire? Was it introduced into that county or into any other Scottish counties? If so, when? There may have been introductions of this frog into Britain of which we know nothing, but there is really no reason why the animal should not be indigenous. Does not the impression that the frog is not indigenous in Great Britain seem to depend much on lack of proper observation? Let

[1] In Ecker's "Anatomy of the Frog," Eng. Trans., 1889, Bell's excellent figures of *R. esculenta* and *temporaria* are reproduced without acknowledgment; and in Milne-Marshall's book, "The Frog," 1895, Bell's figure of the latter species is given, and is there erroneously stated to be "from Ecker."

[2] [In the second edition of Bell's "History of British Reptiles," 1849, p. 108, the author says: "During the last spring, however, I received from Mr. Wolley of Edinburgh, numerous specimens of both sexes, and of various sizes, of the Scottish Frog, and the result of the most careful examination and comparison which I am able to make is the conviction that it is nothing more than a very large variety of the Common Frog, *R. temporaria*." In this magazine for 1893, p. 202, Mr. G. A. Boulenger, F.R.S., made a contribution entitled "On some Remarkable Specimens of *Rana temporaria* from Scotland."—EDS.]

[3] Cooke, "Our Reptiles," 1865, p. 102. References are here given.

[4] *Id.* p. 104.

[5] Thomson, "Outlines of Zoology," Second Edition, 1895, p. 555.

the matter be looked into now by naturalists in various parts of Scotland, and let us have their report. Even if the frog is not indigenous, it would be interesting to determine the extent of its distribution in this country.

[We trust Dr. White's interesting communication will be the means of eliciting further information concerning the true history and nature of these Kincardineshire Batrachians. If *Rana esculenta* has been introduced into the county, it is desirable to know when and by whom.—EDS.]

ON SOME HYMENOPTERA AND HEMIPTERA FROM THE SUMMIT OF BEN NEVIS, COLLECTED BY MR. W. S. BRUCE.

Report by Rev. A. THORNLEY, M.A., F.L.S.

THROUGH the kindness of Mr. Edward Saunders, F.L.S.; the Rev. F. D. Morice, M.A., F.E.S.; and the Rev. T. A. Marshall, M.A., F.E.S., I have been enabled to draw up a short report of the Hymenoptera and Hemiptera collected by Mr. Bruce on Ben Nevis last year. The Hymenoptera consisted largely of Tenthredinidæ, with a few Cimbicina; and Ichneumonidæ, Braconidæ, etc. The true Aculeates were represented by a single example of a little bee, *Andrena nana*, and many winged examples of *Formica rufa*. The list of Tenthredinidæ was drawn up through the kindness of the Rev. F. D. Morice, and that of the Ichneumonidæ by the equal kindness of the Rev. T. A. Marshall. These lists must be considered to some extent provisional. There are few students of these difficult groups; and there is still a mass of material, Foreign and British, to be overlooked and arranged before satisfactory systematic lists can be arranged. It is a great pity that more entomologists cannot be induced to take up these interesting groups, the members of which are scarcely inferior in beauty, and almost rival in the interest of their life-histories the members

of the other groups of insects. It should also be explained that, owing to the unset condition and excessive fragility of the insects, it was quite impossible to make a satisfactory examination of numbers of specimens, so that the list presented is by no means exhaustive of all Mr. Bruce's captures. To Mr. Edward Saunders best thanks are due for so kindly overlooking the Hemiptera; of which group there were but few species, and few examples. I present the lists with remarks upon them just as they were furnished to me. For a description of the geological structure and meteorological conditions of Ben Nevis, the reader is referred to an important note by Mr. Bruce (*ante*, pp. 28-37, and also for Neuroptera, pp. 105, 106).

HYMENOPTERA.

DIV. CIMBICINA, TENTHREDINIDÆ, ETC.

(By the Rev. F. D. Morice.)

Cimbex femorata, *Linn.*—One example.

Trichiosoma lucorum, *Linn.*—One example.

Abia sericea, *Linn.*—One example.

Hylotoma ustulata, *Linn.*—Two examples.

Tenthredo solitaria, *Scop.*—Three examples.

Tenthredo dispar, *Klug.*—One example.

Tenthredo viridis, *Linn.*—Eleven ♂ and twenty-three ♀.

Tenthredopsis nassata, *Linn.*—One example.

Pœcilosoma submuticum, *Thoms.*—Four examples.

Pamphilius stellata, *Christ.*—Two, ♀ and ♂.

Pamphilius cingulatus, *Latr.*—One example.

Dolerus dubius, *Klug.*—One example.

Dolerus lateritius *Klug.*—Two examples.

Dolerus pratensis, *Thoms.*—Three examples.

Dolerus (species?).—One example.

Dolerus elongatus, *Thoms.*—Five examples.

Dolerus æneus, *Htg.*—Nine examples.

Emphytus calceatus, *Klug.*—One example.

Emphytus grossulariæ, *Klug.*—Six examples.

Monophadnus fuscipennis, *Fall.*—Two examples.

Monophadnus albipes, *Gmel.*—Ten examples.

Selandria morio, *Steph.*—One example.

Selandria flavescens, *Thoms.*—Nine examples.

Strongylogaster cingulatus, *Thoms.*—Eighteen examples.

Dineura virididorsata, *André.*—Fifty-seven examples.

Nematus glutinosæ, *Cam.*—Two examples.

Nematus collinus? *Cam.*—One example.

Nematus acuminatus, *Thoms.*—Two—one ♀, and possibly an example of the hitherto unknown ♂.

Nematus capreæ, *Br. and Zad.*—One example.

Nematus canaliculatus? *Htg.* (or capreæ).—One example.

Nematus leucogaster, *Htg.*—Two examples.

Nematus astutus? *Htg.*—Nineteen examples; and eight other examples of *Nematus* which it was impossible to name with certainty.

ICHNEUMONIDÆ, BRACONIDÆ, ETC.

(By the Rev. T. A. Marshall.)

Ichneumon luctatorius, *Gr.*—Twelve examples, all ♂.

Ichneumon, spec. ♂, same group as *pallidifrons.*

Pimpla scanica, *Villers.*—Seventeen examples.

Pimpla turionellæ, *Linn.*—A broken example, but known by hind legs.

Campoplex (species?)—Two examples.

Paniscus *(virgatus? Fouve)*—One example.

Anomalon canaliculatum, *Ratz.*—Five examples.

Anomalon flaveolatum, *Grav.*—Two examples.

Ephialtes (species?)—One ♂ example.

Cteniscus cingulatorius, *Holingr.*—Two examples—one the very rare ♀, the other a ♂.

Mesoleptus semirufus, *Holingr.*—One example.

Bassus nemoralis, *Holingr.*—Two examples.

Rhogas dimidiatus, *Spin.*—Twenty-three examples. Mr. Marshall remarks: "Usually rare in England. Only four are ♂s; three of which are examples of melanism, even their legs are black, unlike those of all our other species."

Meteorus albiditarsis, *Curt.* — One example. Mr. Marshall remarks in his monograph of the Braconidæ, "Trans. Ent. Soc. Lond.," 87 : "Not uncommon from May to September," but gives no Scotch localities.

Meteorus chrysophthalmus, *Ness.* — Two examples. Mr. Marshall remarks : "Not uncommon," but gives no Scotch localities.

DIV. ACULEATA.

(By Ed. Saunders, Esq.)

Andrena nana, *Kirby.*—A single example, ♀.

Formica rufa, *Linn.*—Many males and females.

HEMIPTERA HETEROPTERA.

(By Ed. Saunders, Esq.)

Asopus punctatus, *Linn.*—One example.

Lygus pratensis, *Fab.*—Eleven examples.

Psallus betuleti, *Fall.*—One ♀ example.

Calocoris striatellus, *Fab.*—One ♀ example.

Nabis ferus, *Linn.*—One example.

Rhopalatomus ater, *Linn.*—One ♂ example.

Salda saltatoria, *Linn.*—Two examples.

Corixa præusta, *Fieb.*—Two examples.

HEMIPTERA HOMOPTERA.

Bythoscopus rufusculus, *Fieb.*—Four examples.

Bythoscopus flavicollis, *Linn.*—One example.

Thamnotettix subfuscula, *Fall.*—One example.

Athysannus sordidus, *Zett.*—One example.

Mr. Saunders remarks that all the above Hemiptera, with the exception of *Asopus* (which seems to be more local), are common and widely distributed species.

NOTES ON SCOTTISH ROSES.

By William Barclay.

(*Continued from p.* 121.)

R. RUBIGINOSA, *Linn.*

11, from East Perth, Mid Perth, Roxburgh, and Fife.

So far as I have observed, *R. rubiginosa* varies very little in Scotland, so that I did not send many specimens. The opinion seems to prevail that it is not a native plant in our country. It is, however, by no means rare. It is widely spread, and in many places abundant, in Perthshire. I have seen it in plenty in one part of Ayrshire, in Fife, in Roxburgh, in Mid-Lothian, and in the north of Northumberland. If it be an introduction, it is certainly one of old date, and has spread itself widely by the ordinary modes of dispersion. The late Dr. Buchanan White always maintained that it appeared in Perthshire to be as much a native as any of the other wild roses. Professor Crépin says: "*R. rubiginosa* reaches much farther to the north than *R. micrantha*, and amongst the mountains is found at a much higher elevation than this last."

R. CANINA, *Linn.*

Group *R. lutetiana*, Lem.

24, from Mid Perth, East Perth, and Fife.

In my first parcel I sent some of these Nos. under the name of var. *sphærica*, Gren., which called forth from Professor Crépin the following remark:—"Variations of this group with spherical fruits have been designated *R. sphærica*, Gren.; but these variations differ from each other in characters of different kinds."

Group *R. dumalis*, Bechst.

21, from Mid Perth, East Perth, Stirling, Arran, and Selkirk.

Of a specimen sent me by Colonel Drummond Hay of Seggieden, Professor Crépin says: "This is intermediate

between these two groups. In 1869, in the fifth fascicle of my 'Primitiæ,' I described, under the name of *Transitoriæ* a group intermediate between *lutetiana* and *dumalis*."

Group *R. dumetorum* (Thuill.).

23, from Mid Perth, East Perth, West Perth, Fife, and Berwickshire.

Remarks.—"No. 84 has teeth double and simple. No. 87 has irregular teeth, simple or with one or two 'denticules.' No. 440, teeth often double. No. 442, a certain number of double teeth. No. 86 belongs apparently to this group, only it seems to approach *R. obtusifolia*, Desv. It will be necessary to study it again on the living bush, and to gather new specimens. It remains to be seen if it is not a variation of *R. coriifolia*, Fries."

With respect to this last specimen, which was too immature for certainty, I have not, on subsequent visits to the locality from which it was taken, been able to identify the exact bush. There is a large colony of roses, amongst which grow both *R. coriifolia* and *R. dumetorum*. I now think that No. 86 was a form of *R. coriifolia*.

R. sub-canina (Christ.) and *R. sub-collina* (Christ.).—"The feeble and transitory characters of the glabrous and pubescent forms of this intermediate group render the determination of herbarium specimens often doubtful. Accordingly it is with many reserves that I class the following Nos."

R. sub-canina (Christ.).

14, from eight localities, in East Perth, Mid Perth, West Perth, and Arran.

R. sub-collina (Christ.).

7, from five localities, in East Perth and Mid Perth.

The above Nos. were all contained in my second parcel. Those of the first group were sent under the name of *R. lutetiana*, a few as *R. glauca*. Those of the second I had classed as *R. coriifolia*. I do not pretend to under-

stand as yet either *R. sub-canina* or *R. sub-collina* in a satisfactory manner. The best time for studying them seems to be in the first two weeks of September, and during that period of this season I had but little time to spare for roses.

R. GLAUCA, *Vill.*

I. Teeth simple, pedicels smooth, sepals without glands on the back.

11, from Mid Perth.

"It is to this sub-division that the type of *R. glauca* belongs."

II. Teeth simple, pedicels hispid-glandular, sepals glandular on the back.

5, from Mid Perth, West Perth, Arran, and Selkirk.

"In No. 43 the pedicels are smooth and there are some double teeth mixed with simple teeth. No. 93, which you name *R. andegavensis* (Bast.), is a var. of *R. glauca* belonging to this sub-division. No. 152, from the Isle of Arran, which you name *R. tomentosa*, appears to me to be a var. of *R. glauca*. The leaflets are perfectly glabrous, the teeth are irregular. In general appearance it resembles No. 153 from the same locality, which you refer to *R. tomentosa*."[1]

III. Teeth double or composite, pedicels and sepals without glands.

30, from East Perth, Mid Perth, West Perth, Stirling, Fife, and Selkirk.

"In No. 51 certain parts of the axes are 'heteracanth.' This is probably accidental. In Nos. 41 and 42 the teeth of the upper leaves are simple."

IV. Teeth double or composite, pedicels smooth, sepals glandular on the back.

5, from East Perth, Mid Perth, Cheviotland, and Stirling.

[1] See note on 153, under *R. tomentosa*, on page 120.

V. Teeth double or composite, pedicels hispid-glandular, sepals glandular on the back.

5, from Mid Perth and East Perth.

"In No. 40 there are glands on the receptacles. No. 407 of the parcel of 1895 has irregular toothing and glands on the receptacles."

VI. Teeth composite. Leaflets with glands on veins of the under surface.

1, from West Perth.

"In this form the petioles are somewhat pubescent all round, but they become glabrous with age. The midrib is likewise somewhat pubescent, but it also becomes glabrous with age. This thin pubescence shows the tendency of this form to approach *R. coriifolia*."

Forms of *R. glauca* with glands on the veins below seem to be very rare, at least in Perthshire. I have reason, however, to think that they may be rather more numerous than as yet they appear to be. If I have observed rightly, the glands, which are fairly numerous in the flowering stage of the bush, gradually wear off until it is only on a leaflet here and there that they can be detected. I have several specimens from different localities in this latter state, and shall try to gather them next season in the flowering state as well as in fruit, so as to make certain that what I have stated above is actually the case.

R. CORIIFOLIA (*Fries.*)

I. Teeth simple, pedicels and sepals without glands.

11, from East Perth, Mid Perth, and West Perth.

"It is to this sub-division that the type of *R. coriifolia* (Fries.) belongs. The No. 414 is a variation peculiar in the elliptic form of its leaflets. Notice also that certain leaves of the flowering branches have nine leaflets."

II. Teeth simple, pedicels hispid-glandular, sepals glandular on the back.

7, from Mid Perth, West Perth, Cheviotland, Fife, and Stirling.

"No. 56, pedicels smooth. Nos. 415 and 416 have the appearance of sepals rather spreading (*étalés*) than erect, which would suggest that they belong to the group *R. sub-collina* (Christ.). It will be necessary to see them at maturity in order to make sure. No. 424 has not its sepals plainly erect. Perhaps also a form of *R. sub-collina* (Christ.)."

With regard to these I had no doubt at the time of gathering them that 416 and 424 belonged to *R. coriifolia*, and I think so still. No. 415 puzzled me when at the bush; and I think it is very probably *R. sub-collina*. It was gathered near Learmouth, close to the border of Northumberland and Berwick.

III. Teeth double or composite, pedicels and sepals without glands.

16, from Mid Perth, East Perth, Fife, Stirling, and Cheviotland.

IV. Teeth double or composite, pedicels smooth, sepals glandular on the back.

5, from Mid Perth and East Perth.

V. Teeth double or composite, pedicels hispid-glandular, sepals glandular on the back.

7, from Mid Perth and Cheviotland.

VI. Teeth composite. Leaflets more or less glandular on veins of under surface. (Pedicels and sepals smooth or glandular.)

The pubescence and the *glandulosité* of the leaflets are very variable in this group.

46, from East Perth, Mid Perth, West Perth, Ayr, Stirling, Fife, Roxburgh, and Selkirk.

My first parcel contained but one specimen belonging to this sub-division, and I had not noticed the glands on the

under surface. Of it Professor Crépin remarked, "This variation makes part of the series '*Subrubiginosæ*' of Baker." In 1894 I looked specially for this form, and found it widely spread in Perthshire. This year (1895) I saw plenty of it in other localities of Perthshire, but collected only three Nos. Other five were gathered, two from Stirling and one from each of the three counties mentioned last in the above list. Of this year's gathering Professor Crépin says: "For some numbers one cannot know whether the sepals erect themselves at maturity. I think that in certain forms of *R. coriifolia* the sepals are somewhat late in becoming erect after flowering, and that it is only at maturity that one can judge as to their erection."

From my own observation I can testify that certain forms both of *R. glauca* and *R. coriifolia* are tardy in erecting their sepals, and that mistakes may easily be made in regard to this point, unless the bushes can be seen when the fruit is beginning to redden, as well as in earlier stages.

R. ARVENSIS, *Huds.*

Specimens from three localities in Perthshire where I found it naturalised. It is certainly not native in Perthshire, and very few of its fruits come to maturity in the stations where I have observed it.

R. ALPINA, *L.*, has kept its ground on Kinnoull Hill for over twenty years; and last year I found a bush of the same species in Balruddery Den; but of course the plant is not native anywhere in Britain.

R. HIBERNICA, *Sm.*, var. *glabra*, Baker, has been gathered at two stations near Dunkeld,—at one by Mr. C. Mackintosh in June 1883, and at the other by myself in August 1889, but it has, I fear, been extirpated from both places. There are, however, specimens gathered at the above dates in the herbarium of the Perthshire Society of Natural Science.

In my first parcel were four specimens which I sent under the name of *R. arvatica*, Baker. In his report Professor Crépin referred to these as being probably variations of *R. coriifolia*, Fries, but said that it would be necessary to study them anew on the living bush. This I promised to

do, adding, however, that I did not recollect of having seen this form with erected sepals. In the summer of 1894, and again in 1895, I paid particular attention to this form, which is thinly but widely spread in Perthshire. The result of my observations was that while it has a very great resemblance in its characters to those variations of *R. coriifolia* which have the serrations of the leaflets composite-glandular, and whilst it also agrees in ripening its fruits early, yet it differs in the important point that its sepals do not become erect. The disarticulation at the base of the sepals is already so well formed by the time the fruit begins to redden, which is late in August or early in September, that a touch will in most cases cause them to fall off. I forwarded many specimens in both the second and third parcels, and in his last communication Professor Crépin reports on the whole series as follows :—

An *Rosa coriifolia*, Fries?

I. Leaves not glandular below.

14, from Mid Perth, West Perth, Stirling, Selkirk.

II. Leaves more or less glandular below on principal veins.

8, from Mid Perth and East Perth.

"The forms with leaflets not glandular below appear to me to belong to the same group of variations as those with the leaflets more or less glandular below. In both the fruits are long, and the styles considerably tomentose.

"I think that none of these numbers can be placed in the group of *R. tomentella*, Lem.

"What must one make of them? These variations seem to me to be very near to *R. coriifolia*, Fries. This would seem to force us to place them in the group *R. sub-collina*, Christ. Evidently it appears that they should be classed in this very badly defined group of *R. sub-collina ;* but I dare not venture, at this time, to decide upon their identification. Before deciding, I should like to see all these specimens in flower as well as in fruit. In any case they appear to me to constitute a very curious regional variety (*une variété regionale bien curieux*) which does not seem to me

to be represented on the Continent. Has it been described? Perhaps Mr. Baker has had it in view under some name or other.

"As to *R. arvatica*, Baker, it is quite an artificial creation constituted according to the materials given in his 'Herb. Rosar.' of No. 25 = *R. tomentella*, Lem.; No. 26 = *R. coriifolia*, var. *celerata*, Baker; No. 27 = *R. Blondæana*, Rip. You have then to exercise your sagacity in order to discover what is the true nature of this group.

"Up to this time I have not yet seen *R. tomentella*, Lem., from Scotland."

This last remark is in reply to a question of mine.

NOTES ON DOUBTFULLY NATIVE AND INTRODUCED PLANTS IN WESTERNESS.

By Symers M. Macvicar.

As a railway will probably soon be made through one of the most remote parts of this district, it may be as well to put on record some notes on plants as they occur at present, as the introduction of new means of communication with the south will effect some changes in the flora. The following notes refer only to the districts of Ardnamurchan, Sunart, and Moidart, in one of which I am a resident, unless otherwise specially mentioned; as, except in occasional instances, it is almost impossible to form a correct estimate of the probability of the native origin of doubtful plants without following their manner of distribution in the particular district affected. There will always remain a large margin for individual opinion about many of these dubious plants, but too much caution can hardly be exercised, so little is known of the means by which they are distributed; and every one must occasionally have observed undoubted aliens among an otherwise native vegetation, although the lesson this teaches may not always be taken to heart. It is difficult to convey an accurate impression as to the probability in a locality of a plant being native or introduced.

In a mountainous country the distance a plant may be away from cultivation has a different value from that which it possesses in a more level district, mere mileage being of comparatively little consequence, as some miles in a glen may not make a place so "remote" as would a watershed of a few hundred feet elevation, or a few indentations of a rocky coast.

In this district, as in similar parts of the Highlands, there are some special circumstances to be considered in forming an opinion as regards the claims of a plant to be regarded as native. Some localities are to be suspected, though often not obviously so, such as old sheep and cattle shelters, natural or artificial, on both hill and low ground; stony sides of hill lochs, and the usually sedgy margins of low-land lochs which cattle frequent; the remains of old draining operations, and other works often remote from present dwellings; sea cliffs below which there is grazing and shelter for cattle; sandy shores near old cultivation, and shingly shores also, to some distance from present cultivation, the shingle giving better holding ground for rubbish-heap weeds, which currents carry along near the shore; streams, and the shores of both lochs and sea near the outlet of streams that have passed in any part of their course close to houses or cultivation; and remote localities to which conifers "with soil attached" have been brought from nurseries. The bare roots of hardwood trees seldom bring introductions. In a thinly populated country an introduced plant may be seen on roadsides at some distance from houses, etc.; but other specimens of the plant can generally be traced along the road, or on adjacent bare spots, their frequency increasing in proportion to the nearness of houses, and around the houses and in their neighbourhood it will sometimes be found in abundance. The agricultural and economical history of the district as far back as possible should also be known. The positions of old gardens, crofts, summer sheilings, and cattle and sheep shelters should be looked for. These last named are often on parts of the hills at a distance from cultivation, and are not always easily recognised; but they not unfrequently give the clue that explains the occurrence of some suspicious plant. The

comparison of the flora of deserted townships or homesteads, and crofts with that of inhabited ones, and observation of the usual customs of the inhabitants in the disposal of their weeds, will also give valuable information. If the usual locality of a plant be near houses or cultivated ground, this will not at once justify its being considered a native when found in some remote place. I have not found the Gaelic names of plants to be of much assistance in tracing their history.

The influence on plant distribution of cattle, sheep, and deer must be considerable in increasing the altitude to which many species attain. There is generally soil between their hoofs; and many seeds must be transported by this means. Sheep, after having been gathered to the low ground, will return to their usual haunts on the hills within a few hours, and this occurs twice each summer. Deer are only too fond of spending the early hours of the morning among crops, an hour or two at most taking them easily back to the high ground; their hoofs are very flexible, and allow a quantity of soil to be carried between them. Some plants are seen on moors only on the dung of cattle, and do not remain permanently unless they find soil which is not peaty, or grow on the stony margin of a lake. I have attempted, though unsatisfactorily, in the following groups to divide the plants according to what seemed to me to be the degree of probability of their being native in our district; but some might perhaps be equally well transferred to other groups than those in which I have placed them.

DOUBTFUL NATIVES.

Neckeria claviculata, *N. E. Br.*—Native probably. Uncommon. Chiefly on thatched roofs, but occurs at some distance from houses among boulders in bushy places.

Cardamine hirsuta, *L.*—Denizen probably. Common on roadsides and gravel paths, in gardens, and in waste places.

(Cardamine flexuosa, *With.*, is native. It is common in glens, in wet spots in woods, and about springs.)

Sisymbrium thalianum, *J. Gay.*—Denizen? Rare, on rocks near a ruined castle.

Cerastium glomeratum, *Thuill.*—Denizen probably. Very common on roadsides and gravel paths, and in gardens and waste places.

Stellaria media, *Cyr.*—Denizen? Very common in gardens and waste places, and on roadsides near houses; also on shingly shores, and on cattle dung on moors where it is not permanent. It is absent from deserted crofts.

(Arenaria serpyllifolia, *L.*, is native, but local, on sandy and dry banks, remote from cultivation.)

Geranium molle, *L.*—Native? Uncommon, in sandy places near the sea, sometimes remote from cultivation. This species is increasing through cultivation, and along roadsides.

Geranium dissectum, *L.*—Less like a native than the preceding, occurring in nearly similar places, but less frequent, except in cultivated ground, in which it also is increasing.

(Erodium cicutarium, *L'Hérit.*—Native but rare, being confined to sandy shores and neighbouring banks. It does not occur as a weed of cultivation.)

(Ilex Aquifolium, *L.*—Native. Common in hilly copses, on sea cliffs, and by sides of hill lochs. It has become scarcer as a wild plant since the introduction of rabbits, as seedlings can grow only in spots inaccessible to them, and this is usually where there is not sufficient soil to nourish a tree.)

Ulex europæus, *L.*, is a very doubtful native. Dr. Walker in his "Economic History of the Hebrides and Highlands," in which the result of six journeys to the Highlands, from 1760 to 1786, are given, says of this plant: "Exists not in Cantyre, nor upon any of the western coasts and islands of Scotland north of that promontory." It is a luxuriant plant in this district, self-sown seedlings springing up freely. Tradition gives it as having been brought to one of its sites from another locality, twenty-six miles distant, in the dung of cattle.

Cytisus scoparius, *Link.*—Perhaps a rare native, among heathy rocks.

Trifolium dubium, *Sibth.*—Denizen probably, though locally common in cultivated fields of clover and rye-grass chiefly, and on adjoining dry banks and roadsides; but seldom permanent in any station.

Vicia Cracca, *L.*—Probably native, and rather common. It occurs on rocky places at some distance from cultivation, and on sea cliffs; but more usually at the sides of fields. I have frequently noticed plants springing up in "wild" localities, but where the nearest plants were in cultivated fields.

Lathyrus pratensis, *L.*—Native? Uncommon, along sides of fields and on wall tops chiefly, rarely on sea cliffs, and then only in suspicious places. It is occasionally introduced with nursery plants. It is common in Mull among rocks, where it looks like a native.

Prunus spinosa, *L.*, is native only on the basaltic rocks of Ardnamurchan, having been planted in other places. It is not common.

(Prunus Padus, *L.*, is native, but rare, in copses and on islands on lochs.)

(Rubus Idæus, *L.*, is native, and common on rocky heaths.)

(Pyrus Aucuparia, *Ehrh.*, is native, and common in copses and glens and on sea cliffs.)

(Cratægus Oxyacantha, *L.*, is native, and common in copses and on sea cliffs, and also is planted for a hedge.)

(Epilobium angustifolium, *L.*, is native but rare, growing only on limestone in Ardnamurchan.)

(Hedera Helix, *L.*, is native and very common in woods and on rocks and sea cliffs.)

Valerianella olitoria, *Poll.*, is a doubtful native. It is very rare, occurring in one station only on a sandy bank near the sea, remote from cultivation. I have not met with it in this district as a weed of cultivation.

Senecio sylvaticus, *L.*, is a doubtful native. It is rare. Among rocks about two hundred yards from crofts. It does not increase near the houses, but keeps to the rough ground among native vegetation.

Senecio Jacobæa, *L.*, is a denizen probably, though very common on roadsides near houses, in pastures, and on sea cliffs near where cattle graze. Individual plants occur on the moors where cattle are kept, but they do not obtain a permanent footing unless they reach the gravelly margin of some hill loch. Although frequently seen remote from dwellings, this plant can nearly always be traced to following cattle. On roadsides its frequency is in proportion to its closeness to houses. I have in a few cases been able to follow its course to remote places.

Cnicus lanceolatus, *Willd.*, is a denizen probably, but is common in waste places, on roadsides and shores, in cultivated fields, and near cattle shelters. Wind appears to be a more effective agent in its distribution than the wool on sheep, as it usually spreads up the bottom of a valley and reaches a greater elevation than that at which it is found at on the sides.

(Cnicus palustris, *Willd.*, is native, and is very common in wet pastures, by sides of streams, in glens, on wet rocks, in woods, and by ditches and roadsides. It follows cattle to the moors, on which it is not permanent, and spreads up the sides of valleys as well as along their bases on soil which is not peaty; but it usually occurs there only as isolated plants, following I believe the footsteps of cattle and sheep.)

Lapsana communis, *L.*, is a denizen, I believe, being generally distributed but not common. I have taken special interest in the distribution of this plant for some time, and have satisfied myself that it is not a native of this district. Although without pappus, it spreads quickly in new suitable stations. Generally near cultivation it grows on some sea cliffs; but in suspicious localities, *e.g.* in copses near cultivation, or if at some distance from cultivation, other denizens are found with or near it. One station is in a remote glen; but it is close to the spot where the proprietor of that district occasionally has picnics; and it grows nowhere else in the glen. Another remote station is a wet rock on the side of a wooded hill; but on looking round I found an old cattle track with *Plantago major* on it about twenty yards off, and following this came to a disused cattle shelter, not readily recognisable, in which were nettles and *Cnicus lanceolatus*. The plant grows at only one other place in this wood, and this is close to another cattle track.

Taraxacum officinale, *Web.*, is a denizen probably, but is rather common on roadsides and on neighbouring banks and sandy shores. It grows occasionally on sandy shores at some distance from cultivation, where it has a permanent hold unaffected by man's agency.

Sonchus asper, *Hoffm.*, is frequent. A small form grows on sea cliffs, which, I think, is native—it grows in similar places in Eigg and Skye. An increasing species through cultivation.

(Fraxinus excelsior, *L.*, is native, being common in glens and copses.)

Myosotis arvensis, *Lam.*, is a denizen probably, being common on dry cultivated fields and waste places, and on roadsides. A large-flowered form grows in two stations; one being near a ruined castle, the other near an old cattle shelter. This is the common form on cliffs in Eigg.

Myosotis versicolor, *Reichb.*, is a denizen probably, or a colonist. It is common in waste places, and on the sides of dry cultivated fields, and on roadsides.

(Scrophularia nodosa, *L.*, is a native probably. It is generally distributed, but is not common. Although most frequently found close to houses, on waste places and roadsides, and by sides of streams, it also occurs among rocks remote from houses.)

Mentha hirsuta, *Huds.*, has been probably introduced? It is rather common, but only at sides of streams, near houses, and about deserted crofts. This species was used by the inhabitants medicinally, and was planted near their houses. It seems like a native in ditches in Mull.

(Mentha sativa, *L.*, is native, and is rather common in wet places, mostly near the sides of lochs.)

(Mentha arvensis, *L.*, is native, but rare, in moist ground, especially where liable to inundation.)

Nepeta Glechoma, *Benth.*, has perhaps been introduced, being rare. It occurs in two stations thirty miles apart; one being a roadside two hundred yards from houses, the other among deserted crofts.

Stachys palustris, *L.*, is a doubtful native, and is local. Perhaps it is a rare native at the side of slow-running rivers; but it is mostly confined to cultivated fields and adjoining places.

(Stachys sylvatica, *L.*, is native, and is common in copses and among shady rocks; also frequently about waste places.)

Rumex obtusifolius, *L.*, is a denizen probably, being, though common, almost confined to the neighbourhood of houses and cultivated fields.

Rumex crispus, *L.*, is a doubtful native, though very common. Perhaps it is native on the shore and on islands near it. It is a common weed of cultivation.

Rumex domesticus, *Hartm.*, is a denizen probably, being rare, and confined to stations in the neighbourhood of houses.

Carex ovalis, *Good.*, may be a denizen? Though frequent, it is almost confined to wet roadsides, footpaths, and the sides of neighbouring fields; rarely occurring at the sides of rivers and lochs, and even there nearly always close to paths on which it is to be found. A species increasing through man's agency, it is alone among Carices in this respect; for though *Carex flava*, L., also increases along footpaths and sheep-tracks, it is generally diminished through drainage.

Ammophila arundinacea, *Host.*, is locally common. Native on blown sands in Ardnamurchan, it has been planted in Moidart, also in Arisaig and Eigg.

Poa annua, *L.*, is perhaps a denizen? It is very common in gardens and waste places, and especially on roadsides chiefly. It is found on cattle dung on the moors, and around sheep-shelters on the hills; but is seldom seen on the hills except where animals are in the habit of specially frequenting. If it be native on the low ground, I cannot think it to be so on the hills.

Lolium perenne, *L.*, is a denizen probably. It is common along roadsides and footpaths and in waste places, and grows occasionally on sandy shores. Is one of the chief plants which first cover neglected roads.

(Agropyron repens, *Beauv.*, is native, though rare and confined to sandy shores. It is not a weed of cultivation in the district as yet, but it is so in Skye.)

DENIZENS.

Conium maculatum, *L.*, is rare, near ruins and in cultivated fields.

Galium Aparine, *L.*, is common on rough ground near cultivated fields, in waste places, and near ruins. It is frequent on shores both shingly and sandy, on the latter often becoming dwarfed. It never occurs at any distance from cultivation except on the shores; and even there is most frequent near cultivated ground.

Arctium minus, *Bernh.*, is rather common in waste places, by roadsides, and near ruins and sheep-shelters.

Cnicus arvensis, *Hoffm.*, is partly a colonist. It is locally common in cultivated fields and by roadsides, but rare on sandy shores. In general it is a scarce plant in the district, though abundant in the north of Mull and in Eigg.

Galeopsis Tetrahit, *L.*, mostly a colonist, is common in cultivated fields, in waste places, by roadsides, and on shores near houses. The var. *bifida* (Bœnn.) is the prevalent form, and occasionally spreads to heathy pastures, but it is not permanent there.

Plantago major, *L.*, is common along sheep and cattle tracks, footpaths and roadsides, and on waste places and shores near houses. The var. *intermedia* (Gilib.), occurring on gravelly and sandy shores, is probably a native.

Polygonum aviculare, *L.*, is frequent in waste places, cultivated fields, and on shores, mostly near houses. A plant between var. *littorale* (Link.) and *P. Raii*, Bab., is native on sandy shores.

Polygonum Hydropiper, *L.*, is common in cultivated fields (especially among turnips and potatoes), in ditches near them, and along roadsides, as well as on shores, most commonly near houses or near the outlet of streams which pass through cultivated ground. In such places it can nearly always be traced to the throwing out of rubbish-heaps. Although more permanent than the following, its habitats can generally be traced to man's agency.

Polygonum Persicaria, *L.*, is mostly a colonist. Though very common, it is nearly confined to cultivated fields and waste places, though also found occasionally on roadsides and on the shores of fresh- and salt-water lochs which cattle frequent.

Urtica dioica, *L.*, is common in waste places, near ruins, and in neglected ground at the sides of fields, roadsides, deserted crofts, and cattle- and sheep-shelters on hill and low ground. It never occurs except near artificial works or natural shelters of rock or boulders.

Poa nemoralis, *L.*, is rare, on roadsides and walls. It is only slightly established as yet, but is increasing. Mountain forms do not occur in this district, but are found in Eigg and Skye.

Bromus mollis, *L.*, is not common, by sides of cultivated fields and roadsides, and occasionally on sandy shores near cultivated ground, where it becomes dwarfed.

COLONISTS.

Sisymbrium officinale, *Scop.*, is rare, being almost limited to gardens and their outskirts, rarely observed on roadsides.

Brassica Rapa, *var.* campestris, *Koch*, is not common in cultivated fields.

Brassica Sinapistrum, *Boiss.*, is comparatively uncommon in cultivated fields, rarely spreading to roadsides.

Brassica alba, *Boiss.*, is rather perhaps a casual, being rare along the sides of cultivated fields.

Bursa pastoris, *Weber*, is a common weed in gardens, and on waste-heaps and neighbouring roadsides.

Viola arvensis, *Murr.*, is not common, in gardens and their outskirts mostly, and more rarely in cultivated fields. This is a common weed of cultivation in Eigg.

Spergula arvensis, *L.*, *var.* sativa (*Bœnn.*), is very common in gardens, on waste-heaps, in cultivated fields, and on roadsides occasionally. It spreads on the lower moors through cattle dung, and on bare places near peat-stacks.

Vicia hirsuta, *Gray*, is mostly a rare casual in cultivated fields, and rarely on neighbouring dry banks.

Sherardia arvensis, *L.*, is not common, in cultivated fields,—usually in first year's grass rotation. It is not permanent at any station.

Chrysanthemum segetum, *L.*, is local, but abundant in some cultivated fields.

Artemisia vulgaris, *L.*, is partly a denizen, but is not common, on waste-heaps, sides of cultivated fields, and neighbouring shores.

Senecio vulgaris, *L.*, is common in gardens and outskirts and waste places, more rarely on roadsides and shores near houses.

Crepis virens, *L.*, is partly a denizen. It is locally common in cultivated fields and beside adjoining roads. On sandy shores near cultivation it grows as a low diffuse form, due (always?) to the main stem being eaten by ground vermin.

Sonchus arvensis, *L.*, is rare in cornfields. It is abundant in north of Mull.

Lycopsis arvensis, *L.*, is not common, but occurs in widely separated parts of the district. It is limited to one kind of situation, namely the sandy shore, sides of cultivated fields, and the adjoining sandy shores, as is also the case in Eigg. A list of the kind of situations it inhabits on the west coast would be interesting, as perhaps it may be a native on the sands.

Galeopsis versicolor, *Curt.*, is rare, in cultivated fields and waste-heaps.

Veronica hederæfolia, *L.*, V. agrestis, *L.*, and V. Tournefortii, *C. Gmel.*, are rare weeds, limited, as far as I have seen, to gardens and their outskirts.

Lamium amplexicaule, *L.*, is rare in gardens and outskirts.

Lamium intermedium, *Fr.*, is not common, in cultivated fields, and casually on neighbouring shores.

Lamium purpureum, *L.*, is not common, in gardens, cultivated fields, and casually on neighbouring shores.

Chenopodium album, *L.*, is partly a denizen, but rare in cultivated fields and on shores adjoining or near old cultivated fields.

Atriplex patula, *L.*, var. angustifolia (*Sm.*), is not common, in cultivated fields.

Polygonum Convolvulus, *L.*, is partly a denizen, in cultivated fields and on neighbouring sandy shores. When the fields become permanent grass this plant only keeps its hold on the shore.

Polygonum lapathifolium, *L.*, is rather common in cultivated fields.

Bromus secalinus, *L.*, and B. commutatus, *Schrad.*, are perhaps rare casuals among sown grass.

ALIENS.

Prunus Avium, *L.*—Planted by roadsides and near houses.

Pyrus Malus, *L.*, is met with only as old trees near deserted crofts and gardens.

ÆGOPODIUM PODAGRARIA, *L.*, is locally common, but is limited to gardens and their hedges. It is occasionally imported from nurseries. Although a few seeds ripen, I have never seen it spread by this means.

SAMBUCUS NIGRA, *L.*, grows near houses, where it is frequently planted by crofters. It has no appearance of being native on this part of the coast, or, as far as I have seen, in Mull or Skye. It is probably not a native of Scotland.

TANACETUM VULGARE, *L.*, grows on the shore, close to an old garden.

MIMULUS LUTEUS, *L.*, is perfectly established among the native vegetation in a few places. It increases usually by stems bearing roots being washed down streams to lochs, etc.

PLANTAGO MEDIA, *L.*, was introduced among grass seed in 1884, and has increased in dry gravelly soil; but it has not spread on to the peat.

SALIX ALBA, *L.*, occurs, planted, near houses.

SALIX VIMINALIS, *L.*, is a common shelter-hedge for crofters' gardens; and grows occasionally at the sides of streams which have passed near gardens. I have watched one case in which rooted branches after having been thrown from a rubbish-heap into a river have taken root on the banks lower down. This and the preceding are probably not natives of Scotland.

CASUALS.

FUMARIA OFFICINALIS, *L.*, is a rare weed in gardens.

LEPIDIUM HIRTUM, *Sm.*, was introduced among grass seed in 1887, and increased by seeding until 1890, when it was exterminated by rabbits.

TRIFOLIUM PROCUMBENS, *L.*, is rarely seen, usually among rye-grass.

CICHORIUM INTYBUS, *L.*—One plant appeared in 1891 among grass which had been sown six years previously. The species did not obtain a footing, although the plant was allowed to seed. In Eigg this species has become naturalised at the side of fields.

SONCHUS OLERACEUS, *L.*, is rarely seen in cultivated fields.

ANAGALLIS ARVENSIS, *L.*, grew near a garden, where it remained for a few years, but then died out.

Some plants are so ubiquitous that it is perhaps now impossible to consider them otherwise than native, although their distribution is suspicious. They are most common near the abodes of man or of cattle, and decrease in frequency in proportion to their distance

from them; but they also grow well in localities which cannot be considered suspicious. The following are examples:—

Cerastium triviale, *Link.*, is very common at sides of cultivated fields and of roads, in waste places and on shores, usually near cultivated ground or cattle resorts, but temporary stragglers grow on peaty moors. It is permanent on better pieces of ground, and on gravelly margins of hill lochs, and is rather common on good grassy ground above the moors, and occasionally in plenty on the higher rocks. It is the most frequent plant on old dung on the moors, and can be often traced here from the low ground.

Sagina procumbens, *L.*, is most common on gravel paths and roadsides near houses. It spreads along them and on to the moors by paths or any recently disturbed ground, becoming permanent only when it reaches the gravelly margin of hill lochs. But it also occurs beside springs and in wet places, usually near roads and resorts of cattle.

Prunella vulgaris, *L.*, is very common. Its distribution is not unlike the *Sagina*, but it is much more common, prefers wetter places, and gets a permanent hold wherever it goes; it is usually seen on the hills at sheep-shelters or much-frequented ground, but it occurs in wet woods and other places scarcely open to suspicion.

Rumex Acetosa, *L.*, is very common in similar places to the preceding, but has a preference for manured ground; it also is more common in pastures, and ascends to a much greater altitude.

Rumex Acetosella, *L.*, grows usually in drier places than the previous plant, and perhaps does not reach the same altitude.

ZOOLOGICAL NOTES.

Field Vole on Ben Nevis.—The Field Vole (*Microtus agrestis*) is not at all uncommon on the summit of Ben Nevis. During the summer they are seen, or sometimes captured by the cat, about the observatory buildings. During the winter months several have been seen and captured within the observatory, but I have no record for the outside for that season.—W. S. Bruce, The Observatory, Ben Nevis.

Wild Cat in Inverness-shire.—I have to report the capture of two Wild Cats (*Felis catus*), a male and female, on the estate of Kinlochmoidart in March last. One was trapped in a wood near Kinlochmoidart House, and the other on the hill above the House.

Their length was 37¼ inches from nose to tail. These are the only specimens seen on the estate since 1883, and I believe for a good many years previous.—J. C. Stewart, Glenmoidart.

Magpies Nesting in Captivity.—As I believe any instance of the Magpie (*Pica rustica*) nesting in captivity to be hitherto unknown, a short narration of the circumstances which have lately taken place under my own observation may not prove uninteresting. I have two Magpies, both taken from the nest when young birds—the one four or five years ago, and the other last spring. The latter, a much smaller bird, was confined in a partially roofed enclosure, the other one in a small cage. On the 22nd of March last, the cage containing the older bird was placed against the wire netting which enclosed the young bird. The excitement displayed by the birds—more particularly by the young one, which has since proved to be the female—when thus brought into close proximity, prompted me to put them together. Wishing to give them every facility for nesting, I procured a small holly bush, and stuck it in the centre of the enclosure. At the same time I put in a few beech twigs. They did not go near the bush, however. A few days afterwards a nest was formed on a short perch which crosses one of the corners close up under the roof, and supported by a piece of wire netting. For some time the building went on apace. It was noticeable that the cock bird did all, or nearly all, of the carrying! In about a week, when they seemed to have a fairly good foundation for the nest, I supplied them with dried grass, roots, etc.; and mud, which I made into a kind of plaster. About the 19th of April they ceased working at the nest. On the 21st she laid the first egg, and laid every day till the 25th, when she commenced to sit pretty closely on the five eggs. (From laying the first egg, she was most of the time in the nest.) I must not omit to mention one peculiarity about the nest. It is not arched over as the nest of the Magpie in a wild state usually is. But its nearness to the boarded roof of the cage rendered a dome unnecessary. During the first week the hen sat pretty closely. The latter part of the second week she was much oftener off the nest, and seemed restless. On the 11th May,—sixteen days after the last egg was laid,—two young birds were hatched. On the evening of the following day another young bird appeared. On the morning of the next day, the 13th, a fourth was hatched, and the same night the last egg produced a young bird. On the mornings of the 15th and 16th, the two last birds were found dead. Probably they had never been properly fed, on account of their being much smaller and weaker than the earlier hatched birds. During the period of incubation the male bird was never once seen on the nest, the sitting being entirely done by the female. On the 24th May the young bird hatched on the 12th died. It was certainly not one-fourth the size of the two first

hatched birds, and could not, I think, have been properly fed. As soon as the young birds appeared, I found that the parent birds did not take their ordinary food,—which consisted of meal and bread paste with bruised hemp-seed, and table scraps generally,—and I commenced to search for beetles, larvæ, etc., which very soon proved to be the food they required. At first they would not take worms, but when the young birds got larger and their feathers began to show, they seemed to overcome their objection to them, though they never seemed eager for them. They invariably pulled the worms to pieces after killing them. It will be noticed that the last egg was laid on the 25th April, and the last bird was hatched on the night of the 13th May, which shows that the period of incubation is eighteen days. The two remaining birds are now nineteen days old, and seem strong and well.—Richard Tomlinson, Musselburgh.

Habits of Starlings.—Early this spring, while building their nest, one, or a pair of Starlings (*Sturnus vulgaris*) was observed to continually pick off the young leaves of a chrysanthemum: the bird, or birds, only attacked this one plant in the bed. The leaves were carried up to the nest. The other evening a Starling, building in another part of the house, was seen to drop something, which, on being picked up, was found to be a young lettuce, and, on visiting the bed where these were planted, a whole row was found to have been taken up. This seems to be a new departure on the part of this species.—T. E. Buckley, Inverness.

Nesting of the Chiff-chaff in Upper "Forth."—Authentic Scottish nests of the Chiff-chaff (*Phylloscopus rufus*) have been so seldom recorded, that the following statements regarding one I found this year (1896) in Stirlingshire may not be considered unworthy a place in this journal.

On the 17th of April I heard the notes of a Chiff-chaff in a plantation of young Scotch firs and spruces, among which are scattered a few oaks, etc., of older growth, at Duchray, about three miles above Aberfoyle. On the 22nd there were two if not three singing, and by the end of the month it seemed evident that two pairs had settled down for the summer. Being very desirous to find a nest of the species within the "Forth" area, I spent many hours watching the birds in the hope of detecting them in the act of building; but, though I scattered feathers for their use within view of where I lay, I had to leave the district on 9th May without a clue, beyond fixing the limits of the "beats" of the males, and getting an occasional glimpse of the females. It was the 20th of May before I could return. On that day, after watching for several hours, I commenced a search in a likely spot—an open heathery place studded with small spruces—between two of the older trees which constituted the "beat" of one of the males, and

had not gone far when I caught sight of the coveted nest: in it were six typical eggs not more than two or three days incubated. It was built about six inches clear of the ground, among tall bushy heather, and was composed of withered grass, mosses, and leaves, with a lining of deer's hair and feathers. Superficially it looked not unlike a Wren's nest hanging in the heather, but a closer inspection showed its kinship with that of the Willow Wren—it was (besides being off the ground) rather bulkier, however, and the dome projected more over the entrance, so that the eggs were quite out of sight. The female, which I saw leave the nest several times, evinced considerable anxiety, uttering a plaintive *thew-ee*, *thew-ee*, much like the note of a Greenfinch under similar circumstances; but the male continued his monotonous *chiff chiff chief chiff chief chiff chief chief*, etc., without apparent concern. Judging from my own experience, I am inclined to think that in the case of the Chiff-chaff, and its allies the Wood Wren and the Willow Wren, the nests are built chiefly, if not solely, by the females.—William Evans, Edinburgh

The Tree-Sparrow in Midlothian.—I observe in the "Annals" for April that it is stated there is no recorded notice of the Tree-Sparrow (*Passer montanus*), having been observed in Midlothian previous to Mr. Eagle Clarke's seeing a small flock near Comiston on the 29th December last. Perhaps mention may be made of the following circumstances which I noted on the day it occurred. On the 17th February 1882 I happened to be walking past the garden of Holyrood in the Queen's Park, when my attention was drawn to a twittering sound of birds with which I was not familiar. I found the chirping proceeded from a flock of Tree-Sparrows in the hedge above the wall of the garden. I was quite familiar with the appearance of the Tree-Sparrow, as I had observed them for several years breeding around my house in East Lothian, but I had never seen a flock of the birds before. After watching them for some time, they became disturbed and flew off to the crags on the hill close by. I estimated their number from twenty to twenty-five. Thinking it might interest them, I wrote that night to my friends Mr. A. B. Herbert and Mr. Robert Gray. Both these gentlemen visited the place next afternoon, but there was not a bird of any kind to be seen. This I was not surprised at, as the 17th February was a bright, warm, calm, sunny day, whilst during the night a gale of wind sprang up and continued next day. The Tree-Sparrows had doubtless betaken themselves to some more sheltered situation. It would be interesting to know if Tree-Sparrows have continued to breed in Ayrshire near Ardrossan as mentioned by Mr. Gray in his "Birds of the West of Scotland."—R. Scot Skirving, Edinburgh.

Great Gray Shrike and Rough-legged Buzzard in Lanarkshire.—A Great Gray Shrike (*Lanius excubitor*) was shot in Lanark

parish on the 11th April of this year, and was seen by me shortly thereafter in the hands of Mr. Dummond Pringle, Chapel, Braidwood, who preserved it. Mr. Joseph M'Kay, keeper on the Westsidewood Estate, Carnwath, has kindly informed me that he killed a Rough-Legged Buzzard (*Archibuteo lagopus*) on the Woodend Moor there on the 15th of March of this year.—JOHN PATERSON, Glasgow.

Great Spotted Woodpecker in Dalmeny Park.—On the 26th of May my father, Mr. William Campbell, obtained a good view of a Great Spotted Woodpecker (*Dendrocopus major*) in an oak tree in one of the plantations in Dalmeny Park. From the occurrence of the bird at this season of the year, it is more than possible that it is breeding in the locality. It has not, however, come under further observation.—CHARLES CAMPBELL, Dalmeny Park.

Bewick's Swan in the Outer Hebrides.—It may be worthy of note in your magazine that two adults and one immature bird of Bewick's Swan (*Cygnus bewicki*) were shot in the month of February last on a fresh-water loch on North Uist in the Outer Hebrides. I do not think that this species has been recorded there on authority, though we often get the Whooper (*Cygnus musicus*).—JOHN W. P. CAMPBELL ORDE, Kilmory.

Nesting of the Pochard in Fife.—On 13th May last (1896) I observed four drake Pochards (*Fuligula ferina*) on one of the Fifeshire lochs; and a short search revealed two ducks of the same species, one of which rose straight off her nest containing nine eggs. Beyond taking an egg and a little of the down as vouchers, I did not further disturb the birds. In the body of Saunders's "Manual" it is stated that the Pochard nests in Fifeshire, but the statement is deleted by an entry in the errata slip inserted at the end of the introduction. Although there is evidence of a pair having reared a brood in Moray in St. John's time, the first authentic Scottish eggs appear to be those taken by Mr. J. Hamilton-Buchanan on a loch in South-West Perthshire in May 1879. Other breeding-places have since been recorded, but they are still few and far between, though no doubt more exist than we at present have knowledge of. That the bird is spreading as a breeding species in Scotland is evident, but its increase, so far, has been remarkably slow in comparison with that of the Tufted Duck. Whether a more rapid expansion is now about to take place remains to be seen. Suitable habitats, that is, inland waters with extensive reed beds, for which it seems to have a decided preference, are, however, much less numerous than the simple rush- and sedge-girt lochs and ponds that satisfy its ally.—WILLIAM EVANS, Edinburgh.

Pochard and Tufted Duck breeding in Orkney.—I have just received a letter from J. G. Moodie-Heddle, Esq., of Hoy, telling

me that last year both the Pochard (*Fuligula ferina*) and Tufted Duck (*Fuligula cristata*) bred in Hoy. This year the Pochard again bred in the same place, but the female seems to have been killed, as the nest, with four eggs and one dead newly hatched young bird, was found deserted. Though we are certain that this bird has bred before in another locality in Orkney, this is the first recorded nest actually seen.—T. E. Buckley, Inverness.

Char in Loch Lomond.—Surgeon-General Bidie has the impression that the Char (*Salmo alpinus*) exists in Loch Lomond. I have fished in that loch regularly for forty years,—not on odd days, but for months,—and have been present at innumerable draughts of the net,—large mesh and small,—and have besides, for scientific purpose, searched the bays and backwaters with an eight-inch meshed net, without having met with this fish. Over and above this personal experience, any unusual fish taken in the loch is generally referred to me, and, so far, *Salmo alpinus* has not shown himself. This evidence is, of course, only negative, and it is quite possible that the fish is here, although I have failed to come across it; but more trustworthy evidence than your correspondent offers is necessary to establish its presence. Some eighteen or twenty years ago several hundred American brook trout, which I understand to be Char, were turned into the Finlas, a stream about a mile distant from the Fruin, and the fish reported (if not merely an abnormally coloured trout) may have been one of these. A notice of this introduction will be found at page 82 of my contribution to the "Guide to the Natural History of Loch Lomond." The reference to Loch Dochart is quite irrelevant; that loch belongs to a different water system, which discharges into the German Ocean.—Alfred Brown, Luss.

Testacella scutulum and Stenogyra goodalii in Stirlingshire.—*Testacella scutulum* is found in the gardens at Brentham Park, Stirling. Mr. Bruce, the gardener, told me some time ago that he had often seen them crawling about in the hothouses and borders outside of them. Mr. Bruce protects them with a zealous care, knowing well their carnivorous nature. I got one specimen from him in June 1894, and two since that date.

Stenogyra goodalii is an inhabitant of the orchid-houses at Sauchie. I got several specimens from Mr. M'Connachie, the gardener, in January last. The question arises, How did these alien snails come to have a habitat in the orchid-houses, which are only two or three years erected, and not found in any of the other houses? Their eggs must have been introduced along with, and adhering to, the orchids.—G. M'Dougall, Stirling.

Euchloë cardamines in Moray.—In the "Annals" for 1894, p. 183, I mentioned the appearance of this butterfly in the valley of the burn of Aberlour on 24th May. I observed some fine specimens

in the same place on 7th May last, and also on 4th May in the glen near Dailuaine, Carron, Speyside. It is probably to be found at most of the burnsides in that locality. On 7th May *cardamines* was accompanied by a small Fritillary, either *selene* or *euphrosyne*. In view of recent discussions regarding *E. cardamines* (Linn.) and *E. hesperidis* (Newnh.), it may be of interest to note the sizes of the specimens taken by me near Aberlour in May, viz.—males, $1\frac{8}{16}$ to $1\frac{12}{16}$ inches; females, $1\frac{10}{16}$ inches. These measurements fall just within the limits given by Mr. Newnham for typical *cardamines*,—$1\frac{7}{16}$ to $1\frac{13}{16}$ ("Ent. Record," 1894, pp. 97, 219). In the males the discoidal spot of forewings is decidedly *within* the orange space, and the costa is *not* dotted with black. The specimens are, therefore, orange-tips of the common type and of medium size. One male has the orange patch extended to the hind margin, which is apparently unusual in British specimens.—HENRY H. BROWN, Elgin.

Polyommatus (Zizera) minima in Moray.—At Grantown in the early part of June 1895 I saw a considerable number of this butterfly. I might have taken several specimens, but only took one to ensure identification. Most of them were flying about grassy banks at the roadside, with heather and moor plants beyond, and I was surprised to see the insects in such surroundings.—HENRY H. BROWN, Elgin.

Narrow-bordered Bee Hawk-moth in Midlothian.—Through the kindness of Mr. Symington Grieve, our collection of local insects has been enriched by a specimen of this moth (*Macroglossa bombyliformis*, Esp.), captured at Temple, Midlothian, on the 20th of May last. I have been furnished with the following note on this local species by Mr. William Evans, F.R.S.E., who has paid considerable attention to the Lepidoptera of the Forth District:—

"The occurrence of the Narrow-bordered Bee Hawk-moth at Temple this summer is well worthy of a record. Although recorded for a number of Scottish counties, including several of the eastern ones, it has not, so far as I know, been previously taken in the Lothians. According to Dr. Buchanan-White's "Lepidoptera of Scotland" ("Scot. Nat.," vol. ii. p. 38), it has occurred in "Forth"; but no locality is mentioned, and I imagine the entry most probably refers to the upper or western, that is the Stirlingshire and Perthshire portion of the area. At any rate, this species is not marked in the lists for the Lothians and Fife which were supplied to him, when drawing up his paper, by several well-known local entomologists, and which he kindly placed in my hands not long before his death."—PERCY H. GRIMSHAW, Museum of Science and Art, Edinburgh.

Porcellio pictus, *Brandt*, in Cantyre.—It may be of interest to state that I obtained a specimen of this "Slater" in the vicinity of Campbeltown in April last. In a little paper on the Land and Fresh Water Crustacea of the District around Edinburgh read to the Royal Physical Society, Edinburgh, in April 1891, I mention the occurrence

of *Porcellio pictus* at Seafield, Leith, and also stated that it had been recorded for Banff by T. Edward, and from Ayrshire by D. A. Boyd. In 1894 an interesting paper on the Irish Woodlice by Dr. Scharff of Dublin was published in the "Irish Naturalist" for January and February of that year. In his note on the British distribution of *Porcellio pictus* Dr. Scharff gives Kent as the only English county from which the species had been recorded, but inadvertently omits the Scotch records. I was pleased to observe that at the last meeting of the Glasgow Natural History Society, Dr. Robertson of Millport recorded the occurrence of this "Slater" for Cumbrae. Though this pretty Isopod is much less common than some of its confreres, I have no doubt that if carefully looked for its extreme rarity will be found to be more apparent than real.—T. Scott, Leith.

Erythrops serrata, *G. O. Sars*, in the Firth of Clyde.—Specimens of this interesting Schizopod have lately been obtained in the Firth of Clyde, in the deep water off the Ayrshire coast. In a Memoir on the British Mysidæ, published in the "Annals and Magazine of Natural History" for August and September 1892, Dr. A. M. Norman gives three Scotch stations for this species, viz. St. Magnus Bay, Shetland; the Moray Firth; and the Firth of Forth. So far as I know, there is no previous record of *Erythrops serrata* for the Clyde district.—T. Scott, Leith.

Laophontodes bicornis, *A. Scott*, in the Firth of Clyde.—Specimens of this curious and distinct Copepod have lately been obtained in some dredgings from Kilbrennan Sound, Firth of Clyde. The species was discovered by my son in material dredged off Port Erin, Isle of Man, and is described and figured in the last Report on the work of the Lancashire Sea-Fisheries Laboratory, published this year. Only one specimen of the Copepod—a female—was obtained in the material dredged off Port Erin, but the Kilbrennan dredgings yielded many specimens including both sexes. In this species the second body segment is produced on each side into a strong curved tooth—hence the specific name; this tooth extends outward and backward and gives to the species, which is a small one, a very characteristic appearance.—T. Scott, Leith.

BOTANICAL NOTES AND NEWS.

Birds and Oak-galls.—In strolling through one of our woods a curious observation was made the other evening. A number of galls of *Cynips Kollari* were lying about under an oak tree near the edge of the wood, most of them split open so as to lay bare the central cavity. Upon examination it was clear that some enemy with a bill had done this, and the process could easily be made out. The bird

had evidently perched on the tree while striking the gall, as some of them had broken off and fallen down with one or two sharp-edged beak-marks in them and no more. Many still remained on their twigs with great breaches in their walls, as could easily be detected with a field-glass. Most of the galls that lay on the ground—fifty-seven were counted—had been pierced to their centres, and the larvæ had been removed. All the fragments were removed from the grass, and the place was watched for several days, and at last the clever artist was found pounding away at his laborious task. The bird proved to be a male greenfinch, which, although abundance of food is now everywhere to be found, evidently considered the larva thus fortified in a thick wooden wall such a delicate morsel that he must now and then treat himself and his mate to a dish of it. In order to be within reach of such dainty fare they have set up housekeeping in a holly near by. No other tree in the vicinity has yet been attacked.—A. Macdonald, Durris.

Clover Dodder in Fyvie.—Last summer, in a field of hay belonging to Alex. Castle, Gight, Fyvie, and first observed by his son, were several patches of clover interwoven to a great extent with dodder. The long leafless thread-like stems which spread out in every direction soon found a host in the stalks of the clover, to which it clung, and round which it twisted itself, forming an entangled dense mass, from which it drew its sole nourishment, to the fatal injury of the clover. This troublesome weed is little known in our Northern flora: it is probably imported with the clover seed, but, being an annual, lives only for a season, our climate being unfavourable for its increase.—W. Sim, Fyvie.

[No doubt this dodder is *Cuscuta Trifolii*, Bab., referred, as a variety, to *C. Epithymum*, Murray, from which it differs chiefly in the scales in the corolla tube being a good deal separated, and in *C. Epithymum* growing on broom, ling, thyme, and other plants, while *C. Trifolii* infests clover. It has been found in a number of counties in Scotland, from Forfar southwards; but is probably in all cases introduced with agricultural seeds, and does not hold its ground.—Eds. "Ann. S. N. H."]

First Records of Flowering Plants in Scotland.—In Mr. W. A. Clarke's "First Records" ("Journ. Bot.," April, May, and June) are the following from Scotland:—

Eleocharis uniglumis, Link., 1847.—"Aberdeenshire. Dr. Dickie."—Bab., "Man.," ed. 1, p. 349.

E. multicaulis, Sm., 1800.—"At Corryhattachan, Isle of Skye. Discovered by Mr. John Mackay in 1794."—Sm., "Fl. Brit.," i. 49.

Scirpus pauciflorus, Lightf., 1777.—"Upon Malghyrdy in Breadalbane (Co. Perth). Mr. Stuart."—Lightfoot, "Fl. Scot.," p. 1078.

S. rufus, Schrad., 1777.—"In the Isle of Mull."—Lightfoot, *l.c.*, pp. 86 and 1138.

Eriophorum alpinum, L., 1794.—"Found by Mr. Brown and Mr. Don in a moss about three miles east of Forfar."—"Trans. Linn. Soc.," ii. 290. (Found in August 1791.)

Schœnus ferrugineus, L., 1885.—"Collected beside Loch Tummel (Co. Perth) in July by Mr. (James) Brebner."—F. Buchanan White, in "Journ. Bot.," 1885, p. 219.

Carex Davalliana, Sm., 1800.—"Discovered in marshy ground in Mearnsshire, North Britain, by Prof. James Beattie, jun., of Aberdeen."—"Trans. Linn. Soc.," v. p. 266.

C. rupestris, All., 1836.—"Discovered (2nd Aug.) by Dr. Dickie and Mr. Templeton in Aberdeenshire."—"Comp. Bot. Mag.," ii. p. 191.

C. pauciflora, Lightf., 1777.—"We found this new species of *Carex* about half-way up the mountain of Goatfell in the Isle of Arran."—Lightfoot, *l.c.*, p. 543.

C. incurva, Lightf., 1777.—"This new species of *Carex* was communicated by Dr. Hope. Discovered in deep loose sea-sand at the mouth of the Water of Naver, and near Skelherry, in Dunrossness, in Shetland."—Lightfoot, *l.c.*, p. 544.

C. helvola, Blytt., 1886.—"Collected by Prof. Balfour on Lochnagar, Aug. 11, 1846, and named *C. curta*, var. *alpicola*. Recorded as *C. helvola*, Blytt., by Arthur Bennett in "Journ. Bot.," 1886, p. 149.

C. lagopina, Wahlb., 1838.—"Discovered on rocks on Lochnagar, in Aug. 1836, by Mr. Dickie and Mr. Clark."—"Eng. Bot. Suppl.," 2815.

C. alpina, Sw., 1830.—"Discovered in 1830 by Prof. Balfour and Dr. Greville among some precipitous rocks which surround a small loch about two miles above Loch Callader."—"E. B. Suppl.," 2666 (*C. Vahlii*).

C. atrata, L., 1777.—"Upon the Highland mountains frequent, as upon Benteskerney in Breadalbane."—Lightfoot, *l.c.*, p. 555.

C. rigida, Good., 1792.—"In alpicis Scoticis. Mr. Dickson."—"Trans. Linn. Soc.," ii. p. 193. "It had been found by Sir J. E. Smith, in 1782, on Ben Lomond."—"E. B.," 2047."

C. aquatilis, Wahlb., 1832.—"Common on the Clova range of mountains"; found by W. J. Hooker, W. S. Burchell, and R. K. Greville (about 1824).—"E. B.," 2758.

C. kattegatensis, Fries, 1885.—"Caithness, August 1883, J. Grant."—"Journ. Bot.," 1885, pp. 50, 290.

C. rariflora, Sm., 1813.—"Discovered in 1807, by Mr. G. Don, among the mountains of Clova."—"E. B.," 2516.

C. vaginata, Tausch., 1811.—"Found by Mr. W. Borrer, in August 1810, on the rocky ledges of Craig Calloch, in Breadalbane."—"E. B.," 2293 (as *C. Mielichoferi*).

C. atrofusca, Schkuhr. (= *C. ustulata*, Wahlb.), 1812.—"Gathered on Ben Lawers by Mr. George Don."—"E. B.," 2404.

C. frigida, All., 1874.—"We have been informed that during the excursion of the Scottish Botanical Alpine Club to the Aberdeen and Forfarshire mountains in August last, Mr. John Sadler discovered *Carex frigida*, All."—"Journ. Bot.," 1874, p. 339.

C. capillaris, L., 1777.—"On Benteskerney, Craigneulict, and Malghyrdy in Breadalbane. Mr. Stuart."—Lightf., "Fl. Scot.," p. 557.

C. lævigata, Sm., 1800.—"In a marsh near Glasgow, 1793. Mr. J. Mackay."—"Linn. Trans.," v. p. 272.

C. binervis, Sm., 1800.—"Very common on the driest moors about Aberdeen. Prof. Beattie."—"Linn. Trans.," v. p. 268.

C. filiformis, L., 1777.—"Plentifully at the south end of Air Links. Dr. Hope."—Lightf., "Fl. Scot.," p. 553 (as *C. tomentosa*).

C. pulla, Good., 1797.—"In montibus Scoticis. D. Dickson."—"Linn. Trans.," iii. p. 78. "Found on Ben Lawers in 1793 by Mr. J. Mackay."—Sm., "Fl. Brit.," p. 989.

Poterium sanguisorba, *Linn.*, at St. David's.—This plant was discovered by Miss Smith of Kinghorn on 16th May 1896. It has already been recorded from one or two localities in Fife, but never before from St. David's.—A. B. Steele, Edinburgh.

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—April-June 1896.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

The Fauna of the Outer Hebrides. By Radclyffe Walters. *Zoologist* (3), vol. xx. pp. 139-142 (April 1896).—Notes on twenty-five species of Mammals and Birds observed in Lewis.

Recent Capture of a Wild Cat in Scotland. D. A. M. *The Field*, 18th April, p. 614.—One recently captured at Resipol, Strontian.

Communications on Birds. *Proc. Berw. Nat. Club*, vol. xv. pt. i. pp. 190-194 (1894).—Notes on a double nest of the Corn Bunting, the Fulmar Petrel [Dunbar], Great Northern Diver at Dunbar, Dotterel near Dirleton, and Carrion Crow *versus* Rooks.

Notes on the Irruption of Little Auks, in the Winter of 1894-95, on the West of Scotland—Oban to Ayr. By John Paterson. *Trans. Nat. Hist. Soc. Glasgow*, vol. iv. (N. S.), pt. ii. pp. 195-198 (1894-95).

A List of Land and Fresh-Water Mollusca collected in the Eastern part of Berwickshire. By William Evans, F.R.S.E. *Proc. Berw. Nat. Club*, vol. xv. pt. i. pp. 170-174 (1894).

A Day with the Dredge at Machrie Bay, Arran. By Rev. G. A. Frank Knight, M.A. *Trans. Nat. Hist. Soc. Glasgow*, vol. iv. (N. S.), pt. ii. pp. 169-171 (1894-95).—Eighty species and varieties of Mollusca obtained on 21st August 1894.

Note on some Cretaceous Fossils from the Drift of Moreseat, Aberdeen. By G. Sharman and E. T. Newton. *Geol. Mag.* (N. S.), Dec. iv. vol. iii. pp. 247-254 (June 1896).—Treats of the Cœlenterata, Echinodermata, Annelida, Polyzoa, Brachiopoda, Lamellibranchiata, Gasteropoda, and Cephalopoda, and shows the range of each species.

Coleoptera at Campbeltown, N.B. James J. Walker. *Ent. Mo. Mag.* (2), vol. vii. pp. 110-111 (May 1896).—Eighty-six species are recorded.

Quedius riparius, Kellner, in Inverness-shire. A. J. Chitty. *Ent. Mo. Mag.* (2), vol. vii. p. 140 (June 1896).—Specimen of this new British beetle taken, in September 1893, in flood refuse from the river Beauly, near Beauly Castle.

Early Sallowing. Montague Gunning. *Ent. Record*, vol. viii. p. 16 (1st May 1896).—Tæniocampa gothica, T. stabilis, T. incerta, Scopelosoma satellitia, Calocampa exoleta, and Orrhodia vaccinii, captured at Montrose on 21st March.

Early Perlidæ. Kenneth J. Morton. *Ent. Mo. Mag.* (2), vol. vii. p. 112 (May 1896).—Three species seen [at Carluke?] on 22nd February, and two on 7th March.

On Species of Phoxocephalus and Apherusa. By W. T. Calman, B.Sc. *Trans. Roy. Irish Acad.*, vol. xxx. pt. xx. pls. xxxi. and xxxii. (1896).—Males of P. simplex, Sp. Bate, described from specimens obtained in Cumbrae.

List of Spiders (Araneidea) and Harvestmen (Phalangidea) collected around Evemouth, Berwickshire, in September 1895. By William Evans, F.R.S.E. *Proc. Berw. Nat. Club*, vol. xv. pt. i. pp. 117-121 (1894).—Twenty-two of the species recorded are additions to the county list, one being new to Scotland.

BOTANY.

Report of the Meetings of the Berwickshire Naturalists' Club, for 1894. *Hist. Berw. Nat. Club*, xv. pp. 30-98.—A number of flowering plants are mentioned as found at the excursions of the club, though none appear to be new records for the district.

Proceedings of the Glasgow Natural History Society during 1894-95. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 280-

301.—A number of plants are named as exhibited from various localities in the district.

Reports on Excursions of Glasgow Natural History Society during 1894-95. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 269-279.—A number of fungi are mentioned, and the dimensions of numerous trees are given.

Meteorological Notes and Remarks upon the Weather during 1894, with its General Effects upon Vegetation (in the Parks at Glasgow). By James Whitton. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 229-240.

Records of Measurements of Trees made in 1893 and 1894 (in the District near Glasgow). By Richard M'Kay and John Renwick. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 246-264.

First Records of British Flowering Plants—*continued*. Compiled by Wm. A. Clarke, F.L.S. *Journ. Bot.*, 1896, pp. 183-185, 226-228, 273-276.

Contribution to the Topographical Botany of the West of Scotland. By Peter Ewing, F.L.S. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 199-214.—Is a list of records, since 1892, of vascular plants of the region from Ayr northwards, the names being alphabetically arranged.

Plantago maritima, Linn., its Distribution in Ayrshire. By John Smith. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 226-228.

Occurrence of Cladium germanicum, Schrad., in Bute. By James Ballantyne. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 167-168.

Cystopteris montana in Stirlingshire. By A. Somerville, B.Sc. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 215-217.—Relates to a discovery already recorded in our pages.

Bonnemaisonia asparagoides, C. Ag., that gave a Blue Stain to Paper. By David Robertson, F.L.S. *Trans. Nat. Hist. Soc. Glasgow*, iv. pp. 172-173.—Apparently due to free iodine colouring starch in paper.

Halicystis ovalis. By David Robertson. *Trans. Nat. Hist. Soc. Glasgow*, iv. p. 174.—Dredged at Lamlash.

REVIEWS.

The Book of Antelopes. By P. L. Sclater, M.A., F.R.S., and Oldfield Thomas, F.Z.S., F.R.G.S. Illustrated by Joseph Wolf and J. Smit. (London: R. H. Porter.)

Since our previous notices ("Annals," 1894, p. 263; and 1895,

p. 206), parts iv. and v. of this important and beautifully illustrated work have been issued.

Part iv. treats of the genera *Cephalopus* (continued) and *Tetraceros*, comprising eight species, seven of which are depicted on coloured plates, and completes vol. i. of the monograph. Part v. opens vol. ii. with descriptions of eighteen species of the sub-family Neotraginæ, with coloured figures of nine species.

It is impossible to speak too highly in favour of "The Book of Antelopes." It is a combination of the very highest standard of literary and artistic excellence, and will rank in all respects amongst the most useful, interesting, and beautiful of scientific works of its kind that have ever been produced.

The Wild Cat of Europe (*Felis catus*). By Edward Hamilton, M.D., F.L.S., F.Z.S. Illustrated by P. and J. P. Smit. (London: R. H. Porter, 1896.)

Under the above title Dr. Hamilton gives us a neat octavo volume of about one hundred pages. Herein he has brought together a great amount of information, which has hitherto remained scattered over the wide field of zoological literature, concerning one of the most interesting of European mammals. Among others, there are chapters devoted to Ancestral Descent; Description; Etymology; Skull, and other Osteological Characters; Geographical Distribution; Period of Gestation; Interbreeding of the Wild and Domestic Cat; Relationships of the two Races; Records of Wild Cats in England, Wales, Scotland, Ireland (?), and the Continent, etc. etc.

One of the statements made in the preface is so interesting and important, that we make no apology for reproducing it. It runs as follows:—"I did not expect to find any difficulty in being able to define the Wild Cat (*Felis catus*) as a distinct species. The task, however, was not so easy as I anticipated, for I found that the characteristics relied on by most authors as *specific* were not persistent, were at times absent, and were also often present in the Domestic Cat. Moreover, on a careful examination of a number of examples of the Wild Cat of the present time, I found many indications of a mixture of the two races." This is a subject on which we trust Dr. Hamilton will afford us some further information, especially so far as it may concern British examples.

There are good plates of the Wild Cat, Caffer Cat, Fettered Cat, and Cat of mixed breed; and a series of illustrations devoted to anatomical details.

The book is a storehouse of information concerning the European Wild Cat, culled from all sources, and is well got up, as all Mr. Porter's books are. It will be very welcome to Zoologists, and is to be highly commended.

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Scottish Natural History

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MAMMALIA OF SOLWAY.

By Robert Service.

The following is an annotated list of the Mammalia of the Solway area. Of the 77 species usually given as British, we have 42 only, and some of these are now gone, but as they have become extinct here in comparatively recent times they claim a place still.

There is an unusually meagre list of Cetaceans, but although "Whales" have been often enough recorded, the exact species has been but rarely determined, and most of the records are consequently valueless.

Long-eared Bat, *Plecotus auritus*.—I am inclined to believe that this species is much the most abundant that we have, outnumbering the Pipistrelle in most places.

Pipistrelle, *Vesperugo pipistrellus*.—Very numerous, and of general distribution.

Daubenton's Bat, *Vespertilio Daubentoni*.—This is an interesting species that is usually found in considerable numbers in the vicinity of the lochs and along the still reaches of rivers. It flies swiftly along the surface of the water, and its food is almost wholly composed of Caddis Flies, which it may be seen

catching. It has the same habit as the swallows of dipping into the surface on warm evenings as it flies along. Its flight lasts the whole night through, even when the darkness of August nights has settled down. Many times I have known it caught by anglers when fly-fishing at night, as it dashes at the artificial flies very readily. It roosts in the hollows of oak-trees and in the roofs of out-buildings and in ruinous places, but I have not found it except in the near vicinity of considerable pieces of water. When a colony is disturbed they almost invariably forsake the spot for at least several months. [There is another large dark-coloured Bat that I have noticed on several occasions near Dumfries. It flies very high early in the evening, almost before daylight has begun to wane. It is probably the same as Sir Wm. Jardine referred to when he wrote in the "Statistical Account, 1835" (parish of Applegarth and Sibbaldbie, p. 175): "The Great Bat has been seen flying about the river Annan with a rapid and powerful flight, and must rank as a very rare animal." It may also have been the same mysterious species that was seen farther up Annandale by Dr. Walker as quoted in Fleming's "British Animals," p. 6. But as it has not yet been procured, there can only be speculation as to its identity.]

Hedgehog, *Erinaceus Europæus.*—Everywhere very common. There are certain families of tinkers—a class of degenerate gypsies—who wander through the south-western counties that find in the Hurcheon, when roasted, a gastronomic dainty that is greatly appreciated by them. The same taste also exists amongst many of the itinerant showmen.

Mole, *Talpa Europæa.*—Of general distribution, and too common in most places. It occurs on the tops of hills over 2000 feet in elevation. The so-called Albino Moles are of varying shades of fawn, or pale cream, or buff, sometimes with more or less of a rusty red on snout and under the breast and throat and along the middle line of abdomen. They are not at all uncommon, and the mole-catchers assert that they are confined to certain farms or districts. It may be of interest to note that mole-catching as a regular trade first began in the south of Scotland on the Duke of Buccleuch's lands in 1797.

Common Shrew, *Sorex vulgaris.*—Abundant and of general distribution. I have a fine pale cream-coloured skin of this species taken on Glenlee.

Lesser Shrew, *Sorex minutus.*—I have taken the Lesser Shrew in many parts of Kirkcudbrightshire, and it is probably of general distribution over the remainder of our area.

Water Shrew, *Crossopus fodiens.*—Of rather sporadic distribution, depending as it seems to do in great measure on the presence of water. It is, however, abundant wherever found. I have known several colonies at places at least half a mile from any water, and in summer it is not unusual to find it running across the dry hill-paths in the evenings, at long distances from even the smallest streams and ditches. The only variation in colour that I have met, other than the well-known darker or lighter shade of the under parts, was in an individual captured a few weeks ago in which a deep black patch was enclosed within the usual pale colour of the belly.

Wild Cat, *Felis catus.*—Although the late Captain Clark Kennedy of Knockgray stated in a note to his poem "Robert the Bruce" (1884), in reference to the rough country adjacent to Loch Dee, that "a few Wild Cats [nearly extinct in Scotland] still hold their own," I have not been able to ascertain any confirmation of the gallant gentleman's assertion. Indeed the latest authentic record of a Wild Cat in Galloway is one killed by a Mr. Beck, then farmer in Balmangan, about 1820. At the end of last century the cliffs along the Stewartry shore were notorious for the Wild Cats that infested them. In Dumfriesshire the race seems to have lingered till about the same period, for one was killed at a locality on the heights betwixt Middlebie and Tundergarth at Martinmas 1812.

Fox, *Canis vulpes.*—Hunted by two packs of hounds in Dumfriesshire, the Fox is plentiful there, although in the absence of the strict protection that it obtains it is questionable if it would long exist in the lower grounds. There has been no pack of hounds kept in Galloway for something like forty years. The Foxes there more than hold their own. Of late years quite a trade in young Foxes has risen in the hill-country of Dumfriesshire and the Stewartry, these youthful members of the mountain race being sent off to fox-hunting districts at a price which is seldom lower than half a sovereign each. In one comparatively small glen in the Stewartry there were lately captured, kept for a few weeks, and then forwarded to sportsmen, over sixty young Foxes, and these were only a small proportion of those caught in the district.

Marten, *Mustela martes.*—The only record I can find of the presence of this animal in Solway is the statement by the Rev. J. Little in the "Old Statistical Account" that in 1794 it existed in Colvend. One captured near the head-waters of the Minnock by some of the Marquis of Ailsa's keepers during the hard winter of 1878-79 must have been a straggler from some part of Ayrshire, for Martens had long been totally unknown in Galloway.

Polecat, *Mustela putorius.*—Now practically extinct throughout the area of Solway. The last one I have any notes of was an individual trapped in Glenlee in 1891. Formerly it was a common and familiar animal.

Ermine, *Mustela erminea.*—Not so abundant as in former days, but still sufficiently common.

Weasel, *Mustela vulgaris.*—The same remark applies to this species.

Badger, *Meles taxus.*—Probably the last of the native breed was exterminated before the end of the '60's. Introductions since then have been frequent. The Badgers killed in Kells in 1883, in Southwick in 1877, near Dalbeattie in 1870, and at Dalswinton in 1887, may all have been stragglers from places where they had been turned down. It is just possible that some of the original race may yet linger near the head of one of the Annandale glens, where I have reliable information that some years since a female with two young were seen.

Otter, *Lutra vulgaris.*—Still comparatively abundant, and of general distribution from the head-waters of the smallest streams and the hill lochs down to the sea-shore. There is much reason to believe that it has actually increased in numbers of late years.

Common Seal, *Phoca vitulina.*—Of frequent occurrence all round the coast, but generally in the late autumn months. It is supposed that a herd always descends towards the Ayrshire and Galloway coast from Argyleshire at that season. There are no records of any Seals having bred on our coasts, though that they sometimes do so is shown in the fact that a young one weighing about 28 lbs. was captured on the Blackshaw Bank in Dumfriesshire in August 1894.

Squirrel, *Sciurus vulgaris.*—Mr. Harvie-Brown has already treated the history of the Squirrel in its recent movements in Solway ("Squirrel in Great Britain," "Proceedings of Royal Physical Society") and so exhaustively that anything now to be said is mere repetition. Their re-appearance in Dumfriesshire (Upper Eskdale) dates from 1837, or perhaps a year or two earlier, but it would be fully ten years later before they became quite common and began to spread westwards. They crossed the Nith about 1860, and soon became generally dispersed, reaching the Cree about 1873. That river appears to have been an obstacle not easily negotiated, as some seven or eight years elapsed before the Squirrels got across. Early in the '80's, however, they became general in Wigtown, and at the present day abound in many localities in that county.

Harvest Mouse, *Mus minutus*.—This is an animal of excessive rarity, for I have neither seen nor heard of it anywhere in the district for over twenty-five years. That it occurred at one time on the farm of Rotchell, near Maxwelltown, there is no doubt, for I saw and handled the nests woven into corn-stalks and had some of the Mice from them.

Wood Mouse, *Mus sylvaticus*.—Everywhere a most abundant species. A close search for the yellow-necked form has not been successful as yet, but individuals with a large patch of yellow on the lower throat are not scarce. These appear to be only the ordinary Wood Mouse in exceptionally good condition. At times the species is very destructive to indoor fruit, and much damage has been done to peaches, nectarines, etc. Tomatoes they are very fond of, burrowing in the pulp to get at the ripe seeds.

Common Mouse, *Mus musculus*.—As a matter of course is everywhere abundant. In some parts of the town of Dumfries, piebald and plum-coloured specimens are often captured, thus showing where some of the tame breeds have got loose amongst their wild relatives. Examples of the so-called White Mice are also caught now and again.

Black Rat, *Mus rattus*.—A small colony seems to have existed until recent years in and near Dalbeattie, from whence I have seen three specimens, all got previous to 1880. One or two individuals were seen about the Craignair granite quarries there, and my friend Mr. James Matthewson informs me that one example in particular used to come out from under the stones and feed upon the crumbs that fell from the bread eaten by the masons at meal-times. This one got killed by a Weasel. The Black Rat has also been reported from Lochmaben in Dumfriesshire, but an example shown to me from that locality as this species was really a very dark, almost black, variety of *M. decumanus*. Mr. Stewart of Tonderghie has recorded the occurrence of the Black Rat at Whithorn, where it was probably introduced from ships. There is an interesting statement about Rats in Symson's "Description of Galloway" (p. 71), written in 1684, which is here transcribed:—

> "Under this head I think it will not be amiss to inform you that, although we have mice good store, yet we have no rats (In this Presbytrie [Wigtown] I meane, but whither they are in the Rinns I know not). Whither this proceeds from the nature of the countrey, I cannot determine; or whither they will live here or not. However, there is a gentleman in this parish of Kirkinner who assures me that above thirty years since he saw an innumerable multitude of rats in his barne, which over-

spread most of his corne there; but they only stayed a day or two and then evanished, he not knowing whence they came or whither they went."

Brown Rat, *Mus decumanus*.—Everywhere too common and destructive. Very dark specimens have been captured in the neighbourhood of Lochmaben. I have yellow skins from Dalbeattie, but these probably originated from some pet breed. Extraordinary swarms of Rats are found at the base of the rocky parts of the shore, where they find a sufficiency of food in shellfish and remains thrown up by the sea.

Short-tailed Field Vole, *Microtus agrestis*.—This notorious little quadruped is of very general distribution from the shore to the very summits of our highest hills. The recent "plague"—beginning in the autumn of 1887 and reaching its maximum in June 1893, thereafter diminishing very rapidly till within a few months later, when it would have been difficult to find one individual where so recently they were in millions—made the name of Vole very familiar to the public. "Plagues," on a very small scale, are quite familiar to close observers of this species. One very marked recurrence of this kind was on Rough Island, at the mouth of the river Urr, where, in the summer of 1894, the pasture, consisting of about nine acres, was completely devastated by the ravages of Voles.

Bank Vole, *Microtus glareolus*.—A very common and widely distributed species, but not so partial to the open fields, moors, and meadows as its congener, the Short-tailed Vole. It is at times most destructive from its habit of barking the trees and bushes. It is also a most annoying pest in gardens, where it is very fond of eating the crops of early vegetables, especially those sown under the glass of frames and pits for early use.

Water Vole, *Microtus amphibius*.—Very common along every watercourse and by the loch margins. A most marked increase of this species was noticed during the Vole Plague. The black varieties occur in all shades, from dark brown to glossy jet black. Pied varieties also occur, and I have one or two pretty skins of these in my collection. Spotted variations are more rare, but the late Dr. Grierson of Thornhill possessed a most remarkable series of these.

Common Hare, *Lepus Europæus*.—Vastly scarcer than in former days, is the verdict over much of our area, but still showing in fair numbers where the estates are sufficiently extensive to allow of effective preservation being exerted.

Mountain Hare, *Lepus timidus*.—The earliest record of the Mountain Hare in Dumfriesshire was in 1860, when some few were shot on Queensberry. Since then it spread rapidly east-

wards through the Annandale ranges on to Eskdale. It was some ten years later before it made its appearance westwards on the Stewartry ranges. It now abounds everywhere on all the hills.

Rabbit, *Lepus cuniculus*.—When Dr. Singer wrote his "Agricultural Survey of Dumfriesshire" in 1812, he remarked (p. 384) that "a few rabbits are to be found, but hardly worth mentioning. There is no regular warren." At the same period they were practically unknown in Galloway, and the rabbit-skins that were annually exposed at the Dumfries Candlemas market for furs ("Scottish Naturalist," July 1891) during the first twenty years or so of this century were of Ayrshire origin. Some time subsequent to 1825 the fox-hunting interest introduced rabbits largely throughout both Dumfriesshire and the Stewartry, and ever since that time they have been plentiful enough. At the present day the wild breed has been much crossed in some parts by the turning down of tame breeds such as the Belgian and Silver Gray.

Wild White Cattle, *Bos Scoticus*.—Two herds formerly existed, one of them being the Drumlanrig herd, which may be said to have been indigenous and original stock. They were either killed or sold—for there are different versions of the story—by William, Duke of Queensberry, somewhere about 1777. There was also a small herd, the originals of which were procured from Cadzow, kept at Cally Park by Alexander Murray of Broughton, and sold in 1846. For a more extended account of the Solway Wild White Cattle, see "Zoologist" for December 1887.

Red Deer, *Cervus elaphus*.—"The range of the Red Deer, formerly extending over all our province (Solway) and much farther south, is now far to the northward." So said Sir Wm. Jardine in a lecture delivered in 1860 to the Dumfriesshire and Galloway Natural History Society. According to the writer of the "Statistical Account" of Moffat parish, "the last hart was killed there in 1754, having been long single." The range betwixt Dumfriesshire and Lanarkshire was, as may easily be supposed, a famous place for deer. In the ballad of "John of Breadislee" we find that the redoubtable borderer

> . . . has gone to Durisdeer
> To hunt the dun deer down.

A stag was killed at Eaglesfield in Dumfriesshire on 25th October 1815, a Mr. Clark of Broughton having been killed by it. It had been hunted from Dalemain near Penrith, through Carlisle and Cockermouth, and far across the border country. In Symson's "Galloway" (1684) there are some references to

the presence of "very large Red Deer" about the "remote parts of that great mountain" (Merrick). I bought at a book sale one day a work in two vols., entitled "The Natural History of Quadrupeds and Cetaceous Animals," published at Bungay in 1811. The work is profusely illustrated with coloured plates, but is a mere compilation, and its only value is in its extreme scarcity. I find an allusion therein (vol. ii. p. 209) to the Galloway Deer, which is of interest: "So late as in the beginning of the last century there were red deer scattered over the hills of Galloway. But by the eagerness with which the peasants pursued them, they have been long since exterminated from that district." A remnant must have been left, for "Deer were occasionally seen in the remembrance of some old people" ("New Statistical Account," Kells parish, February 1844).

Fallow Deer, *Cervus dama*.—Only kept in a semi-domesticated state in a few of the parks. The "New Statistical Account" records in the notes to the parish of Johnstone that in 1780 James, Earl of Hopetoun, brought a dozen of Fallow Deer to Raehills, where they were placed in an enclosure, but subsequently broke out, and were never confined again. They gave rise to a numerous herd that roamed at large in Upper Annandale, and in 1844 it was computed that they numbered upwards of 200. Orders to destroy them were issued, and although more than fifty were killed within a week, their utter destruction was not accomplished before the orders were recalled. It is believed that possibly a few descendants of this herd are still at large, but as these may be confused with individuals recently escaped from the parks, there can be no certainty.

Roe Deer, *Capreolus caprea*.—The return of the Roe to Annandale was put down by Sir Wm. Jardine as shortly after 1854, but there is some reason to believe that it was a few years earlier, for the writer of the account of the parish of Johnstone in the "New Statistical Account" states that "within these last three years a few Roe Deer have been discovered." An introduction on the Drumlanrig estates about 1860 helped to stock Nithsdale, and within a few years thereafter the Roe was quite common. By 1870 the Roe had spread widely over Galloway, and is now everywhere numerous in suitable haunts.

Common Rorqual, *Balænoptera musculus*.—A Whale stranded on the Priestside Bank on 20th September 1817 has been described as this species. Another occurred in the channel opposite Torduff Point on 21st June 1843. For several weeks at this period a couple of large Whales, computed to have been over sixty feet in length, and noted in the local papers of the time as Rorquals, frequented the Solway betwixt the Robin Rigg and the Sea Scaur Lighthouse. They were supposed to be

confined within some of the banks, but they eventually got out of the firth again. A Rorqual was caught near Port William in July 1889, and one caught in Lochryan a few weeks ago was also described as a Rorqual. Although there is little if any doubt that in these instances all were Rorquals, yet that they were all Common Rorquals is very doubtful indeed.

Bottle-nose, *Hyperoodon rostratus.*—Of "Bottle-nosed" Whales there are numerous records, yet of all those so called, only one —an individual stranded on Priestside in September 1876— has been authenticated. The upper part of its skull is now in the Observatory Museum. Of those said to have been "Bottle-noses" may be mentioned—One stranded at Innerwell, 1801; two taken in Innerwell salmon-nets, June 1821; one stranded at Southerness, September 1822; one stranded at Carsethorn, 27th August 1832; two stranded at Lochryan, 16th October 1839; one taken in salmon-nets, Innerwell, 20th August 1844; one stranded in Balcary Bay, 28th September 1850; one floating dead near Corsewall Lighthouse, 18th October 1856; one cast ashore, Southpark, Borgue, 3rd August 1862.

Common Porpoise, *Phocæna communis.*—Very abundant at times inside the Firth, herds of many hundreds being occasionally seen disporting round Southerness. Whenever a good run of salmon occurs the Porpoises are pretty sure to be in their wake. My friend Mr. Robert Major, Carsethorn, tells me an interesting episode that happened in his fishing one day a year or two ago. He was taking in his whammle-net abreast of Southerness, and found a small Porpoise entangled in the net. Being in need of oil at the time, he lifted the porpoise into the boat and thought no more about it, although he had noticed that the animal had a companion that had followed it to the boat-side. After he had stowed the net, he sailed right up to Carsethorn, taking about half an hour. Just as he was about to moor the boat, he saw that the same Porpoise had followed the boat, and was now swimming round it. At once suspecting it was seeking its lost mate, he looked at the captured Porpoise, and finding it was still alive, he lifted it overboard, where its companion received it with apparent relief, and both of them swam directly off in company. After the salmon shoals they will sometimes come considerable distances up the rivers, and I have seen individuals caught in the salmon-nets up as far as Kingholm on the Nith. There is a tradition that about the middle of last century a herd of some hundreds was captured as far up the Nith as Castledykes pool, fully five miles from the estuary, and so much oil was rendered from the carcases that all the people living in the neighbourhood had enough for their lamps during the entire winter following.

Grampus, *Orca gladiator*.—This is a species well known to our fishermen, but it is so wary as to be seldom captured or stranded within the shallows. A remarkable visit of Grampuses was made to the Solway at the end of July and beginning of August 1863, and their capture was an almost daily event from Gretna to Creetown. Some twenty-three in all were driven ashore by boats, or stranded through the movements of the tide. The largest was 26 feet long and the shortest 17 feet. These ferocious Cetaceans had probably been attracted into the Firth by the abundance of salmon, which were at the time being captured in enormous quantities. Indeed it is recorded in the local newspapers that some of the Grampuses vomited salmon in their death-struggles.

Pilot Whale, *Globicephalus melas*.—The most remarkable visit of Whales to the Solway occurred in the middle of December 1854, when a great herd of Caa'ing Whales got stranded. About 200 ran ashore betwixt the mouth of the Sark and the Annan, and over 100 more on other banks, such as the Blackshaw and Barnhourie. About thirty came ashore in the bay at Gillfoot, in Kirkbean. Our shallow waters and intricate channels seem to have entrapped almost the whole herd. The average length was 20 feet, and the blubber yielded many tuns of valuable oil.

Risso's Grampus, *Grampus griseus*.—One captured at Battlehill near Annan on 24th September 1892, and another on 17th October following at Carsethorn. Both had become stranded at ebb tide. For full particulars, see "Annals," January 1893.

Common Dolphin, *Delphinus delphis*.—In 1872, while fishing for salmon in Balmangan Bay, the Messrs. Turner captured a Cetacean that Mr. John Turner assures me was really this species.

Bottle-nosed Dolphin, *Delphinus tursio*.—In November 1887 I found a stranded specimen lying on Mersehead Sands. A few months later I was shown a skull of this species that had lain at Arbigland for some years. And in July 1894 Mr. Robert Major found a defunct Bottle-nose Dolphin floating on the tide, and towed it into Carsethorn. Its identity was fully determined.

NOTES ON BIRDS OBSERVED IN SHETLAND DURING THE SUMMER OF 1896.

By Robert Godfrey, M.A.

The following notes were made during a visit to Shetland in June and July this season, and are supplemented by a few references to a short holiday spent in Walls in June 1895. I worked the Mainland from various centres, but did not pass south of the line joining Scalloway and Lerwick. I also paid short visits to Yell and to Unst.

Such a holiday is, of course, always full of surprises, and some interesting species not expected beforehand are sure to turn up, whilst others eagerly sought for evade the pursuer's gaze. I was especially disappointed in failing to see the Red-necked Phalarope, although I was certainly in one of the haunts occupied in former years, and found its associates the Dunlin and the Snipe in the marsh, but I never succeeded in rousing the bird I sought. All the species inserted in this list were personally met with.

Whilst expressing my gratitude to all who assisted me during my tour in the islands, I must especially mention Mr. Bowie of Infield, Mossbank, for the great kindness shown to me, and for the interest he took in my pursuits.

Wheatear, *Saxicola œnanthe*.—Occurs abundantly and is universally distributed throughout Shetland. I heard this bird singing all night about the middle of June.

Wren, *Troglodytes parvulus*.—I found this little bird widely distributed, frequenting alike the neighbourhood of human abodes and the wild regions removed from human haunts.

Meadow Pipit, *Anthus pratensis*.—Common. I got a nest with five fresh eggs in Aithsting on 19th June, and another with four, incubated, on 30th June.

Rock Pipit, *Anthus obscurus*.—A never-failing object of the cliff scenery of Shetland.

Swallow, *Hirundo rustica*.—Twice observed by me: a pair at the Sound of Weisdale on 11th June, and a single bird at Gruting Loch in Sandsting on 15th June.

Sparrow, *Passer domesticus*.—Common beside houses everywhere.

Mealy Redpoll, *Linota linaria.*—This species should not properly be entered as a summer bird, but is inserted here lest the record be lost. On 15th July, Mr. White, the schoolmaster at Baltasound, showed me a live bird, and has since informed me that it "was caught in our garden on the 25th April last. It was seen hovering about from shrub to shrub two or three days previous to the 25th along with its mate, and my two sons had made a few attempts to capture them as they seemed so tame. I suggested that a piece of herring-net should be thrown over the boor-tree where they were. This they did, and one of the birds got entangled in the meshes of the net and was thus captured. The other got away, but shortly after I understand it was also caught down near Baltasound Voe, and is taking well with its confinement."

Twite, *Linota flavirostris.*—Fairly common in the cultivated districts, and occurring also on the "banks" or cliffs, and on small islands. I found a nest in Yell, situated between two perpendicular slabs of rock at the head of a cliff.

Bunting, *Emberiza miliaria.*—The harsh song of the Common Bunting is constantly heard beside human habitations, and the bird is widely distributed. Here and there, however, are stretches of wild moorland from which the bird is entirely absent.

Skylark, *Alauda arvensis.*—The Skylark is undoubtedly the bird of Shetland, keeping the hills in perpetual music, day and night, during midsummer.

Starling, *Sturnus vulgaris.*—The Starling occurs in great profusion throughout the islands, being especially abundant on the shore and on small uninhabited islands. In Shetland the bird sometimes alights on the back of a pony. In the smaller isles the Starling nests in holes in the ground amongst stones or in old burrows.

Hooded Crow, *Corvus cornix.*—This abundant species is generally distributed, and often surprisingly bold, coming close to the crofts for its food. The first indications of flocking were given on 2nd July, when I saw a party of twenty together in North Roe.

Raven, *Corvus corax.*—The Raven still remains an abundant species in Shetland, and seems not to be influenced in numbers by the persecution meted out to it. They nest generally, though not always, in sites difficult of access. By the time of my arrival, young broods were already able to fly, and I came on family parties of five and of six birds several times. On one occasion I saw a Raven pursuing an Erne, but I have seen him in his turn being harassed by a Crow.

Sea Eagle, *Haliætus albicilla*.—This noble bird formed one of the main objects of my visit. It still maintains its hold in a few localities, and is met with frequently during the time of the spring migration. I found it occupying two haunts, one of which had not been tenanted for a number of years back. On our approach to this eyrie, we saw the Erne, which appeared to be almost wholly white, perched on the cliff-head, and we rowed our boat close in under the rocks before she took flight. The nest had been thrown down a few days previous to our visit, and lay strewn at the base of the rocks. My companion and I climbed without difficulty to the occupied ledge, situated under a slanting rock about 25 or 30 feet from high-water mark. On again rowing past the rocks at night, we saw the Eagle resting on the summit. I made careful inquiries to ascertain if the nest had been robbed, and talked with natives who had climbed to it before my visit, but I could not hear of any eggs having been taken. It was, however, a satisfaction to know that the bird—only one was positively seen—had escaped molestation.

The other eyrie visited by me has been long established, and is allowed to remain in peace. The sitting bird, on being disturbed, flew slowly back and forward in front of the cliffs, pursued by Herring Gulls, and uttered its "yelping" note several times.

Peregrine, *Falco peregrinus*.—Bred at one of the eyries referred to under the last species. I saw the female bird on one occasion pursued by two Richardson's Skuas, to whom she paid no attention. I saw the bird also at Fethaland.

Merlin, *Falco æsalon*.—I did not discover any breeding-haunt of the Merlin, and during this visit to Shetland I met with it only once—in Yell.

Kestrel, *Falco tinnunculus*.—On the same cliff referred to above as tenanted by Erne and Peregrine, a pair of Kestrels safely brought off their young.

Cormorant, *Phalacrocorax carbo*.—This species is very much rarer and much more local than its congener. During my stay in Delting I frequently met with single birds, both inland and around the islands lying to the south of Yell Sound. In 1895 I saw a single pair on the Island of Vaila.

Shag, *Phalacrocorax graculus*.—Very abundant around the Shetland coast, and nesting generally on inaccessible cliffs. Single birds sometimes resorted to inland lochs to fish.

Heron, *Ardea cinerea*.—This non-breeding species occurs as a straggler even in midsummer in Shetland. I saw one in Aithsting on 13th June, and another near Mavisgrind on 20th

June. On 4th July I met with six birds on the eastern coast of Delting, and I frequently met with them about the same neighbourhood during my stay in that quarter.

Mallard, *Anas boscas*.—The Stock Duck, as it is termed in Shetland, is by no means abundant as a breeding species, though fairly distributed.

Teal, *Querquedula crecca*.—I found the Teal in Unst only, where I met with a drake and two ducks at Uyeasound on 15th July.

Wigeon, *Mareca penelope*.—I watched a pair on a loch in Sandsting on 15th June. They were evidently breeding there, but I could not find their nest.

Scaup, *Fuligula marila*.—On the evening of 12th June my friend Mr. James Baxter of Edinburgh and I, when returning to our quarters in Walls, detected a pair of Scaup near the edge of a large loch in that parish. From that day till the 18th, which was our last in Walls, we spent many hours watching the birds with the view to discovering their nest. But our hopes were doomed to disappointment, for, although the birds were tame and fairly confiding, they gave little indication of breeding, beyond what their presence in itself implied. On 13th June I saw the pair of birds "nebbing," and on the 18th they had shifted their quarters from the shore to the edge of the island which lay on the loch. They were peculiarly silent, never uttering any cry so far as we could hear. I may mention that a raid had been made on the island shortly before our visit, and that amongst the spoil procured was a Merganser's nest with eight eggs, and another, supposed to be a Merganser's at the time, with four eggs. I have the down from the former nest, but I learned that no down had been taken from the second nest, and I was thus left without any accurate clue to the identification of the owners.

Golden-eye, *Clangula glaucion*.—I observed a drake Golden-eye on Mioness Loch in Delting on 8th July. The bird presented the same shy nature with which I am familiar in the winter months, and would, on rising, have flown straight away, had not a Richardson's Skua swooped down upon it and compelled it to settle on the loch and dive. It then swam off to the opposite shore, maintaining the same wild disposition, and soon disappeared.

Long-tailed Duck, *Harelda glacialis*.—I met with this species on one occasion only, in Firths Voe, on 22nd July. The bird, a female, when first seen, was close inshore, but, on seeing attention directed to it, swam outwards, and evaded pursuit by repeatedly diving.

Eider, *Somateria mollissima*.—This fine sea-duck occurred all round the islands, but never in any great abundance at any one haunt. I frequently met with small parties of Eiders on inland lochs. A few nest on the hills at a considerable distance from the sea.

Red-breasted Merganser, *Mergus serrator*.—This species, although fairly distributed, occurs in greater abundance in some districts than in others. Sometimes parties are met with even in the height of the breeding season; on 14th June 1895 I counted sixteen birds together at the mouth of the Houllard burn in Aithsting. This is a remarkably silent species, and the only cry which I heard it utter was a low "krŭk, krŭk" to its young.

Rock Dove, *Columba livia*.—Abundant around the Shetland coast.

Water Hen, *Gallinula chloropus*.—I found this species breeding on a marsh in the south-west corner of Unst, and caught a young bird, only a few days old, on 16th July. [In 1895 I saw a Coot's egg, said to have been locally taken, in the possession of a native in Walls.]

Golden Plover, *Charadrius pluvialis*.—Commonly, but not abundantly, distributed. The first signs of flocking were shown on 26th June, when I met with a party of ten on the summit of Rona's Hill; on 3rd July I saw a flock of thirty at Brebister in North Roe, and on 18th July I observed an immense flock, containing several hundred birds, near Muness Castle in Unst.

Ring Plover, *Ægialitis hiaticula*.—Abundant on low fore-shores, and on bare stony regions amongst the hills.

Lapwing, *Vanellus vulgaris*.—I did not meet with this bird except in Unst, where I found small parties of six and three respectively in two localities. But I was given to understand that it was formerly common in a number of localities on the Mainland, in some of which it had occurred sparingly in the earlier part of the present season. My brother John took a nest with four eggs in Walls on 1st June, but I found no trace of the bird in that locality when I visited it later on.

Turnstone, *Strepsilas interpres*.—We fell in with a party of eight on the low shingly beach of an island in Yell Sound on 22nd July, and procured a male in brilliant summer plumage.

Oyster-catcher, *Hæmatopus ostralegus*.—Very numerous.

Snipe, *Gallinago cœlestis*.—Of universal distribution, but not abundant. Thomas Bowie, Esq., of Infield, Mossbank, presented me with a specimen of the variety known as Sabine's Snipe, which he had shot in the parish of Aithsting thirteen years ago.

Dunlin, *Tringa alpina*.—Much less numerous than the last species, but widely distributed; its chief haunts were in North Roe and the marshes in the south-west of Unst.

Sandpiper, *Totanus hypoleucus*.—In 1895 I noted this species on three lochs in Walls, and on Click-a-himin near Lerwick. In 1896 I found it on Houllma Water and on Voxterby, and on a loch at the waterfalls in North Roe. Its eggs are, I believe, still a desideratum for Shetland.

Redshank, *Totanus calidris*.—On 22nd July Mr. Bowie and I noted a single bird of this species off Firths Ness, and later on in the day at Mossbank.

Whimbrel, *Numenius phæopus*.—In 1895 I met with a single bird at the side of Grumnavoe in Walls on 17th June. In 1896 I did not meet with the bird till I reached Eshaness on 23rd June. Thereafter I found it repeatedly, though sparsely distributed.

Curlew, *Numenius arquata*.—The curlew occurred commonly throughout the isles, but as a breeding-species was sparingly distributed. Its chief nesting-haunts were in Delting and the islands of Yell Sound.

Arctic Tern, *Sterna macrura*.—I found colonies of this bird on three grass-clad inland lochs: Grumnavoe in Walls, Setter in Aithsting, and a small loch in the Kame Hills of Delting. I examined the nests on Grumnavoe carefully in 1895; they were thick structures of broad herbage, laid down without any tidiness, but compact enough to keep the eggs thoroughly dry. On the Brough of Copister I saw a nest made of seaweed, and measuring eight inches across. Again, on Linga in Delting, I saw a number of nests on the grassy slopes; these were insignificant structures compared with the nests found previously, but even here nearly every nest contained a little grass or hay. These facts are sufficient to confute Dixon's statement that "no lining is ever used." In the last-mentioned colony a pair of white-headed Terns were flying with the community, and were eagerly desired as great rarities. I brought one home with me, and Mr. Eagle Clarke tells me it is merely an immature Arctic Tern, to which formerly the name of *Sterna portlandica* was assigned.

Black-headed Gull, *Larus ridibundus*.—The only breeding-station of this bird seen by me was on a small island in Houllma Water, between Sandsting and Aithsting, on which there are a very few pairs. I noticed the bird there in 1895 as well as in 1896, and this year in our rambles around Walls we frequently met with one or two birds foraging from this haunt. On 28th July I saw a single bird at the Mill Loch, near Noness Head in Lunnasting.

Common Gull, *Larus canus.*—The chief breeding-haunts of this species are on the islands and borders of inland lochs: less frequently grassy islands off the shore or low rocky stacks without vegetation are chosen.

Herring Gull, *Larus argentatus.*—Occurs in great abundance in Shetland, breeding in large colonies on the rocky fore-shores only.

Lesser Black-backed Gull, *Larus fuscus.*—Another abundant species throughout the isles, nesting at times with the last-named species on the rocks. Its chief breeding-haunts, however, are low-lying islands on the inland lochs. In desolate tracts these birds sometimes build on the edge of a loch, or even in a moss.

Great Black-backed Gull, *Larus marinus.*—Is generally distributed throughout the islands, breeding in isolated pairs or small colonies in many places. Its important breeding-stations are the summits of inaccessible rock-stacks,—one such, Gruna Stalk in Eshaness, containing about thirty pairs of this bird.

Kittiwake, *Rissa tridactyla.*—A very abundant species at the fishing-stations. The nesting-haunts of this species are more local than those of the other common gulls, and are generally safer from intrusion.

Great Skua, *Stercorarius catarrhactes.*—I found a pair of these birds in a haunt not generally recognised as one of their breeding-stations, and I suspected from the boldness of their actions that they had escaped molestation. In another district of Shetland, an egg, which had all the appearance of a Great Skua's, was given to me. This egg, which has been seen by Mr. Eagle Clarke, was taken in a hitherto unsuspected region occupied by Richardson's Skua.

Richardson's Skua, *Stercorarius crepidatus.*—This species occurs commonly throughout the area I examined, and its wild mewing cry is one of the familiar bird-calls in Shetland. I have seen six of them harassing a flock of Gulls at the same time. I found the first young birds on 26th June, and saw birds of the year on the wing on 23rd July. In 1895 I discovered a downy chick lying dead in a moss in Aithsting, and, on opening it to see the nature of its food, found its stomach crammed with spiders.

Stormy Petrel, *Procellaria pelagica.*—We took the eggs of this species from a small island lying off Yell on 8th July. On five out of the six eggs taken we caught the sitting bird. I took two birds, which proved to be male and female, thus showing that both sexes incubate.

Manx Shearwater, *Puffinus anglorum.*—I met with this bird abundantly during the latter half of July in the neighbourhood

of Mossbank, and have counted as many as ten fishing together close inshore. I did not find the nests of this species.

Fulmar, *Fulmarus glacialis.*—On 23rd June I discovered a small colony of Fulmars, consisting of six birds, on the north face of Calder's Geo in Eshaness, and watched them with the greatest interest for four hours. Two previous haunts—Foula and Papa Stour—are noted in Shetland, but I did not succeed in reaching either of these islands. Few birds are stronger or easier on the wing than the Fulmar; few are more helpless on land. It stands in a curious attitude, with its breast barely, if at all, off the ground, and it lowers its head slowly but repeatedly as if unable to maintain its balance. On the ledges the birds walked in a very laboured style, as if they were moving in great pain at each step, and sitting seemed their only safe position on land. I suspected that this awkwardness on land accounted for their slowness in alighting, and I watched the birds on many occasions come right up to a ledge then sheer off again without gaining their object. When alighting, the Fulmar vibrates its wings to enable it to procure a foothold, and tries to settle on the very rim of the rock. One alighted on the centre of a ledge instead of on the rim, and even though maintaining the vibration of his wings to check his fall, just missed hitting his head against the ground. One Fulmar clung to its ledge as tenaciously as a Shag during my entire stay, and would not budge for all the efforts I made to dislodge it; this individual was probably hatching, but would not give me an opportunity of seeing its egg. The Fulmar's cry is a harsh, repeated croak.

Razorbill, *Alca torda.*—Very abundant. On 18th July the first young in their journey south from the Ramna Stacks were seen off Mossbank, but in a week they were common. One parent bird alone accompanies the youngster, and one such adult bird shot by us proved to be a male.

Guillemot, *Lomvia troile.*—Abundant like the last.

Black Guillemot, *Uria grylle.*—The "tystie" is a never-failing object on the seas round Shetland in summer, occurring in greater abundance in the neighbourhood of cliffs.

Puffin, *Fratercula arctica.*—Another abundant species, whose breeding-haunts, however, I did not reach.

Red-throated Diver, *Colymbus septentrionalis.*—In summer the call of the rain-goose is one of the most frequently heard notes in Shetland. The bird is generally distributed, occurring more abundantly in the more desolate tracts. In 1895 I found a nest on a small loch by the roadside in Walls; and in 1896, within a certain small area, I discovered two nests with eggs, and saw a third diver leading two newly-hatched young birds.

ON THE BREEDING OF THE *WIGEON* (*MARECA PENELOPE*) ON THE BORDERS.

By George Bolam, F.Z.S.

With reference to the notes of Mr. William Evans ("Annals," 1893, p. 115) and Mr. Peter Adair (*ibid.* 1895, p. 231), it may perhaps be worth while to put upon record, that for some years past I have occasionally met with this Duck upon some of our Border loughs, late in the spring, and when it certainly *ought* to have been breeding; and though I have no direct evidence to offer to show that it really has done so, I strongly suspect that it does, sometimes at any rate, remain to breed with us.

Following the example of others, and suppressing the exact localities, I may say that upon the 14th of last month, upon a Northumbrian lake not more than ten miles south of the Border, I saw a female Wigeon, which appeared quite at home, amongst the Mallards and other Ducks which were breeding there; and my brother was informed by the keeper at the place a few days afterwards that there were a pair of Wigeons upon the water, and that they, or another pair, had remained there throughout the previous summer, though he could not speak more definitely as to whether or not they had bred. At the date of my visit (14th May) some of the Mallards had already hatched out, while Shovellers were sitting, and the Wigeon was not at all shy and looked quite as much like a breeding bird as any of the other Ducks.

On looking back in my journal for a year or two I find that at Bolam Lake, in Northumberland, on 10th April 1892, I found several Wigeons amongst the other fowl, the males whistling loudly; whilst on 30th March in the following year two pairs of Wigeons were seen at another lake amongst the Northumbrian hills, the males of which were chasing the females about, with much whistling, etc., and showing evident signs that the honeymoon had begun.

In another locality quite close to the Border, but upon the Scotch side, I have more than once seen Wigeons in the late spring, and on 5th May 1893 picked up an egg which had been casually dropped amongst the heather, and which

we thought might belong to this species. There was no nest or any other certain means of identification, but at the time there was a fine Wigeon drake upon the lough close by, in company with a couple of Teals of his own sex, strongly suggestive of all three birds having sitting females in the immediate vicinity. The Teals undoubtedly had, for several nests were found during the afternoon, while from the little pools amongst the heather surrounding the lough I twice sprung a *pair* of Wigeons.

We were informed that the keeper upon a neighbouring estate had shot a duck, during the previous autumn, while flapper shooting, which he thought was a young Wigeon; but it had not been preserved, and there is no evidence to show what the bird really was. But as Mallards, Teal, Tufted Ducks, Pochards, and Shovellers all breed there, and should be well known to the man, it ought not to have been any of these, and may quite possibly have really been a Wigeon.

I do not of course wish to attach any more weight to the above facts than they deserve, but in view of the Selkirkshire station and of the evident southward trend of the Wigeon as a breeding species, it may be interesting to readers of the "Annals" to know how late they sometimes linger in this district, where I have scarcely a doubt that they will before long be actually found breeding.

Berwick-on-Tweed, 16*th June* 1896.

RECORDS OF COLEOPTERA COLLECTED IN SCOTLAND.

By the Rev. A. Thornley, M.A., F.E.S., F.L.S.

The following notes on Scotch Coleoptera are given as a small contribution to that most interesting subject—the distribution of living forms. It was therefore very desirable to include all, even the commonest species, obtained from the northern districts, *e.g.* Inverness, Caithness, etc. In such remote localities as these it is important to note the slightest

variation not only in form but also in habit, the substitution of one species by a closely allied one, the change of food-plant, etc. Such observations may at any time shed remarkable light on some of the deepest problems of Natural History. I should like to remark with respect to the specimen of *Amara Quenselii*, Schön., recorded—it is somewhat damaged. The species has only as yet occurred in the Dee district, and suspicion must therefore rest on a mere fragment found so far away as Carrbridge, Inverness ; it is just possible it may be *Amara rufocincta*, Dej. But this species appears to be confined to the Lowlands. It would be interesting to hear whether any Scotch Coleopterist has taken *Quenselii* in the county of Inverness, and so be able to corroborate this record. The specimens of *Tachinus proximus* recorded were also a little troublesome to determine, apparently differing in some particulars from that species, which led to the hope that they might be the rarer *pallipes*, Grav. As the species was abundant on the sea-cliffs at Thurso, perhaps some naturalist in that neighbourhood could procure us some fresh specimens. On Castletown sandhills (Caithness) *Otiorrhynchus atroapterus* was found feeding exclusively on the small thistle *Cirsium arvense*. I should like to know whether this has been noticed to be the case in any other locality. With these few short notes I append my list.

Cychrus rostratus, *L.*—Moffat, 1890, one specimen (July).

Leistus rufescens, *F.*—Moffat, 1890, common on moors, under stones (July).

Miscodera arctica, *Payk.*—Two specimens, Carrbridge, Inverness-shire (July). One on Ben Nevis, 1891 (August).

Pterostichus vitreus, *Dj.*—Not uncommon on moors, Moffat, 1890 (July).

Amara apricaria, *Sturm.*—A single specimen on cliffs at Thurso, 1892 (August). Canon Fowler says of this common species : "Widely distributed throughout the kingdom, except in the extreme north of Scotland, from which district it has not yet been recorded" (1887).

Amara Quenselii, *Schön.*—I possess a broken specimen, which appears to be this species. I took it under a stone at Carrbridge, Inverness-shire, in July 1890.

Calathus melanocephalus, *L.*, *var.* nubigena, *Hal.*—Not uncommon at Moffat in July 1890.

Calathus micropterus, *Duft.*—Carrbridge, Inverness-shire, 1890 (July), and at Moffat July 1890.

Calathus piceus, *Marsh.*—A single specimen, Moffat, July 1890.

Pristonychus terricola, *Herbst.*—A single specimen in my lodgings at Thurso, 1892 (August).

Patrobus septentrionis, *Dj.*—Two on Ben Nevis, 1891, about 1000 feet below summit (August).

Cymindis vaporariorum, *L.*—One under a stone, Carrbridge, 1890 (July).

HYDRADEPHAGA.

Cœlambus novemlineatus, *Steph.*—A single specimen in tarn, Dunnet Head, Caithness, 1892 (August).

Hydroporus planus, *F.*; H. erythrocephalus, *L.*; H. palustris, *L.* (with very dark varieties); H. nigrita, *F.*; H. memnonius, *Nic.*; H. Gyllenhalii, *Schiödte.*—All from tarns in the neighbourhood of Thurso, 1892 (August).

Agabus arcticus, *Payk.*—Abundant in a tarn near Dunnet Head, Caithness (1892).

Agabus guttatus, *Payk.*
„ bipustulatus, *L.*
„ chalconotus, *Pz.*
„ nebulosus, *Forst.*
Acilius sulcatus, *L.*
Colymbetes fuscus, *L.*
Rhantus exoletus, *Forst.*

All occurred more or less commonly in ponds or tarns near Thurso, 1892 (August). *A. sulcatus*, L., was quite the type form.

PALPICORNIA.

Limnebius truncatellus, *Thoms.*—Common in water-channels on moors near Thurso, August 1892.

BRACHELYTRA.

Tachinus proximus, *Kr.*
„ laticollis, *Grav.*

These species were common on the cliffs at Thurso in August 1892. By mistake *proximus* was named "pallipes" in notice given in "Ent. Mo. Mag.," June 1893.

Quedius umbrinus, *Er.*—Very common on the shore at Thurso, 1892, under little stones (August).

Quedius semiæneus, *Steph.*—One at Thurso, 1892 (August).

Cafius xantholoma, *Or.*
Ocypus brunnipes, *F.*
„ morio, *Grav.*

Common in same localities as above, Thurso, 1892 (August).

Othius melanocephalus, *Grav.*—Common under stones on the cliffs at Thurso, 1892 (August).

Stenus guttula, *Müll.*—A few specimens at Thurso, 1892 (August), under stones in damp places on the cliffs.

Bledius arenarius (*Payk.*)—Common on sandhills at Castletown, Caithness, 1892 (August).

CLAVICORNIA.

Necrophorus ruspator, *Er.*—One specimen at Thurso, 1892 (August).

Silpha opaca, *L.*—A pair at Thurso, 1892. One in the town (August).

Micropeplus porcatus, *Payk.*—Abundant at Thurso, 1892 (August), on the flags used for dividing fields.

Byrrhus pilula, *L.*—Moffat, under stones (July 1890).

Simplocaria semistriata, *F.*—Thurso, 1892, under stones (August).

LAMELLICORNIA.

Aphodius lapponum, *Gyll.*—Abundant in sheep droppings on moors at Moffat (July 1890), all dark forms.

Serica brunnea.—Common on sandhills at Castletown, Caithness (August 1892).

STERNOXI.

Corymbites cupreus, *F.*, and *var.* æruginosus.—Both at Thurso (August) and Moffat (July), but chiefly var. *æruginosus.*

PHYTOPHAGA.

Donacia bidens, *Ol.*—Abundant on leaves of *Potamogeton* in a little tarn near Thurso, August 1892.

Crepidodera ferruginea, *Scop.*—A dark variety common on Gosford shore near Aberlady (August 1895).

RHYNCHOPHORA.

Otiorrhynchus blandus, *Gyll.*, monticola, *Walt.*—Common in the valleys under stones at Carrbridge (August 1892) and on the shore at Thurso, 1892 (August).

Otiorrhynchus maurus, *Gyll.*—A single specimen at Carrbridge (1890) under a stone in a pine wood.

Otiorrhynchus atroapterus, *De G.*—Common on *Cirsium arvense* on sandhills, Castletown, Caithness, August 1892.

Otiorrhynchus ovatus.—Common under stones on the shore, Thurso (August 1892).

Otiorrhynchus sulcatus.—One in Thurso town (August 1892).

Tropiphorus tomentosus (*Marsh*), mercurialis, *Brit. Cat.*—One under stone, Thurso, 1892.

Barynotus Schönherri, *Zett.*—A few specimens at Moffat (July 1890) and Thurso (August 1892).

Curculio abietis, *L.*—Abundant everywhere at Carrbridge (July 1890).

Myelophilus piniperda, *L.*—One at Thurso (August 1892). This is a rather remarkable find, considering that there are very few trees in the neighbourhood. The specimen was found clinging to a Caithness flag.

References to the commoner Coleoptera will be found for Thurso in the "Entomologist's Monthly Magazine" (June 1893), and for Ben Nevis in the "Entomologist's Monthly Magazine" (December 1891).

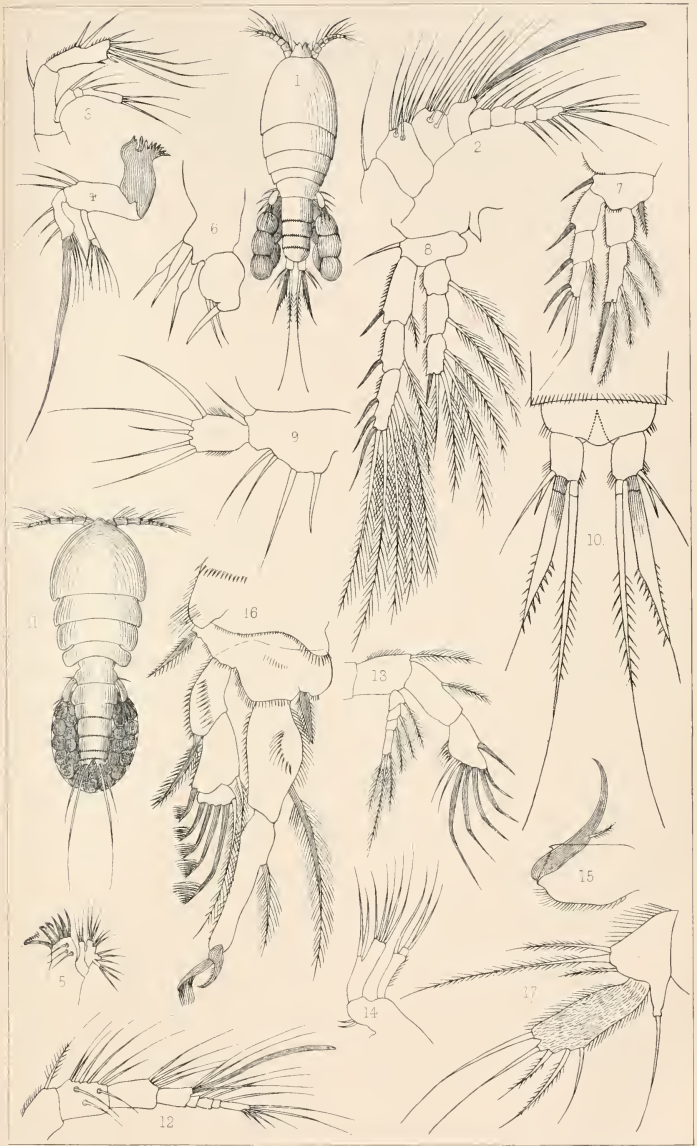
ON SOME NEW AND RARE COPEPODA FROM THE CLYDE.

By Thomas Scott, F.L.S.,
Mem. Soc. Zool. France, Naturalist to the Fishery Board for Scotland,

and Andrew Scott,
Fisheries Assistant, Liverpool.

Plate IV.

The Firths of Forth and Clyde, which are the two most important estuaries, have had both their fauna and flora investigated by quite a number of able and enthusiastic naturalists, and zoology and botany have been enriched by many interesting and important discoveries that, as a result of these investigations, have been made in both these branches of study. Yet notwithstanding all the research of previous years, prolonged and thorough though it has been, much still remains to be done ere it may reasonably be asserted that, even in regard to these restricted areas, our knowledge of the



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Figs 1-10 DELAVALIA GIESBRECHTI, Sp n
Figs 11-17 IDYA MINOR, Sp n

The second, third, and fourth pairs are somewhat similar to those of that species (Fig. 8). In the fifth pair the inner portion of the basal joints is only slightly produced; the posterior free margin, which is irregularly angular, bears four setæ—the two exterior setæ are close together, but the other two, which are moderately stout, are somewhat distant from each other as well as from the two exterior setæ; the secondary branches are subquadrangular, they are longer than broad, and are each furnished with five setæ ranged around the distal end—the middle seta is much shorter than the others (Fig. 9). Caudal stylets short, about equal in length to the last abdominal segment, and each furnished at the apex with a long slender seta interiorly and two small setæ at the outer angle, while intermediate between these is a broad spine-like appendage. This appendage, seen from the dorsal aspect, has its two margins apparently nearly parallel for rather more than half its length; they then taper towards the end, where the appendage terminates in a slender hair. This tapering portion is plumose on both sides, but the feathering shows most prominent on the inner edge. The middle portion of each long seta also appears to be plumose (Fig. 10). Ovisacs two, moderately large.

Habitat.—Ayr Bay, Firth of Clyde, not very rare.

Remarks.—Perhaps the most obvious character of this small but distinct and interesting species, and one which requires no dissection to render evident, is that of the curious broad spine-like appendages of the caudal stylets. The peculiar character of these appendages distinguish this species at a glance from any other member of the genus. The species is named in compliment to Herr Dr. W. Giesbrecht, of the Naples Zoological Station.

Delavalia æmula, *T. Scott.*

This species was described in the "Eleventh Annual Report of the Fishery Board for Scotland" (part iii. p. 204, Plate IV., Figs. 36-47, 1893), from specimens obtained in Largo Bay, Firth of Forth, and till this year this was the only station for the species known to us; we are now, however, able to record its occurrence in the Clyde estuary,

having found it not unfrequent in some dredged material from Ayr Bay. *Delavalia æmula* has both branches of the first pair of swimming feet three-jointed, the second and third joints of the inner branches being subequal and together rather longer than the first joint; and, though in this respect the species does not agree with the generic definition, it is nevertheless a typical *Delavalia*, and therefore we prefer to leave it in the genus to which it was first assigned.

(?) Delavalia, *sp.*

This is another interesting aberrant species of *Delavalia*, also from the Clyde, but we have not yet had time to prepare a description of it. It is apparently a typical *Delavalia*, except that, like *Delavalia æmula*, the inner branches of the first pair of swimming feet are three-jointed; it differs, however, from that species in having the first joint of the inner branches long and slender, nearly equal to the entire length of the outer branches, while the second and third joints, though distinct, are very short. In this respect it resembles some of the species of *Dactylopus*.

Delavalia (?) robusta, *Brady.*

A *Delavalia*, which appears to be identical with *D. robusta*, except in the form of the principal terminal seta of the inner branches of the first pair of swimming feet, was comparatively frequent in one or two of the Clyde dredgings recently collected, and especially in a dredging from Kilbrennan Sound. In these Clyde specimens the principal terminal seta of each of the inner branches of the first feet is stout at the base, but is otherwise long and slender, and is, so far as we have observed, invariably curved forward in a falcate manner: the concave margin of the seta is also furnished with a dense fringe of delicate cilia. The form of this seta appears to be the only point of difference between the Clyde specimens and *Delavalia robusta* as described and figured by Dr. Brady. *Delavalia robusta* has not previously been recorded for Scotland, Dr. Brady's specimens having been obtained off the coasts of Durham and Yorkshire.

IDYA MINOR, *sp. n.*, Plate IV. Figs. 11-17.

Description of the Female.—Length .7 mm. ($\frac{1}{36}$ of an inch). Body closely resembling *Idya furcata* (Baird) in general appearance. Antennules eight-jointed, stout; second and third joints of about equal length, and longer than any of the others; the first, fourth, and last are also moderately elongate, and nearly equal in length. The formula shows approximately the proportional lengths of all the joints :—

Proportional lengths of the joints	12	18	18	12	3	5	3	11
Numbers of the joints	1	2	3	4	5	6	7	8

The first three joints of the secondary branches of the antennæ are short; the fourth joint is as long as the second and third together (Fig. 13). Mouth organs somewhat similar to those of *Idya furcata*. The first pair of swimming feet are robust; their outer branches do not reach much beyond the end of the first joint of the inner branches; the spine on the exterior distal angle of the first joint of the outer branches scarcely extends beyond the terminal joint (Fig. 15). The second, third, and fourth pairs resemble those of *Idya furcata*. In the fifth pair the inner portion of the basal joint is subtriangular in outline and bears three setæ at the bluntly rounded apex, the middle seta being much longer than the other two; the secondary joint is somewhat spatulate, the width being greater towards the distal end, the length of the joint is equal to about three times its width, the end is truncate and furnished with five apical setæ, both surfaces of the secondary joint are covered with minute hairs. Caudal stylets short. Ovisac large.

Habitat.—In a few localities in Loch Fyne, especially where the water is shallow with a muddy bottom as in Loch Gair and in the vicinity of Carndow and Largabruach; not uncommon.

Remarks.—*Idya minor* is the smallest member of the genus that we have yet observed. It may be distinguished by the structure of the antennules and antennæ, by the robust form of the first pair of feet and the comparatively broad and spatulate secondary branches of the fifth pair. In general appearance *Idya minor* resembles *Idya furcata* more closely than any of the other described forms; but in the latter species the third joint of the antennules is distinctly

shorter than the second joint, and the secondary joints of the fifth pair of feet are narrow and of nearly equal width throughout; it is also a larger species.

Besides *Idya minor* and *Idya furcata*, two other species of *Idya* have been obtained in the Clyde district, viz. *Idya gracilis*, T. Scott, and *Idya longicornis*, T. and A. Scott.

Idya gracilis is about twice the length of *Idya minor*, and is easily distinguished by the remarkably long and slender inner branches of the first pair of swimming feet. This species was described in part iii. of the "Thirteenth Annual Report of the Fishery Board for Scotland (1895)," from specimens obtained in the Firth of Forth. It has not hitherto been recorded from the Clyde district, but specimens have now been obtained by us in material (chiefly dredged) from one or two places in Loch Fyne and in Kilbrennan Sound.

Idya longicornis is the largest species of *Idya* known to us. It was described in the "Annals and Magazine of Natural History" for June 1895, from specimens discovered in East Loch Tarbert (Loch Fyne). It has since been obtained in Caradale Bay and a few other Clyde stations, but we know of no record for the species beyond the Clyde area.

Canuella perplexa, *T. and A. Scott.*

This interesting Copepod, so closely resembling *Longipedia coronata* in general appearance and in several of its structural details, and yet differing so much in other points as to make it generically distinct, has lately been obtained in some gatherings of Clyde Copepods; it was moderately frequent in dredged material from Ayr Bay, and is an addition to the Clyde Copepod fauna. Can the close resemblance between *Canuella perplexa* and *Longipedia coronata* be considered a case of "mimicry"?: it looks like it. *Canuella perplexa* was described in the "Annals of Scottish Natural History" for April 1893, from specimens obtained in the Firth of Forth; it has also been observed in Liverpool Bay.

Neobradya pectinifer, *T. Scott.*

This was one of a group of peculiarly slender species of Copepoda described in the "Tenth Annual Report of the Fishery Board for Scotland"; they had been discovered in

the Firth of Forth off St. Monans, at a place locally known as "the Fluke Hole" and famous for the fine quality of its flat-fishes, especially plaice and lemon soles. In structure, *Neobradya pectinifer* is somewhat intermediate between *Longipedia* and *Bradya* (or *Ectinosoma*); it is, however, quite distinct from other British Harpactids, and is apparently local in its distribution. Till quite recently "the Fluke Hole" was the only habitat for *Neobradya* known to us. We are now, however, able to record its occurrence in the Clyde; a few specimens of it, along with specimens of other rare forms, having been obtained in a small gathering of Copepods from Ballantrae Bank.

Pseudocletodes vararenses, *T. and A. Scott.*

This genus and species were instituted to include a somewhat large Copepod from the Moray Firth, and descriptions were published in the "Annals and Magazine of Natural History" for October 1893. Only a very few specimens of this Copepod were obtained at that time, and no others have been observed by us till a short time ago, when, on re-examining a number of doubtful forms from the Clyde set aside for further study, several specimens of this apparently rare species were obtained. They had been collected from some material dredged near Sanda Lighthouse at the mouth of Clyde estuary, where the conditions as regards depth of water and the nature of the bottom are apparently somewhat similar to that part of the Moray Firth where the species was first discovered. The elongate cylindrical form of the species, with its somewhat long and peculiar caudal stylets, distinguish it from other allied Copepods.

EXPLANATION OF PLATE IV.

Delavalia giesbrechti, *sp. n.*

Fig. 1. Female, dorsal view . × 80
,, 2. Antennule . . × 380
,, 3. Antenna . . . × 253
,, 4. Mandible and palp . × 253
,, 5. Maxilla . . . × 253
,, 6. Second foot-jaw . × 760
Fig. 7. Foot of first pair . × 253
,, 8. Foot of fourth pair . × 253
,, 9. Foot of fifth pair . × 253
,, 10. Caudal stylets and last two segments of abdomen . × 253

Idya minor, *sp. n.*

Fig. 11. Female, dorsal view × 53
,, 12. Antennule . . × 130
,, 13. Antenna . . × 253
,, 14. Mandible palp . × 380
Fig. 15. First foot-jaw . × 253
,, 16. Foot of first pair . × 253
,, 17. Foot of fifth pair . × 253

FLORULA OF A PIECE OF WASTE GROUND AT ABERDEEN.

By James W. H. Trail, A.M., M.D., F.R.S.

In the year 1869, the work was begun of cutting a new and straighter channel for the river Dee near Aberdeen. This work occupied a considerable time. One result was to leave the former channel near the town empty, or nearly so, except about high water of each tide. A considerable extent of this old channel was gradually filled up with rubbish of all sorts ; and in course of years it was raised, at first here and there, but afterwards all over, to a level some feet above the highest tide-mark. This "reclaimed ground" lay for a time unenclosed, and covered with cart-loads of rubbish brought from many sources. In this condition but little vegetation could thrive, as it was trodden down, or eaten by domestic animals before almost any plant could form flowers or ripen seeds. Then streets and roads were planned and laid out on the ground,—at first mere paths or roads. Some years ago the Caledonian Railway Company leased a portion of this ground, near the Railway Station, about seven or eight acres in extent, and protected it with a high paling, so as to shut out all traffic from it, and to prevent the deposition of more rubbish on it.

The ground enclosed is irregularly triangular in outline, being broader towards the east, where it abuts on small enclosures used for storing old metal, for fish-curing, etc. At the west end, the ground narrows to a point. The north side is occupied by the main railways, or by lines for shunting ; and about half the south side is bounded by large flour and meal mills and other buildings, the rubbish from which probably accounts for at least some of the numerous foreign plants that have grown up on the ground.

For some months after it was enclosed, the space showed many bare spots, with only a moderate vegetation here and there. In the early summer of 1893, one or two foreign plants were brought to me from it. By the courtesy of the railway authorities I have had free access to botanise there.

I made a very thorough examination of its whole area on several occasions during 1893, noting every species of flowering plant on it, and also marking the degree of prevalence or rarity of each. Of the numerous "casuals," I took one or more examples as vouchers, regulating the number of specimens taken by the commonness of each species. In each of the following seasons I have renewed my examination of its flora, and have noted most carefully any variations from my previous records in species disappearing, or newly detected, or tending to die out or to increase. In 1894 a double line of rails was laid down almost the whole length, and a little nearer the north side of the ground. These rails were laid down on a thick bed of cinders; and during the past two years cinders have been laid down over a considerable width at each side of the rails, so as to raise the ground to the level of the adjoining railway. Thus, especially at the narrower western part of the ground, a great part of the surface exposed in 1893 is now under cinders to a depth, in some places, of several feet; but more than half of the area is still as it was in that year. Certain tracks used as cart-roads before enclosure, and in this way beaten harder than the rest, were very bare during the first year or two, and are still traceable by their shorter herbage, but are now (August 1896) for the most part green with low plants. Few bare places are now visible on the original surface, though one or two spots on which loads of sawdust had been laid down are still nearly so. The surface of the cinders is still very bare, except where covered or mixed with earth. Its only vegetation is short scattered herbs, or here and there grow masses of deep-rooted plants, such as Docks. Some heaps of earthy rubbish beside the double line are rich in a few kinds of plants characteristic of such habitats.

The herbage over the whole extent is darkened with soot from the smoke of the many engines constantly occupied in shunting carriages and trucks on the double line, or on the adjoining railways. Near the mills the plants bear a more or less evident coat of white dust. As the ground has been left unreaped, and in fact almost unaltered, except where covered with cinders, the plants have had an excellent oppor-

tunity of competing with one another in the struggle for existence.

I have been much interested in watching the results of the struggle, noting the probable origin and fate of the numerous casuals, and the increasing ascendency of certain species and the consequent effects on the vegetation of the area. The absence of various common species of plants native in the Aberdeen district, or common weeds of cultivation here, is scarcely less striking than the prevalence of others. In the hope that others may find interest in the record, I summarise below an entire list of species observed, stating in parallel columns their relative abundance or rarity in each season.

The scale I have used in my notes, reproduced here, permits of somewhat greater accuracy than words, with greater brevity. It is as follows:—1 *scarce*, 2 *not rare*, 3 *common*, 4 *plentiful*. Each of these is modified where needed by the signs — and + ; thus, while 1 means *scarce*, 1 — means *very scarce*, and 1 + means a score or so of plants in the area. 2 means *not rare*, or one or two examples in say five yards square ; 2 — means say half as many or fewer ; and 2 + denotes up to say twice as many. 3 denotes so common as to form a conspicuous proportion of the flora, but only a minor part ; 3 — being up to say 5 per cent, and 3 + to about 25 per cent. 4 means about half the vegetation by bulk, 4 — that from one-fourth to one-half, and 4 + that from about one-half to almost the whole bulk of the vegetation consists of the plant indicated. When only one or a very few individuals of any species were noted, the actual number is stated in words. *l.* denotes *local* ; *v. l.* denotes *very local*.

The census was taken each year late in August or early in September, and the condition of the species is noted where that seems desirable ; *veg.* denoting the absence of flowers or fruits, and *fr.* the presence of well developed or nearly ripe fruits. Where not specially noted, the plants were in flower and fruit at the period of observation.

Notes on individual species follow the list. In all cases in which I was in doubt as to any plant, I compared my specimens with the specimens in the herbarium at Kew ; and

I have to express my obligations to members of the staff of Kew Herbarium for assistance in several instances.

My readers may be reminded that the summer of 1893 was very warm and dry; while the winter 1894-95, especially after Christmas, was exceptionally severe, with long-continued extremely low temperatures.

Ranunculus acris, *L.*	One	One	A few	One
R. repens, *L.* . .	o to *l.* 2 –	1 – to *l.* 2	1 – to *l.* 3 –	1 – to *l.* 3 +
Papaver somniferum, L.	A few			
P. dubium, *L.* . .	...	...	...	One
*P. Rhœas, *L.* . .	A few	...	A few, on cinders	
Fumaria officinalis, *L.*	*l.* 2			
Matthiola tristis, R. Br.	One			
Hesperis matronalis, L.	A few	...	...	One
Sisymbrium officinale, *Scop.*	A few	o to 1 +	o to 1 +	1 –
S. pannonicum, Jacq.	...	*v. l.* to 2 –	*l.* to 2	Rather local, 1 + to 2 +
Camelina sativa, Crantz.	*l.* 1 to 2 +	A few		
Brassica oleracea, L.	A few	...	One or two	
B. Napus, L. . .	A few			
B. Rapa, L. . .	A few	One or two	One or two	*v. l.* 1 – to 2 –
B. Sinapistrum, *Boiss.*	*l.* to 2	o to 1 +	o to 2	o to 2 +
Capsella Bursa-pastoris, *Web.*	locally up to 3	1 – to 2	o to 2 +	1 – to *l.* 3 –
*Lepidium Draba, *L.*	...	...	One	
Thlaspi arvense, *L.* .	One or two	...	...	One or two
Rapistrum rugosum, Berger	*l.* 1	*l.* 2 –	One	
Viola tricolor, *L.* .	o to 1 +	o to 2 –	o to 1 +	Very few
V. arvensis, *Murr.* .	1 +			
Saponaria Vaccaria, L.	Two	...	...	*v. l.* to 2
Silene Cucubalus, *Wibel.*	A few	...	One	Two
S. dichotoma, Ehrh. .	...	Two or three		
Lychnis alba, *Mill* .	*l.* 2 +	*l.* 1 – to 1	*l.* o to 2 –	*l.* o to 2
L. dioica, *L.* . .	...	...	...	One or two
Cerastium triviale, *Link.*	1 – to 2 +	1 – to *l.* 3 –	1 – to *l.* 3	1 – to 3 + in opener spots
Stellaria media, *Cyr.*	1 – to *l.* 4	1 – to *l.* 4	o to *v. l.* 4 –	o to *v. l.* 3 +
Arenaria serpyllifolia, *L.*	1			
Spergula arvensis, *L.*, *v.* sativa, *Bœnn.*	1 to 2	o to 1 +	o to 1 +	1 –
v. *vulgaris*, Bœnn.	One or two			
(*)Malva rotundifolia, *L.*	A few			
M. parviflora, L. .	*l.* 1 +	...	*l.* 1	
Linum usitatissimum, L.	*l.* 1 to 2 +			

Geranium molle, *L.* .	0 to 2+	1 – to 2 –	0 to 2 –	0 to 2 in open spots
G. dissectum, *L.* .	1 – to *l.* 1	1 – to *l.* 2 –	A few	0 to *l.* 2
Erodium cicutarium, *L'Herit.*	1	Very few		
*E. moschatum, *L'Herit.*	One or two			
Citrus Aurantium, L.	Numerous seedlings			
Vitis vinifera, L. .	Seedlings, *l.* 2 to 4 –	Seedlings, *v. l.* 1 + to 2+	Seedlings, a few	Two plants 18″ high
Ulex europæus, *L.* .	...	...	Seedlings, several	A few from 4″ to 8″ high
Cytisus scoparius, *Link.*	...	...	Seedlings, several	On cinders, *l.* 1 – to 2
Medicago sativa, L. .	...	*v. l.* 2	*l.* 1 to 3 –	*l.* 2 – to 3
*M. falcata, *L.* . .	*v. l.* 2 –	*v. l.* 2	*v. l.* 2+to 3 –	*v. l.* 2+to 3
M. lupulina, *L.*	1 +	...	...	One or two
*M. denticulata, *Willd.*	1 – to 2 +			
*M. arabica, *Huds.* .	1 – to 3 –	0 to 2	Very few	
Trigonella polycerata, L.	One			
*Melilotus officinalis, *Lam.*	*v. l.* 2+	*l.* 2	*l.* 2 +	2+
*M. alba, *L.* . .	Two	1 +to 2	1 +to 2 –	
M. indica, All. .	*l.* 1 – to 2 –			
Trifolium pratense, *L.*	*l.* 1+	*l.* 1 to 2 –	*l.* to 2+	Only two seen, on the cinders
T. hybridum, L. .	*l.* 2	1 to *l.* 3	1 +to *l.* 4 –	1 to *l.* 3
T. repens, *L.* . .	1 – to 1 +	1 – to 1 +	1 – to 2+	1 to 3
T. procumbens, *L.* .	One or two			
T. dubium, *Sibth.* .	A few	A few		
Lotus uliginosus, *Schkuhr.*	...	...	...	One plant
Scorpiurus subvillosa, L.	Several in fl. and fr.			
Pisum arvense, L. .	Several			
Vicia hirsuta, *Gray* .	One or two			
*V. tetrasperma, *Moench*	Several,in fl. and fr.			
V. Cracca, *L.* . .	One or two	...	...	One or two, young
V. sepium, *L.* . .	1	A few	A few	A few
V. angustifolia, *L.*, *v.* Bobartii, *Koch.*	1	...	...	One or two
V. Faba, L. . .	One			
*Lathyrus hirsutus, L.	1			
L. Ochrus, DC. .	Three, in fl.	One, in fl.		
Rubus idæus, *L.* .	One, in fl.			
Fragaria elatior, Ehrh.	One or two seedlings	...	One or two seedlings	A few small plants
Potentilla Anserina, *L.*	1	Several	One	
P. recta, L. . .	Very local, 2	Very local, 3 –	Very local, 3	Very local, a large patch
	l. to 2 –	*l.* to 1 +	*l.* 1 +	*l.* 2, on cinders

*Pyrus Malus, *L.* .	Several seedlings	Seedlings and a few older plants	Much as in 1894	A few plants, 6″ to 12″ high
*Saxifraga umbrosa, *L.*	A few			
Ribes Grossularia, L.	A few seedlings	...	A few seedlings	Several young
*R. nigrum, *L.*, .	Several seedlings	...	A few young plants	
*Lythrum Salicaria, *L.*	...	...	One, in fruit	The same, in flower
Epilobium montanum, *L.*	1	...	One large plant	
Œnothera ? fruticosa, L.	...	One fruiting plant		
Conium maculatum, L.	*l.* 1+	*l.* 1+ to 2	*l.* 1+to 3	*l.* 2 to 4
*Apium graveolens, *L.*	*v. l.* 2–	As in 1893	As in 1893	As in 1893
Carum Petroselinum, Benth. and Hkb.	...	*l.* 1–	*l.* 1	*l.* 1+fr.
*Scandix Pecten-veneris, *L.*	*l.* 1+			
Anthriscus sylvestris, *Hoffm.*	...	...	...	One young plant
Peucedanum sativum, Benth. and Hook, f.	A few	Several		
Heracleum Sphondylium, *L.*	...	...	...	Three plants, fr.
Daucus Carota, *L.* (wild)	...	*l.* 1 to 2+	*l.* as in 1895	Very few
D. Carota, L. (cultivated)	*l.* 2	Seem all to have reverted to wild form		
*Caucalis nodosa, *Scop.*	*v. l.* 2, in fr.			
Galium Aparine, *L.*	*l.* 2	*l.* 1	*l.* 1 to 2	*v. l.* 1+
Sherardia arvensis, *L.*	1+	A few	Several	
Scabiosa arvensis, *L.*	...	...	One, in fr.	One, in fl.
Bellis perennis, *L.* .	1	1 – to 1	1 – to 1+	1 – to *l.* 2+
Erigeron canadense, *L.*	One or two			
Gnaphalium uliginosum, *L.*	One or two			
Ambrosia artemisiæfolia, L.	One, in fl.			
Xanthium spinosum, *L.*	One large plant, did not fr.			
Bidens chrysanthemoides, Michx.	Two in fl.			
*B. tripartita, *L.* .	A few in fl.			
Galinsoga parviflora, Cav.	One			
Achillea Millefolium, *L.*	*l.* 2	1 – to 2 –	1 to 3	1 to 3
A. crithmifolia, W. K.	Two, in fl.			
*Anthemis Cotula, L.	One or two	...	...	Two
*A. arvensis, *L.* .	*l.* 1+	*l.* 1 to 2	*l.* 1 to 2	A number on rubbish heap on cinders

Chrysanthemum segetum, *L.*	*l.* 1	*l.* 1 – to 2 +	One large plant	*l.* 1 – to 2 +
C. Leucanthemum, *L.*	1 +	1 – to 2 –	1 – to 2	1 – to *l.* 3 +
C. Parthenium, Pers.	*l.* 2	*l.* 1 to 2 +	*l.* 1 to *v. l.* 3	*v. l.* 1 to 3
C. coronarium, L. .	One in fl.			
Matricaria inodora, *L.*	*l.* 1 + to 2 +	1 to 2 +	to 2 +	1 – to 3
*M. chamomilla, L. .	*l.* 2	*l.* 1 +	*l.* 1 +	*l.* 1
*Tanacetum vulgare, *L.*	*l.* 1 – to 2			
*Artemisia Absinthium, *L.*	Two, young			
A. vulgaris, *L.* .	1	1 – to 1	...	One
A. arenaria, DC. .	One, young			
Tussilago Farfara, *L.*	*l.* 3	*l.* 2 to 4	*l.* 2 to 4	*l.* to 4
Calendula officinalis, L.	*l.* 2	*l.* 1 to 2	*l.* 1 –	
Senecio vulgaris, *L.*	1 to 3	1 – to 2 +	1 – to 3 –	1 – to 2 +
*S. viscosus, *L.* .	One	...	One, small	
S. Jacobæa, *L.* .	...	...	...	Two, in fl. and fr.
Arctium minus, *Bernh.*	1 –	1 – to 1 +	1 – to 1 +	1 – to 2
Helianthus tuberosus, L.	*l.* 1	A few	...	One or two
Cnicus lanceolatus, *Willd.*	1 to 2 +	1 to 3 +	1 – to 3 +	1 – to 4
C. arvensis, *Hoffm.* .	*l.* 2	1 – to 4	1 – to *l.* 2	1 – to *l.* 4
Centaurea nigra, *L.*	*l.* 1 +	...	*l.* 1 to 2 –	*l.* 1 – to 1 +
(*)C. Cyanus, *L.* .	1 +	...	...	Two, on the cinders
*C. Calcitrapa, *L.* .	A very few	Two or three		
C. ?fusca, Desg. .	An immature plant			
*Cichorium Intybus, *L.*	One or two	Three	Three	One
Lapsana communis, *L.*	One or two	...	One or two	One
*Picris echioides, *L.* .	Two, one large			
Crepis virens, *L.* .	1 – to 2	1 – to 2 +	1 – to 2	1 – to 1
Hieracium boreale, *Fr.*	...	...	...	One large and one small
Hypochœris radicata, *L.*	1	...	...	A few
*Leontodon hirtus, *L.*	...	One large plant, fr.		
Taraxacum officinale	1 – to 1 +	1 – to 2 –	1 – to *l.* 3 –	1 – to 2 +
Sonchus oleraceus, *L.*	1 – to 1 +	1 – to 2 –	1 – to 3	1 – to 2
S. asper, *Hoffm.* .	1 – to 1 +	1 – to 1	1 – to 1	
S. arvensis, *L.* .	*l.* 1 +	One, fr.		
Anagallis arvensis, *L.*	One or two			
Fraxinus excelsior, *L.*	...	...	...	One, about 6″ high
Myosotis arvensis, *Lam.*	1 to 2	1 – to 1	A few	One or two
(*)Lithospermum arvense, *L.*	...	*v. l.* 2		

Echium vulgare, *L.* .	...	...	...	Two, fl. and fr.
*Volvulus sepium, *Junger*	*v. l.* 2	*v. l.* 2+	*l.* 1 to 3 –	*l.* 1 to 3
Convolvulus arvensis, *L.*	...	...	...	*l.*
Solanum tuberosum, L.	1 – to *l.* 3	1 to 1+	1 – to 1+	1 – to 1+
Lycopersicum esculentum, L.	*l.* 1 to 3 fl. and fr.			
Nolana prostrata, L.	...	Two, fl.		
*Verbascum Thapsus, *L.*	1	One or two, fl.		
Mimulus luteus, L.	...	...	...	One
M. guttatus, DC. .	...	One		
Veronica agrestis, *L.*	A very few	1		
V. arvensis, *L.* .	1	1		
V. officinalis, *L.* .	...	...	One	
V. montana, *L.* .	...	...	...	One, *veg.*, on cinders
Rhinanthus Crista-galli, *L.*	One			
*Mentha piperita, *L.*	*v. l.* 1, not fl.	*v. l.* 1 to 2 not fl.	*v. l.* 2+, not fl.	*v. l.* 2+, fl.
M. viridis, L. .	...	...	...	Small clump
M. arvensis, *L.* .	...	*v. l.* 1+, fl.	*v. l.* 2, fl. and fr.	Covered with cinders
Nepeta Glechoma, *Bth.*	...	...	...	One, on cinders
*Scutellaria galericulata, *L.*	...	...	*v. l.* 2–, fl. and fr.	
Prunella vulgaris, *L.*	...	...	...	One or two, fl.
Stachys italica, Mill.	One, large, fl.			
Galeopsis Tetrahit, *L.*	...	...	One or two, *v. l.*	*l.* 1 to *v. l.* 2+
Lamium intermedium, *Fr.*	One or two			
L. purpureum, *L.* .	1+	...	1 – to *l* 2.	As in 1895
Plantago major, *L.* .	*l.* 1+	1 – to *l.* 1+	1 – to *l.* 2+	1 – to 2 –
P. lanceolata, *L.* .	1 – to *l.* 3	1 – to 2+	1 – to 2	1 – to 2+
Chenopodium album, *L.* (very variable)	1 to 3	1 – to 4 –	As in 1894	As in 1894
v. viride, *Syme*	1 to 2	As before	As before	As before
C. opulifolium, Schrad.	A few			
*C. Bonus-Henricus, *L.*	One, young			
Atriplex patula, *L.* .	1 – to 2	1 – to 2+	1 – to 2+	1 – to 2+
Salsola Tragus, L. .	Two			
Polygonum Convolvulus, *L.*	*l.* 1 – to *l.* 3	1 – to *l.* 3+	1 – to *l.* 3+	1 – to *v. l.* 4
P. aviculare, *L.* (varying from the usual forms to very slender)	1 to 3	1 to 3+	As in 1894	Rather less abundant than in 1895
P. equisetiforme, Sibth.	Several, fl. and fr.			
P. Persicaria, *L.* .	1 – to 2	1 – to 2+	1 – to 2 –	1 – to 2 –
P. lapathifolium, *L.*	1 – to 2	1 – to 1+	1 – to 1+	1 – to 1

Rumex obtusifolius, *L.*	1 – to 1 +	1 – to 2 +	1 – to 2 +	1 – to 3 [1]
R. crispus, *L.* . .	1 – to 2	1 – to 2 +	As before	1 – to 3 + [1]
R. domesticus, *Hartm.*	1 – to 1 +	1 – to 2	1 – to 2	1 – to 2 + [1]
R. Acetosa, *L.* .	A few	A few	1 – to 1 +	1 – to 1 +
R. Acetosella, *L.* .	1 to 3	As before	As before	As before
Cannabis sativa, L.	Several	One or two		
Urtica dioica, *L.* .	1 – to 1 +	1 – to 1 +	1 – to 2	1 – to *l.* 3
U. urens, *L.* . .	*l.* 2	1 – to *l.* 1	*l.* 2	*l.* 1 –
Juncus bufonius, *L.*	...	...	...	One
*J. tenuis, *Willd.* .	...	One		
Phœnix dactylifera, L.	Seedlings, *l.* 2			
Panicum miliaceum, L.	*l.* 1			
P. Crus-galli, L. .	1 – to 1 +			
*Setaria viridis, *Beauv.*	1 – to 1			
Phalaris canariensis, L.	1 – to *l.* 3	One or two	One or two	One
P. arundinacea, *L.*	...	...	...	A small patch
P. arundinacea, L., striped	...	...	A small patch	As before
P. cærulescens, Desf.	...	1 – to *l.* 2 +	*l.* 1 +	
Alopecurus geniculatus, *L.*	*l.* 2	1 –	1 – to 2	
*A. agrestis, *L.* .	1 – to 1			
Phleum pratense, *L.*	1 – to 2 +	1 to *l.* 3 (some very large heads)	1 to 3	1 – to *l.* 4
Agrostis palustris, *Huds.*, with *v.* stolonifera (*L.*)	1 to 1 +	2 – to 4 –	1 to 3 +	1 to 4 +
A. vulgaris, *With.* .	1 to 1 +	1 to 2 +	1 to 2 +	1 to *l.* 3
*Apera spica-venti, *Beauv.*	...	One or two		
Deschampsia cæspitosa, *Beauv.*	1 – to 1	1	1	1 to 1 +
Holcus lanatus, *L.* .	1 – to 2 –	1 – to 2 +	1 – to 2 +	1 – to *l.* 3 +
Avena strigosa, Schreb.	1 – to 1	1 – to 1 +	1 – to 1 +	*l.* 1 +
*A. fatua, *L.* . .	*l.* 1 + to 2	*l.* 1 – to 1	One	A very few
A. sativa, L. . .	2 to 3	1 – to 1 +	1 – to 1 +	1 – to 2 –
v. *orientalis*, Schreb.	*l.* 1 +	...	...	*l.* 1 –
Arrhenatherum avenaceum, *Beauv.*	1 – to 1 +	1 – to 2 –	1 to 3 –	1 to *l.* 3
Dactylis glomerata, *L.*	1 – to 1 +	1 – to 2	1 – to 2 +	1 – to 4
Poa annua, *L.* .	1 to 2	1 – to 2	1 – to 2	1 – to 2
P. pratensis, *L.* .	1 to 2 –	1	1	1 +
P. trivialis, *L.* .	1 – to 1	1 – to 2 +	1 – to 3	1 – to 3 +
Glyceria distans, *L.*	1 – to *l.* 2 +	1 + to 2 –		
*Festuca uniglumis, *Sol.*	*l.* 1			
F. sciuroides, *Roth.*	A very few	...	One	
F. rubra, *L.* . .	...	...	...	One or two

[1] Chiefly on the cinders.

F. elatior, *L.* . .	A few	...	...	A few
c. pratensis, *Huds.*	...	*l.* 1	*l.* 2	*l.* 1+
*Bromus madritensis, *L.*	One	...	...	One, small
B. sterilis, *L.* . .	One			
B. secalinus, *L.* .	One or two			
B. mollis, *L.* . .	1+	1 – to 1+	1 – to 1	*l.* 1 – to 1
Lolium perenne, *L.*	1 to 3	1 – to 2 –	1 – to 2	1 – to 3 –
e. italicum (*A.Br.*)	2+	1 – to 2 –		
Agropyron repens, *Beauv.*	*l.* 2	1 – to 2	1 – to 3	1 – to 3+
Triticum vulgare, Vill.	2	1 –	1 –	1 –
Ægilops triuncialis, L.	Several			
Æ. caudata, L. .	Several			
Secale cereale, L. .	2+	1 to 2 –	A few	A few
*Hordeum maritimum, *With.*	1 – to *l.* 2+	1 – to 1		
H. distichum, L.	*l.* 1 to 2	A few	One or two	Near mills, several
H. hexastichum, *L.*	1 – to *l.* 1+	...	...	Near mills, one or two

An inspection of the above list shows that the total number of species and varieties observed on the area during the four years was not a very large one (approaching 230 species), and it is very unlikely that more than one or two species, if even that, escaped the minute and careful search made on all parts of the area. Certainly none was overlooked of which more than one or two examples occurred there. Many of the common species of the north-east of Scotland either did not occur, or were very infrequent.

In the list the names of species not native anywhere in Britain are printed in italics. To the names of those species that are natives of the British Islands but have not been found in the north-east district of Scotland except as evident "casuals," or escapes from cultivation, an asterisk is prefixed. The asterisk is inclosed in brackets in the case of a few species that have been admitted into Dickie's "Botanist's Guide" as native, but which occur under circumstances that scarcely warrant their being so regarded. Several of the remaining species, though entitled to a place in the flora of the neighbouring counties, are not met with in a wild state within a good many miles of Aberdeen. The very large proportion of non-native species is remarkable, and it suggests the nature of the materials employed in filling up the old

river-bed, or deposited on the waste ground before it was enclosed. The refuse from fruiterers' or florists' shops and from the neighbouring mills probably must account for a large share of the economic plants, such as dates, oranges, tomatoes, vines, and cereals, as well as for a number of the weeds of warmer latitudes. It is of interest to notice that, leaving out of view the fruits named above and garden flowers, the greater number of the non-British species are natives of Southern Europe, especially along the Levant and in Southern Russia. Probably their seeds were brought with cereals from these regions, and were cast out from the mills near the ground. Such western species as *Ambrosia artemisiæfolia* possibly point to a similar introduction in cereals from North America, but may be from countries in Europe where they are naturalised.

Subjoined are remarks on the more noteworthy species :—

Papaver somniferum, L.—An occasional escape from gardens in Aberdeen.

P. Rhœas, L., is a rare casual in fields near Aberdeen, though included in the native flora by Dickie.

Matthiola tristis, R. Br.—The single specimen met with showed a few flowers, and bore several leafy shoots on its spreading roots. It is a native of the countries along the Mediterranean.

Hesperis matronalis, L., occurs here and there about Aberdeen, probably as an escape from gardens.

Sisymbrium pannonicum, Jacq., had not before been found near Aberdeen, though it is included as naturalised in Britain in the ninth edition of the London Catalogue. It is year by year becoming more abundant on this ground, even among the rank vegetation that covers the parts on which it occurs. It is a native of central and Eastern Europe.

Camelina sativa, Crantz, has of late years been scarcely rare on waste ground here and there about Aberdeen, but exists only for a year or two anywhere. It also is a native of Central and Eastern Europe.

Brassica.—Cabbage and Curly Kale, and Yellow and Swedish Turnips, all occurred in some plenty during the first year, but they do not hold their ground.

Lepidium Draba, L.—A single plant was found in 1895 bearing several inflorescences in rich flower. The flowers showed a

number of strange departures from the usual structure in the Cruciferæ. I removed the plant into my garden, in order to continue my observations on the floral deviations, but in garden soil it has ceased to flower, and has spread over several square yards by underground shoots. The species is a native of almost all Continental Europe, except the North. In the London Catalogue it has an asterisk. It is generally regarded as an alien in Britain. It had not been found before near Aberdeen.

Rapistrum rugosum, Berger.—This, not seen before in Aberdeen, is also a native of Middle and Eastern Europe. It was scarcely rare in 1893 and 1894, but has quite died out.

Saponaria Vaccaria, L., a native of Continental Europe except the North and Britain, is occasionally found as a casual in the vicinity of Aberdeen, but never seems to establish itself, even where for a short time fairly common.

Silene dichotoma, Ehrh., native in South-Eastern and Mid Europe, was represented in 1894, for the first time in Aberdeen, by two or three plants bearing flowers and fruits. After 1894 it did not reappear.

Lychnis alba, Mill.—Though occasionally met with in grass fields in this neighbourhood, this plant is too sporadic to be counted on. It is fairly common on the area in question, especially near the mills, but does not increase.

Stellaria media, Cyr.—This very common species was most abundant on the open spots in 1893 and 1894, varying considerably in appearance. One plant presented a most curious appearance, being very compact and richly branched, with short internodes and crowded leaves, which were scarcely larger than those commonly found on *Arenaria serpyllifolia*. *S. media* is becoming less abundant as the opener spots become overgrown.

Spergula arvensis, L.—This very common cornfield weed was not rare on the open spaces in the earlier years, but has become scarce as these were covered by coarser plants. The variety *vulgaris*, Bœnn., is extremely scarce near Aberdeen. One or two examples showed themselves on this ground in 1893, and I found a few in a turnip-field three miles south of Aberdeen in August 1894. I know of no other examples of var. *vulgaris* from the district.

Malva rotundifolia, L. — Though included as native in the "Botanist's Guide," it is confined to habitats (such as gardens and ground bearing refuse) that throw grave doubts on its being so.

M. parviflora, L., admitted as naturalised into the later British lists, is a native of Southern Europe. These mallows are both too inconspicuous to be introduced otherwise than as weeds, probably among fodder or cereals. Both are scarce casuals near Aberdeen, seeding freely, but not holding their place.

Linum usitatissimum, L., is a very frequent casual by roadsides and in waste places about Aberdeen, but soon dies out, as it did on the reclaimed ground after 1893.

Erodium moschatum, L'Herit. (native throughout Europe, except Scotland, Scandinavia, and Russia), had not been previously found here, and very soon died out.

Citrus Aurantium, L., and *Vitis vinifera*, L.—It is unnecessary to say that these are not natives of North-East Scotland, and that they had not before been observed there as "casuals." In the warm summer of 1893 they sprang up in scores on the made-up ground, apparently where decayed oranges and grapes had been deposited. About a dozen small orange trees, taken in 1893, are growing healthily in my greenhouse. The winter 1893-94 proved fatal to all the seedling oranges out of doors, and no new seedlings have since appeared. The vines proved hardier, one or two of the seedlings surviving the winter 1893-1894, and many others growing from seeds not previously germinated. The severe winter 1894-95 proved fatal to all the vines, but again seedlings sprang up in the summer of 1895. Of these, two at least seem to have survived the mild winter 1895-96, as two young plants (protected in part by coarse vegetation) have in August 1896 reached a height of about 18 inches.

Ulex europæus, *L.*, and *Cytisus scoparius*, Link.—Neither of these plants was observed before 1895, in which summer a few seedlings were noticed on cinders that had been spread out during the previous autumn. This autumn both seem likely to extend their area.

Medicago.—Of this genus, *M. sativa*, L. (sub-spontaneous in Middle and Southern Europe, and admitted as naturalised in Britain), was first observed in 1894. It flowers and seeds freely on this ground, and is becoming more abundant. Elsewhere near Aberdeen it is a sporadic casual.

M. falcata, L.—Of this species (which has not been found elsewhere in this part of Scotland, to my knowledge), a specimen was picked up on the reclaimed ground as long ago as 1883. In 1893 I found several plants; and it seems to be spreading in one of the grassy spots. It flowers and seeds freely. Probably it will hold its ground till covered with cinders.

M. denticulata, Willd., and *M. arabica*, Huds., though both included in the British flora, were more likely introduced from the Continent, in fodder possibly. Both were rather plentiful in 1893 on some of the barer spots, but they did not reappear in subsequent years. *M. denticulata* had formerly been found at Aberdeen on ballast; but *M. arabica* had not been observed in the district before. *M. lupulina*, L., though not scarce near Aberdeen in fields, strangely enough did not reappear after 1893 in the enclosed area.

Trigonella polycerata, L., a native of South-West Europe, was represented by one example in 1893. It had not previously been found here.

Melilotus officinalis, Lam., probably introduced in fodder or with agricultural seeds, has of late years been not an uncommon casual around Aberdeen, especially where town-manure is made use of. It is quite holding its ground as a denizen on the reclaimed ground, rising conspicuously among the coarse vegetation.

M. alba, L., very scarce in 1893, became not uncommon in 1894 and 1895. This year I can find no trace of it. Its only previous record from this district was from a field near Buckie in 1890 (T. Edward).

M. indica, All., is also new among the casuals of North-East Scotland, but of it only a few plants occurred in 1893. They flowered freely, but must have failed to perfect seed; at least the species has not reappeared. It is included as naturalised in the "London Catalogue of British Plants."

Trifolium hybridum, L.—I refer to this clover, now so largely grown as fodder throughout the country, only to note that in 1894 a considerable number of the plants showed anomalies in the inflorescences. In some the pedicels were very long. In others they were scattered some distance down the peduncle, irregularly or in detached groups. In others the peduncle ended in a vigorous leafy shoot or bore two or more secondary heads on peduncles an inch or more in length. Usually these abnormalities were associated with alterations in the floral structure, the sepals being replaced by more or less perfect leaflets, or, less often, by small bi- or tri-foliolate leaves. The corolla was in some but little altered; in others it was greenish and more or less abortive. The stamens were often abortive. The carpels were usually enlarged, in some projecting beyond the corolla, and sterile, though closed; in others varying in form between the open carpel and the flat leaflet; while in others the carpel was replaced by a leaf of the ordinary structure, though small. Similar abnormalities were met with, though in

less abundance, in 1895. This year I observed them in the enclosed area on only three plants, and to a far less marked degree. I have of late years frequently found the like on plants of *T. repens* and of *T. hybridum* in the neighbourhood of Aberdeen, almost always on ground (such as rubbish-heaps, embankments, or roadsides) recently disturbed and with abundant plant-food. I find that on marked plants they may recur in the following year only in slight degree or not at all.

Scorpiurus subvillosa, L.—This (native in South Europe) was not very rare on open spots in 1893, but did not reappear. It had not occurred near Aberdeen before.

Pisum arvense, L., and *Vicia Faba*, L., each represented by a few examples in 1893, did not reappear. Both were probably introduced in refuse.

Vicia tetrasperma, Moench., was not very scarce in 1893, but failed to establish itself, though a British plant. It had not been observed in this district before.

Lathyrus hirsutus, L. (a native of Europe from Essex to South Russia), and *L. Ochrus*, L. (a native of South Europe), were both new casuals for Aberdeen.

Fragaria elatior, Ehrh., despite its tendency to spread, has quite failed to do so on this ground, and has died out.

Potentilla recta, L., native on great part of the European Continent, may have been introduced with sweepings of shops, or with garden rubbish, though scarcely showy enough one would think for cultivation. It is holding its place, having established itself at one place on the cinders. Here several large plants are fruiting very freely.

Rubus idæus, L., and *Pyrus Malus*, L., are the offspring of seeds evidently, and are probably due to the refuse of fruiterers' shops.

Ribes Grossularia, L., and *R. nigrum*, L.—The same remarks apply to these.

Saxifraga umbrosa, L.—Several young plants, outcast from some garden, were observed in 1893, but had failed to establish themselves.

Lythrum Salicaria, L.—One plant has grown to a considerable size, and flowers and fruits, producing apparently good seed, though alone.

Œnothera ?fruticosa, L.—The single example found in 1894 was not in such condition as to permit of determining the species with certainty. *Œ. fruticosa* is a native of North America.

(*To be continued.*)

NOTES ON "THE FLORA OF DUMFRIESSHIRE," BY MR. G. F. SCOTT-ELLIOT, F.L.S.[1]

By ARTHUR BENNETT, F.L.S.

IN looking through the flora of a Scotch county (for which one cannot but be thankful, and trust it may be the forerunner of many others) that by its geographical position on the borders of England is of much interest (especially when combined with Wigtown and Kirkcudbright), one cannot help feeling that there were many queries that needed more elucidation. In fact, while doubtless some new features (improvements?) are introduced, the matter seems hardly treated with the present-date knowledge that is called for in a county flora.

The rather self-laudatory tone of the preface hardly becomes the earnest worker; and, though gauged by the local stand-point it may pass muster, it must by the general botanist be deprecated. We are not yet in a position to assume the tone of a dictator as to our native plants. Much yet remains to be done in working out their life-histories; while the extraordinary bias towards neglecting what tells against their being indigenous, and the acceptance of anything that tells for it, stands much in the way of a true explanation of the distribution of our flora. These remarks are not made in a carping spirit, but from the wish that we should all try to emulate the example of Mr. H. C. Watson in carefulness and exactness.

I think that had the author of this flora sought it, more help could have been obtained in clearing up some doubtful points. In looking through the book, I have jotted down some notes that may doubtless be open to criticism; but they are offered as a help to explanation of some of the queries involved in its pages.

First, as to the records of some of the older botanists. How is it possible that the names now used could have been so used by them? We want the names added by which they recorded them. As an historical matter this is of

[1] Dumfries: J. Maxwell & Sons, High Street, 1896.

interest. Take *Ranunculus trichophyllus* for example. How did Dr. Singer name this in 1843? In that year the first edition of Professor Babington's "Manual" was published; and there no mention of such a plant as *trichophyllus* is to be found, nor is it in Lindley's "Synopsis" (1828), nor in Hooker's "British Flora" (1835), though it certainly appeared under *Batrachium pantothrix* in Gray's "Nat. Arrangement" (1821). But a better example is *Œnanthe pimpinelloides*, Linn. I venture to say that neither Mr. Stevens, nor Dr. Graham, nor Professor J. H. Balfour, *at the dates given*, knew this plant. Not only that, but the specimens were sent to Mr. Watson from Dumfries as "*Œnanthe peucedanifolia*" by both Dr. Balfour and Dr. G. M'Nab, and in all cases they were simply *Lachenalii*. *Œ. pimpinelloides* has been recorded from Perth, but I believe from no other Scotch county.

Surely the varieties of *Caltha palustris* are not so common as not to need localities being appended to them?

Sagina subulata.—The note on this species is curious. Surely at the British Museum it would be no difficult matter to determine what the specimen referred to really was. Judging by other naming of Dumfries specimens, I should prefer the alternative name.

Surely under *Ononis reclinata* the full locality might have been given from the "New Botanist's Guide."

Lathyrus palustris.—The only Scottish record that is at all localised is that of "Galloway," and this bare fact is all that the "Flora" has to tell us about it; yet Hooker in "Brit. Flora," ed. 3 (1835), gives "Galloway, Scotland, Mr. Mackay." (Watson, overlooking this, says in the "Cybele Brit.": "Hooker gives it in the 4th and 5th editions without authority.") I suppose this would be Mr. J. T. Mackay, and if so, his plants are at Dublin ("Index British Botanists"), and at least a search might have been made among them for so interesting a plant. In 1830 Hooker remarks: "Scarcely indigenous to Scotland, though mentioned by Lightfoot." There is no reason why it should not occur in Scotland, as it reaches to 70° in Norway, and to Dalarne and Gefleborg in Sweden, and is generally distributed over Finland to 68° N. lat.

L. maritimus.—How can any one attempt to verify such a record as that given; *i.e.* no locality at all.

Potentilla suberecta, Zimm.—Why given as a species? (this is scarcely up to the preface); and, Why does it require confirmation? It

was named by Herr Murbeck on a specimen in my herbarium, and was duly recorded in the "Journal of Botany," p. 79 (1888).

Cuscuta Epilinum.—Mr. Lloyd sent the note of this plant to Mr. Watson as "*C. europæa.*"

Statice limonium, sub-sp. *Rariflora* (Why capital R?).—Under what name was it really called (in 1736), other than *Limonium*, by Dr. Graham? How could he name this *rariflora* at that date, when the first notice of it under that name was in May 1843, by Mr. Henfrey in the "Phytologist," p. 561.

Atriplex rosea, L., is applied to *A. arenaria*, Woods. One would have expected the author to have known that the Linnean name as applied to our plant was exploded years ago.

Under *Rumex* we have the curious arrangement of *R. obtusifolius*, L., then four other species, and after these "*R. Friesii*, Bab." (which is the usual *obtusifolius*). Babington does not call it a species; the authorities for the specific name are Grenier and Godron.

Oxyria.—The author has a note on this as to "record making." He says it was "published as new in 1888." This is a perversion of the truth. It was published as "*not recorded in 'Top. Bot.' ed.* 2, 1883," in 1889. Probably Mr. Watson knew of the records, but, not having seen specimens, distrusted them.

Euphorbia portlandica.—I can supply the locality for this, viz. "Tarbert, J. M'Andrew"!

Sparganium affine.—Wigtown, Druce, *ex.* Newbould. Kirkcudbright, M'Andrew, sp.!

Under *Potamogeton natans* and *polygonifolius* the places of growth are transposed, unless they are different in Dumfries from everywhere else.

P. lanceolatus, Sm.—One would have supposed that all British local botanists knew by this time that all Scotch records under this name are probably *P. nitens*, Weber; and yet we have the old name "hashed up" again, and no confirmation of the name as to what it may have been.

P. Zizii.—Mr. P. Gray is credited with *P. Zizii* in 1850; and yet the plant was not reported in Great Britain until 1879. Such a record is absolutely false, and makes one wish Mr. Watson was with us to deal with it. I have seen *Zizii* from several localities in Scotland labelled as "*P. rufescens?*" by Professor J. H. Balfour, by Dr. Greville, and by others.

What is the Dumfries plant recorded as "*Scirpus riparius*, Sprengel"? Usually this is considered as an Australian plant; but perhaps it is I who am behind the times here.

Carex stricta.—I have a specimen from Kirkcudbright.

Equisetum pratense.—"Dr. Davidson." I have a specimen from him. With regard to the query in the preface as to Dr. Davidson's plants, I may say that I am responsible for many of the names of his specimens, though I cannot safely say for all. There may be errors among them of my making, though I think I may assume they are probably as correct as some of the names of other specimens, if I may judge by those that have passed through my hands.

ON THE OCCURRENCE OF *ERIOCAULON* IN COLL.

By Symers M. Macvicar.

Watson in "Cyb. Brit.," vol. iii. p. 37, quotes the "British Flora" for this plant—"Coll and a few of the neighbouring islands of the Hebrides"—and adds: "I do not know which of the neighbouring isles are here intended, nor on what personal authority the statement is made." In the Supplement to "Cyb. Brit." and in "Top. Bot." he gives the authority as "S. Macculloch." Hooker's "British Flora," ed. 3 (1835), gives "Skye (Dr. Hope), Coll (Dr. M'Culloch), and a few of the neighbouring Hebrides." The authority meant is no doubt Dr. M'Culloch, the author of "The Highlands and Western Isles of Scotland" (1824). The following extract from that work, for which I am indebted to Mr. A. Somerville, B.Sc., gives what is said in it about the *Eriocaulon*. Speaking of Coll, the author says: "Though not about to give a pentandrian-monogynian account of the vegetable beauties of Coll, I must not forget to say that I found in its lakes the *Eriocaulon septangulare* before this known only in Skye." He adds: "Those who never saw the sea-kale in its native state will find it also on the western shore" (vol. iv. p. 101). I have lately visited Coll and found *Cakile* in plenty on the western shore, and it grows on the shore not far from the road. *Crambe* I failed to find, and if it occurs it must be rare. The only loch on the western side of the island is by the wayside and not far from where *Cakile* grows; in it, and on the side nearest the road, is a large patch of matted

Littorella lacustris, which is not unlike *Eriocaulon* as I observed it in Skye last year. M'Culloch was not a botanist, and I think might quite well have mistaken the plant. I dragged this loch, and all the others on the island which were near roads, as well as some others; but I saw nothing of *Eriocaulon*. There are about forty lochs in Coll, and I did not examine them all; but I carefully worked those which a non-botanical visitor would probably come across. It is extremely difficult to prove a record to be wrong when once it has been made; but I cannot help thinking that this one is due to the mistake above mentioned. In this case the plant is not one which would become exterminated in a few years. I also examined a number of the lochs in the neighbouring island of Tiree, but saw nothing of *Eriocaulon*.

ZOOLOGICAL NOTES.

Pine Marten in Argyleshire.—Your readers will be interested to hear of the occurrence during August of the Pine Marten (*Mustela martes*). As I give the report on the information of so reliable an observer as Canon Tristram, who was my guest at Kilmory, I think no doubt can be thrown on it. It was in chase of a rabbit, but being disturbed by a fox-terrier, it ran up a very old silver fir. A few months ago one was trapped on the Poltalloch estate in our neighbourhood: it was said to be a barren female. With this exception, and a few occurrences in Morvern or Ardnamurchan, it has not, I believe, been reported in Argyleshire for many years.—JOHN W. P. CAMPBELL ORDE, Kilmory.

Badger in Lanarkshire.—Mr. Robert M. Morton informs me that he saw recently, in the hands of Mr. Drummond Pringle, Chapel, Braidwood, who was preserving it, a Badger (*Meles taxus*) which had been shot by the farmer in Gilbank, Carluke parish, in July.—JOHN PATERSON, Glasgow.

Bottle-nosed Whale in Renfrewshire.—According to a report in the "Greenock Telegraph" of 29th July, a Bottle-nosed Whale (*Hyperoodon rostratus*) was captured on the previous day at Messrs. Russell and Company's, Kingston Yard, Port-Glasgow. It had floundered inside a boom protecting one of the launching-ways. According to a measurement taken at the time it was captured, it was 14 ft. 6 in. long. I had an opportunity of seeing it while it remained on exhibition in Greenock. It was a male, and from its size no doubt a young one.—JOHN PATERSON, Glasgow.

Lesser Rorqual in the Moray Firth.—In the "Scotsman" of 7th August a "White Whale," 27 feet in length, is reported to have been cast ashore at Cullen two days previously. Shortly afterwards the report spread that the creature was not a White, but a Sperm Whale, and I myself noticed that report in at least one newspaper published in the North. As both of these whales are of excessively rare occurrence round the British coasts, I resolved to take advantage of a short visit which I was about to pay to the Moray Firth region, in going to see this whale with the object of verifying the genus and species to which it belonged. Accordingly, on Monday, 24th August, I visited Cullen accompanied by my friend Mr. W. Taylor of Lhanbryde, and we at once found the remains to be those of the Lesser Rorqual, *Balænoptera rostrata* (Fabricius). Not much remained of the body of the whale, the oil having been extracted from the blubber, and the bones having been nearly all divested of the flesh, being in fact in the process of preparation by the man who had purchased the carcase. I saw nothing of the viscera or of the sexual organs, but it is reported to have been a male. According to reports, it was never seen alive, and was in all probability dead for several weeks before being thrown ashore. This will account for its "white" colour, and for the loss of the baleen, of which I saw not a trace.

The length of the entire specimen is said to have been 27 feet. The measurements of the skull taken by Mr. Taylor and myself are as follows :—

Entire length of skull . . .	5 feet 3 inches.
Greatest breadth behind orbits .	3 ,, 0 ,,
Breadth across base of rostrum .	1 ,, 10 ,,
Length of rostrum, base to tip .	3 ,, 3 ,,

This species has no place in Messrs. Harvie-Brown and Buckley's recently published "Fauna of Moray," and is presumably an addition to the fauna of that district.—R. H. Traquair, Museum of Science and Art, Edinburgh.

The Blackcap in East Renfrewshire, and the Scaup Duck there in Summer.—Two additions to our list of East Renfrewshire birds have been made in the present summer. First the Blackcap (*Sylvia atricapilla*), of which two or three pairs have been found in the Rouken Glen near Thornliebank, and second the Scaup (*Fuligula marila*); the latter, considering the time of its occurrence, being probably of more than local interest. Scaups are so strictly maritime in their habits during the usual period of their sojourn in this country, that even in this district, which presents many attractions to their congeners, they have been hitherto practically unknown, as the record by Mr. R. H. Read of one shot near Glasgow at the beginning of November 1890 ("Scot. Nat.," N.S., vol. v. p. 39) stands alone so far as we know. This summer, however, from the end of June until the middle of August, when this is written,

Scaup have been seen regularly on Balgray Dam, a considerable sheet of water, at over 300 feet elevation, near Pollok Castle. Usually three birds have been in company, two males and one female; but within the last two or three weeks five males and one female were seen on one occasion, and on another two males and two females. In a dozen visits to the locality named we have never failed to find Scaup represented; and their presence has probably lessened, in our view, the interest attaching to the presence of Pochards on the same dam throughout the present summer. No proof of the nesting of either species has been found this year. Tufted Ducks have been more numerous than the species named on Balgray Dam, and the circumstance is referred to because of the confusion stated to have arisen between this species and Scaup in one instance in Scotland too well known to call for particular reference. Scaup are well known to us, and there is in the present case no confusion between them and any other duck. This note may be read in connection with the recent record in the "Annals" of Scaup in the estuary of the Clyde on 1st August 1895.—JOHN PATERSON and JOHN ROBERTSON, Glasgow.

Ray's Wagtail nesting near Edinburgh. — As a breeding species, the Yellow or Ray's Wagtail (*Motacilla rail*) is sufficiently rare in the Lothians, or for that matter in most parts of Scotland, to justify a record of a nest with six apparently fresh eggs which I discovered in a cornfield in the vicinity of Portobello, near Edinburgh, on the 3rd of June last (1896). I had been watching the birds at intervals for about three weeks, and on the day mentioned saw the female go to the nest. Eight years ago (that is, in the summer of 1888) a brood was reared in the very same field, and several times towards the end of June I watched the old birds feeding the young ones after they had left the nest and were able to fly a few yards. Although I had previously noticed the species now and then about Duddingston and elsewhere, it was not till Mr. Eagle Clarke informed me he had observed it near Portobello in the beginning of June in the year last mentioned that I was able to trace it to its breeding-ground.—WILLIAM EVANS, Edinburgh.

The Roller in Orkney.—A specimen of this comparatively rare bird was secured in the island of Westray, Orkney, during the second week of June, under the following circumstances:—A lad at the farmhouse of Baccaraas, near Noup Head, observed a hawk pursuing a bird and repeatedly striking it. The bird was observed to escape, and descended into the barn, where the lad succeeded in catching it alive and took it into the house, but it survived only a short time. It was sent to Mr. Sim, naturalist, Aberdeen, for preservation, and identified by him as the Roller (*Coracias garrulus*). Two specimens of this bird were seen in the same island in 1890, and a specimen was shot in Sandwick parish in 1889.—J. W. CURSITER, Kirkwall.

Greenland Falcon in Skye.—Mr. Mackay received a specimen of the Greenland Falcon (*Falco candicans*), apparently a male, from Captain Macdonald of Waternish, on 26th May 1896.—T. E. Buckley, Inverness.

Nesting of the Stock Dove on the Pentland Hills, etc.—The Stock Dove (*Columba œnas*) appears now to have fairly established itself on the Pentland Hills in this county. The first intimation I had of its presence there was from Mr. Eagle Clarke, who observed one about the rocks at Nether Habbie's Howe, in the very heart of the Pentlands, on 1st May 1892; and there can be little doubt one or more pairs have annually returned to breed in this spot, for the bird has been seen there on several subsequent occasions, including 15th April of the present year, when Mr. R. Godfrey twice saw a Stock Dove leave her nesting-hole in these same rocks. I also ascertained that in the summer of 1893 a pair reared two broods in a rabbit-burrow on Torduff Hill on the north side of the range. To this locality they have likewise annually returned—this year, on 10th March, I put one out of a nesting-hole there, and roused a group of seven from a rock in Bonaly Glen. On 11th May I observed another in a wooded ravine close to Glencorse reservoir.

The first record of the Stock Dove as a bird of the Lothians was made by me in 1886 ("Proc. Roy. Phys. Soc.," vol. ix. p. 186) on the strength of several specimens obtained that year at Gosford and Newbattle. Subsequent observation and inquiry have convinced me that the species has been present in the district for a longer period than I then supposed. In the spring of 1889, several examples from near Gorebridge came under my notice, and in the same year I saw numbers in Dalkeith Park, where Mr. Chouler, the head keeper, who knew them as "Rocks," and in whose hands I have examined both birds and eggs, assured me they had been present ever since he came to the place twenty-two years ago (namely in 1874), nesting in holes in old oaks and in the sandstone rocks overhanging the Esk. Along the northern branch of the Esk they now occupy sites almost as far up as Carlops. Mr. Godfrey, to whom I am much indebted for many interesting field-notes on this and a number of other birds, first found it nesting on the Penicuik estate—on the banks of the Harken Burn—in May 1891. Passing over to the Balerno district on the north side of the Pentlands, a former keeper at Malleny described to me, nine or ten years ago, a pigeon he had shot there which could be nothing else than a Stock Dove; and a year or two later one was seen on the same ground by myself. During the last four or five years I have once or twice in the autumn observed single birds at Mortonhall and elsewhere in the immediate vicinity of Edinburgh. Mr. Bruce Campbell has recorded it from Dalmeny Park, West Lothian, and he tells me it has nested there this year.

As regards East Lothian, where it is now known to breed from

the coast sandhills to the cleughs and deans of the Lammermoors, I obtained, about two years ago, a piece of unexpected information from one of the oldest residenters (Wm. Brown by name) in Aberlady. For more than half a century this man has been in the habit of scouring Luffness and Gullane links in search of Peewits' and other birds' eggs, and in the course of conversation with him just after I had found a Stock Dove's nest in a burrow on the former ground, he told me he had long known these pigeons, and had from time to time found their eggs when looking for Jackdaws' nests in the rabbit-holes. He could not say exactly when he first came across them, but he was positive it could not be less than thirty to thirty-five years ago. I do not wish to press this evidence too much, but I see no reason to doubt it, and think it ought to be mentioned: compare with it the following statement made in 1883 by Mr. Harvie-Brown in his paper "On the Stock Dove, with Remarks upon its Extension of Range in Great Britain." "Many years ago," he there writes, "I have had evidence of so-called Wood Pigeons breeding under furze bushes on Tents Muir in Fifeshire. As yet I have failed to learn if these were really Wood Pigeons or *C. œnas*" ("Proc. Roy. Phys. Soc.," vii. p. 244, footnote). The recent increase and spread of the species in Scotland have been abundantly shown, but the evidence as to the length of time it has been in the country is far from satisfactory. As bearing on this point, I would draw attention to the fact that Sibbald includes "the Stock Dove," as well as the Ring Dove, the Rock Dove, and the Turtle Dove, in his list of Scottish birds published in 1684 ("Historia Animalium in Scotiâ," p. 17), a most interesting fact which I have not seen previously referred to. The following record by Mr. T. Armstrong, Carlisle, in "The Zoologist" for 1859 (p. 6378), seems also to have escaped notice:—"Stock Dove (*Columba œnas*).—A bird was shot on Duncan lime-kiln, near Ecclefechan, in November [1858], which has proved to be this species." So, probably, were also the two "foreigners—smaller than the Cushat, of a slaty blue, and without the ring," shot at Wallhouse, Linlithgowshire, by Colonel Gillon, in the autumn of 1877 ("Proc. Roy. Phys. Soc.," v. 68).—William Evans, Edinburgh.

The Stock Dove in Linlithgowshire and Midlothian.—On 18th April I was informed by Mr. David M'Diarmid, head gamekeeper, Dalmeny, that he had seen a pair of Stock Doves (*Columba œnas*) in the park, and that they had a nest in a lime tree. This nest contained two eggs on 2nd May, and on that day I saw another nest, also in a lime, and only a short distance from the one first found. On 4th May I saw two birds, one of which was shot, in a field to the south of Balerno, Mid-Lothian. I was informed by the person who shot the bird that he had seen several others at Riccarton, near Currie.—Bruce Campbell, Edinburgh.

Turtle Dove in the Outer Hebrides. — I have to report the occurrence in North Uist, Outer Hebrides, of the Turtle Dove (*Turtur communis*). A young bird was shot by my gamekeeper late in August last, and has been mounted for my collection.—J. W. P. Campbell Orde, Kilmory.

Turtle Dove in West Ross-shire.—On the 6th of June last I observed a Turtle Dove (*Turtur communis*) fly out of one of the plantations, and across the road, at Braemore, Loch Broom. This is the first time I have seen this bird during the twenty years that I have been resident here.—J. A. Fowler, Inverbroom.

The Tufted Duck in South Ayrshire.—As the volume of the "Annals" which closes with the present number contains so much regarding the distribution of the Tufted Duck (*Fuligula cristata*) in Scotland, it may be convenient to place on record now the result of a visit I paid in June to a group of South Ayrshire lochs which are not mentioned in Mr. Harvie-Brown's paper. I visited Lochriecawr, Lochs Enoch, Macaterick, Gower, Finlas, and Derclach Loch, and remained for four days at the south end of Loch Doon, but though constantly on the lookout for this species it never came under observation. This confirms what I stated in a previous communication, that there are still many localities in the south-west to colonise. I proceeded from Loch Doon to the Ayrshire coast, and visited Mr. Charles Berry, who has a thoroughly representative collection of the birds of the Lendalfoot district, but he has no Tufted Duck, and he told me he could not be sure that he had ever seen it. Mr. Berry's vocation takes him much on the waters, and as he has been all his life an enthusiastic collector, his statement is valuable.—John Paterson, Glasgow.

Probable nesting of the Red-breasted Merganser in Bute-shire and Ayrshire.—The distribution of the Red-breasted Merganser (*Mergus serrator*) in the nesting season in Scotland is generally stated in recent works on British Birds without reference to the Firth of Clyde, but that it breeds there I have little doubt. Mr. John Robertson saw a female with two quite young birds in Bute on 20th July of this year. These young birds, he is satisfied, must have been bred near the spot where he saw them. In a list of birds observed in Bute in July of this year which I have received from my friend Mr. John Lang, Greenock, I find one pair Mergansers entered. A recent experience of my own on the Ayrshire coast helps to confirm the view Mr. Robertson takes of its occurrence as a nesting species in Bute. On the 8th of August, in Mr. H. B. Watt's company, I found a female Merganser attended by a young bird, which was quite unable to fly, on the shore south of Fairlie. I followed the birds on the thickly matted zostera for a considerable distance, and could have captured the young bird had I been anxious to do so. I may mention that on the 23rd of May

I saw a pair (♂ and ♀) of Mergansers in a pool on the shore close to where I found the female and young bird in August. I thought at that time they were likely to be on migration, and indeed farther south, on the Ayrshire coast, at Turnberry, on the 5th of June, a fortnight later, I saw ten Mergansers.—JOHN PATERSON, Glasgow.

The Roseate Tern in Aberlady Bay.—Terns have been unusually abundant in Aberlady Bay this autumn, a flock of 500 to 1000, nearly all old birds, being a daily sight throughout the month of August—indeed I found them there, though scarcely so numerous, on my arrival on the 28th of July. On 30th July I took special note of a flock which, on a careful estimate, I set down at not less than 500 birds. The great majority were the Common species, but a considerable number were Sandwich Terns, and I made certain of a few Arctics. When I had put them up several times, they grew more restless and began to scatter, some in one direction and some in another. It was then that the Sandwiches, separating from the rest, afforded a good opportunity for estimating their number, which reached fully 100. At the same time, among the odd birds that were flying about, was one distinctly different from the others. Coming towards me, it hovered round several times almost directly overhead, uttering the unmistakable *craik, craik, craik* of the Roseate Tern (*Sterna dougalli*). Its relatively longer tail, long measured beats of wing, and altogether more elegant form than the common species, to which, in size it most nearly corresponded would, apart from its cry, have enabled me to identify it with certainty. In the course of the next ten or twelve days the ranks of the Common Terns had greatly increased, while most of the *Cantiacas*, and with them probably the Roseate, the Arctics, and a certain section of the common species, had left the locality. No doubt we had been visited by a passing colony, possibly from the Moray Firth. I should perhaps say that during several visits to the Farne Isles a few years ago I had ample opportunities of becoming acquainted with the appearance and cry of the Roseate Tern. Since Jardine's time, when it bred on the Isle of May "in considerable abundance," the species seems seldom to have been detected in the Forth.—WILLIAM EVANS, Edinburgh.

Peculiar Mode of Fishing of the Great Black-backed Gull.—When at Loch Inver in June this year, I noticed a habit of the Great Black-backed Gull (*Larus marinus*), which, as far as I am aware, has not been recorded in any account of this bird: it may be exceptional. Whilst walking along the shore of Loch Culaig, a small fresh-water tarn communicating by a short but rapid stream with the salt-water loch below, I observed one of these birds slowly flying about 50 feet above the water, on the narrow part of the loch, near the schoolhouse. Suddenly it checked its flight, hovered for a moment, closed its wings, and fell like a stone (much in the same

manner as the Solan Goose does when fishing), immersing itself entirely under the surface. In a second or two it appeared with a small fish in its beak, which it seemed to pouch; rose to the same height, began again searching the water, and very soon repeated the same process, with the same result. This occurred three times; it then flew away and disappeared behind some rocks. It soon, however, returned, and commenced the same tactics, with the same result, always flying off in the same direction. I watched the bird for over twenty minutes, and it made four visits to this part of the loch, acting in the same manner at every visit. After the fourth time, I suppose the young ones were satisfied for the time, as I observed both the old birds settle on a more distant part of the loch.—Edward Hamilton, London.

An Adult Sabine's Gull (*Xema sabinii*) in Aberlady Bay, Firth of Forth.—On 24th August last (1896) my friend the Rev. Alfred Thornley came to see me at Aberlady that we might have a "beetle-hunt" together on Luffness Links. Under the disadvantage of a strong westerly wind, we worked along the edge of the links and over the sandhills till near the north-east (locally the Jovie's neuk) corner of the bay, when, leaving the beetles, we proceeded to the shore to see what birds were there. It was then about high-water (3 o'clock or so), and close at hand numbers of young Sanderlings were feeding on the wet sands. A little farther off hundreds of Common Terns were resting, and near them a solitary small gull, to which Mr. Thornley drew my attention, was standing at the water's edge. Moving cautiously towards it, we soon perceived that we had something out of the common before us. "Can it be a Bonaparte's Gull?" inquired Mr. Thornley. "More like a Sabine's," I replied; and a few seconds later, as we stood some 27 or 28 paces from it (I paced the distance afterwards) discussing its various features—slate-coloured head and darker collar, black bill with yellowish tip, dark legs, etc.—all uncertainty on the point was at an end. "We must look out for the forked tail when it gets on wing," I remarked, as we moved on again. At first it only flew a few yards, but on rising a second time it proceeded towards the inner portion of the bay, passing to landward of us, and disappearing behind the sandhills. As it passed, the forked tail—which, by the way, was entirely white—was clearly made out; and we also noted what seemed a character by which the bird might readily be distinguished when flying from any of the common British Gulls, namely the large amount of black along the terminal half of the wing, contrasting finely with the broad white of the inner margin. The bird was unmistakably adult, and to all appearance still in full summer plumage. Although on the outlook for days afterwards, I failed to see the stranger again.

So far as I know, only four previous instances of the occurrence of Sabine's Gull in Scotland are on record, namely: one said to

have been seen in Banffshire prior to 1860; one said to have been seen in Unst, Shetland, on 1st January 1861; an immature female shot on the Firth of Forth, near North Berwick, on 2nd October 1877; and an adult male in summer dress obtained in Mull on 7th or 8th September 1883. But two adult specimens appear to have been obtained in Britain—the Mull bird and a Yorkshire one.

Seeing I am unable to substantiate the present record by the production of the bird,—a form of evidence the value of which I fully appreciate,—it is fortunate Mr. Thornley was with me and can bear witness to the facts I have above stated.—William Evans, Edinburgh.

Char in Loch Lomond.—In the April number of the "Annals" I chronicled the capture of a well-marked specimen of the Char (*Salmo alpinus*) in the river Fruin, a tributary of Loch Lomond, and find that Mr. A. Brown, in the July number of the periodical, tries to negative this fact by stating that during his long experience in angling and netting in the loch he has never met with a specimen of the fish. This does not count for much when confronted with the actual capture of a Char that must have come up from the loch for spawning purposes; and it may be said, with all due deference, that Mr. Brown may have seen and failed to recognise the fish as distinct from some variety of the common trout. This seems all the more likely when we find it stated that it has never been caught in the net in Loch Lomond—a remark that shows that he is apparently unacquainted with the habits of the Char, which avoids nettable water, and lives in the deepest parts of lochs. The circumstance that, some eighteen or twenty years ago, a few hundreds of *American Brook Trout* were put into the Finlas, another stream running into Loch Lomond, is of no account with respect to the point at issue, as this fish, when thus introduced, is said to take an early opportunity of migrating, it is believed, to the sea, and may or may not return. In fact, so far as I have heard, no specimen of the *American Brook Trout* has been seen in the loch for a number of years. Besides, the *American Brook Trout* (like the *S. hucho*) differs materially from the Common Char in the arrangement of its teeth, and in other respects, which render the identification of the species easy enough for any one accustomed to handle fish for scientific purposes. In mentioning the presence of Char in Loch Dochart, a near neighbour of Loch Lomond, I was not oblivious of the circumstance that these two lochs belong to different water systems. What I had in my mind's eye was, that as numerous tributaries of these two lochs interlace on the gathering-grounds, it might happen that during floods fish might pass from the one to the other, as the Salmon is said to sometimes get into the upper waters of the Clyde.—G. Bidie, Cheltenham.

Lophopteryx camelina, very pale variety of, at Aviemore, Inverness-shire.—On 21st May 1893, I found on the trunk of a

birch at Aviemore, Inverness-shire, a very pretty pale variety of this moth. Mr. C. G. Barrett, London, to whom I have shown the specimen, tells me he has only seen another like it. The ground colour, which is broken up by the darker nervures and cross-lines, may be described as pale isabelline or wood brown—a marked contrast to the ordinary chestnut-coloured form. Of the figures of *L. camelina* in Mr. Barrett's "British Lepidoptera" (vol. iii. pl. 110), that lettered 1 *c*, from a Scotch example, comes nearest, I think, to my specimen.—William Evans, Edinburgh.

Tæniocampa gracilis, *F.*, near Oban.—Dr. Buchanan White seems to have regarded this moth as a great rarity (if not a doubtful native) in Scotland. In his "Lepidoptera of Scotland," the only areas he gives for it under the heading "Distribution" are Tweed and Solway, and he adds the following note:—"This species is reported from Peasbridge, Berwickshire (Hardy), and Dalmally (Buxton). I have not seen specimens, and I think that there is possibly some error" ("Scot. Nat.," vol. ii. p. 181). At page 276 of the same volume, Mr. Doubleday, referring to the above, states that he had seen a number of specimens taken near Rannoch, in Perthshire, by R. Weaver. It may therefore be worth while recording a perfect specimen which I took in a piece of boggy ground near Oban, Argyleshire, on 20th April 1894.—William Evans, Edinburgh.

Meta menardi (*Latr.*) at Loch Ard, South-West Perthshire.—On 29th April last, with the aid of a candle, my son and I found numbers of this large and interesting spider (of both sexes, and mostly adult) on their webs in Rob Roy's Cave, Loch Ard. The Rev. O. P. Cambridge obtained it at the foot of Ben A'an (Trossachs) in 1861. More recently it has been found by Professor Trail near Aberdeen, and by Mr. G. Bolam on the Berwickshire coast; and Mr. R. Service has lately sent me an egg-cocoon, apparently of this species, from a cavern near Dumfries.—William Evans, Edinburgh.

BOTANICAL NOTES AND NEWS.

Festuca ovina, *L.*, *var.* supina, *Hackel*, in South Aberdeenshire.—On the Little Craig in Dal I gathered this pretty grass, growing near the station for *Astragalus alpinus*, which was in fine flower towards the end of June. It was interesting to see on the sweet-scented flower of this local species the rare Burnet Moth (*Zygæna exulans*) in great plenty. The grass, which is the *F. supina*, Schur., "Enum. Pl. Trauss.," 784 (1866), and the *F. ovina*, var. *alpina*, Gren. et Godr., not of Koch, was kindly named for me by Professor Hackel. I do not remember to have seen it recorded for Scotland before. The setaceous lamina and aristate glumes, and short narrow panicle,

mark it as a variety. It is apparently more frequent in Eastern Europe, but is also found in Norway, Sweden, Lapland, Nova Zembla, and Spitzbergen.—G. Claridge Druce.

First Records of Flowering Plants in Scotland.—In Mr. W. A. Clarke's "First Records" ("Journ. Bot.," August) are the following from Scotland:—

Hierochloe borealis, Roem. and Schult., 1827.—"In a narrow valley called Kella, Angus. G. Don."—Hook. Scot., 28. "Discovered in 1812."—"E. B. S.," 2641 (1830).

Alopecurus alpinus, Sm., 1803.—"Mr. G. Don has favoured us with this new species of *Alopecurus*, discovered by himself on mountains about Loch Nagore (Lochnagar) in Aberdeenshire."—"E. B.," 1126. "Mr. R. Brown . . . informs me that he communicated it to Mr. G. Don."—Sm., "E. Fl.," i. 80 (1824). Brown discovered the plant in August 1794, as stated on the ticket accompanying his specimens in "Herb. Mus. Brit."

Phleum alpinum, L., 1777.—"Said to be found on Craigneulict above Killin."—Lightf., "Fl. Scot.," 1133. "In montibus prope Garway Moor," Scotland.—James Dickson in "Trans. Linn. Soc.," ii. p. 288 (1794).

Deyeuxia strigosa, Kunth., 1885.—Found by Robert Dick at Loch Duran, in Caithness.—"Journ. Bot." (1885), p. 253.

D. neglecta, Kunth., 1810.—"Discovered by Mr. G. Don in June 1807, in a marsh called the White Mire, a mile from Forfar."—"E. B.," 2160.

Deschampsia alpina, Roem. and Schult., 1810.—"Mr. George Don . . . found it on the high mountains of Clova in Angusshire."—"E. B.," 2102 (as *Aira lævigata*).

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—July-September 1896.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable and will bear the initals of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

The Vertebrate Zoology of Kirkcudbrightshire. By Robert Service. *Maxwell's Guide to the Stewartry of Kirkcudbright*, 6th ed., 1896.—An excellent guide, comprising 23 pages.

The Black Rat. Walter M. Stopford. *The Field*, 1st August 1896, p. 215.—A female killed on 23rd July at Ballindalloch Castle.

Ancient Red Deer of Scotland. Robert H. Elliot. *The Field*, 4th July 1896, p. 42.—Head found in the bed of Linton Loch, Roxburghshire, at a depth of 14 feet, shortly after it was drained. The head has the full complement of teeth, and there are nineteen points, namely, ten on one horn and nine on the other.

Birds of the Bass Rock. H. N. Bonar. *The Field*, 27th June 1896, p. 1026.—A nest of young blackbirds found on the Bass Rock, and the Oyster-catcher and the Starling found breeding on Inchmickery.

Hedge-sparrow breeding on the Bass Rock.—A. H. Meiklejohn. *Zoologist* (3), vol. xx. p. 304 (August 1896). A nest containing four eggs found on 16th May.

Hybrid Grouse and Blackcock. Robert Raine. *The Field*, 5th September 1896, p. 422.—Two males shot on a moor in Kirkcudbrightshire.

The Opah, or King-fish, off Aberdeen. *Zoologist* (3), vol. xx. p. 306 (August 1896).—Specimen caught about 4 ft. long and $2\frac{1}{2}$ ft. at the broadest part, weighing 70 lbs.

Capture of the Opah. "G. M." *The Field*, 13th June 1896, p. 941.—Specimen caught 240 miles north-east of Kinnaird's Head.

Lepidoptera of Argyleshire. W. M. Christy. *Entomologist*, vol. xxix. pp. 262-263 (August 1896).—A list of eighty species taken about Loch Riddon during the last few years.

Variation of Oporabia dilutata. J. J. F. X. King. *Ent. Record*, vol. viii. p. 111 (1st July 1896). Specimens described from Glasgow, Paisley, Lead Hills, and Wanlockhead.

Occurrence of Coleophora Glitzella, Hfmn., in Britain. By Eustace R. Bankes, M.A., F.E.S. *Ent. Mo. Mag.* (2), vol. vii. pp. 145-148 (July 1896).—Specimens bred by Mr. W. H. B. Fletcher from larvæ obtained at Rannoch by Mr. W. Salvage in the spring of 1884, and again in 1891 and 1893.

Notes on Trichoptera (including Agrypnia picta, Kol.) taken in Unst (Shetland), 1895. By James J. F. X. King, F.E.S., *Ent. Mo. Mag.* (2), vol. vii. pp. 151-152 (July 1896).—A list of twenty-seven species taken during the year.

On some New and Rare British Crustacea. By Thomas Scott, F.L.S. *Ann. and Mag. Nat. Hist.* (6), vol. 18, pp. 1-8, and pls. i. and ii. (July 1896).—Description of Clausia Cluthæ, sp. n., from Ayr Bay, Firth of Clyde; Marænobiotus Vejdovskyi, Mrazek, from Loch Vennachar, Perthshire; Attheyella Duthiei, sp. n., from Brough Loch, Island of Yell, Shetland; and Canthocamptus parvus, sp. n., from Aberlady Bay, Firth of Forth.

BOTANY.

Records of Excursions in Ayrshire. By John Smith. *Ann. Anders. Nat. Soc.*, ii. pp. 22-45.—Scattered through these are a good many notes of more or less botanical interest.

First Records of British Flowering Plants. Compiled by W. A. Clarke, F.L.S. Continued in *Journ. Bot.* (1896), August, pp. 362-365.—From *Panicum glabrum*, Gaud., to *Avena fatua*, L.

Plants of the Kenmuir District of the Clyde. By John R. Lee. *Ann. Anders. Nat. Soc.*, ii. pp. 8-15.—Enumerates the more interesting species.

Moneses grandiflora in Argyle. By Edward S. Marshall. *Journ. Bot.*, September, p. 400.—At Lochgilphead.

The Pollok Wych Elms (Ulmus montana). By John Boyd. *Ann. Anders. Nat. Soc.*, ii. pp. 4-6.

Clydesdale Mosses. By James Murray. *Ann. Anders. Nat. Soc.*, ii. pp. 16-21.

Hypnum micans, Wils., in Inverness-shire. By Symers M. Macvicar. *Journ. Bot.* (1896), August, p. 367.

New or Critical British Marine Algæ. By E. A. L. Batters, B.A., etc. *Journ. Bot.*, September, pp. 384-390.—Besides describing numerous novelties, mostly found by G. Brebner near Plymouth, enumerates several *Lithothamnia*, new to the British flora, from Scotland.

REVIEW.

Eggs of British Birds, with an Account of their Breeding-Habits. Limicolæ. With 54 Coloured Plates. By Frank Poynting. (London: R. H. Porter, 1895-96.)

Mr. Poynting's book on the eggs of the British Limicolæ (Plovers, Snipes, Sandpipers, etc.) is in every way a most handsome volume, and in our opinion the plates are worthy of the highest praise. In truthfulness of delineation and colour, as well as in beauty of finish, the figures could not well be excelled. Though occasionally the ground-colour is, perhaps, rather bright in tone, they are, we think, nevertheless, the best that have yet been issued in this country, Hewitson's classic illustrations not excepted. Indeed, we even prefer them to the beautiful pictures of Baedeker's "Eier der europaeischen Voegel," or those in Bendire's admirable work on the "Life Histories of North American Birds." Artist and lithographer alike are to be congratulated on the uniform excellence of their work. We say "and lithographer" advisedly, for without such high-class reproductions as Greve of Berlin has here supplied, the public would probably never have had it in their power to possess these beautiful and "life-like" pictures.

Mr. Poynting's plates have, moreover, this advantage over those of all previous books on British Oology,—and this is perhaps their chief *raison d'être*,—they exhibit a much wider range of variation, as many as a dozen eggs of a single species being frequently represented —in the case of the Little Stint no fewer than fourteen are given. The great majority of the figures are from specimens in the extensive collection of Mr. Herbert Massey. Without wishing to detract in any way from the value of Mr. Massey's evidently superb collection, one cannot help giving expression to a feeling of regret that the selection of specimens was not made from a much wider field. A still greater range of variation in the case of many species would thus have been secured, and the plates rendered correspondingly more interesting and useful. A few of the illustrations are from the pencils of other artists,—those of the rare American species having been furnished by J. L. Ridgway from specimens in the United States National Museum,—and are likewise of a high order of merit. By the way, would it not have been worth while to have given a figure of the reputed egg of the Knot in the National Collection at South Kensington?

The author has been well advised as regards the letterpress. Instead of presenting us with condensed accounts drawn up by himself, he very wisely gives us copious extracts from the writings of those who have recorded their personal experiences of the nesting habits of the birds. These extracts have, as a whole, been judiciously selected from a very wide field, thereby rendering the volume highly interesting reading, and at the same time a valuable book of reference. No doubt a few errors—such as Saxby's statement to the effect that the Golden Plover's period of incubation is only 17 days—are thus reproduced, but these might very well have been taken notice of in footnotes. There are also one or two valuable original notes contributed by Mr. H. Leyborne Popham, recording some of the results of a successful trip made by him to the lower Yenisei, and about which we should like to hear more.

In a word, Mr. Poynting has proved himself to be both a master in the art of depicting a bird's egg, and a safe guide to the best accounts of the nesting of British birds. We therefore recommend his book to our readers, and earnestly hope he will see his way to continue his labours till he has covered the entire British list.

W. E.

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END OF VOL. V.

Printed by R. & R. CLARK, LIMITED, *Edinburgh*