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EDITED BY W. EAGLE CLARKE, F.L.S.

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, &C.

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THE COMMON SEAL IN FRESH-WATER STREAMS AND LOCHS OF SCOTLAND.

BY J. A. HARVIE-BROWN, F.R.S.E., F.Z.S., &c.

IT is well known that seals (*Phoca vitulina*) in many countries ascend fresh-water rivers in pursuit of their favourite prey—salmon and sea-trout—and even permanently exist in fresh-water areas. Yet it is curious to find how little notice has been taken of the fact by our naturalists, in relation to British waters, none of the authorities which I have been able to consult having taken any special notice of the matter since the days of the “Old Statistical Account,” and of Professor Fleming, dating respectively 1793 and 1822. (“Philosophy of Zoology,” vol. ii. p. 82.) I have only given special attention to the matter within the last few years, but have kept notes on the subject since about 1879, referring to Loch Awe.

In connection with this curious distribution of the common seal, I will proceed to treat the subject chronologically. The earliest notice¹ of the seal frequenting Loch Awe in Argyleshire, and coming up the rapid River Awe for that purpose, is contained in the “Old Statistical Account” (vol. vi., p. 260), where it is stated:—“The seal comes up from the ocean, through a very rapid river, in quest of this fish [the salmon]; and retires to the sea at the approach of winter.” The date of this statement is 1793. We again find this quoted by Fleming in his “Philosophy of Zoology” (vol. ii., p. 82, *footnote*), dating 1822, without remark, and again, also without remark, in his “History of British Animals” (p. 17). Since that time I have not been able to find a published account of this somewhat singular departure in the habits of the seal—at least, as regards Scotland—in any work devoted to British mammals. It becomes, therefore, rather interesting to find what was then recorded as fact, occurring, beyond dispute, at the present day. In 1879, as was related to me, “a large old seal” frequented Loch Awe between Inverawe Point and the island

¹ I do not find anything concerning this in Pennant (1768), *Lightfoot's Flora Scotica* (1777), nor in his later editions.

opposite the Pass of Brander. It was seen by many people. John MacIntyre, boatman at Taycreggan, made the statement amongst others. It was seen to follow in the wake of the loch steamer for a long distance. In 1878 it was last seen in August. In 1879 it was once seen in September, and in 1889 it was seen as late as November. Many other eye-witnesses have made similar statements, and there cannot be any doubt that the statements are correct. A little more recent information on the subject is added by Dr. John Duncan, who was long resident at Hayfield on Loch Awe side. I give his account fully, as it is considered of great interest and also because it is desirable to place the facts on record up to date.

This gentleman writes me as follows:—"For ten years, up to 1883, we spent our autumn holiday on Loch Awe side, and frequently a portion of April. I think there were few years in which we did not see one or more seals in the Loch. This was most frequently in autumn, but I have also seen them in spring. On one occasion, a bright and absolutely still day, I saw two quite close to our boat, one of them not more than fifteen or twenty yards off. I remember a year in which for weeks we never went out fishing without seeing one somewhere between Innishail and the Brander Pass. I have several times seen a seal in the upper pools of the River Awe, and on one occasion some of us were fishing above the rock with the gangway round it¹ when we noticed a seal rapidly diving and rising again in the river. Presently a salmon threw itself clean out of the water on the other side into a small basin, from which it could not get back into the river. It lay splashing there until a navvy, working on the railway, which was then being made, came down, knocked the fish on the head and walked away with it. He held it up for us to see, and it looked about 15 or 16 lbs."

In connection with this matter it is not uninteresting to notice first the peculiarity of Loch Awe, in that the inflowing and out-flowing rivers, Orchy and Awe, are both at the same end of the loch. The Awe is a very rapid, heavy river descending 118 feet in about four miles, but the Orchy is dead and stagnant as far up as Dalmally, and there is much swampy meadow-land by its sides subject to flooding. Now there is a traditional account that

¹ *i.e.*, Close to the outlet of Loch Awe from the Brander Pass and just at the glide above the first rough stream of the river (H-B).

“The Brander Pass and River Awe are stated *not* to be the original outlet of the loch, and that Loch Awe is almost singular in this respect amongst Scottish lochs. An examination of the south-west extremity of the loch shows that the level at one time was higher and the overflow was into Crinan.” To this account is also added, “the Brander Pass supposed to be caused by an earthquake.” (“A Tour through Scotland.” 1830, p. 218.) These old records or traditions are in great measure substantiated by more modern geological evidence. (Geikie, “Scenery of Scotland.”) Dr. John Duncan makes the remark in his letter, already quoted:—“As to the old outlet of Loch Awe being at the other end, I have myself no doubt. It would suggest itself even to one ignorant of geology who has compared that and the present outlet. There is, indeed, but very few feet of difference between the two levels.”

Although it is not considered necessary to quote at length all the evidence we have obtained in verification of the facts above stated, yet I may state that amongst those from whom I have received communications on the subject are the following:—Mr. Muir of Innistrinich testifies to having seen one on 12th Nov., 1888. Mr. R. M'Cloy, gamekeeper on Poltalloch, unsolicited, testifies to having seen seals several times in Loch Awe in 1879: “and a pair are stated to be there at the present time—May 20, 1888.” Dr. John Duncan says, “they certainly come and go, are seen day after day, and then disappear for weeks.”

Whilst investigating these records, I also learned equally without doubt of the occasional occurrence of *Phoca vitulina* in another large sheet of water, *viz.*, Loch Shiel. I first heard of this through my friend Mr. J. J. Dalgleish of Ardnamurchan. Mr. Duncan Cameron, at the Fishery at Dorlin, wrote to Mr. Dalgleish “that one was seen about ten years previously (about 1878) about 400 yards above the falls, at high water and spring-tide, when the tide was about half-a-mile up the River Shiel”; and the same person believed that one was killed in the Bridge Pool about 60 years ago (about 1828). Following upon the above is a positive statement, at a later date, giving the details of the capture from the same person. A letter from Rev. Father Macdonald, Mingary, Loch Shiel, is also confirmatory. From these letters the following facts may be culled. Two cases only can be cited. One seen about 50 years ago¹ by a “truthful old man”—Archibald Mac-

¹ D. C. says 60 years ago.

donald, who died about 8 years ago—at the lower end of Loch Shiel, and almost opposite the Rev. Father's house. The other instance dates further back, and is traditional of a large seal visiting the far end of Loch Shiel, near Glenfinnan, and shortly after being seen was shot upon a rock which bears to this day the name *Sgeir nan roin* (the seal's rock). Certain minor discrepancies appear in the different accounts, but only such as rather tend to the proof of the general authenticity of the record. I am satisfied with this, after having weighed all the statements.¹

Under date of Nov. 25th, 1890, Dr. Duncan writes me as to the occurrence of the seal in Loch Shiel in which he tells me that he was unable to discover "more than vague rumours of their appearance in the past, and to discover that a certain rock some miles up Loch Shiel goes by the name of the Seal Rock. This year I was informed that a seal had been seen in Loch Shiel by many people for about a fortnight in the early part of September. I was present on the 25th of September at its descent of the River Shiel to the sea. I was fishing the upper part of the large pool below the bridge when it made its appearance in the centre, and passed down the stream. My brother-in-law—Captain Bishop Culpeper—was then fishing the 'Garrison pool' about half-a-mile farther down, and he also saw it swimming quietly downwards. There is, therefore, complete proof of the presence of one seal in the loch and river, and I have now no doubt that the rumours of others in past years are quite true."

As I am discussing seals, it seems to me there are many facts relating to the Natural History of many of our British Mammals not yet recorded in books of authority. The following incident is worthy of record. In Sept., 1880, and again in Nov., 1888—the latter in reply to my inquiries—my friend Mr. A. Burn-Murdoch wrote me concerning the curious behaviour of a seal in Loch Suinart. We quote from his last letter (13th Nov., 1888):—"Memory might be inaccurate, so I quote from my journal, written at the time. Sept. 19th, Sunday.—The carpenter tells me that after we went ashore on Friday morning, when we left him and Sandy Cameron, the shepherd, still fishing 'cuddies,' a seal took the 'cuddy' that was on the hook. They let the rod go,

¹ Burt in his "Letters from the Highlands" (Ed. 1876; Vol. I *et seq.*) says, "he watched seals in the tideway off Inverness Bridge."

and presently it floated up minus the 'cuddy,' but with the hook still there. Again, a second time, the seal caught the hooked fish, but this time, holding on to the rod, the gut was broken, and fish and hook were carried off by the seal. N.B.—To verify this by questioning the shepherd.

“Sept. 25th, Saturday — . . . I saw the shepherd and questioned him about the seal story of the 17th, and he fully corroborates the carpenter's account, only that it was thrice the seal took off the hooked fish—not twice. The shepherd saw the seal plainly when it seized the cuddy on the hook, and also again when it tried unsuccessfully to do so—its want of success being due to the shepherd jerking the fish clear.” Mr. Burn-Murdoch then continues in his letter, “I often chatted with the men about the incident, and have not the slightest doubt about its being perfectly true. We were constantly fishing 'cuddies' in the evenings at that time, and the seals—one or two of them—were regularly round us at close quarters, and quite fearless. We never fired at them in the neighbourhood of Glenborrodale, on purpose to encourage their presence, so that the fact of one being so bold as to take the hooked fish seemed the less extraordinary.”

The above incident illustrates how much might be done by our West Highland lairds and their shooting tenants to encourage and protect these interesting animals on the shores of our Highland lochs.

**LIST OF BIRDS OBSERVED IN THE VALLEY OF
THE SPEY DURING AUGUST AND PART OF
SEPTEMBER, 1889.**

BY WILLIAM EVANS, F.R.S.E., M.B.O.U.

THE following list is based entirely on daily notes which I made while spending a holiday on the Spey in the autumn of 1889. My temporary abode was at Kinraig, near Loch Inch: and the part of the valley chiefly investigated lies between

Kingussie and Aviemore, but flying visits were made as far as the head of Glen Feshie on the one hand, and Grantown on the other. The distance between these two places is fully twenty-five miles, and the intervening country includes some of the finest scenery in Scotland. The Spey is here already a noble river, flowing through a narrow belt of meadow and common with patches of cultivation at intervals, and receiving the waters of several important tributaries—the Tromie and the Feshie, for instance, on the right, and the Dulnan on the left. At Inch the river widens into a loch, about a mile long by half-a-mile broad. Finer still are Loch-an-Eilan and Loch Morlich, in whose waters pine-tree and mountain-top are reflected with exquisite effect. Birch-woods abound, especially on the north-west side of the valley, stretching in some parts from the river's bank to the lower slopes of the Monadhliath Mountains, which rise to a height of from 2500 to 3000 feet. On the opposite side the pine-woods predominate, reaching their greatest extent in the forests of Rothiemurchus and Abernethy, though the finest trees are probably to be seen at Castle Grant. Behind these pine-woods rise the Cairngorms, whose remoter summits—Cairn Toul (4,241 ft.) and Braeriach (4,248 ft.)—excite the enthusiasm of the mountaineer. The country abounds in interest to the student of British Ornithology, for its woods, lochs, and mountains are the haunts of such rare species as the Crested Tit, the Osprey, and the Dotterel.

1. *Turdus viscivorus* (Missel Thrush).

Abundant throughout the valley, and often seen well up the hill-sides: mostly in flocks, feeding on the berries of the various species of *Vaccinium*, *Arctostaphylos*, and *Empetrum*, which grow in great profusion on the moors and commons: also observed feeding on juniper-berries and bird-cherries. In Glen Feshie, on 2nd September, I counted over 80 all in the air at one time.

2. *Turdus musicus* (Song Thrush).

Generally distributed, but not nearly so numerous as the above.

3. *Turdus merula* (Blackbird).

Much the same as the Song Thrush in numbers and distribution.

4. *Turdus torquatus* (Ring Ouzel).

Seen singly, or in small parties, in suitable spots in several

localities on the Monadhliath and Cairngorm Mountains; generally at an elevation of from 1,000 to 2,000 ft., but I startled one along with a flock of ptarmigan at fully 3,000 ft., on a ridge where *Empetrum* berries were in great abundance. The largest party—12 or 13—was observed on 19th August; and the last seen was alone, on 6th September, high up among the wild rocks overlooking the western end of Loch Eunach.

5. **Saxicola oenanthe** (Wheatear).

Abundant throughout August, up to from 3,000 to 3,500 ft.; a few even at greater elevations. One met with on 6th September, near the summit of Cairn Toul.

6. **Pratincola rubetra** (Whinchat).

Three on meadow below Loch Inch, on 10th August, and one near Alvie, on the 11th. No others seen.

7. **Ruticilla phoenicurus** (Redstart).

Common all along the valley. Last (old and young) observed at Kinrara, on 5th September.

8. **Erithacus rubecula** (Redbreast).

Frequently seen—both old and young—but not so abundant as in the South of Scotland.

9. **Sylvia cinerea** (Whitethroat).

Only once seen with certainty, namely, near Kinraig, on 11th August.

10. **Regulus cristatus** (Goldcrest).

Abundant, especially in the pine-woods, associating with the Cole and other Tits. The last tree by the path from the head of Glen Feshie to Braemar was enlivened by their presence.

11. **Phylloscopus trochilus** (Willow-Warbler).

Abundant in all the woods up to about the 23rd of August; then rapidly decreasing in numbers, so that by September never more than one was seen in a day, except on the 5th, when two (the last observed) were met with at Invereshie.

12. **Accentor modularis** (Hedge Sparrow).

Far from common: only seen on six occasions, and these mostly in the lower part of the valley—Aviemore, Carrbridge, and Grantown. Three—the most seen together—were among juniper bushes at the head of Glen Feshie, entirely away from any dwelling.

13. **Cinclus aquaticus** (Dipper).

Though looked for in every likely place, only four pairs were detected in the following localities, namely: on the stream flowing from Cairngorm into the upper end of Loch Morlich; on the Dulnan at Carrbridge; on the Spey, a short distance below Kincaig; and on the stream entering Loch Inch near Dunachtonmore. Perhaps the rivers and streams are too rapid or too subject to floods for the Dipper's liking. Whatever the cause, they are much less numerous than in the lowland counties; in Peebles-shire, for instance, I have seen more in the course of an afternoon's walk than during a month on the Spey.

14. **Acredula rosea** (Longtailed Tits).

Of the six Tits seen, this was apparently the least common. Parties (one consisting of eleven individuals) were met with on three occasions among alders and birches by the Spey and the Feshie.

15. **Parus major** (Great Tit).

Almost as scarce as the preceding. Always among birches and generally in company with the Blue Tit.

16. **Parus ater** (Cole Tit).

By far the most abundant of the group, especially in the pine-woods, but continually met with in the birch-woods as well.

17. **Parus palustris** (Marsh Tit).

One of the first birds to attract my attention during a short walk in the immediate neighbourhood of Kingussie, on the day of my arrival in the valley, was the Marsh Titmouse; and thereafter it was noted almost daily. They seemed to have a great partiality for the birch-woods—indeed, I never observed them among any other kind of timber—consequently they were most plentiful on the north-western side of the river, below Kincaig. They were never alone, but joined with Blue Tits, Cole Tits, and occasionally Goldcrests, in the formation of foraging parties. In the woods behind Baldow, where there is a series of small marshes, and at Docharn, near Boat of Garten, I have seen from seven to ten at a time. In no other part of Scotland have I found the species so abundant.

18. **Parus cæruleus** (Blue Tit).

Common, but very little more so than the Marsh Tit. Though

not confined to the birch-woods, it was oftener seen in these than elsewhere.

19. **Parus cristatus** (Crested Tit).

I had not been many days at Kincaig, when a group of Tits and Goldcrests attracted my attention as they searched the walls of a garden adjoining a large pine-wood by the road to Glen Feshie. Examining them through my binoculars, I was delighted to discover a pair of Crested Tits. The party soon left the garden and took to the wood, where I followed them for several hours, studying the habits and call-notes of *Cristatus*. Once familiar with the call-note, it was easy to detect the presence of the birds, even when feeding near the tops of the tallest trees, where otherwise it was difficult to identify them; and I scarcely ever afterwards entered a pine-wood (they were never noticed out of these), from the head of Glen Feshie to Grantown, without soon becoming aware of their presence. In the large forests—those, for instance, of Rothiemurchus, Glenmore, Abernethy, and about Carrbridge—they were by no means rare. They were always in company with Cole Tits and Goldcrests, seldom more than a pair, however, being with any one group. During a ramble in one of the large forests on the 28th August, I detected them in eight different parties of Tits. It is difficult to represent the call-note on paper: the syllables, *twurr, twurr, twurr*, written down at the time, still vividly recall the sound to my mind.

20. **Troglodytes parvulus** (Wren).

Frequently observed; occasionally even in remote places among the hills.

21. **Motacilla lugubris** (Pied Wagtail).

Common: occasionally in large assemblages. On 22nd August, I counted about eighty Wagtails—mostly this form—among a quantity of mown grass, which had been carried by the Spey when in flood, and left near the road-side a short distance above Loch Inch. They were mostly young birds, but there were several old black-backed males present. Another considerable gathering was observed near Boat of Garten, on 4th September.

22. **Motacilla alba** (White Wagtail).

In the assemblage of Wagtails seen on 22nd August, were two

or three unmistakable old males of this form. Doubtless there were also a number of females and young birds, but it was impossible to identify these with any certainty.

23. **Motacilla melanope** (Grey Wagtail).

Was frequently seen on the Spey, and the Dulnan.

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

In flocks on the meadows and commons by the Spey and the Feshie throughout my stay. The largest gathering was seen on 3rd September. A few still lingered on the high grounds; thus a pair were noticed on Cairngorm on 16th August, at about 3500 feet, and on the 19th another pair were met with on the high moor above Loch Eunach.

25. **Anthus trivialis** (Tree Pipit).

Only once identified, namely on 8th August, in a clump of trees a little above Kinrara.

26. **Muscicapa grisola** (Spotted Flycatcher).

Frequently met with. At Invereshie House on 17th August, they were unusually abundant, and were still in some numbers up to the 28th: the last seen was on 2nd September.

27. **Hirundo rustica** (Swallow).

In greater or less abundance from the first to the last day of observation (8th September). The largest assemblages were seen on 6th and 20th August.

Note.—I looked particularly for the House Martin (*Chelidon urbana*), in Kingussie, Grantown, Carrbridge, and other likely places, but could see nothing of either the birds or their nests. This year (1890), I noticed several pairs nesting at Braemar.

28. **Cotile riparia** (Sand-Martin).

Abundant up to the 20th of August on the Spey below Kinraig: a few noted up to 4th September.

29. **Certhia familiaris** (Tree-Creeper).

One or two seen on many occasions with groups of Tits.

30. **Passer domesticus** (House-Sparrow).

Common about all the villages and farms.

31. **Fringilla chloris** (Greenfinch).

Frequently seen, but never in large numbers.

32. **Fringilla cælebs** (Chaffinch).

By far the most abundant of the *Fringillidæ*. Large numbers were frequently met with in the pine-woods.

33. **Linota rufescens** (Lesser Redpoll).

Abundant in all the birch-woods in flocks of considerable size.

A flock of fully 100 fed daily on the catkins of the birches in front of the house we occupied. No diminution in their numbers could be detected up to the time I left (9th September), and the people about the place said they were seen all through the winter. Eggs that had been taken in the neighbourhood were shown to me.

34. **Linota flavirostris** (Twite).

Only seen on three occasions, twice on the boggy moor behind Feshiebridge, and once on a bit of similar ground at the head of Loch Garten.

35. **Pyrrhula europæa** (Bullfinch).

To one accustomed to live in a district where the Bullfinch is almost a rarity, it was very pleasing to meet with parties of from four to five, up to twice that number, several times a day. Though seen in both the birch-woods and the pine-woods, I consider they were most numerous in the former.

36. **Loxia curvirostra** (Crossbill).

This interesting bird was constantly met with in the pine-woods in flocks of from seven or eight up to twenty or thirty. There were never more than from one to three red birds in a flock. In addition to the cones of the firs, larches and pines, I noticed that the galls on the twigs of the spruce—which Professor Trail informs me are the work of *Chermes Abietis* (an Aphis)—were eagerly attacked. The Crossbill, as is well known, breeds very early in the year. I was, therefore, greatly surprised to see two young ones, which, to all appearance, could not have been more than ten days to a fortnight out of the nest, being fed by their parents on 4th September. This was in the forest near Carrbridge. An incessant *peetow, peetow, peet, peetow, peepet*, from the thick branches of a Scotch-fir attracted my attention, and I soon discovered that the petulant chirping proceeded from two young Crossbills hopping from branch to branch after the old birds from whom they were continually receiving food. The way in which they opened their bills to be fed, at the same time quivering their wings, and, indeed, their whole behaviour and appearance pointed to their extreme youth. They never made the slightest attempt to feed themselves.

37. **Emberiza citrinella** (Yellow Hammer).

Not particularly common, but a good many seen, especially in the lower part of the valley.

38. ***Emberiza schoeniclus*** (Reed Bunting).

A female at Baldow on 6th August, and another near the upper end of Loch Inch on the 22nd, were the only ones seen.

39. ***Plectrophanes nivalis*** (Snow Bunting).

On 16th August, I ascended Cairngorm, and when within 100 yards of the summit, a Snow Bunting flew past me. On 6th September I met with another near the top of Braeriach.

40. ***Sturnus vulgaris*** (Starling).

Frequently seen in different parts of the district, mostly in good sized flocks. A number observed at Castle Grant were evidently at home.

41. ***Pica rustica*** (Magpie).

Observed on many occasions, generally 4 or 5 together.

42. ***Corvus monedula*** (Jackdaw).

Good many with Rooks near Kingussie, Nethybridge, and elsewhere.

43. ***Corvus corone*** (Carrion Crow).

Not numerous: seen on 7 or 8 occasions, generally singly or in pairs. Five were noticed together on 16th August near Glenmore Lodge, in company with the next.

44. ***Corvus cornix*** (Hooded Crow).

Appeared to be more numerous than the last. Eight near Glenmore Lodge on 16th August; fully a dozen between Kincaig and Kingussie on the 22nd; and on the 28th, three nailed to wall at keeper's cottage in Abernethy Forest. Also singly or in pairs on several other occasions. The keepers say they are resident throughout the year.

45. ***Corvus frugilegus*** (Rook).

Abundant, frequently in large assemblages. On 22nd August, I counted between 1500 and 2000 on a field of rough pasture near Kingussie, and a few days later, another similar gathering was seen between Boat of Garten and Nethybridge.

46. ***Corvus corax*** (Raven).

On 23rd August, in the course of a walk over the Monadhliath Mountains from Kincaig to the Dulnan, and back to Aviemore, I saw no less than six Ravens. On the 30th—almost the only really summer-like day we had during the month—

I was busy capturing beetles and other insects in the marshes behind Baldow when a croaking overhead caused me to look upwards, and there, at a great height, was a Raven floating in the clear blue sky.

47. ***Alauda arvensis*** (Skylark).

Was not numerous. I only met with it on half-a-dozen occasions, in parties of from 3 to 5.

48. ***Cypselus apus*** (Swift).

Frequently seen from 3rd August to 4th September. On the latter date four were circling high over Aviemore Station at sunset.

49. ***Caprimulgus europæus*** (Nightjar).

One haunting the clumps of birches on the Common, immediately to the north of Feshiebridge, during the last week of August.

50. ***Cuculus canorus*** (Cuckoo).

Young birds were observed several times. On 7th August one was still being tended by its foster parents (meadow Pipits). On the 28th, another was seen to fly on to the roof of a house at Boat of Garten; and on 2nd September two were noticed in Glen Feshie.

51. ***Asio otus*** (Long-eared Owl).

I should have expected this Owl to be common, but apparently it was not. It was only once detected, namely, at Invereshie. Two stuffed specimens in a shop in Kingussie were said to have been killed in Gaick Forest.

52. ***Syrnium aluco*** (Tawny Owl).

Appeared to be fairly common; often heard hooting in the woods around Kinraig, especially during moonlight nights in September.

53. ***Buteo vulgaris*** (Buzzard).

On 23rd August I had a good view of one hunting along the side of Cnoc an Fhrangaich on the Dulnan; and on 1st September another was observed soaring over the Cairngorms near the entrance to the Alt na Cricke Glen.

54. ***Aquila chrysaetus*** (Golden Eagle).

I had the pleasure of seeing this Eagle on three occasions. On 19th August I had been wandering about the Invereshie deer-forest since early morning, and towards 4 p.m., passing over Sgoran Dubh, found myself suddenly on the brink of

the stupendous wall of precipices which rise almost perpendicularly from the dark waters of Loch Eunach. At no great distance on my right, an Eagle was perched upon a rocky pinnacle, and gave the finishing touch to one of the grandest scenes within our shores. On my approach he took wing, and soared away to his home on the other side of Braeriach. The next was seen on 2nd September circling across the remotest part of Glen Feshie; and four days later, during the ascent of Cairn Toul, I had once more the pleasure of witnessing the power and grace of the Eagle's flight.

55. **Accipiter nisus** (Sparrow Hawk).

Observed on five or six occasions only, and mostly about Invereshie.

56. **Falco peregrinus** (Peregrine Falcon).

Only seen thrice, namely—one passing from Loch Eunach to Glen Feshie; another dashing through a flock of Lapwings at the foot of Loch Inch; and a third on Craigellachie, near Aviemore.

57. **Falco æsalon** (Merlin).

Is doubtless more common than my experience, taken alone, would indicate. I only saw it twice.

58. **Tinnunculus alaudarius** (Kestrel).

By far the most common of the birds of prey. In Glen Feshie I have had four, and at the entrance to the Larig Pass three in view at one time. One rose from a ridge of the Cairn gorms at 3500 feet.

59. **Pandion haliaetus** (Osprey).

Up to the 20th of August a pair of Ospreys were daily visitors to Loch Inch, where I often watched them capturing large fish, and carrying them off to their eyrie. As they passed over-head, I could, with the aid of my binoculars, distinctly see the fish, which was always carried in a position parallel to the bird's own body—the one foot being placed well in front of the other—making violent efforts to escape from the talons of its captor. The nest occupied this year was not on the Castle of Loch an Eilan, but on a Scotch fir growing on an islet in a little-frequented loch among the hills.

60. **Ardea cinerea** (Heron).

Frequently seen on the Spey, especially about Loch Inch; and also on the Dulnan.

61. **Anas boscas** (Wild Duck).

On all the lochs, a great increase of their numbers being observed about the middle of August. On the 18th they were very abundant on Loch Inch, and at flight time the air was alive with them proceeding to their feeding grounds.

62. **Querquedula crecca** (Teal).

Was also common about Loch Inch, especially from the middle of August onwards.

63. **Spatula clypeata** (Shoveller).

A pair observed feeding close to the edge of Loch Inch on 13th, and again on 18th August.

64. **Fuligula ferina** (Pochard).

A few on Loch Inch on 14th, and two pairs on 18th August. Nineteen beauties on Loch Garten on the 28th.

65. **Mergus merganser** (Goosander).

Parties of from 3 to 10 on Loch Inch throughout August. On the 18th there were between 20 and 30 on the loch. A family-party of 7 was observed on Loch Morlich on the 16th.

66. **Columba palumbus** (Ring-Dove).

Common all along the valley.

67. **Columba oenas** (Stock Dove).

On 20th August I had a very good view of one flying up the valley past Kinraig bridge.

68. **Phasianus colchicus** (Pheasant).

The only Pheasants seen were a few being reared at Dunachtonmore.

69. **Perdix cinereus** (Partridge).

Coveys were frequently seen on the pastures and commons adjoining the Spey.

70. **Lagopus mutus** (Ptarmigan).

Abundant on all the more elevated parts of the Cairngorms; was seldom met with below 3000 feet. In the course of a walk over the higher ridges of the Invereshie deer-forest, I put up no fewer than 94. They were generally in parties of from 6 or 7 to twice that number, though, on one ridge, a pack of 29 was met with. Five rose within three or four yards of the cairn on the highest point of Braeriach. On examining the ground where a flock had been sitting, I in-

variably found a number of newly cast feathers. The birds were, of course, in the grey and white plumage of autumn, and when at rest among the granite rocks and boulders it was next to impossible to detect them. During a moonlight walk across these mountains Ptarmigan were continually getting up almost among my feet, the rustle of their wings and the loud *gur-r-r-r-r* of the cocks, adding not a little to the eeriness of the situation.

71. **Lagopus scoticus** (Red Grouse).

Needless to say, this favourite game-bird was abundant on all the moors on both sides of the valley. In the Invereshie deer-forest, on 19th August, two rose with Ptarmigan at an elevation of well over 3000 feet, and four others joined them from a point still higher.

72. **Tetrao tetrix** (Black Grouse).

Frequently met with from the head of Glen Feshie downwards. Most seen in the young fir plantation on the moor behind Feshie bridge.

73. **Crex pratensis** (Corn-Crake).

One seen near Kincaig on 5th August. I am told their monotonous call is a well-known sound in the valley during the summer evenings.

74. **Gallinula chloropus** (Moor-hen).

Common: seen about Loch Inch, Drimanloch, Loch Pithulais, &c.

75. **Fulica atra** (Coot).

Common on several of the lochs; counted 90 on Loch Inch on 18th August, and over a dozen on Loch Garten on the 28th.

76. **Charadrius pluvialis** (Golden Plover).

Two or three about Loch Inch on the 9th, and a few on a boggy moor on the Cairngorms on 19th August were all that came under my observation.

77. **Ægialitis hiaticula** (Ringed Plover).

On the night of 9th August I heard Ringed Plovers calling overhead. I was at the lower end of Loch Inch at the time, and the birds seemed to be flying up the valley.

78. **Eudromias morinellus** (Dotterel).

This most interesting bird was met with several times in small parties on the Cairngorms, but never under 3000 feet. Four-

teen was the most seen together, and on 6th September a group of six was met with on the top of Braeriach.

79. ***Vanellus vulgaris*** (Lapwing).

Abundant in flocks of 50 and under till near the end of August, when the numbers became greatly diminished.

80. ***Hæmatopus ostralegus*** (Oystercatcher).

Common; feeding in small parties on the meadows and pastures, occasionally in company with Lapwings. On 6th August many groups—seldom composed of more than seven or less than two birds—were observed flying up the valley at a considerable height. By the 27th comparatively few were to be seen, and on the 31st, eight were seen flying northwards.

81. ***Scolopax rusticola*** (Woodcock).

I only once got a glimpse of a Woodcock in the birchwood near Kincaig.

82. ***Gallinago cælestis*** (Common Snipe).

A few put up on marshy ground by the Spey above Loch Inch, and on the Monadhliath Hills.

83. ***Totanus hypoleucus*** (Common Sandpiper).

Frequently observed about the margins of Loch Inch and Loch Alvie; last seen on 22nd August.

84. ***Totanus calidris*** (Redshank).

Single birds observed on the 11th, 18th, and 22nd August by the Spey and Loch Inch.

85. ***Totanus canescens*** (Greenshank).

One put up several times from the banks of the Spey above Kinrara on 21st August. My attention was first attracted to it by its loud whistle.

86. ***Numenius phæopus*** (Whimbrel).

On 4th August, when midway between Kincaig and Alvie, one passed over my head, flying in a southerly direction. It was calling loudly.

87. ***Numenius arquata*** (Curlew).

Frequently seen in small parties about Loch Inch and on the meadows and pastures. On 6th August several groups were seen flying high in a southerly direction, and calling.

88. ***Larus fuscus*** (Lesser Black-backed Gull).

A few were observed near Aviemore on 6th August, and a pair about Loch Inch on the 20th.

89. ***Larus ridibundus*** (Black-headed Gull).

Both old and young were frequently seen during the first fortnight of August. In Kingussie they were flying among the houses. Eggs taken near Boat of Garten were shown to me.

90. **Podiceps minor** (Little Grebe).

Three old and four young birds were seen several times on Drimanloch, where three old nests were floating among the *Lobelia Dortmanna* and other water plants. I also saw a Little Grebe on Loch Pithulais.

THE GREAT SKUA (*Stercorarius catarrhactes*); ITS
PRESENT STATUS AS A BRITISH BIRD.

BY HAROLD RAEBURN.

IN the case of a species like the Great Skua, possessing but three breeding-stations within the British Isles, and existing in limited numbers even at those few spots, it is a matter of comparative ease to ascertain the total number that yet remain to us. Unfortunately it is also only too easy to exterminate a bird so utterly fearless of danger as is the skua in the breeding season, and which deposits its eggs in places so easy of access, that even the old women of Foula are able to take part in the plunder of its nest. This year—1890—the persecution which the great skua has been subjected to has been worse than any previous year; and an extremely unpleasant feature—a new one—is the fact that men calling themselves naturalists—I am glad to say there are no Scotsmen among them—have visited the Shetlands and, not content with taking the eggs, have shot the old birds as well, in utter contempt of the provisions of “The Wild Birds’ Protection Act.” I do not alone refer to the proceedings of Mr. Barrington and his party (*cf.* “Zoologist,” Sept., Oct., Nov., 1890), for I have the names of several others who also destroyed great skuas on their breeding grounds this year. If this sort of thing is going to be repeated, then, I think, it will be the duty of Scottish naturalists to take the matter up and put a stop to it by prosecuting the offenders; a conviction would be easily obtained at the Lerwick Court.

Before giving an account of the present state of each colony, I shall briefly recapitulate what we know of the numbers of the great skua existing at its three Shetland colonies in past days.

Foula.—Though this is by far the largest colony at the present time, it would seem that this was not always the case; their increase in this locality being entirely due to the care with which they were protected for a long time by the late Dr. Scott of Melby. About 1770 there appear to have been only a few pairs, for Low, in his "Tour through the Islands of Orkney and Shetland," says, "Six pairs possess the highest ridge of Liorafield . . . penalty for killing, 16s 8d., stg."—a large sum for the locality and date, and shows in what estimation the skua was held. At the beginning of the present century there seems to have been about a dozen pairs, and they have increased since then to their present numbers of about 60 pairs. In a paper on the "Summer Birds of Shetland" (*Proc. Roy. Phys. Soc. Edin.* 1888), I stated the number of skuas then on Foula at only 16 pairs. These figures I got from the proprietor himself, Mr. Scott of Melby, and I accepted them in preference to a report of there being as many as 60 pairs which I heard as long ago as 1884. However, I have estimates this year ranging from 40 to 100 pairs; and giving the preference to those most reliable, we may take the total of the colony at about 60 pairs. This is a large number, but after a long period of immunity the skuas have fallen upon evil days and the numbers have been decreasing for the last year or two.

Unst.—This is now a very much smaller colony than that on Foula, but some years previous to 1861, according to Saxby, it numbered between 50 and 60 pairs. By 1870 these had been reduced to 5 or 6, and the colony has remained at about that number ever since; the figures for the last seven years showing a slight increase as the following statistics show:—1884, 5 pairs; 1885, 6 pairs; 1886, 7 pairs; 1887, 8 pairs; 1888, 8 pairs; 1889, 8 or 9 pairs; 1890, 9 pairs.

Northmavin.—This was originally, perhaps, the largest of the three stations, but being the most accessible, has suffered in proportion. The credit, or rather discredit, of the destruction of this colony is usually laid upon Dunn, the author of the "Ornithologists' Guide to the Islands of Orkney and Shetland;" but this charge he

endeavours to deny, laying the blame upon some other tourists from the south, and upon the officers of a revenue cutter which was stationed near the locality for some time. Whoever was to blame, the fact remains that the skuas were reduced from "great numbers" till they became in 1837 "almost extinct." They do appear to have been entirely banished shortly after, and when Saxby's "Birds of Shetland" was published in 1874 they had apparently not returned. For about the last ten years, however, a pair or two have annually attempted to breed on the old ground, and an egg was certainly hatched in 1885. This year, 1890, no less than 4 or 5 pairs have made the attempt to rear their broods, but the treatment they have received has certainly not been of a kind to encourage them. Eggs have been taken and old birds shot in June, and in July the only pair of young hatched were carried off.

Summing these totals up, we get about 75 pairs as the entire number of great skuas at present nesting on British soil. This number is quite sufficient to keep this interesting bird on the list of our breeding species, if—and this is imperative—they only receive some measure of protection from dealers and quasi-scientists on their breeding grounds.

LIST OF ROTIFERA FOUND WITHIN A RADIUS OF TWENTY MILES ROUND DUNDEE.

(Read at the Meeting of the E.S.U.N.S. at Montrose in 1890.)

BY JOHN HOOD, F.R.M.S.

ORDER I.—RHIZOTA.

FAMILY.—*FLOSCULARIIDÆ*.

GENUS.—*Floscularia* Oken.

1. **F. ambigua** Huds. In marshes on *Sphagnum*, *Ranunculus*, and other aquatic plants.
Forfar, Fife, Perth. Common.
2. **F. algicola** Huds. Found only in a parasitic alga (*Gloio-trichia pisum*), on leaves and stems of various aquatic plants. Rare.
Stormont Loch, Perth.

3. **F. annulata.** On *Sphagnum* in marshes. Rare.
Tents Muir in Fife, Forfar.
4. **F. campanulata** *Dobie.* Common on *Ranunculus* and other aquatic plants.
In every loch in Fife, Perth, and Forfar.
5. **F. cornuta** *Dobie.* Common in ponds, lakes, and marshes.
Perth, Forfar, Fife.
6. **F. spinata.** (Yet undescribed), 5 lobed. Rare.
Marsh at Lundie, Forfar.
7. **F. calva** *Huds.* On *Sphagnum* and *Myriophyllum.* Rare.
Fife (Loch Lundie, Tents Muir), Forfar.
8. **F. coronetta** *Cubitt.* On *Sphagnum.* Rare.
Pond near Dundee, Forfar, marsh on Tents Muir, Fife.
9. **F. cyclops** *Cubitt.* On *Ranunculus, Sphagnum.* Not common.
Camperdown Fish Ponds, near Dundee, Tents Muir.
10. **F. edentata** *Collins.* On *Myriophyllum.* Rare. *J. H.*
Black Loch.
11. **F. Hoodii** *Huds.* On *Myriophyllum* and *Sphagnum.*
Rare.
Tents Muir, Loch Lundie, Fife, Forfar.
12. **F. longicaudata** *Huds.* On *Sphagnum* and *Ranunculus.*
Not common.
Fife, Forfar, Perth.
13. **F. ornata** *Ehr.* Common in lakes, ponds, and ditches; on *Myriophyllum* and other aquatic plants.
In tide-pools; Firth of Tay, on *Conserva.*
14. **F. trilobata** *Collins.* Common on *Ranunculus, Myriophyllum,* and *Sphagnum.*
Loch Lundie, and lochs around Blairgowrie.

GENUS.—**Stephanoceros** *Ehrenb.*
15. **S. Eichhornii** *Ehr.* In marshes. Not common.
Black Loch, Stormont Loch, Perth.

FAMILY.—*MELICERTIDÆ.*

GENUS.—**Melicerta.**

16. **M. Janus** *Huds.* Common on *Myriophyllum* and *Ranunculus.*
Lakes in Fife, Forfar, and Perth.

17. **M. conifera** *Huds.* In ditches and marshes on *Nitella* and *Ranunculus*. Sometimes in great numbers, but usually rare.
Tents Muir.
18. **M. ringens** *Schrank.* Common in ponds, ditches, and marshes on *Ranunculus* and other aquatic plants.
Perth, Forfar, Fife.
19. **M. tubicolaria** *Ehr.* Rare; on *Ranunculus*.
Pond near Dundee, Forfar (rare).

GENUS.—**Limnias** *Schrank.*

20. **L. annulatus** *Bailey.* Rare; on *Myriophyllum*.
Ponds near Dundee, Forfar.
21. **L. Ceratophylli** *Schrk.* Common on *Myriophyllum* and *Chara*.
In ponds near Dundee, Forfar.

GENUS.—**Cephalosiphon** *Ehrenb.*

22. **C. candidus** *Huds.* Very rare; on *Ranunculus*.
Loch Lundie, Forfar.
23. **C. limnias** *Ehr.* Rare; on *Myriophyllum*.
Loch Lundie, Forfar.

GENUS.—**Æcistes** *Ehrenb.*

24. **Æ. brachiatus** *Huds.* Black Loch and Rosemont Loch. Sometimes in large numbers, but not usually common.
25. **Æ. algicola.** Stormont and Lindores Lochs. This makes its home in a globular parasitic alga (*Gloiotrichia pisum*), on which it is not rare. This has also been named by Dr. Kellicott *Æ. muciola*.
Stormont and Lindores Lochs.
26. **Æ. minutus.** Not common; on *Myriophyllum* and *Confervæ*. *J. H.*
Loch Lundie.
27. **Æ. crystallinus** *Ehrenb.* Common in ponds on *Ranunculus*, *Myriophyllum*, and other aquatic plants.
Fife, Perth, and Forfar.
28. **Æ. intermedius** *Davis.* In ponds on *Ranunculus* and other aquatic plants. Sometimes in great numbers, but usually uncommon.
Perth and Forfar.

29. **Æ. longicornis** *Davis*. In marshy pools on *Sphagnum* and *Ranunculus*.
Common in Perth and Fife.
30. **Æ. pilula** *Wills*. In marshy pools on *Sphagnum*.
Common in Perth, Forfar, and Fife.
31. **Æ. stygis** *Gosse*. On *Ranunculus* and *Myriophyllum*. Rare.
Black Loch, Perth.
32. **Æ. serpentinus** *Gosse*. On *Myriophyllum*. Rare.
Black Loch.
33. **Æ. umbella** *Huds*. In marshy pools on *Sphagnum*. Not
common.
In Fife and Perth.
34. **Æ. ptygura** *Huds*. Prolific in my aquarium during the past
four years. Rare.
35. **Æ. velatus** *Gosse*. On *Myriophyllum*. Rare.
Pond near Dundee.

GENUS.—**Conochilus** *Ehr.* (Free Swimmer.)

36. **C. volvox** *Ehr.* Common in marshy pools.
Tents Muir, Fife ; Stormont Loch, Perth.

ORDER 2.—**B D E L L O I D A.**

FAMILY.—*PHILODINIDÆ.*

GENUS.—**Philodina** *Ehr.*

37. **P. aculeata** *Ehr.* In ponds and marshy pools. Not
common.
Fife and Forfar.
38. **P. citrina** *Ehr.* Not plentiful, in lochs around Blairgowrie
and near Dundee.
39. **P. erythrophthalma** *Ehr.*
Very common in ponds and ditches throughout Perth,
Forfar, and Fife.
40. **P. roseola** *Ehr.* In lakes and ponds. Not common.
Perth and Forfar.
41. **P. megalotrocha** *Ehr.* In marshy pools and ponds.
Not rare.
Perth, Forfar, Fife.
42. **P. microps**, new species. In salt water in rock-pools.
Rare.
Carnoustie, Firth of Tay.
43. **P. tuberculata** *Gosse*. In marshes on Tents Muir. Rare.

GENUS.—*Rotifer Schrank.*

44. *R. macrurus* *Schr.* In ponds, ditches, and marshes. Common.
Fife, Forfar, Perth.
45. *R. macroceros* *Gosse.* In lakes and ponds; fond of fixing their feet to the leaves of *Myriophyllum* and other aquatic plants. Common.
46. *R. tardus* *Ehr.* In marshes, ponds, and lakes. Fairly common.
Perth, Forfar, Fife.
47. *R. vulgaris* *Schr.* In ponds and ditches and in sea-waters of the Tay. Common.

GENUS.—*Actinurus Ehr.*

48. *A. Neptunius* *Ehr.* In a ditch near Dundee. Very rare.

GENUS.—*Callidina Ehr.*

49. *C. bidens* *Gosse.* In marshy pools and ditches of green colour. Not uncommon.
Perth and Forfar.
50. *C. elegans* *Ehr.* In ponds and ditches among *Conferva*. Common.
Perth, Fife, Forfar.
51. *C. bihamata* *Gosse.* In marshy pools. Not common.
Tents Muir.

FAMILY.—*ADINETIDÆ.*GENUS.—*Adineta Hudson.*

52. *A. vaga* *Davis.* Very rare in a small pool near Dundee.

ORDER 3.—*PLOIMA.*FAMILY.—*MICROCODIDÆ.*GENUS.—*Microcodon Ehr.*

53. *M. clavus* *Ehr.* Black Loch (rare).

FAMILY.—*ASP LANCHNIDÆ.*GENUS.—*Asplanchna Gosse.*

54. *A. Brightwellii* *Gosse.* Rare in pond in Pitcaro Wood.

55. **A. marina** *Gosse*. Tide Pool, Firth of Tay. Rare.

GENUS.—**Asplanchnopus**.

56. **A. myrmeleo** *Ehr*. In a ditch, Tents Muir, in 1836. This was the first time it had been found in Britain.

GENUS.—**Sacculus** *Gosse*.

57. **S. viridis** *Gosse*. In Black Loch. Very rare.

FAMILY.—**SYNCHAETIDÆ**.

GENUS.—**Synchæta** *Ehr*.

58. **S. baltica** *Ehr*. Sometimes abundant in Firth of Tay.
59. **S. gyrina**. In Firth of Tay. Abundant in Spring. *J. H.*
60. **S. longipes** *Gosse*. Numerous in a pond in Emmock Wood, but elsewhere not common.
61. **S. pectinata** *Ehr*. In lochs, ponds, and marshes. Not rare.
Perth, Forfar, Fife.
62. **S. tremula** *Ehr*. In ponds, ditches, and lochs. Common.
Perth, Forfar, Fife.

(To be continued.)

ON THE FLORA OF SHETLAND.

BY WILLIAM H. BEEBY.

LAST summer's work in Shetland completed the fifth year of my investigations there; and I propose on the present occasion to give a rough *resumé* of what has been done, as well as of the present state of our knowledge respecting the Flora of that distant and scattered county.

The species observed growing there by myself number altogether about 365, every one of which is represented in my Shetland Herbarium, together with numerous varieties, forms, and states. Besides these there are some 15 other species, dried examples of which have been seen, or which are sufficiently vouched for; and

there are also some 30 species recorded, and likely to be confirmed, but at present not sufficiently vouched for. These three groups together give a total of 410 species; and, considering that every new district visited hitherto has contributed its quota of new records, I am disposed to estimate the Shetland Phanerogams, Vascular Cryptogams and Characeæ, at about 450 species. There are also about 75 additional species recorded. These records consist, to a small extent, of mere casuals; but, for the most part, I believe, of errors.

Comparing the above estimate with the Flora of Orkney, we find that Mr. Irvine Fortescue's list (*Scott. Nat.*, 1882-3) enumerates 494 species; but many of these are of extremely doubtful occurrence; and applying to this list the same rigid scrutiny that has been brought to bear on the Shetland lists, and allowing for a few species since recorded, I should accept 450 species as representing the Orkney Flora as at present known. When fully worked, the Orkneys may be expected to yield some 50 more species than Shetland; the difference being made up, to a large extent, of naturalised cornfield weeds, etc.

The districts visited last August were Dunrossness and Walls. The first comprises the southern portion of the Mainland, including Spiggie and Quendal, where *Carex incurva* grows so abundantly on the sand tracts that here cover so large a part of the country. As anticipated, this district produced several plants which are not found farther north in these islands; but *Daucus Carota*, *Hieracium Pilosella*, and several other common plants which were expected, were not met with. Walls lies on the west side of the Mainland; and is remarkable for the innumerable lochs, large and small, which occur in the district; between 30 and 40 of these were examined, though in many cases but partially. Many of the larger lochs contain small islands or holms; and these are of special interest, as they alone preserve many plants which around the shores of the lochs are eagerly devoured by the sheep. I reached one of these holms by wading, and another by swimming, and I hope at some future time to examine them more closely; but to do this a portable boat is required, as most of the lochs have no boat on them. While at Walls, the island of Vaila was visited, but on it neither *Dianthus deltoides* nor *Rhynchospora alba* was found. It may be remarked that here the Thrift (*Armeria*) is known by its other name of Sea-pink; and this may possibly

have given rise to the record of the *Dianthus* as a plant of Vaila Island. Both of these Vaila records certainly require confirmation.

In all a good number of new county records were made, and an interesting *Carex* and *Potamogeton* were gathered, neither of which is yet fully determined. The following abbreviations are used:—

D. = District of Dunrossness.

W. = District of Walls.

‡. = Not recorded for the county in *Top. Bot.*, Ed. II., or in Bennett's *Additional Records*, unless with some form of query.

‡ **Batrachium Baudotii**.—D. Abundant in the north end of the Loch of Spiggie, close to the sea; sparingly in other parts of the loch, and in Brue and Hillwell Lochs. Mostly in the earlier stages of growth, with copious flowers, and submerged leaves, but no floating leaves or fruit; a few plants were found in very shallow pools, with plenty of ripe fruit and floating leaves, but with the submerged leaves mostly decayed.

‡ **B. trichophyllum**.—W. Stony bottom of Kirkiegarth Loch, rather frequent.

‡ **B. hederaceum** Dum.—D. In a ditch at Skelberry, and in a good many other places in the southern part of the district; not seen north of Levenwick.

‡ **Ranunculus Steveni**.—This is generally commoner than *R. acris* (*Borœanus*) in the Islands. When growing on dry ground it is a remarkably hairy, almost hispid plant, with comparatively few stout stems, and a strong creeping rhizome; when growing beside streams, etc., the plant is glabrid, and produces innumerable slender stems from the densely interlacing rhizomes. This latter state grows in large masses, and differs much in appearance from the dry-ground plant. Cultivation of the two states indicates that the differences between them are due to situation alone. The so-called "*R. acris* var. *pumilus*" belongs to this species. I first gathered it near Roeness Voe in 1886, when it was so named. As, however, it was obvious that it did not belong to *R. acris*, I have deferred recording it until further attention had been paid to the Shetland species. I doubt much whether it is entitled to rank as a variety of *R. Steveni*, and am more inclined to think it an alpine state of the type—an extreme state, in fact, of

the wet-ground plant—the difference again being due to local causes. Mr. F. Townsend also, who has looked over my Shetland *Ranunculi*, suspects, from observations on these *pumilus* forms in Scotland and elsewhere, that “they are but states caused by situation, climatic conditions,” etc. I have not, however, grown this form yet in cultivation.

R. acris L.—This extends from north to south, but seems confined to the sand tracts, and to dry, grassy hillsides near the sea.

Nymphæa alba L.—Recorded from one locality by Edmondston; it also occurs near Walls in Lunga Water, Bunya Water, and in a small loch near Brunatwatt.

‡ **Papaver Lamottei** Bor.—D. Field at Exnaboe, near Sumburgh. Only the aggregate *P. dubium* previously recorded.

‡ **Sinapis alba** L.—W. A weed in cultivated fields.

‡ **Subularia aquatica** L.—W. Rather abundant in a quiet corner of Bardister Loch.

Cochlearia officinalis L.—D. On the shore at Spiggie; this is the first time that I have seen the typical plant in the Islands.

‡ **Arenaria serpyllifolia** L.—D. On dry banks on both sides of Quendal House; and in a stubble field at Exnaboe.

‡ **Radiola linoides** Gmel.—D. Moor at Skelberry; moor by Brue Loch.

‡ **Geranium Robertianum** L.—D. Abundant on the stony shore near Boddam; the locality was pointed out by Mr. Isbister.

Callitriche stagnalis Scop.—D. I met with this for the first time in a running ditch at Bakkasetter.

‡ **Arctium intermedium** (Lange)?—D. In grassy places, on Sumburgh Links. Only the old aggregate, *A. Lappa*, which includes our four species, is recorded in *Top. Bot.* Owing to their immature condition, I could not determine the plants with certainty. I believe it to be referable to the above, though possibly it may belong to *A. nemorosum*.

Sonchus oleraceus L.—D. A garden weed at Boddam; certainly a very uncommon plant in Shetland.

‡ *Veronica persica* Poir.—D. Abundant as a garden weed at Boddam, whence it will doubtless spread.

‡ *Rhinanthus major* Ehrh.—D. Cornfield at Ringasta, apparently established. Queried in *Top. Bot.*, Edmondston's records being very doubtful.

‡ *Mentha hirsuta* (L.) Syme.—The Tingwall plant (*vide Scott. Nat.*, 1889., p. 36.) proves to be the above species. Though I did not see it in flower, a plant which is evidently the same species occurs plentifully about the Loch of Spiggie and Loch Brue, in Dunrossness.

Stachys ambigua.—Having had some doubts about the Shetland plant, I brought home roots in 1889. It proves to be quite sterile in cultivation; and is doubtless *S. sylvatica* × *palustris*.

‡ *Myosotis palustris* L. var. *strigulosa* (Reich.)—D. Abundant in swamps about Hillwell Loch, and beside ditches, etc., thence towards Loch Brue. The Shetland plant is remarkable for the very deep blue colour of the flowers when growing.

‡ *Utricularia minor* L.—W. Abundant in pools on the Cloka Burn; Bunya Water; Burga Water.

‡ *U. intermedia* Hayne.—D. Pools about Loch Brue, and the south end of the Loch of Spiggie, along with *U. vulgaris*.—W. Pools on the Cloka Burn, with *U. vulgaris* and *U. minor*; Bunya Water.

‡ *Rumex acutus* L.—Upper end of Tingwall Loch, near Scalloway (1888). This plant differed slightly from the southern form; and I have therefore awaited a confirmation of my determination before recording it.

R. propinquus J. E. Areschoug. Referring to my note (*Scott. Nat.*, 1890, p. 300), I now give the following localities for this plant:—Balta Sound, Unst; and about Scalloway and Tingwall, abundant.

R. conspersus Hartm.—The records must be restricted to the following stations:—Baliasta, Unst; beside Asta Voe, Scalloway.

‡ *Euphorbia Peplus* L.—D. An abundant garden weed at Boddam.

Potamogeton (polygonifolius × *heterophyllus* ?)—W. A remarkable pond weed occurred plentifully in the Burn.

from Brousta Loch. It bears considerable resemblance to deep-water states of *P. polygonifolius*; but differs from that species in the shape, and texture when fresh, of the submerged leaves; and also in producing hardly any floating leaves when growing in still, shallow water. The few floating leaves produced are much thinner and less coriaceous. It has been referred with considerable confidence to *P. plantagineus*; while *P. natans* × *heterophyllus* has also been suggested. My own opinion is expressed above as to the origin of the plant; but what it really is must at present be held to be uncertain.

P. pusillus L.—W. Pools on the Cloka Burn, not in fruit, but apparently the typical plant, and considered probably to be so by Mr. Bennett.

‡ Var. **rigidus** Ar. Benn.—W. Bardister Loch, plentiful. Mr. Bennett reports: “the same as Dr. Trail’s Orkney plant. Your specimens are small, and the leaves are shorter than in the full-grown Orkney plant.”

Zannichellia polycarpa Nolte.—W. Bardister Loch; the second locality recorded for the county.

‡ **Scirpus multicaulis** Smith.—W. Bogs on the hills between Burga Water and Snarraness Voe.

‡ **S. fluitans** L.—W. Cloka Burn, a mile above Walls; Burga Water; burn running from Houllma Water into Grass Water.

Carex rigida Good. ?—W. An interesting *Carex* occurred plentifully on a holm in a loch on Gibbie Law’s Burn. Mr. A. Bennett has considered it to be probably a lowland form or state of the above, an opinion in which I concur. Whether it is referable to any named variety, or whether it be a variety or merely a state due to situation, must remain open questions for the present. I cannot give the exact altitude of the station, but it is a little under 100 feet. I have never before met with the species at so slight an elevation, although on the north side of Roeness Hill a slender form (*C. hyperborea* Drejer?) occurs at an elevation of 300 or 400 feet.

I am quite unable to concur in the views expressed by Prof. L. H. Bailey, who (*Journ. Bot.*, 1890, p. 171) unites *Carex rigida* and *Carex Goodenovii*, regarding them as being only varietally distinct; and I submit that Dr. Boott (cited by the Professor) has not “shown” this to be the case.

REPORT FOR 1890 ON THE FUNGI OF THE EAST OF SCOTLAND.

(Read at the Meeting of the E.S.U.N.S. at Montrose in 1890.)

BY PROF. JAMES W. H. TRAIL, A.M., M.D., F.L.S.

MY Report on this occasion for the first time includes the Province of "Forth;" the species now recorded for that district were collected by myself in Fifeshire in August, 1889.

The additions here recorded from "Tay," were collected partly in Fifeshire in August, partly near Perth in October, 1889, and I have also included a few found at St. Cyrus in July, 1890. The records for "Dee" are fewer than usual, owing to want of leisure to work up the accumulations of material awaiting scrutiny. I have included in this list a few species recently published by others; and in each case the reference to the place of publication is given. I include a few species found by me since this list was read in July, 1890. The names of those species that had not been recorded from Scotland previous to my last Report, *viz.*, that for 1889, are marked with an asterisk.

PROVINCE OF FORTH.

UREDINEÆ.

Uromyces Valerianæ (*Schum.*) Winter, on *Valeriana officinalis*;
Largo Law.

U. Anthyllidis (*Grev.*) Schr., on *Anthyllis Vulneraria*; Kincaig.

Puccinia Poarum *Niels.*, on *Poa pratensis*, and on *P. trivialis*;
and with it *Æcidium Tussilaginis* on *Tussilago Farfara*.
Common in August along the Fife shore of the Forth.

P. Baryi (*B. & Br.*), on *Brachypodium sylvaticum*; Kincaig
near Elie.

P. Lapsanæ (*Schultz*), on *Lapsana communis*, near Dunfermline.

P. Lychnidearum *Link*, on *Lychnis diurna*; near Largo.

P. Tanaceti (*D. C.*) *Cooke*, on *Artemisia Absinthium*; at Kincaig.

(This has already been recorded from Charleton by Rev.

J. Fergusson, on *Tanacetum vulgare*, as *P. discoidearum*.)

**Uredo Symphyti* *D. C.*, on *Symphytum officinale*; plentiful on
a plant by the road between Queensferry and Dunfermline.

USTILAGINEÆ.

Ustilago longissima (Sow.) Tul., on *Glyceria aquatica*; Longannet Point beside the Forth, above Culross.

PERISPORIACEÆ.

Erysiphe Umbelliferarum De Bary, on *Heracleum Sphondylium*; Abundant.

PYRENOMYCETES.

Venturia Potentillæ (Fr.) Che., on *Potentilla Anserina*; near Dunfermline.

Sphærella micropsila (B. & Br.) Cooke, on *Epilobium montanum* in Kiel's Den, near Largo.

Asterina Veronicæ Lib. on *Veronica officinalis*, in Kiel's Den.

ASCOMYCETES.

Mollisia Trifolii (Bernh.), on *Trifolium repens* and *T. pratense*; near Dunfermline and at Milnathort.

PERONOSPOREÆ.

Peronospora alta Fekl., on *Plantago major*, near Dunfermline. Reported by me in 1888 from near Callander, but wrongly referred to Tay.

P. affinis Rossm., on *Fumaria officinalis* at Milnathort.

**P. Schleideni* Unger, on Onions, near Edinburgh. (W. G. Smith, from specimen sent by W. Sutherland; *Gard. Chron.* 16th Nov. 1888, p. 755.)

SPHÆROPSIDÆÆ.

Ascochyta cornicola Sacc., on *Cornus sanguinea*; Lahill, near Largo.

Asteroma Ulmi Klotzsch, on *Ulmus montana*; near Largo.

Septoria Stachydis R. & D., on *Stachys sylvatica*; near Culross, &c.

MELANCONIÆÆ.

Glæosporium Ribis (Lib.) R. & D., on *Ribes nigrum*, Lahill, near Largo.

Cylindrosporium Oxalidis Trail, on *Oxalis Acetosella*; at Lahill.

HYPHOMYCETES.

Ovularia sphæroidea Sacc., on *Lotus major*; near Culross.

O. obliqua (Cooke) Sacc., on *Rumex* sps.; abundant.

Ramularia Ajugæ Niessl, on *Ajuga reptans*; near Largo.

- R. calcea** (*Desm.*) *Ces.*, on *Nepeta Glechoma*; on Castle Island, Loch Leven.
- R. Epilobii** (*Schn.*), on *Epilobium montanum*; near Dunfermline.
- R. pratensis** *Sacc.*, on *Rumex Acetosa*; near Culross, &c.
- R. Taraxaci** *Karst.* on *Taraxacum officinale*; near Milnathort.
- Fusicladium depressum** (*B. & Br.*), on *Angelica sylvestris*; near Culross.
- Cladosporium Asteroma** *Fekl.*, on leaves of *Populus alba*; near Culross.
- Cercospora Mercurialis** *Pass.*, on *Mercurialis perennis*; near Largo.
- Isariopsis carnea** *Oud.*, on *Lathyrus pratensis*; near Dunfermline.
- Isaria arachnophila** *Fr.*, on a spider; near Culross.

PROVINCE OF TAY.

UREDINEÆ.

- Uromyces Anthyllidis** (*Grev.*) *Sch.*, on *Anthyllis Vulneraria*.
St. Andrews.
- U. Behenis** (*D. C.*) On *Silene maritima*, on the beach at St. Cyrus, the *Æcidium* occurred in July.
- Puccinia Porri** (*Sow.*). Not rare on *Allium vineale* at St. Cyrus in July.
- P. Poarum** *Niels.* Common on *Poa pratensis* and *P. trivialis*.
- P. Sonchi** *Rob.* Uredospores on *Sonchus asper*, on the beach at St. Cyrus in July.
- P. Schneideri** *Schröter*, deforming stems of *Thymus Serpyllum*, on the Links of St. Cyrus, in July.
- P. paliformis**, *Fekl.* on *Koeleria cristata*, on Kinnoull Hill near Perth, in autumn.
- P. Malvacearum** *Mont.*, on *Malva sylvestris*, at Leuchars in August, and on *Althæa rosea* (Hollyhock), at Craigo near Montrose (*F. B. W.*).

USTILAGINEÆ.

- (**Tilletia Tritici** (*Bjerk.*), = *T. Caries* *Tul.* was most abundant in August in wheat fields near St. Andrews, and must prove very injurious to the value of the crop. This species has been previously recorded from "Tay," as well as from other districts; but I have not previously met with it myself.)

PERISPORIACEÆ.

Exoascus aureus (Pers.) Sadeb., on *Populus nigra*; Drumcarrow, near St. Andrews.

PERONOSPOREÆ.

Peronospora affinis Rossm., on *Fumaria officinalis*; near Perth.
 P. *alta* Fekl., on *Plantago major*; near St. Andrews.
 P. *densa* Rabh., on *Rhinanthus major*; Tents Moor.
 P. *obovata* Bon., on *Spergula arvensis*; near Perth.
 P. *Scleranthi* Rabh., on *Scleranthus annuus*; near Perth.

HYPHOMYCETES.

**Polyactis galanthina* B. & Br. on *Gal. nivalis* at Glamis Castle. (J. S., in *Gard. Chron.* 4th May, 1889, p. 365) in end of February. This is very closely related to, if really distinct from *P. cana*, K. & S.

Ramularia didyma Unger, on *Ranunculus repens*; Leuchars.
 R. *Epilobii* (Schn.), on *Epilobium montanum*; Drumcarrow.

R. *pratensis* Sacc., on *Rumex Acetosa*; common.

R. *sambucina* Sacc., on *Sambucus nigra*; near St. Andrews.

R. *Taraxaci* Karst., on *Taraxacum officinale*; near St. Andrews.

R. *Urticæ* Ces., on *Urtica dioica*; Leuchars.

Fusicladium dendriticum, on apples; St. Cyrus, in July.

**Hymenula rubella* Fr. On dead leaves of *Typha latifolia*, in loch at Drummond Castle, near Crieff, in September.

PROVINCE OF DEE.

DISCOMYCETES.

**Hymenoscypha amenti* (Batsch), on decaying catkins of *Salix aurita*; Den of Maidencraig, near Aberdeen, in January.

H. *eburnea* (Rob.), on corns of *Arrhenatherum avenaceum*, in Braemar in April.

**Lachnea protracta* (Fr.) Phill. *in litt.* Growing in groups, among grass on the north bank of the Dee, a short distance above Ballatèr in April. Stunted fir trees were scattered sparingly over the sward where this very handsome addition to the British flora grew in fair abundance. Mr. Phillips has described it in *Grevillea* (1890, p. 83) under the name *L. mirabilis* (Borszc.), and it is mentioned by myself under

that name, following his authority, in *Scot. Nat.* 1890, p. 384, with a reference to Wettstein's excellent figure and description under the name *Anthopeziza Winteri*. Both names must yield place to the earlier name, given by E. Fries (*Nov. Symb. Mant.*, p. 230).

**Tapesia sanguinea* (*Pers.*), on dead wood of *Populus tremula*, in Braemar, in April; and of *Rosa canina*, near Ballater in April.

**Propolis Rosæ* *Fckl.*, on dead twigs of *Rosa canina*, near Ballater, in April.

PYRENOAMYCETES.

Lophodermium hysterioides (*Pers.*), (*Hysterium foliicolum* *Fr.*), common, in May, on dead leaves of *Cratægus Oxyacantha*, beside the Dee at Cults, near Aberdeen.

**Nectria mammoidea* *Ph. & Pl.*, on dead stump of *Ulex europæus*, near Aberdeen, in November.

SPHÆROPSIDÆÆ.

**Dendrophoma pruinosa* (*Fr.*) *Sacc.*, in twigs of ash (*Fraxinus excelsior*), near Aberdeen, in November.

HYPHOMYCETES.

Fusicladium dendriticum (*Wallr.*) *Fckl.*, on leaves and fruits of apples (*Pyrus Malus*), near Aberdeen, in summer and autumn.

Illosporium roseum (*Schreb.*) *Mart.*, on lichens (*Parmelia*), on branches of Ash, near Aberdeen, in November.

GASTROMYCETES.

Mr. George Masee, in his "Monograph of the British Gastromycetes" (*Annals of Botany*, Vol. IV. part xiii. 1889), notes the following from Aberdeenshire (all being new records for "Dee"), as seen by himself (? in the Berkeley Herbarium).

Lycoperdon cælatum *Bull.*, Aboyne (*l.c.* p. 74).

**L. echinatum* *Fr.* In open places among woods, Aboyne (*l.c.* p. 67).

L. pusillum *Fr.* (*Myc. Scot.* 1001), owing to its structure is referred to *Bovista* under the name *B. pusilla* (*Fr.*) *De Toni.* (*l.c.* pp. 65-66).

Scleroderma bovista *Fr.*, Aberdeen (*l.c.* p. 51).

ZOOLOGICAL NOTES.

Badger in Lanarkshire.—On the 18th of April last a full-grown female Badger (*Meles taxus*) was captured on the Dolphington Estate, the property of John Ord Mackenzie, Esq. This makes the third Badger got there during the last two or three years.—CHARLES COOKE, Edinburgh.

The Haunts of the Lesser Shrew (*Sorex minutus*)—This small mammal appears to be rather common in the Edinburgh district; and as so little seems to be known of its haunts and habits, I venture to place the following note on record.

On the 22nd of November last I captured a specimen among heather at an elevation of over 1200 feet on the slopes of the Pentland Hills at Colzium. When first seen it was in an open grassy patch among the heather, but quickly sought shelter in a thick mass of the latter, through which it threaded its way with surprising rapidity.—WILLIAM EAGLE CLARKE.

Black and Alexandrine Rats at Leith.—I have lately had several specimens of these rats brought to me alive which have been captured on vessels while in Leith harbour. The Alexandrine Rat (*Mus alexandrinus*) is abundant on some of the Scotch coasting steamers, indeed, so much so, that the aid of a professional rat-catcher has to be periodically sought to keep its numbers down. The Black Rat (*Mus rattus*) is not so common, but in June last many were captured on a Leith steamer, and specimens brought alive to the Museum.—WILLIAM EAGLE CLARKE.

The Reed Warbler, Lesser Whitethroat, Marsh Titmouse, and Woodpeckers, as Scottish Birds.—To “The Ibis” for October last, Mr. Seebohm contributes a paper on Irish Ornithology, in which, among other things, he contrasts the avifauna of the Sister Isle with that of Great Britain, and proceeds to draw some interesting, but speculative, conclusions therefrom.

I beg to draw the attention of Scottish Ornithologists to some of Mr. Seebohm’s statements concerning the status, etc., of certain species in Northern Britain—statements which it is thought they will scarcely accept as correct, although emanating from so high an authority.

Regarding the Reed Warbler, and the Lesser Whitethroat, Mr. Seebohm remarks:—“The Reed Warbler (*Acrocephalus streperus*) and the Lesser Whitethroat (*Sylvia curruca*) are very doubtfully recorded from Ireland, though they are common, if local, in England and in many parts of Scotland.” That the Reed Warbler is common locally in many parts of Scotland is a very surprising statement. Indeed I make bold to ask if there is a single thoroughly reliable instance of the bird’s occurrence in the country—an occurrence backed by an example of the bird, or by the examination of a specimen, undoubtedly obtained in Scotland, by a competent ornithologist? As to the Lesser White-

throat, I am not aware that it is common in any, much less many, parts of Scotland.

The Marsh Titmouse (*Parus palustris*), we are told, is "very rare" in the north and east of Ireland, and unknown in the south and west of that country; and then Mr. Seebohm proceeds to say that curiously enough it is almost as rare in Scotland as in Ireland. That the Marsh Titmouse is abundant in some districts, at least, of this country is well shown by Mr. William Evans in his interesting paper on the birds of the Spey District, at page 8 of this number of "The Scottish Naturalist."

In his remarks on the Woodpeckers, Mr. Seebohm is more satisfactory, but still, so far as they apply to one species, his remarks are not correct. Of the Green Woodpecker (*Gecinus viridis*) he says it can only be regarded as a rare and accidental visitor to Ireland and Scotland, and this is no doubt correct. The Lesser Spotted Woodpecker (*Dendrocopus minor*), and the Great Spotted Woodpecker (*Dendrocopus major*), are described as very rare in Scotland. This is also true as regards the former species. Of the latter, however, although it is questionable if the bird is now resident in Scotland—and is, perhaps, more than rare, in this respect—yet it is, in some years, almost common during the autumn as an immigrant from Continental Europe, and tarries for a considerable time with us.

The object of these criticisms is to call attention to the fact that the status of these species in Scotland is not sufficiently well known to ornithologists; and to suggest that original information on their distribution in some cases, and the details of their occurrence in others, may be usefully made known, to the advantage of British ornithology, through the pages of our Journal.

WILLIAM EAGLE CLARKE.

Woodcocks in Sutherland.—An unusually large flight of Woodcocks seems to have arrived in Sutherland this year. On our shooting in the centre of the county, when, for the previous fifteen or sixteen years only some half-dozen had been killed in all that time, this year seven and twenty were obtained and a good many more seen. On the whole shooting of some forty or fifty thousand acres there are not a dozen trees, with the exception of perhaps a quarter of an acre just round the lodge. The birds seem to prefer rocky and broken ground with long heather, and, if in such situations there are patches of wettish, natural grass, so much the better, as these indicate good soil, and consequently good feeding. At the same time it is by no means necessary that the two classes of ground should be close together, but Woodcocks will not be found near their feeding grounds *in ordinary weather*, unless there is good cover for them to lie in during the day.

On the east coast of the county, Woodcocks are very fond of lying in patches of bracken mingled with stones and rocks, more especially if the weather be frosty, the harder the frost the better for the sportsman, as thus the more inland situations get frozen up, and the birds are forced to come to warmer and more accessible places, and are then more collected. Snow is a still quicker agent in driving these birds in, as their feeding and resting grounds are then covered, and they take themselves either to the woods, or to the whin and broom bushes so abundant on the coast.

In regard to woods, those composed of birch always hold more birds than do those of fir; indeed, all game seem to prefer birch to the latter, with the exception perhaps of pheasants.

When Woodcocks come to the whin bushes, they always prefer those that are old and hollow in the centre to the thicker, and apparently more shelter-giving ones; the reason for this is that the bird likes to be able to move about in his temporary abode, and get away easily, which he cannot do if the bush is too thick; indeed, in such situations, we have often heard the bird fluttering to get out, when disturbed by the dogs, and then settle down again, until eventually driven out.

In many places on the east coast may be found patches of old natural grass, more or less wet—these form a very great attraction to the Woodcocks, whose borings and droppings may be seen in such places in any direction.

In those steep burns whose sides are more or less covered with bushes and which run roughly, east and west, we have observed that Woodcocks prefer the more northerly and, apparently, colder aspect. This was especially noticeable the other day when beating two such burns, as out of some fifteen or sixteen birds seen, only about three were flushed on that side of the burn which faced south and west, and one or two of these might have come over from the other side when disturbed.

After this long digression, which, however, we trust may have something of interest, if not of novelty, in it, we must finish by making out our original point, *viz.*, that a more than usually large flight of Woodcocks pitched in Sutherland this season.

On Monday, Nov. 17th, after 2.30 p.m. ten Woodcocks were found; on Tuesday 18th, two guns got ten, and several more were seen; and on Wednesday 19th, the same guns shot eighteen, and at least twenty-five were found, probably more.

These numbers may not appear large to many of our readers, no doubt but at the place we are alluding to, so many birds are rarely, if ever seen, except in a storm, and not always then; and, during the three days given above, the weather was very mild and open, and by no means favourable for Woodcock shooting there.

We heard, too, of large numbers having been seen in another very similar locality not far from this, so the flight would appear to have been very general. Beyond the "small dark" bird, and the "large, light-coloured" bird, so often mentioned by sportsmen, we have never noticed any allusion to the variations in the plumage of the Woodcock. Anyone who will take the trouble to examine a lot of these birds hanging up with their backs to the front, will see that they are by no means all shaded and marked alike.—T. E. BUCKLEY, Rossal, Inverness.

Hybrid between Pheasant and Capercailzie.—A hybrid between these species was shot here on 8th of November last. It was observed feeding in a corn field along with some pheasants, and on being disturbed ran a considerable distance before taking wing. It shows very clearly the characteristics of both species in both plumage and shape.

So far as I know, this is the first instance of those species breeding together, and it would be interesting if we could state with certainty how the hybrid is bred. We have, however, no proof of this, and it is impossible to say if it is between a capercaillie cock and pheasant hen, or the reverse. When shooting the wood near where it was shot we saw both cock and hen capercaillie and pheasants, but came upon no more hybrids.—JAMES LUMSDEN, Arden, Alexandria, N.B.

[I have examined this most singular and interesting specimen. In general appearance it resembles a cock capercaillie with the tail of a pheasant; but a closer examination reveals modifications in both characters and plumage due to its mixed parentage.

The head is that of a cock capercaillie, but the bill is rather weak, and the cheeks are naked below the eye, as in the cock pheasant; the beard, however, is well developed. The tarsus is only feathered on its upper part, the lower three-fourths, or more, being scutellate and bearing a nodule in the place of the phasianine spur. The toes are also mainly those of the pheasant, for only the faintest trace is to be found of the lateral horny processes so characteristic of Tetrao. The tail is decidedly cuneate in form, but not so pronouncedly so as in the pheasant, and consists of eighteen feathers.

In colour the feathers of the crown and hind-neck are green with yellowish-grey margins. The sides of the face green with dull yellow patches. Breast glossy green. Feathers of the abdomen and sides with two dull yellow bars and a broad terminal margin of green; giving a blotched appearance, the green largely predominating. The back and scapulars resemble those of a cock capercaillie, but the vermiculations on the feathers are coarser and of a dull yellowish tint. The tail feathers are barred with pale brown on a black ground, and are broadly edged with black. The wings are a mixture of dull yellow and black, and the primaries, on their outer margins, are barred with pale brown, as in the pheasant; the white shoulder mark of the male capercaillie is conspicuous.—ED.]

Curious Site for Ring Dove's Nest.—In April, 1888, I found the nest of a Wood Pigeon (*Columba palumbus*) in a hawthorn bush in a wood near Dumbarton. The height from ground to top of nest was only two feet eleven inches.—ROBERT H. READ, Cathcart, Glasgow.

Early Nesting of the Teal.—On March 3rd, 1889, a shepherd on the moors a few miles south of Glasgow saw a hole in the snow, and, thinking a rabbit might be sitting there, pushed in his arm. To his surprise, however, out flew a Teal (*Querquedula crecca*), and in the hole under a tuft of heather he found its nest containing two fresh eggs.—ROBERT H. READ.

Scaup inland near Glasgow.—From the 2nd to the 8th of this month—November, 1890—was a week of very rough weather, especially along the west coast. On the 6th a duck which had been shot on fresh water near Glasgow was sent to me for identification, and turned out to be a young male

Scaup (*Fuligula marila*). The Scaup is a true sea-duck and seldom comes inland except during very rough weather. I am not aware that it has even been obtained near Glasgow before.—ROBERT H. READ.

Black Tern in the Firth of Forth.—On 2nd October last Mr. J. B. Hunter of Musselburgh shot a young female Black Tern (*Hydrochelidon nigra*) in Aberlady Bay. Mr. Hunter tells me it was a single bird, and was flying over the sands at low tide. The sex was determined on dissection by Mr. Small, Edinburgh, to whom it was sent for preservation. As far as I am aware this is but the fifth that has been obtained in the Firth.—WILLIAM EVANS, Edinburgh.

Hoopoe in East Lothian.—On the 11th August last a dead Hoopoe (*Upupa epops*) was found floating in the east bay, North Berwick, within 200 or 300 yards of the shore, and sent to Mr. Small for preservation. It was a female. When in North Berwick shortly afterwards, I called on the man (M'Donell) who picked it up, and ascertained from him the precise locality and date.—WILLIAM EVANS, Edinburgh.

Opah and Sun-Fish in the Forth.—Fine specimens of these fishes were captured in the Forth estuary about the 12th of October last.

The Opah (*Lampris luna*) was found on Pettycur Sands, near Kinghorn, by a workman. The Sun-fish (*Orthogoriscus mola*) was caught at Aberdour by a boatman, and weighed two-and-a-half hundredweights. About the middle of September I had it reported to me by Mr. Wm. Evans, that several small Sun-fish, about 12 inches in length, had been found stranded on the beach at North Berwick.

Both are of uncommon occurrence in, but neither are new to the Firth of Forth.—WILLIAM EAGLE CLARKE.

Acanthocinus ædilis, L. at Bo'ness-on-Forth.—In the fourth week of September, a male specimen of this fine longicorn beetle was captured in a coal pit at Bo'ness at a depth of 150 fathoms.—JAMES RUSSELL ALLAN, Edinburgh.

[The specimen, which was presented by Mr. Allan to the Edinburgh Museum, had no doubt been imported in the larva or pupa state in pit-battens of fir-wood, probably from Scandinavia. It is thought to be an indigenous species in the fir-forests of the Tay, Dee, and Moray districts.—ED.]

Dasypolia templi in the Forth District.—The Brindled Ochre Moth would appear to be rare in the district, and has been thrice captured by me, namely—one (male) on window at Morningside, Edinburgh, 11th Oct., 1882; one (male) at the lantern, Isle of May Lighthouse, 17th Sept., 1885; and one (female) at rest on trunk of Scotch fir, Bavelaw Wood, near Balerno, 21st April, 1888.—WILLIAM EVANS, Edinburgh.

Is the Range of Noctua sobrina Increasing?—It is about

forty years since *Noctua sobrina* Gn. was first discovered in Britain. The place of its discovery was the neighbourhood of Loch Rannoch, a district where so many boreal and alpine insects have been first detected as British species. For many years after its original capture *N. sobrina* seems to have escaped observation, and continued to be very rare in collections. This appears to have been due to ignorance on the part of collectors of its habits. The majority of species of the genus *Noctua* come readily to "sugar," but at the season at which *N. sobrina* is in the perfect or imago-condition, there are in Rannoch, at least, so many counter attractions in the way of wild flowers, that "sugar" is apt to fail, in great measure, as a bait. Although *N. sobrina* will come to "sugar," yet it has a much greater preference for the flowers of the ling (*Calluna*), and the discovery of this habit, by a collector who visited Rannoch sixteen or seventeen years ago, resulted in furnishing many cabinets with a series of the hitherto rare moth. It still, however, continued to be—so far as our knowledge extended—confined to Rannoch and an adjacent part of Glen Lyon, which were the only recorded British localities till quite recently.

Within the last few years, however, it has been detected in several localities in the neighbourhood of Perth, and still more lately it has been captured in the lowlands of Aberdeenshire.

The point of interest, then, is this—has it always inhabited these recently detected localities, or is it a new-comer?

Some Perth collectors, whose acquaintance with the district extends over many years, seem to be of opinion that it is a recent immigrant. That it is so cannot, of course, be positively affirmed, but it is a fact that one of the localities in which it has been recently captured, is a place whose lepidopterous fauna has been studied, with more than usual care and perseverance, for many years. Hence if *N. sobrina* was always a constituent of that fauna, it is at least curious that it escaped detection for so long a period.

The Continental distribution of the insect is rather extensive. The type occurs in Central Germany, Switzerland, and Central Russia; and a variety has a still wider range, reaching from the Pyrenees to Lapland and eastward to the Altai. The food plant of the larva presents no obstacles to the distribution, since it—the Blaeberry or Bilberry (*Vaccinium myrtillus*)—is common throughout the country.—F. BUCHANAN WHITE, Perth.

Sirex gigas and S. juvenus in South-West Scotland.—

These fine Sawflies are very seldom referred to as indigenous Scottish species. In this neighbourhood they occur annually with more or less frequency. Some years I have had as many as a dozen of *S. gigas*, while in other seasons only an odd specimen or two, but I think for a number of summers past, it has not been altogether absent.

I have never been able to find *S. gigas* in the larval stage, or emerging from the wood in which it had passed its early life. In the case of *S. juvenus* there are at least three localities of the Solway area where it has been found breeding. From Munches in Kirkcudbrightshire, some years ago, a block of larch wood was sent me from which I bred a number of very large specimens, both males

and females. In 1889 *S. juvenus* was noted emerging from trunks of larch trees growing on Closeburne estate in Dumfriesshire at an elevation of over 800 feet, and specimens were sent me for identification. In June of this year, while in a hothouse at Southwick House, Kirkcudbrightshire, the gardener drew my attention to a number of this insect fluttering against the glass roof. They had been emerging daily for some time previously. All I saw were rather small males. They were proceeding from blocks of rough wood that were being used as stands for flower-pots. These blocks had been cut from a silver fir growing in the avenue at Southwick, which had become so sickly and unsightly that it had to be felled. It is extremely probable that the decay of this tree had been caused by the ravages of the larvæ of *S. juvenus*.—ROBERT SERVICE, Maxwelltown.

Testacella haliotidea in Kirkcudbrightshire.—Early last April a fine large specimen of this curious mollusk was found in the Corberry Nurseries here, and I handed it to Mr. Rimmer, F.L.S., author of *Land and Fresh-water Shells of the British Isles*, who informed me that it was of the usual type found in Southern England, and agreed with me in the opinion that it had been accidentally introduced across the border, most likely in hampers of greenhouse plants, or some other nursery goods. Not many days elapsed, however, until numbers more of the slug were picked up in and about the glasshouses in the nurseries. Some of these were a good many yards away from the houses right in the open air. They were in all stages of growth. With a little searching now, a specimen or two can be found at any time, more especially in a large glasshouse in which Tomatoes are grown. Probably they may increase and multiply and so form a permanent colony, for I am not so uncomplimentary to my own faculties of observation as to even hint that they have been here "all along," but quite overlooked until this season. The workmen in the nurseries have christened them "shell back slugs," and they receive with extreme dubiety any statement regarding the food of the slugs in question which is at variance with that orthodox belief of the gardeners' creed, that snails of all sorts are obnoxious beasts to be destroyed at sight! Mr. William Evans tells me there is a previous record of this species in Scotland—in Sang's nurseries, Kirkcaldy. There can be no doubt, I think, looking to the similarity of locality or habitat, that in both instances this interesting slug has been introduced unintentionally from the South.—ROBERT SERVICE.

Wild Cat in Shetland.—Mr. J. G. Laurenson, while shooting rabbits on October 7th, on the cliff east of Bressay Lighthouse, encountered a wild cat, also in pursuit of the rabbit. He shot at the cat and wounded it, when it sprang at him while he was in the act of again firing, and though it received its *coup de grace* by the shot, it tore his wrist. It weighed 15 lbs. and measured 30 inches from the nose to the tip of the tail. (Thomas Marshall, *Zoologist*, 1890, p. 454.)

A Seal in the Clyde.—The unusual occurrence of a Seal being found in the Clyde has recently been reported. The animal is stated to have been shot at a point some two miles above Port Glasgow, and to have weighed 50 lbs. (*Field*, October 11th, 1890, p. 549.)

Increase of Redstarts in West Scotland.—Extraordinary numbers of Redstarts (*Ruticilla phoenicurus*) were observed at Ballachulish in August last; whereas not a single bird was seen there five years ago, although, no doubt, there were a few pairs in the district. (Arthur H. Macpherson, *Zoologist*, 1890, p. 437.)

Buffon's Skua on the Solway.—“A Buffon's Skua (*Stercorarius parasiticus*)—a rare visitor to the western coasts of Britain—has been shot near Carseththorn, on the shores of the Solway. The bird was in immature plumage.” (*Rod and Gun*, Nov. 8, 1890.)

Baltimore Oriole in Shetland.—A bird of this species was captured alive at Balta Sound, Unst, on September the 26th, 1890, by Andrew Anderson, and immediately sent to London for preservation. It was submitted for identification to Mr. Harting, who considers it an immature female, and very properly remarks that it had probably escaped from confinement, since it is often imported as a cage-bird. A bird of this species was also seen at Haroldswick on the same day. (H. Dykes Lloyd, *Field*, Nov. 15th, 1890, p. 746.)

REVIEW.

The Birds of Iona and Mull. By the late H. D. GRAHAM, edited by J. A. HARVIE-BROWN, F.Z.S. Edinburgh: David Douglas, 1890.

This is another of those handsome volumes belonging to the series on the *Vertebrate Fauna of Scotland* at present being issued by Mr. David Douglas. In his preface, the Editor wishes it understood that it should be looked upon in the light of a relief volume, amongst heavier work, affording not only a very pleasant and entertaining notice of the birds of the Sacred Island, but at the same time giving an insight into the fascinating life of a naturalist, who at one time spent so much leisure in their pursuit and study. Much of the substance of this book was communicated during the life of the author in a series of admirably descriptive letters, commencing in 1851, and ranging over twenty years, to his friend and companion, Mr. Robert Gray, and shortly before the death of Mr. Graham, which took place in 1872, he gave consent for their publication, as a memorial of many pleasant years spent in Iona, and a contribution to the Ornithology of Scotland, dedicated to those who, like himself, were imbued with the true spirit of inquiry, and sought their information in the open field.

Unfortunately the unexpected and much-to-be-regretted death of the author of the *Birds of the West of Scotland*, prevented the wishes of his deceased friend being carried out, and thus it fell to the lot of another ornithologist, in the front rank of Scotch naturalists, Mr. J. A. Harvie-Brown, to complete a task which had been commenced by Mr. Robert Gray. That the Editor has done his work ably and well, will, we think, be admitted by all who are competent to judge, and the result has been, these graphic and pleasant pages have at last been published. What, perhaps, will most strike the reader in *The Birds of Iona*, is the author's intense love and appreciation of Nature, as shown in his weird and varied sketches of the wild scenery of those sea-girt islands, which formed his happy hunting-grounds, and in his power of clear and skilful word-painting—indeed, it is impossible not to feel, in reading these chapters, that we have here to do with a real naturalist of rare ability and descriptive power.

In a series of twenty-seven letters, commencing with January, 1852, and filling 152 pages, the author deals with the out-door life of a naturalist and sportsman at all seasons and in all weathers, with life-like notices of his feathered favourites, from that bird of the northland, the charming white-winged snow-flake, cowering amongst winter stubbles, to the wary old whaup squattering in the ooze of the foreshore. Nor was his knowledge confined to land and shore birds; in his boat, the "Scarbh," and a shooting punt, made by cutting an old skiff in two, and usually accompanied by his two little terriers, Dash and Doran, he explored at one time or other all the holes and corners in the neighbouring coasts and islands.

The limits of a short review will only permit mention of a few of the chief points of interest in the book. Fain would we have followed the author to the breeding haunts of the Stormy Petrel, in some of those wild, unfrequented, and fortunately still ratless islands, which surround Iona and Staffa—witness with him the harrying of a raven's nest in a very dangerous cliff—or listen delighted to the long-tailed ducks, the Gaelic name of which is *Lach Bhinn*, or the musical duck, a creature which seems to revel in the uproar of the elements, when the storm is loudest and the waves run mountains high—their voices heard in concert far away at sea, like distant bagpipes or the notes of a bugle—as borne on the breeze, rising and falling—like the syllables—our-o-u-ah! our-o-u-ah! loud, clear, and triumphant between the thunderings of the surf. Then there are the haunts of the rock-doves to be visited, in the granite precipices of Mull, or the basaltic cliffs of Staffa, pierced by innumerable caverns, from the majestic Hall of Fingal to little fairy caves where the cool, white shell-sand is scarce dimpled by the sparkling ripples of the sheltered sea.

Most interesting, too, are the notices of the habits and breeding haunts of the Black Guillemot, either diving in pursuit of small fry or sitting erect on the ledges of the rocks—their plumage a perfect bottle-green with a pure white patch on the wing—brilliant in their red-slippered feet relieved against the black basalt, and scarcely less so the rich orange of the mouth, seen when they gasp out their plaintive, kitten-like mewings—a lovely creature seen in bright sunshine above a summer sea.

Not less bright is the plumage of the Green Cormorant, a common bird in

these western waters—a mixture of green and gold, like the most gorgeous shot-silk raiment, traversed by delicate bands of rich velvet—the beak is of gold, and its eyes living emeralds. He also wears a plume upon his head as a mark of nobility. This plea for the Scart reminds the author of a reply made by a worthy old friend who, for half a century, ruled the glens of Mull with his ramrod. “All God’s works are lovely; every beast and every bird is bonniest of its kind. ’Deed, sir, and the Hoodie Crow hersel’ is a pratty, pratty beast, if it werena that she’s just *vermin*.”

We confess at first we were somewhat at a loss to understand the energy displayed by Mr. Graham, at all times, in the pursuit of the gorgeously attired Scart. Could it be for the pure love of slaying so beautiful a thing? The matter was made plain to us later in the chapter—“keep a sufficiently long time, skin off his jacket, and make him into soup. It requires a couple to make it good, and then I defy the Court of Common Council or a jury of Aldermen to detect the difference between it and the finest hare soup.” A fact, no doubt, new to many, but one which the Editor, in a footnote, most cordially endorses.

In 1852, Mr. Graham knew of three nests of the Chough in Iona, one of these was placed near the top of the great Tower of St. Columba’s venerable shrine; also several other pairs nested, at this date, on the rocks of Mull. It is a matter of regret, as mentioned by Mr. Harvie-Brown, that this quaint and charming bird has now ceased to occupy any of the sites mentioned. Formerly the natives called it St. Columba’s bird, which is suggestive of its once having bred about the Cathedral in considerable numbers, when its haunts were less disturbed by summer excursionists.

The second half of the volume is taken up with a notice of the birds of Iona and Mull, each species under a separate heading. We think the Editor has exercised a wise discretion in leaving Mr. Graham’s notes intact, without any attempt to bring the list up to date—postponing all additions to the *avi-fauna* to some future volume of the series, which will embrace a larger and more natural area.

Mr. Graham was an artist of very considerable merit; the sketches in this book, 74 in number, have been selected from his numerous drawings. Although they cannot be considered highly finished productions, they are truthful and often very humorous, evidently characteristic of the man, and add much interest to the descriptive text, illustrating various phases of bird-life, and the author’s own personal adventures and wanderings by land and flood.

The Birds of Iona, as a contribution to Ornithological literature, must be accepted as the life-record of an enthusiastic naturalist, ever careless of his own personal risk when knowledge was to be acquired. Each page of the letters and journal is full of life and vigour. Mr. Robert Gray, in concluding the original preface, says, that in presenting this book he ever kept in view the difficulty, he might almost say impossibility, of adding to the journals of so gifted a writer, a word that would enhance their originality or freshness. We certainly require no higher testimony than this to the merits of the author.

NOTES AND NEWS.

The Editor has much pleasure in announcing that Prof. Trail, the past Editor of this Journal, has most kindly offered to edit the Botanical matter contributed to the "Scottish Naturalist." This valued assistance the Editor has gladly accepted and begs to fully acknowledge the obligation.

To the *Studies from the Museum of Zoology in University College, Dundee*, Professor D'Arcy Thompson has contributed a valuable and interesting article *On the Systematic Position of Hesperornis*. In this he tells us that he has for some years considered Prof. Marsh's group of *Odontornithes*, or Toothless Birds, as an unreal and illusory one, and that it is as unreasonable to unite them, on account of the persistence of their teeth, as to group together the toothless Mammals. Regarding *Hesperornis*, he considers that from purely osteological characters, there is a wide difference between it and any of the *Ratitæ*—the Ostriches, Cassowaries, Emeüs—with which it has hitherto been associated, but that its close resemblance to Divers and Grebes is clear and patent. From these characters *Hesperornis* is a Diver of great size and prodigious swimming power, and possessed of anatomical resemblances almost amounting to identity with existing *Colymbidæ* or Divers—resemblances as great as between *Stringops* and other Parrots, and much greater than between the Dodo and ordinary pigeons.

"The Auk" (October, 1890, p. 413), informs us that "the real character of the European House-Sparrow" is at last attracting the attention of legislators. The State of Massachusetts Legislature, after an extended discussion, has passed an Act entitled "An Act providing for the Extermination of the English Sparrow in the Commonwealth." The bird had already been declared an outlaw in several States, and the offering of bounties for its wholesale destruction has been agitated for in others.

In "The Ibis" for October last (p. 411), Dr. Günther describes and figures the foot of the young of the Wryneck (*Tynx torquilla*). In the nestling the skin of the heel is greatly thickened, forming a prominent pad studded with conical tubercles. The function of this structure is to enable the chick to move about the nest-hole, to do which it does not use the toes, but pushes itself forward by means of the rough surface of the heel-pad. Dr. Günther remarks that it would be interesting to ascertain if a similar structure is to be found in nestling Woodpeckers of the same age—two days.

Two new birds have recently been added to the British Avifauna. Mr. James Backhouse in "The Naturalist" (1890, p. 258), recorded the occurrence near Scarborough, on the 23rd of October, 1889, of the Asiatic Turtle

Dove (*Turtur orientalis*), in first plumage. Although a native of Asia, this species has been detected as a straggler in Europe, including Scandinavia. The second species is also an oriental stranger, namely, the Indian Roller (*Coracias indicus*). This bird was shot near Louth, in Lincolnshire, on the 8th of October, 1883, and was recorded in the Migration Report for 1883, p. 47, as a Common Roller. It remained unexamined until Mr. Cordeaux, who communicates the facts to "The Ibis" for January, 1891, happened to see it and rescued it from oblivion. The Indian Roller is a native of India and Persia, but has occurred as an occasional visitor in Eastern Europe.

A "Forth Branch" of the *Selbourne Society* has been formed in Edinburgh and is the only one existing at present in Scotland. One of the primary objects of the Society is to "preserve from unnecessary destruction such wild birds, animals, and plants as are harmless, beautiful and rare." We would fain call the attention of the Scottish Branch of this very worthy Society to the case of the Great Skua mentioned by Mr. Harold Raeburn at page 18 of this number of the "Scottish Naturalist." We, too, know from personal experience gained in its only British haunts in Shetland, that unless those interested in such work will take up the case of this most interesting species, it must soon be expunged from the list of our indigenous birds. The Honorary Secretary of the Forth Branch is Miss Isabel B. Waterston, 45 Inverleith Row, Edinburgh.

Dr. F. Buchanan White contributes to the "Journal of the Linnean Society" (Vol. XXVII., pp. 333-457), an important monograph entitled "A Revision of the British Willows." The chief results of his long and close study of this group of plants—only too well-known to British botanists as one of the most difficult in our native flora—have appeared in a paper by Dr. White in our last issue as regards the nomenclature of the forms that he recognises as species and as hybrids respectively. But in the "Revision" we have the group treated of in a manner that explains the author's reasons for the conclusions at which he has arrived, and enables us to appreciate in some degree the labour involved and the completeness of the material employed in the investigation. Dr. White has brought to the study of British Willows a very thorough acquaintance with the labours of salicologists, both British and foreign, and has rendered these available to British botanists in a way previously unknown. He has probably unequalled acquaintance with our native Willows in the wild state, and has thus been enabled to trace out the genealogy of many of the doubtful forms. Thus equipped he has been able to throw light on not a few of the difficulties that beset the path of salicologists, and while adding considerably to the list of known hybrids, he has done the useful work of sweeping aside names representing forms too inconstant to deserve even varietal rank. The number of true species admitted in the "Revision" as British is 17, while the known hybrids reach 41. Of these, all the species have been met with in Perth and Forfar, and over two-thirds have been found in Midlothian, including even "alpine" forms among the latter. The "Revision" is accompanied with three diagrams, of which one illustrates graphically the views of leading British botanists with regard to the British Willows at various periods.

The second diagram illustrates the modes in which complex, as well as simple, hybrids can be built up, till, as Wichura showed, as many as *six* true species may be represented in certain artificial hybrids. The third illustrates very clearly the relationship of the Tribes and Species of Willows to one another and their capacities for hybridisation. The thanks of British botanists are due to Dr. White for the service he has rendered by a monograph that will unquestionably take a high rank among such works, and will greatly lessen the difficulties of all students of Willows.

The *Gardener's Chronicle* (4th Oct., 1890, p. 288) mentions a tulip tree growing in Kilgraston grounds, Perthshire, which was planted 180 years ago. It measures 60 feet in height, the stem is bare to about 12 feet, and the spread of the branches is 30 feet. At Hopetoun House, near Edinburgh, two tulip trees were recorded in 1830 as 86 years old and 60 feet in height.

The British foxglove is said to have established itself on the slopes of Stringer's Creek Valley, near Walhalla, Victoria. All along the banks it was conspicuous this season by its purple flowers.

At the first meeting this session of the Edinburgh Botanical Society, Dr. W. Craig exhibited a specimen of the beefsteak fungus, *Fistulina hepatica*, which was found growing on a Spanish chestnut in his garden in Edinburgh. This is the first instance on record of its being found growing on this tree in Scotland.

Under the heading of an "Extraordinary Flight of Leaves," Mr. James Shaw writes to *Nature* (Oct. 30, p. 637) describing a very singular occurrence witnessed at Dalgouar Farm, Dumfries-shire, in Oct., 1889. This flight was at first mistaken for a flock of birds, but as the objects fell to the earth they were found to be oak leaves. The air was thick with them, and they descended in an almost vertical direction. The effect seen in the sunshine was beautiful. The wind was from the south, and gentle with showers of rain. After the fall was over the leaves were found to cover a tract on the hill about a mile wide and two miles long. The leaves were entirely those of the oak, but there are no oak trees growing in clumps within eight miles of the scene.

We are glad to note the great and praiseworthy activity prevailing among the Scottish Faunists. In this Number it is our pleasing duty to review the latest addition to Mr David Douglas's fine series—"The Birds of Iona and Mull." Now there lies before us the prospectus of what promises to be a singularly acceptable volume of this same series, devoted to the "Vertebrate Fauna of the Orkneys," by Messrs. Buckley and Harvie-Brown.

Meetings, etc., of Societies.

Kirkcaldy Naturalists' Society.

- Jan. 13.—Communications from the Vice-Presidents.—J. M. CAMPBELL, A.M., B.M., C.M.; REV. JOHN CAMPBELL, B.D.; JAMES L. LUMSDEN.
- Jan. 27.—“Recent Progress in the Applications of Electricity, with Illustrations.” SAM. MAVOR, M.I.E.E.
- Feb. 10.—“A General Sketch of the Progressive Development of Animals.” J. ARTHUR THOMSON, M.A., F.R.S.E.
- Feb. 24.—“The Life History and Structure of some of the Common Zoophytes.” J. H. FULLARTON, M.A., D.Sc.
- Mar. 10.—“The Isle of May: its Bird Life and Bird Migration.” J. HARVIE BROWN, F.Z.S., F.R.S.E.
- Mar. 24.—Open Night for Communications from Members, and Exhibition of Specimens. Papers already promised by P. DUNSIRE; JOHN WATSON; WILLIAM YOUNG.

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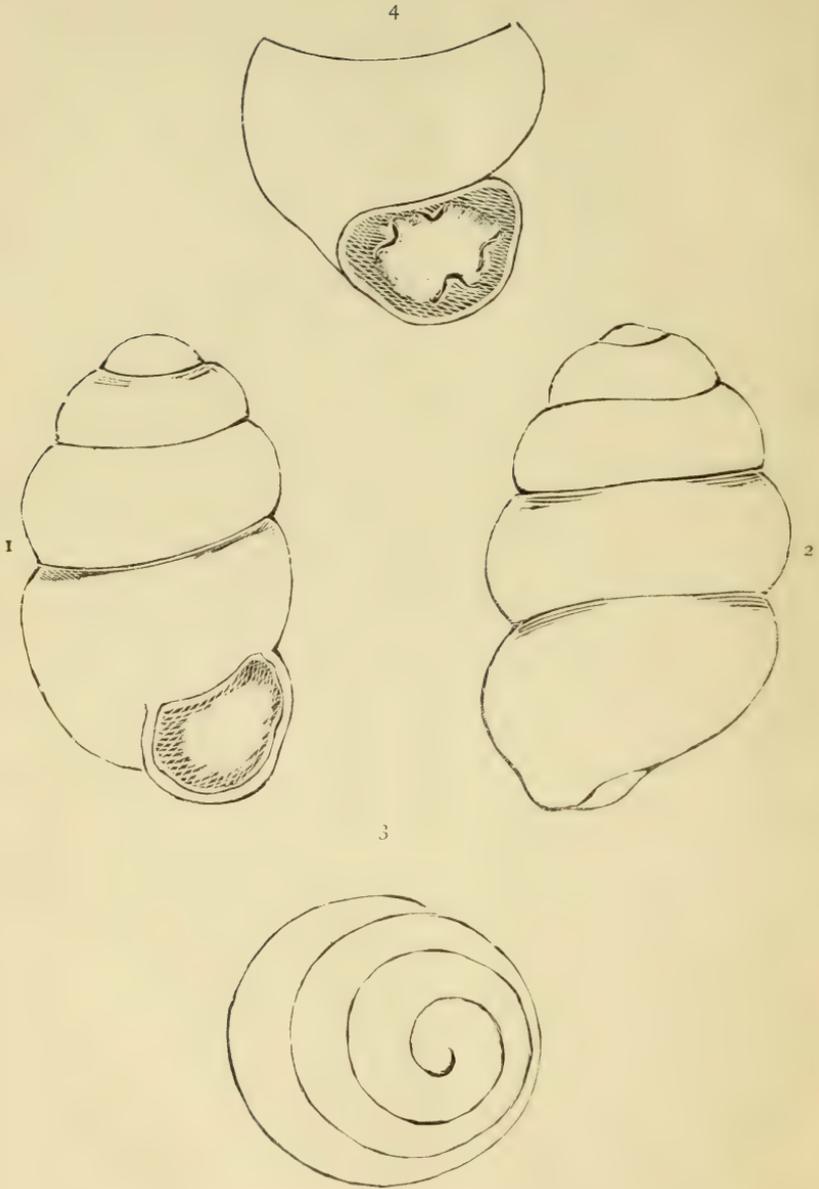
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Figures 1, 2, 3, show different positions of *Vertigo concinna*. Figure 4 shows the mouth of *Vertigo pygmaea* for comparison. (All magnified.)



SOME NOTES ON THE SCOTCH SPECIES OF THE
MOLLUSCAN GENUS VERTIGO.

By THOMAS SCOTT, F.L.S.,

Naturalist to the Fishery Board for Scotland.

PLATE I.

IN the following Notes, though reference is made to the distribution of the recent (or living) species of *Vertigo* observed in Scotland, my chief purpose is to bring together the various records I have been able to collect bearing on their fossil distribution. The nomenclature and arrangement of Jeffrey's "British Conchology" are adhered to. The Rev. Canon A. M. Norman, F.R.S., &c., is publishing in the "Annals and Magazines of Natural History" a "Revision of British Mollusca" which will be of great value to students of systematic conchology. In this revision he includes the species of *Pupa* and *Vertigo* under the one generic name, *Pupa*, Draparnaud, and retains *Vertigo* as a sub-genus in which the two sinistral species, *V. pusilla* Müll., and *V. angustior* Jeff. are included.

The following papers will be found useful as bearing on the recent distribution of the species.

1836. "Excursions illustrative of the Geology and Natural History of the Environs of Edinburgh," by William Rhind, M.R.C.S.E. &c.
1843. "The Molluscous Animals of Scotland," by Professor Macgillivray.
1870. "A Catalogue of the Mollusca of the Counties of Aberdeen, Banff, and Moray," by Robert Dawson, A.M. (published by the Aberdeen Natural History Society).
- 1873-74. "List of Land and Fresh-water Mollusca of Scotland," by Dr. F. Buchanan White (pub. in the "Scottish Naturalist").
1876. "Land and Fresh-water Mollusca," by F. G. Binnie (In "Fauna and Flora of the West of Scotland").

1885. "Notes on the Land and Fresh-water Mollusca about Greenock and surrounding District," by Thos. Scott ("Tran. Nat. Hist. Soc. of Glasgow").
1886. "Preliminary Notes on the Land and Fresh-water Mollusca about Tarbert, Loch Fyne," by Thos. Scott ("Journal of Conchology").
1889. "The Land and Fresh-water Shells of the Neighbourhood of North Berwick, Haddingtonshire," by Rev. John M'Murtrie, M.A. ("Journal of Conchology").
1891. "Census of Scottish Land and Fresh-water Mollusca," by Wm. Denison Roebuck, F.L.S. ("Proc. Roy. Phys. Soc., Edin.").

The species of the genus *Vertigo* referred to in the following Notes are—

VERTIGO ANTIVERTIGO (Drap.).

This *Vertigo* as a recent (or living) species is, where the conditions are favourable, of comparatively frequent occurrence. It is recorded in Roebuck's "Census" from six different counties, including Sutherlandshire—to these I am able to add another, *viz.*, Fifeshire. Some time ago Mr. J. W. Paterson of Edinburgh, submitted for my inspection a number of shells obtained by him near Largo during last autumn, and among them I observed this species. The fossil distribution of *Vertigo antivertigo* in Scotland seems to be very limited, as yet I only know of its occurrence in the Elie post-tertiary deposits described in the Proceedings of the Royal Physical Society, Edinburgh, vol. x., p. 334, and since in what appears to be an older deposit than that described in the Proceedings referred to. This deposit—which also occurs at Elie—was exposed while some drainage operations were being carried out. This *Vertigo* was comparatively common in both deposits.

VERTIGO PYGMEA (Drap.).

This is a common species in many places; at least I have found it so both in the east and west of Scotland. Last autumn I collected a good number of specimens among the ruins of an old boundary wall near Elie, and J. W. Paterson showed me specimens collected by him near Largo. I have also obtained it on Inchkeith. Fife is not included in the "Census" of distribution for this species.

Its fossil distribution is limited, though not so much so as the last; it was obtained at Elie with the other; it was also obtained in a post-tertiary deposit at Kirkland of Leven, and in what appears to be an interglacial peat-bed at Hailes, near Edinburgh.*

VERTIGO SUBSTRIATA (Jeff.).

This, though apparently not a common species, is widely distributed. In Roebuck's "Census" Loch Fad, Bute; Kinkell Braes, near St. Andrews; and Brora, Sutherlandshire, are mentioned as localities. In my collection are specimens from Routen-burn Glen near Greenock, certified by the late Dr. J. G. Jeffreys. It was obtained by T. Edwards of Banff, and one specimen was found by Dr. Macgillivray in the Den of Rubislaw, Aberdeenshire.

As a fossil I do not know of its occurrence anywhere else than at Elie, where it was obtained in the two separate deposits, one apparently older than the other, referred to above.

VERTIGO PUSILLA (Müll.).

This seems to be a rare shell in Scotland; only two localities are mentioned in the "Census"—Banks of the Clouden near Maxwelltown, Kirkcudbright; and Largs, Ayrshire. My friend, Mr. James Steel of Glasgow, has also obtained it in the vicinity of the Clyde near Lanark. I saw one of the specimens he obtained, and he also exhibited them at a meeting of the Natural History Society of Glasgow during the last summer session of the Society. So far as I know this species has not been recorded as a fossil in Scotland.

VERTIGO ANGUSTIOR (Jeff.).

This interesting and rare shell has been added to the Scotch List of Land Mollusca, by Mr. W. Baillie, Brora, Sutherlandshire. Its solitary occurrence in this northern county might naturally raise some doubt as to its being really indigenous. What I have now to record, however, will tend to dispel such a doubt, if any existed. During some drainage operations at Elie last year, a deposit of earthy peat was cut into. A quantity of the material was sent to me by Mr.

* "The Ancient Lakes of Edinburgh" (Proceed. Roy. Phys. Soc. Edin., vol. x., p. 126).

James Bennie of the Geological Survey; in the material there were land and fresh-water shells in considerable abundance, and among other rarities this *Vertigo* was of frequent occurrence. I obtained no fewer than six species of *Vertigo* in the material sent to me from the deposit referred to, viz., *Vertigo antivertigo*, *V. pygmaea*, *V. substriata*, *V. angustior*, *V. edentula*, and *V. minutissima*. The presence in such numbers of *Vertigo angustior*, as a fossil at Elie, points to its more frequent occurrence in Scotland when this deposit was being formed than it appears to be now, and also proves its claim to be an indigenous species.

VERTIGO EDENTULA (Drap.).

As a recent shell, this species, though widely distributed, is not very plentiful. As a fossil it occurred in the same deposit with the last. It is also recorded by Mr. David Robertson, F.L.S., from the Arctic shell clays at Garvel Park, near Greenock.*

VERTIGO MINUTISSIMA (Hartm.).

This pretty shell is still very local and rare in Scotland. It is not the smallest of our *Vertigos*, though the name might lead one to suppose it was. There are seven specimens of this shell in my collection collected among the debris at Salisbury Crags, and none of them can be considered very small comparatively. In Rhind's List of Land Shells found near Edinburgh, and published in 1836, the following are recorded—*Pupa pygmaea*, King's Park, *Pupa edentula*, Roslin, King's Park, and *Pupa cylindrica*, Salisbury Crags. This last seems to be *Vertigo minutissima* (Hartm.), not *Helix Cylindracea* (Da Costa), which, according to Jeffreys, appears to be *Pupa umbilicata*, Drap. (Dr. Norman in his Revision of the British Mollusca restores Da Costa's name, *Pupa cylindracea*), and what makes it more likely that this *Vertigo* is referred to is, that Dr. Rhind records *Pupa muscorum* (= *P. umbilicata*?), *Pupa marginata* and *Pupa bidentata*, all from the King's Park, but he only records *Pupa cylindrica* from Salisbury Crags which is the only known habitat for *Vertigo minutissima*. If my conjecture is right, this rare species has been known as a resident among the debris of Salisbury Crags for a much longer time than is usually supposed.

* "The Post-tertiary Beds of Garvel Park, Greenock" (Trans. Geol. Soc. of Glasgow, vol. vii., p. 36).

This species, as already stated, was one of the fossil *Vertigos* obtained in the material from the Elie post-tertiary deposit, and so far as I know this is the first record of its occurrence as a fossil in Scotland. In the "Census" it is stated that "Dr. Buchanan White speaks of its having been found at Balmerino in Fifeshire, a locality which it is desirable should be reinvestigated." If this implies a doubt as to the genuineness of the "find," the following will show that Dr. William Turton had no doubt about it. In his "Manual of the Land and Fresh-water Shells of the British Islands," p. 201, (1840), he says—"It (*Vertigo minutissima*) was sent to Dr. Fleming by Mr. Chalmers, Surgeon, Kirkcaldy, who found it in the parish of Balmenna (Balmerino), Fifeshire." Captain Thomas Brown also refers to it under the name *Vertigo cylindrica*, Ferussac, and says, "Found near the village of Balmenna, Fifeshire, by my friend, Mr. Chalmers, Surgeon, Kirkcaldy."* Though there can be no doubt that Dr. Chalmers did obtain this *Vertigo* as stated, it would be interesting to have the district "reinvestigated," as perhaps other "rarities" might be secured besides this *Vertigo*.

VERTIGO CONCINNA, provisional name.

In the post-tertiary marl at Kirkland, Leven, described in the Proceedings of the Royal Physical Society, Edinburgh, vol. x., p. 334, a *Vertigo* closely resembling *V. pygmæa* occurred as a moderately common shell. The surface is smooth and polished, the form is somewhat oval, rather turmid, whorls convex, more rounded on the lower side, apex of spire blunt, whorls $4\frac{1}{2}$, suture distinct, mouth small, rounded, scarcely if at all flexuous as in *V. pygmæa*, destitute of teeth—not even a trace of a tooth being observed in the most perfect of the shells. Length, about 2 mm.; breadth, fully 1 mm. In the "Preliminary Notes on a Post-tertiary Fresh-water Deposit at Kirkland, Leven, and at Elie, Fifeshire," in the Proceedings of the Royal Physical Society already referred to, I have proposed *Vertigo concinna* as a provisional name for this shell.

* See also Dr. Fleming's description in "British Animals" (1828).

NOTES ON BIRDS IN THE PARISHES OF METH- LICK, AND TARVES, ABERDEENSHIRE.

BY GEORGE MUIRHEAD, F.R.S.E., F.Z.S., &c.

THESE contiguous parishes are situate between fourteen and twenty-six miles north north-west of Aberdeen, and are about ten miles distant from the east coast of the county. Their united extent is about 31,000 acres—nearly all arable—and their altitude above the level of the sea varies from 64 feet at Tangland Bridge on the River Ythan, to 579 feet at the Moss of Belnagoak. The surface, although undulating, has, generally speaking, a bare appearance, owing to the absence of trees and hedgerows—the fields being chiefly fenced by low stone walls. The climate is cold and moist. On the march between the two parishes the beautifully wooded pleasure-grounds of Haddo House—the residence of the Earl of Aberdeen—extend to nearly two thousand acres, and are continued along the banks of the Ythan to the sylvan valley of Gight, where the picturesque, ivy-clad ruins of the ancient castle of that name, celebrated for its connection with the family of Lord Byron, add a charm to the romantic scenery.

The Ythan, with its deep and sluggish waters, flows through the parish of Methlick for five or six miles, where its stream is increased by the Little Water of Gight, the Burn of Kelly, and other smaller rivulets. There are three artificial lakes of considerable extent in the grounds of Haddo House; and several mosses and bogs still exist in the wilder districts.

The number and variety of the birds found at present in the two parishes, when compared with those in a similar extent of country in the south of Scotland, are somewhat smaller, and this is more particularly the case with the migratory insectivorous species, many of which, such as the Blackcap, Garden Warbler, Whitethroat, Wood Wren, and Chiffchaff, being conspicuous by their absence. It is probable that this may be accounted for by the great scarcity of the smaller migrants on the east coast of Aberdeenshire, and the district being far removed from the regular line of their migration.

The following short notes on the birds which have occurred, or

are found in the two parishes, are proposed to be supplemented when further observations have been made.

Missel Thrush. (*Turdus viscivorus.*) Rather scarce. A few are found in the woods at Haddo House ; and at Gight.

Song Thrush. (*Turdus musicus.*) Not plentiful. Found chiefly in grounds at Haddo House, and at the Braes of Gight. Numbers seen at the Old Castle of Tolquhon on the 29th of Oct., 1890, where there are some very large holly and yew trees, which appear to be 400 or 500 years old. When shooting partridges here during the autumn of 1890, I did not observe any Song Thrushes rising out of the turnips as they are seen to do in the South of Scotland at that season.

Fieldfare. (*Turdus pilaris.*) Very numerous all over the district, especially in the deer park of Haddo House, where they resort in the clumps of old Scotch fir at night. No Redwings have been observed as yet.

Blackbird. (*Turdus merula.*) Found in small numbers in the policies of Haddo House, at the Braes of Gight ; and where there are plantations in the district.

Wheatear. (*Saxicola œnanthe.*) Plentiful in spring, and may be seen flitting along the dykes by the roadsides in summer.

Whinchat. (*Pratincola rubetra.*) Rather common in spring and summer when it may be seen frequenting the wild uncultivated grounds and young plantation where whin and broom abound.

Stonechat. (*Pratincola rubicola.*) Rare. One observed near Inverebrie in the beginning of May.

Redstart. (*Ruticilla phœnicurus.*) Rare. A pair nested in a wall near Methlick village in the summer of 1890.

Redbreast. (*Erithacus rubecula.*) Common.

Golden Crested Wren. (*Regulus cristatus.*) Plentiful in the woods of Haddo House.

Willow Wren. (*Phylloscopus trochilus.*) Common in summer wherever there are trees.

Sedge Warbler. (*Acrocephalus phragmitis.*) Numerous in the dwarf bushes and rank vegetation by the side of the Ythan in summer.

Hedge Sparrow. (*Accentor modularis.*) Rather scarce.

Dipper. (*Cinclus aquaticus.*) Frequently observed on the

Ythan ; Little Water of Gight ; Burn of Kelly ; and other small streams.

Long-tailed Titmouse. (*Acredula caudata.*) A large flock seen at the Braes of Gight on the 3rd of September, 1890.

Great Titmouse. (*Parus major.*) Scarce.

Coal Titmouse. (*Parus ater.*) Found in small numbers in the fir woods.

Blue Titmouse. (*Parus cœruleus.*) Common.

Wren. (*Troglodytes parvulus.*) Abundant.

Tree Creeper. (*Certhia familiaris.*) Seldom seen.

Pied Wagtail. (*Motacilla lugubris.*) A few pairs scattered over the district in the breeding season. Seen in flocks migrating in spring and autumn.

Grey Wagtail. (*Motacilla melanope.*) A pair seen at Upper Mill Pond in September, 1890.

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

Spotted Flycatcher. (*Muscicapa grisola.*) Not uncommon in summer. A pair nested at the Kennels, Haddo House, in June, 1890.

Pied Flycatcher. (*Muscicapa atricapilla.*) A male was seen at Wardford Wood, on the banks of the Ythan, in the parish of Methlick, on the 13th of May, 1890.

Swallow. (*Hirundo rustica.*) Very plentiful.

Martin. (*Chelidon urbica.*) Numerous.

Sand Martin. (*Cotile riparia.*) Rather scarce.

Greenfinch. (*Ligurinus chloris.*) Abundant.

Sparrow. (*Passer domesticus.*) Very numerous.

Chaffinch. (*Fringilla cœlebs.*) Plentiful.

Brambling. (*Fringilla montifringilla.*) Seen in small flocks amongst Chaffinches in winter.

Linnet. (*Linota cannabina.*) Very plentiful.

Bullfinch. (*Pyrrhula europæa.*) Found in considerable numbers at Gight, and in the woods near Haddo House.

Crossbill. (*Loxia curvirostra.*) Frequents the pine woods about Haddo House in great flocks in winter and spring. A pair were seen at Gight on the 1st of May, 1890. It doubt-

less breeds in the district, but its nest has not yet been discovered.

Yellow Bunting. (*Emberiza citrinella.*) Common.

Reed-Bunting. (*Emberiza schoeniclus.*) Not numerous. A nest found at mouth of the Ebrie in summer of 1890.

Starling. (*Sturnus vulgaris.*) Very plentiful.

Magpie. (*Pica rustica.*) Rare. One seen at Tolquhon on the 16th of October, 1890.

Jackdaw. (*Corvus monedula.*) Scarce.

Carrion Crow. (*Corvus corone.*) Plentiful. Numbers roost during winter in the trees on an island in the Upper Lake in the grounds of Haddo House.

Hooded Crow. (*Corvus cornix.*) Rare.

Rook. (*Corvus frugilegus.*) Very numerous. There is a very extensive rookery at Haddo House.

Skylark. (*Alauda arvensis.*) Plentiful in some localities.

Swift. (*Cypselus apus.*) A few frequent suitable buildings.

Nightjar. (*Caprimulgus europæus.*) Has been seen at Gight.

Kingfisher. (*Alcedo ispida.*) Rare. Two seen on the Upper Lake in the grounds of Haddo House in August, 1890.

Cuckoo. (*Cuculus canorus.*) Plentiful. Young one shot in Deer Park on the 7th of August, 1890.

Long-eared Owl. (*Asio otus.*) Rare. Has been seen at Gight.

Short-eared Owl. (*Asio accipitrinus.*) Has been obtained in the neighbourhood of Gight.

Tawny Owl. (*Syrnium aluco.*) Found in small numbers in the woods of Haddo House.

Golden Eagle. (*Aquila chrysaetus.*) A beautiful female was shot at Gight on the 11th of February, 1884, and is now preserved at Haddo House. It was seen eating a hare shortly before it was killed.

Sparrow-Hawk. (*Accipiter nisus.*) Common. Breeds annually in the woods.

Peregrine Falcon. (*Falco peregrinus.*) Has occurred at Gight.

Merlin. (*Falco aesalon.*) Frequently seen. A female was shot

while feeding on a skylark, at Milltown of Ardlethen, on the 30th of August, 1890.

Kestrel. (*Falco tinnunculus.*) Numerous. Breeds annually in the woods.

Osprey. (*Pandion haliaetus.*) A male in full plumage was seen at the Lake of Keithfield in the grounds of Haddo House on the 18th of June, 1890.

Common Heron. (*Ardea cinerea.*) Plentiful. There is a small Heronry of eight or nine nests in the woods of Haddo House.

Bean Goose. (*Anser segetum*); and **Pink-footed Goose.** (*Anser brachyrhynchus.*) Are said to frequent the farms of Lethenty and St. John's Wells in spring when the corn is being sown.

Whooper. (*Cygnus musicus.*) A specimen, which is preserved at Haddo House, was shot in the neighbourhood a few years ago.

Teal. (*Querquedula crecca.*) Small flocks frequent the lakes at Haddo House in autumn and winter.

Wigeon. (*Mareca penelope.*) Large numbers are seen on the Lower Lake at Haddo House in the autumn and winter months.

Tufted Duck. (*Fuligula cristata.*) Seen in small numbers on the lakes of Haddo House in winter.

Golden Eye. (*Clangula glaucion.*) A few frequent the lakes at Haddo House during the winter months.

Common Scoter. (*Edemia nigra.*) Specimen noticed on Keithfield Lake in winter of 1889-90.

Goosander. (*Mergus merganser.*) Occasionally seen on the Ythan during the autumn and winter months. A female shot on that river near Methlick on the 21st of October, 1890.

Ring Dove. (*Columba palumbus.*) Very numerous in the woods of Haddo House.

Stock Dove. (*Columba oenas.*) Very rare. One was seen in grounds of Haddo House in September, 1890. Mr. Gordon of Ellon killed a specimen while shooting wood pigeons there, on the evening of the 19th December, 1890. He saw several small flocks frequenting the wood near the curling pond.

- Black Grouse.** (*Tetrao tetrix.*) Very scarce. Several frequent the Braes of Gight. A few years ago it was found in small numbers in the Bellmuir Wood.
- Red Grouse.** (*Lagopus scoticus.*) A few found in the Moss of Belnagoak.
- Pheasant.** (*Phasianus colchicus.*) Abounds in the woods at Gight and at Haddo House.
- Common Partridge.** (*Perdix cinerea.*) Not very plentiful.
- Land Rail.** (*Crex pratensis.*) Frequents the haughs by the side of the Ythan.
- Water Rail.** (*Rallus aquaticus.*) Occasionally found about small streams and ditches.
- Moor Hen.** (*Gallinula chloropus.*) Very numerous by the side of the Ythan and in the lakes at Haddo House. While shooting in the young fir woods along the west side of the Little Water of Gight on the 28th of February, 1891, I saw several Moor Hens fly from amongst the thickest cover.
- Coot.** (*Fulica atra.*) Frequents the lakes at Haddo House in small numbers where it nests.
- Golden Plover.** (*Charadrius plumialis.*) Small flocks are seen on the high-lying grass fields in autumn and winter.
- Lapwing.** (*Vanellus cristatus.*) Plentiful.
- Oystercatcher.** (*Hæmatopus ostralegus.*) A fine specimen was seen in the deer park at Haddo House on the 28th of June, 1890. This bird breeds on the farm of Ardlethen in the parish of Ellon.
- Woodcock.** (*Scolopax rusticola.*) Plentiful at certain seasons in the woods. Has been found breeding in the Badicbath Wood at Gight. When shooting partridges near Tolquhon Castle on the 16th of October, 1890, I killed the first Woodcock of the season. It rose from a clump of brackens.
- Common Snipe.** (*Gallinago cælestis.*) Found in considerable numbers in the Red Moss and the Moss of Cairnies, where it breeds.
- Jack Snipe.** (*Gallinago gallinula.*) Scarce. Killed one at the Red Moss on the 14th of November, 1890.
- Common Sandpiper.** (*Totanus hypoleucus.*) Frequents the Ythan and other streams in small numbers in summer.

Curlew. (*Numenius arquata.*) Frequents some of the grass fields in the autumn.

Black-headed Gull. (*Larus ridibundus.*) A pair nested in an oat field on the farm of Little Ythsie in the summer of 1890. This attracted considerable attention in the neighbourhood, for no gulls had been seen breeding there previously, and the situation of the nest, though on boggy land, was comparatively dry.

Common Gull. (*Larus canus.*) Occasionally visits the grass fields.

Herring Gull. (*Larus argentatus.*) Sometimes seen on the pasture lands.

Little Grebe. (*Podiceps fluviatilis.*) Has been occasionally seen on the Ythan.

THE GREAT GREY SHRIKE (*Lanius excubitor*),
CONSIDERED AS A SCOTTISH BIRD.

BY REV. H. A. MACPHERSON, M.A., M.B.O.U.

THE March number of "The Zoologist" contains a short summary of the habits of the Great Grey Shrike. It occurred to me when epitomising a large amount of materials for that paper, that it might be well to separate the Scottish notes and to arrange them under their proper faunal areas. While English naturalists are content to work on with artificial political boundaries, Mr. Harvie Brown has emancipated Scottish naturalists from the thralldom of such unnatural ties, by taking the lead in writing vertebrate faunas of the natural areas into which Scotland falls; and hence within the next few years, we shall possess a complete vertebrate fauna of Scotland, each natural division being undertaken by Mr. Harvie Brown or some other *Scottish* naturalist. It seems to me, that this plan of following natural divisions should be applied to each individual species of bird or mammal. It only

requires to be well known to be valued as a most useful aid to definiteness of distribution. Following the precedent of my Report on the Visitation of Pallas' Sand Grouse to Scotland, I have arranged the occurrences of *Lanius excubitor* under the faunal divisions, and I venture to hope that others will adopt the same plan in dealing with Scottish birds. I have treated the two forms *Lanius excubitor* and *Lanius major* as one, because of the difficulty of separating them. In this connection, I may add that, though I have examined many Grey Shrikes shot in Scotland and the North of England, I have only as yet seen one adult male, killed in England, that combined the characteristic of the single white alar bar with the white rump and white breast that distinguish the Siberian specimens of *Lanius major* that Mr. Seebohm kindly showed me. But upon this point I may be permitted to quote a letter from my friend, the late Mr. Robert Gray, written about a bird that I had reported to him, and dated from Edinburgh, January 3, 1884: "The bird you refer to," he says, "is evidently the well-known *excubitor*, which always has the double wing spot. *Lanius major* or Pallas' Shrike has occurred many times in Scotland, and is the species of whose existence in the Eastern Counties I ventured to surmise in my ornithological correspondence twenty years ago, although I failed to convince Messrs. Sharpe and Dresser when they published their diagnoses of British Shrikes in their Birds of Europe."

In confirmation of Mr. Gray's remark, I would add that almost all the Scottish Grey Shrikes that have come under my notice possessed only a single white alar bar, though one fine double-barred bird lived for some time in our possession. I believe that most of our Scottish Shrikes are of Scandinavian origin, and more or less cross-bred.

I. SCOTTISH SOLWAY AREA.

The Grey Shrikes are comparatively rare in the west of this faunal area, but more numerous on their lines of migration from the Forth to the Solway. Mr. R. Service wrote in 1884 that "the Great Grey Shrike had occurred nearly every winter for the last few years" in the Stewartry of Kirkcudbright. Mr. R. Gray records a young male shot near Kirkcudbright on the 28th of October, 1880. This specimen exhibited vermicular markings on the

inferior surface (Proc. Roy. Phys. Soc. vi. p. 359). Of other recent examples, I may name an adult male killed near Stranraer in the autumn of 1884; and another old male, shot at Lauriston near Castleton, December 14th, 1889. This last was a double-barred bird; the lower parts white, with very scanty traces of vermiculations. On opening its body, I found the remains of a Shrew (*Sorex*). In 1890, my friend, Mr. T. Bell of Liddel Bank, near Canonbie, observed a double-barred Grey Shrike on February 24th, but contented himself with examining the bird closely with a powerful glass.

II. TWEED AREA.

The *ornis* of a large portion of this area has been exceptionally well explored by the members of the Berwickshire Naturalists' Field Club. In Vol. I. of his "Birds of Berwickshire," a work which is chiefly a valuable resumé of the avian memoirs of the B.N.C., Mr. Muirhead mentions about a dozen specimens of this Shrike as killed in Berwickshire. I have no doubt that it is in fact an almost annual visitant to Berwickshire. Chambers, in his "History of Peebleshire," includes the Great Grey Shrike as a rare visitant to that county. In Selkirkshire, a male bird was shot at Bowhill on March 9th, 1876 (Proc. Roy. Phys. Soc. iv. p. 115).

III. FIRTH OF FORTH AREA.

To no part of Scotland are the visits of this fine Shrike more frequently paid than to *this* area.

The present winter, 1890-91, has been marked by an unusual scarcity of this species throughout Great Britain; but Mr. W. Evans tells me that a single example was shot upon the Forth early in the season. The late Dr. Smith on many occasions exhibited specimens of the Great Grey Shrike before the Royal Physical Society of Edinburgh, the birds being obtained within the limits of this area, and five or six being often obtained in a single winter. I may cite, in passing, a few of these occurrences, *viz.*, an immature bird, shot at Dunbar in November, 1858; an adult male shot at Tulliallan near Kincardine, March 30th, 1859; one killed at Alloa and another at Fenton Barns in October, 1865; one seen near Edinburgh, and another shot at Dunipace in February, 1866 (Zool. 1867., p. 143); one shot at Ormiston, Haddingtonshire, in

November, 1876; one shot at Culross, March 19th, 1881; another visited the Isle of May, October 16th, 1882 (Migration Report, 1883, p. 12).

I have examined others killed in this district more recently.

IV. TAY AREA.

The Great Grey Shrike becomes more rare north of the Forth, but is found all along the line of the east coast. Mr. W. Horn states in his Notes on the Birds of North-West Perthshire that "several (Great Grey Shrikes) have been killed in different parts of Perthshire, but I have only heard of one in this particular district."

Mr. P. Henderson of Dundee has most kindly favoured me with the following remarks:—"The Great Grey Shrike is rare in this quarter, and in the last twenty years, I am safe to say, that not more than twelve have passed through my hands for preservation, and of late years, say within the last five years, I have only seen four specimens; one in June, 1884, one in May, 1885, and in June, 1887. Last year (1888), I had one from Kinnaird, Perthshire. This season I heard of one being got at Monifieth, east of Broughty Ferry. They are comparatively rare with us" (In Lit., Oct. 28, 1889).

V. DEE AREA.

As long ago as 1849, the Rev. James Smith was inclined to refer an Aberdonian Shrike to the well-known Nearctic species, *Lanius borealis*. The bird in question was shot near Aberdeen in January of that year, and had a single white alar bar (Zool., 1849, pp. 2495, 2567).

In 1859, a Great Grey Shrike was killed in Aberdeenshire on the 28th of October.

In 1860, an "immature" male (by dissection) was captured upon the rigging of a vessel sixty miles off the east coast upon the 1st day of October (Zool., 1860, p. 7235).

Mr. Sim, A.L.S., a well-known Aberdeen naturalist, kindly informed me in October, 1889, that the accompanying notes include all the specimens of local Grey Shrikes that had passed through his hands during twenty-five years: "1865, one killed at Balogie;

1866, March 17th, one at Parkhill, another at Corse; 1887, a male bird flew on board a fishing boat in Aberdeen Bay on the 2nd of May; 1889, a male caught with bird-lime on Aberdeen Links on the 7th of February." To these notes I may add that my friend, Miss D. Hamilton of Skene, wrote to me under date of December 29th, 1889: "Just a line to tell you that there is a Great Grey Shrike here; I saw it first on December 12th, and since then several times, always about the lawns and garden. On the 17th I saw it catch a Bank Vole in a cabbage bed, and carry it to an apple-tree, where I found it inserted between two branches."

VI. MORAY FIRTH.

Charles St. John writes of this bird in his usual happy style: "Last winter I saw a Great Ash-coloured Shrike, or Butcher Bird, in my orchard. The gardener told me that he had seen it for some hours in pursuit of the small birds, and I found lying about the walls two or three chaffinches which had been killed and partly eaten in a style unlike the performance of any bird of prey that I am acquainted with" ("Wild Sports of the Highlands," p. 86).

Within this area this Shrike is, comparatively, a rare bird. In Banffshire one was shot in February, 1859. Near Forres a Great Grey Shrike was shot in January, 1860 (*Zool.*, 1860, p. 6860).

In 1889 I examined a single-barred Grey Shrike, shot near Forres in February of that year. The birdstuffer who received this specimen, Ledingham, told me that he had only mounted one other specimen of this Shrike, and that twenty years earlier. In confirmation of this, another taxidermist, Mr. James Brown of Forres, wrote to me (in *Lit.*, Oct. 21, 1889): "I do not remember more than two specimens of the Great Grey Shrike being killed in this district, the species being very rare here." He then instances one killed at Brodie about the 1st of February, 1889, and another killed near Elgin some twenty years earlier.

VII. SUTHERLAND AND CAITHNESS.

Mr. Reid of Wick most courteously reminds me, that he has furnished all his local information to Messrs. Harvie-Brown and Buckley, whose information I quote accordingly. Our authors state that, in Sutherland, the species must be considered an

“irregular autumn visitant ; more common perhaps than is supposed. Observed as long ago as 1845, a specimen in the museum being dated that year. . . We have ourselves observed one or two specimens on the south-east coast, and there is in our collection at Dunipace a male bird shot near Tongue, and sent to us in the flesh by Mr. Crawford on 7th December, 1875.”

With regard to Caithness, Mr. Shearer states “thrice found. This bird was once captured by me in spring, in the act of attacking a linnet fixed in a hair snare, and itself got entangled also.” (Proc. Roy. Phys. Soc. II. p. 337.) Messrs. Harvie-Brown and Buckley add that this Shrike “has been frequently obtained in Caithness, and almost always in the winter.” They cite a few occurrences (Vertebrate Fauna of Sutherland, Caithness and Cromarty, p. 119). In 1889, I examined a single-barred Grey Shrike, killed by James McEwen, Ausdale, Berriedale, Wick, on or about the 15th of April that year. Mr. James Sutherland writes to me that he had no reliable information prior to 1889, except the notes recorded by Mr. Harvie-Brown. “But on the 24th of March this year, a specimen was seen by Mr. Grant, gardener, in our neighbourhood. This he minutely described to me at the time. . . The last time it was seen by him it had a small bird in its beak. It then flew over the garden wall.

“About three weeks afterwards, a fine specimen entered a house, where it was captured and put in a cage, not far from the above garden. It only lived a few days in confinement. It damaged itself about the beak in trying to regain its liberty. It was preserved, and is now in the possession of Mr. Sandison here. You will see that formerly it was observed here in the fall of the year.”

This specimen, it would appear, was captured in April, 1889.

VIII. ORKNEY AND SHETLAND ISLANDS.

Mr. Reid of Wick reminds me that Messrs. Baikie and Heddle record some three occurrences of the Great Grey Shrike in Orkney.

Mr. James Sutherland, in a highly interesting letter, tells me of a specimen obtained in Orkney in October, 1889. Mr. T. E. Buckley will no doubt tell us of additional occurrences, should such exist, in his “Birds of Orkney.”

For Shetland, I have at present only Saxby's single record of a Great Grey Shrike, seen in December (Zool. S.S. p. 2561).

IX. WEST ROSS AND SKYE.

The Great Grey Shrike is not included in Mr. Dixon's catalogue of the Birds of Gairloch, nor yet in my list of the Birds of the Isle of Skye.

We should, nevertheless, expect that it will eventually occur in at least the mainland portion of this faunal area.

X. OUTER HEBRIDES.

I am not cognisant of any occurrence of this species in the Outer Hebrides.

XI. ARGYLL AND THE ISLES.

The late Mr. Robert Gray says that he examined specimens of this Shrike, which had been procured in Argyllshire (Birds of the West of Scotland, p. 65). I am sorry that I can not personally extend this statement.

XII. CLYDE AREA.

There are many records of Great Grey Shrikes killed in this large faunal region. Mr. Harvie-Brown remarks that a male Great Grey Shrike, killed at Helensburgh, Dumbartonshire, Feb. 3rd, 1883, "illustrates line across central districts of Scotland" (Migration Report, 1883, p. 12). Among other instances, the following may be cited:—1865, one killed in Dumbartonshire in December; 1866, January, another killed at Motherwell; 1868, December, one. In 1878, a Great Grey Shrike was killed at Rosdhu in December, when the incident elicited from Mr. James Lumsden the accompanying criticism:—"The Shrike is very rare in the Loch Lomond district, not more than four or five specimens having occurred" (Proc. N. H. Glasgow, 4, p. 200). But the species reappeared in 1881, when a male bird, which had recently eaten a goldcrest, was shot on the 30th of December.

In reviewing the foregoing data, it becomes apparent that the Great Grey Shrike occurs irregularly and in sparing numbers all over Eastern Scotland; that it is fairly represented in the south-west of the Scottish mainland, but is seldom detected in the Shetland and Orkney faunal area, and is not known, so far as

available information goes, in West Ross, Skye, or the Outer Hebrides.

Of some thirty-six occurrences, the exact dates of which are known, eight birds were killed in October, eight in December, six in February, and five in March.

Occurrences in April and May are far more frequent than some ornithologists suppose.

The earliest autumnal arrival on our east coast (of Scotland) appears to be that of the bird killed at sea on the 1st of October, though I have examined birds caught in England three weeks earlier.

Among recent contributions to the literature of this species may be mentioned, Seebohm, "British Birds," Vol. I., and "Proc. Roy. Phys. Soc." Vol. VII. p. 223; Collett, "The Ibis," 1886; H. A. Macpherson, "Trans. Cumb. and Westd. Assoc.," IX., pp. 106, 107, this last containing a description of the habits of the Great Grey Shrike, as studied in a Scottish example.

SOME NOTES ON BIRDS RECENTLY OBSERVED IN THE TAY DISTRICT.

BY COL. H. M. DRUMMOND HAY, M.B.O.U.

Red-backed Shrike (*Lanius collurio*, Linn.)—A bird of this species in skin, was forwarded to me for identification, by A. Nicol Simpson, Esq. of Mayfield, Arbroath, early in September last, which had been shot on the coast some miles to the west of Arbroath, near Ethie, on the 13th of the preceding month, August, 1890—proving on inspection to be a female of the second year, not having quite attained the adult plumage.

Hybrid.—A very curiously-marked Mallard (*Anas boscas*), doubtless a cross between the Mallard and Pintail Duck (*Anas acuta*), which was in company with a common Mallard, were both

shot right and left on the banks of the Tay, near Seggieden, by the gamekeeper there, on the 30th December, 1890. The peculiarities in this bird are as follows:—The bill bluish grey with the centre ridge black instead of being greenish yellow, as in the common Mallard, and much narrower in comparison to its length. The head, instead of being of the rich, glossy green of the common bird, inclines more to a brownish shade, which is especially seen as the feathers are lifted up by rubbing the wrong way. The white collar is broader and inclining upwards on the side of the neck as in the Pintail, but not nearly to the same extent. The wing is also different. The speculum being bright green instead of purplish blue and much narrower—the primaries also being shaded with brownish chestnut instead of white. The legs also are of a much paler yellow than those of the typical bird—but the most marked difference is in the tail—the under coverts have the black more extended. The tail feathers are much more prolonged and pointed than in the Mallard, and wanting the curled feathers—the two centre ones which are black, are the longest, but shorter than those in the true Pintail, and inclined upwards as if partaking somewhat of the character of the curled feathers of the true Mallard. The measurements of the two were about equal, barring the greater length of the tail in the Hybrid.

Smew (*Mergus albellus*; Linn.)—A female of this species, believed to be a bird of the year, was shot on the Tay at Seggieden, on the same day as the above, 30th December, 1890, also by the keeper. This is a very rare bird in Perthshire, and only the second that I have any record of as having been got on the Tay “proper,” and the fifth within the whole district or watershed of the Tay and its tributaries—extending along the coast as defined by the Tay District Salmon Fisheries, from the Redhead to Fifeness. In the Tay, Mr. Thomas Marshall of Stanley tells me (in lit. 27th November, 1888) that a female of this species was shot only a few days previously, namely, on the 20th, in the Stormont-field breeding ponds, with four salmon parr in its stomach, and the remains of others more or less digested. This bird was in fine plumage. Of the three others obtained in the district—the first of which I find any record, was in the winter of 1837, when a female was shot on the Eden, near St. Andrews; and in the same vicinity on the Kenley on the 16th February, 1871, a male was shot in full adult plumage; this bird had 10 minnows in the

stomach (*—fide* R. Walker, *Scot. Nat.*, 1871, p. 80); and a very fine male, also in full adult plumage, was shot on the Loch of Forfar by Sheriff Robertson of Burnside, I think, in 1884.

Great Crested Grebe (*Podiceps cristatus*, Linn.)—A male of the second year, in immature plumage, was shot on the Tay, opposite Kinfauns Castle, by Roger Davidson, Esq., Kinfauns Manse, on the 1st of January, 1891. This is also an uncommon bird on the Tay, as well as in the district at large—the only one on the Tay that I have been able to record of late years is one shot opposite Errol by a punt gunner in December, 1885. This was likewise a male in immature plumage. As to the other parts of the district, a fine specimen in full plumage, a female, was shot by Sheriff Robertson of Burnside, on the Forfar Loch, in the autumn of 1887—and several years ago, I saw a fine pair in full adult plumage that had recently been shot in the vicinity of Dunkeld. There are probably other instances which have not come to my knowledge.

As it may not be generally known that both the RAZORBILL (*Alca torda*) and the GUILLEMOT (*Uria troile*) are occasionally to be seen fishing in fresh water, I may mention that Mr. Thomas Marshall of Stanley, a most observing ornithologist, tells me (in lit. 27th November, 1888), that several of these birds of both species had been on the water about Stanley and Stormontfield for the last four weeks. There can be no doubt but what these were feeding on salmon parr, which may have attracted them, and what almost seems to bear this out, is the fact of a Guillemot being shot above Seggieden very early on the morning of 16th February, 1890—though on the tidal part of the river, the water there is quite fresh, and is so for some way down. This bird, which was an adult male in winter plumage, had evidently been fishing some distance up the river, as when seen it was swimming down with the current at a great pace—the season was exceptionally mild and had been so for some time past, so that it must have come up fishing on its own account and was then returning to the estuary. The stomach contained merely the remains of some small fish which could not be identified; but that there should have been nothing found in the stomach in a fresh state is easily accounted for, from its not having been

killed dead, and the fact of a boat having to be got, as the retriever, when reaching the bird, refused to touch it, some time therefore elapsed before it could be picked up, and as is the case in most sea-birds, the fresh contents of the stomach would have been ejected. The Guillemot has also been frequently got on Loch Tay.

In connection with the sea-birds visiting fresh water I may mention that with regard to the SCAUP (*Fuligula marila*) being found inland and shot near Glasgow, as stated by Mr. Robert Read in the last number of the "Scot. Nat." p. 39—that in the Tay district they are not unknown to our fresh waters, several instances of their capture occurring on Loch Rannoch, many miles from the sea. And specimens from that locality have been forwarded to the Perthshire Society's Museum in Tay Street, Perth. It has also been got on Methven Loch, four or five miles on the other side of Perth, and on the Tay above Seggieden, where, as before stated, the water is fresh; and an instance will be found in the "Scot. Nat.," 1880, p. 340, recorded by myself of a female Scaup taking up its quarters in the curling pond at Seggieden, for about three weeks, during which time it fed almost entirely on a species of water snail then literally in thousands (*Limnæa peregra*), which it seems to have entirely exterminated, as the species has never been found since. I may further mention that this pond is frequently visited by ducks from the river close at hand. On the Clyde, where the Scaup is an exceedingly more abundant bird than it is on the Tay (I speak of some years ago), I have seen large flocks as high up as Bowling, only eight or nine miles below Glasgow, so that it would not be difficult for a stray bird to ascend that distance or even higher, should they still frequent the Clyde as they used to do.

THE ZOOLOGICAL SOCIETY AND THE PRESERVATION OF THE GREAT SKUA.

WE learn with pleasure that the great Silver Medals of the Zoological Society of London have been awarded to Mrs. Edmonston of Bunes House, and to Mr. Robert Scott of Melby, in recognition of the effective protection accorded by members of their families, for 60 years, to the Great Skua (*Stercorarius catarrhactes*), at its breeding stations in the islands of Foula and Unst.

LIST OF ROTIFERA FOUND WITHIN A RADIUS OF
TWENTY MILES ROUND DUNDEE.

BY JOHN HOOD, F.R.M.S.

(Concluded from p. 25.)

FAMILY.—*TRIARTHRIDÆ*.

GENUS.—*Polyarthra Ehr.*

63. *P. platyptera Ehr.* In ponds and marsh pools. Common.
Tents Muir; Emmock Wood; Fife; Forfar; Perth.

GENUS.—*Pteroessa Gosse.*

64. *P. surda Gosse.* Black Loch, near Blairgowrie. Rare.

GENUS.—*Triarthra Ehr.*

65. *T. longiseta Ehr.* Sometimes met with in large numbers,
in ponds and ditches in Forfar and Fife; but not common
usually.

66. *T. mystacina Ehr.* Met with once or twice in a pool in
Emmock Wood; but rare.

FAMILY.—*HYDATINIDÆ*.

GENUS.—*Hydatina Ehr.*

67. *H. senta Ehr.* Common in stagnant pools, near farm-
yards, in spring and early summer. (Males, May and
June). Fife and Forfar.

GENUS.—*Notops Hudson.*

68. *N. clavulatus Ehr.* In marshy pools, on Tents Muir and
in Stormont Loch. Not common.

69. *N. hyptopus Ehr.* In marshy pools, on Tents Muir.
Not numerous.

FAMILY.—*NOTOMMATIDÆ*.

GENUS.—*Notommata Gosse.*

70. *N. aurita Ehr.* Rea Loch; White Loch, Blairgowrie;
Tents Muir. Common.

71. *N. cyrtopus Gosse.* In marshy pools. Perth; Fife; Pit-
caro, Forfar; but not common.

72. *N. brachyota Ehr.* Black Loch, Loch Rea, Marlee Loch.
Not rare.

73. *N. saccigera* Ehr. Loch Lundie, Rosemont, Forfar
Perth. Not common.
74. *N. naias* Ehr. In lochs and marshy pools, near Blairgowrie: Rare.
75. *N. lacinulata* Ehr. This vigorous little creature is to be met with frequently in ponds and ditches.
Perth, Forfar and Fife.
76. *N. collaris* Ehr. Black Loch and Stormont Loch, and in marshy pools.
Perth and Fife. Not common.
77. *N. tripus* Ehr. In ponds and lochs in Perth, Fife, Forfar. Common.
78. *N. ansata* Ehr. In lochs, ponds and marshes; but not common.
79. *N. pilarius* Gosse. Stormont Loch and Marlee Loch.
Perth. Common.
80. *N. forcipata* Ehr. In marshy pools and ditches. Not common.
81. *N. ovulum* Gosse. In my aquarium.

GENUS.—*Taphrocampa* Gosse.

82. *T. annulosa* Gosse. In marshy pools.
Perth; Fife; Forfar. Sparingly.

GENUS.—*Pleurotrocha* Ehr.

83. *P. constricta* Ehr. Common in Monk Mire, Stormont Loch and Black Loch.
Perth.
84. *P. leptura* Ehr. In marshy pools.
Lundie. Not common.
85. *P. gibba* Ehr. Midmill Pond, near Dundee. Rare.

GENUS.—*Copeus* Gosse.

86. *C. spicatus* Huds. Black Loch, Perth; only one specimen.
87. *C. labiatus* Gosse. In Midmill Pond and in marshes.
Forfar; Perth; Fife. Not rare.
88. *C. pachyurus* Gosse. Pretty numerous in marshy pools, on Tents Muir and in Lundie Loch. Not common.
89. *C. Cerberus* Gosse. Black Loch, Stormont Loch, and Rea Loch, and in marshy pools, Lundie. Not rare.

90. **C. caudatus** *Collins*. Midmill Pond, Black Loch, and lochs around Blairgowrie.
Forfar and Perth. Common.

GENUS.—**Proales** *Gosse*.

91. **P. sordida** *Gosse*. In Pitcaro Wood and Black Loch.
Forfar and Perth. Not common.
92. **P. felis** *Ehr*. In marshy pools in Fife and Forfar. Not rare.
93. **P. parasita** *Ehr*. Lives where *Volvox globator* is found, being parasitic in that species, in lochs and marshy pools.
Fife and Perth. Common.
94. **P. gibba** *Ehr*. In ponds and ditches in Forfar. Not common.
95. **P. tigridia** *Gosse*. In ponds and marshes at Lundie.
Forfar. Rare.
96. **P. petromyzon** *Ehr*. In lochs and ponds.
Fife, Perth, Forfar. Not rare.

GENUS.—**Furcularia** *Ehr*.

97. **F. marina** *Duj*. Firth of Tay at Carnoustie, in Forfar.
Not common.
98. **F. gracilis** *Ehr*. Stormont Loch and Monk-Mire Loch,
Perth. Not rare.
99. **F. forficula** *Ehr*. Rescobie Loch and Balgavies Loch, and
in Perthshire lochs. Common.
100. **F. cæca** *Gosse*. In marshes and ditches on Tents Muir.
Fife. Rare.
101. **F. ensifera** *Gosse*. In marshy pools on Tents Muir, and
pond in Emmock Wood. Not rare.
102. **F. sphærica** *Gosse*. In tide-pools of the Tay, and inhabits
fresh water also, in Forfar. Rare.
103. **F. longisetæ** *Ehr*. In ditches in Forfar. Rare.
104. **F. æqualis** *Ehr*. In marshy pools at Lundie. Not
common.
105. **F. micropus** *Gosse*. In ditches in Forfar and Fife. Rare.

GENUS.—**Eosphora** *Ehr*.

106. **E. aurita** *Ehr*. In ditches and marshes, in Forfar and
Fife. Common.

GENUS.—*Diglena* Ehr.

107. *D. circinator* Gosse. In lochs in Perth and Forfar. Not rare.
108. *D. forcipata* Ehr. In pond near Dundee, and in marshy pools at Lundie.
Forfar. Rare.
109. *D. permollis* Gosse. Midmill Pond and marshes on Tents Muir. Not rare.
110. *D. caudata* Ehr. In lochs around Blairgowrie in Perth. Common.
111. *D. catellina* Ehr. Numerous in tide-pools in Firth of Tay. It inhabits both salt and fresh water.
112. *D. clastopis* Gosse. In a ditch, Tents Muir, Fife. Rare.
113. *D. suilla* Gosse. At Wormit, Invergowrie. Not rare. Marine.
114. *D. pachida*. Firth of Tay. Marine.

GENUS.—*Distemma* Ehr.

115. *D. marina* Gosse. Firth of Tay, at Carnoustie.
Forfar. Rare.
116. *D. raptor* Gosse. Common in salt water in tide-pools in Firth of Tay.
117. *D. platyceps* Gosse. In tide-pools at Carnoustie. Not common.
118. *D. labiatum* Gosse. In marshes at Rescobie in Forfar. Rare.

SUB-ORDER.—LORICATA.

FAMILY.—*RATTULIDÆ*.GENUS.—*Mastigocerca* Ehr.

119. *M. carinata* Ehr. Common in ponds, ditches, and marshes.
Perth; Forfar; Fife.
120. *M. elongata* Gosse. Not rare in marshes.
Perth; Forfar; Fife.
121. *M. bicristata* Gosse. Common in marsh pools only.
Perth; Forfar; Fife.
122. *M. Irnis* Gosse. In marshy pools around Blairgowrie. Not rare.
123. *M. bicornis* Ehr. Common in marshes.
Perth; Forfar; Fife.

124. *M. rattus* Ehr. In ponds and marshes.
Perth; Forfar; Fife. Common.
125. *M. scipio* Gosse. In marshes.
Fife; Perth. Not rare.
126. *M. lophoessa* Gosse. In ponds, ditches and marshes.
Common in Fife, sparingly in Perth.
127. *M. macera* Gosse. In marshy pools on Tents Muir and
near Blairgowrie. Not rare.
128. *M. stylata* Gosse. In ponds and ditches in Fife and
Perth. Not common.

GENUS.—*Rattulus* Ehr.

129. *R. tigris* Müll. In ponds and marshes. Common in
Perth, Forfar and Fife.
130. *R. calyptus* Gosse. In rock pools, at Carnoustie in Firth
of Tay. Rare.
131. *R. cimolius* Gosse. In ditches and marshes in Perth and
Fife. Rare.

GENUS.—*Cœlopus* Gosse.

132. *C. minutus* Gosse. Black Loch and marshes. Perth.
Rare.
133. *C. cavia* Gosse. Black Loch, Perth. Not common.
134. *C. tenuior* Gosse. Rescobie Loch, Forfar. Rare.
135. *C. brachyurus* Gosse. Black Loch and Stormont Loch,
and marshes in Perth and Fife. Rare.

FAMILY.—*DINOCHARIDÆ*.

GENUS.—*Dinocharis* Ehr.

136. *D. pocillum* Ehr. Common in lochs, ponds, ditches and
marshes. Perth; Forfar; Fife.
137. *D. tetractis* Ehr. Common in ditches, ponds and lakes.
Perth; Fife; Forfar.
138. *D. Collinsii* Gosse. Black Loch, Perth. Rare.

GENUS.—*Scaridium* Ehr.

139. *S. longicaudum* Ehr. In lochs (Lundie, Stormont,
Monk Mire) and marshes. Perth; Forfar; Fife. Common.
140. *S. eudactyлотum* Gosse. Black Loch, Perth. Rare.

GENUS.—*Stephanops* Ehr.

141. *S. armatus* Hudson. Rescobie Loch, Forfar. Rare.

142. *S. muticus* Ehr. In ponds, ditches, marshes and lakes
Perth; Forfar; Fife. Not rare.
143. *S. chlæna* Gosse. Common in marshes on Tents Muir,
Fife, Perth. Not scarce.
144. *S. unisetatus* Collins. Loch Rea, Perth. Rare.

FAMILY.—*SALPINIDÆ*.GENUS.—*Salpina* Ehr.

145. *S. brevispina* Ehr. In lakes and ponds. Perth; Forfar;
Fife. Common.
146. *S. mirina* Gosse. In tide-pools in Tay; Forfar; Fife. Rare.
147. *S. eustala* Gosse. Common in ponds and ditches. Perth;
Forfar; Fife.
148. *S. macracantha* Gosse. Midmill Pond. Marshes on
Tents Muir. Perth; Fife; Forfar. Common.

GENUS.—*Diaschiza* Gosse.

149. *D. exigua* Gosse. Black Loch, Perth. Rare.
150. *D. Hoodii* Gosse. Black Loch, Perth. Marshes on Tents
Muir. Rare.
151. *D. semiaperta* Gosse. Common in lochs around Blair-
gowrie, and in marshes on Tents Muir, and in ponds near
Dundee.
152. *D. tenuior* Gosse. In lochs and marshes. Fife; Perth;
Forfar. Not common.
153. *D. globata* Gosse. In 1886 it was prolific in my aquarium,
also in Black Loch, Perth. Not usually common.
154. *D. valga* Gosse. Common in lochs in Perth.
155. *D. pæta* Gosse. In marshes at Lundie, Forfar. Rare.

GENUS.—*Diplax* Gosse.

156. *D. compressa* Gosse. In ponds and ditches near Dundee.
Not common.
157. *D. trigona* Gosse. In marshes at Lundie, Forfar; Perth.
Rare.

GENUS.—*Diplois* Gosse.

158. *D. Daviesiæ* Gosse. In ditches on Tents Muir and in
a pond near Dundee. Not common.
159. *D. propatula* Gosse. In ponds and ditches. Forfar and
Fife. Not rare.

FAMILY.—*EUCHLANIDÆ*.

GENUS.—*Euchlanis Ehr.*

160. *E. triquetra Ehr.* Common in ponds, lakes and marshes. Perth; Forfar; Fife.
161. *E. dilatata Ehr.* White Loch, Rea Loch, Stormont Loch, Lindores Loch, Lundie Loch and Rescobie Loch. Perth; Forfar; Fife. Common.
162. *E. macrura Ehr.* Lundie, Rescobie Loch. Not very common, but not rare.
163. *E. deflexa Gosse.* In lochs around Blairgowrie and Lundie. Not rare.
164. *E. pyriformis Gosse.* Black Loch, Perth. Rare.

FAMILY.—*CATHYPNIDÆ*.

GENUS.—*Cathypna Gosse.*

165. *C. diomis Gosse.* Black Loch and Stormont Loch, Perth. Not rare.
166. *C. latifrons Gosse.* Black Loch and Lundie Loch. Perth; Forfar. Rare.
167. *C. luna Ehr.* Common in ponds, ditches and marshes. Perth; Forfar; Fife.
168. *C. rusticula Gosse.* Midmill Pond. Marshes on Tents Muir, Fife; Forfar. Common.
169. *C. sulcata Gosse.* In marshes, Stormont, and Tents Muir. Perth; Fife. Rare.

GENUS.—*Distyla Eckstein.*

170. *D. Ludwigii Gosse.* Lundie Loch, Forfar. Rare.
171. *D. Gissensis Eckst.* Stormont Loch, Rescobie Loch, and in marshes in Forfar and Perth. Common.
172. *D. flexilis Gosse.* Ponds near Dundee. Rare.

GENUS.—*Monostyla Ehrh.*

173. *M. cornuta Ehr.* Common in ditches, pools and marshes, all over Perth, Fife, Forfar.
174. *M. mollis Gosse.* Rescobie Loch, Balgaves Loch, Forfar. Rare.
175. *M. bulla Gosse.* Lundie Loch and Monk-mire Loch; Perth and Forfar. Not uncommon.
176. *M. quadridentata Ehr.* Ditches near Dundee; and marshes on Tents Muir. Rare.

FAMILY.—*COLURIDÆ*.GENUS.—*Colurus Ehr.*

177. *C. dicentrus* *Gosse*. In tide-pools at Carnoustie, Firth of Tay. Not rare.
178. *C. grillator* *Gosse*. Tide-pools in Firth of Tay. Rare.
179. *C. leptus* *Gosse*. In fresh water at Emmock Wood; also marine in Firth of Tay. Rare.
180. *C. deflexus* *Ehr.* Common in ditches and marshes, in fresh water.
Perth; Forfar.
181. *C. obtusus* *Gosse*. In ditches near Dundee, in fresh water. Common.
182. *C. caudatus* *Ehr.* In Black Loch and in ditches.
Fife; Perth. Common.
183. *C. amblytelus* *Gosse*. In salt water in rock-pools, at Carnoustie, Firth of Tay. Not common.
184. *C. dactylotus* *Gosse*. In tide-pools on Lucky Scalp, Firth of Tay. Rare.
185. *C. pedatus* *Gosse*. Wormit Bay (tide-pools), Firth of Tay, Marine. Rare.
186. *C. cœlopinus* *Gosse*. In tide-pools at Carnoustie, Firth of Tay. Not rare.

GENUS.—*Metopidia Ehr.*

187. *M. solida* *Gosse*. In ditches, ponds and marshes.
Perth; Forfar; Fife. Plentiful.
188. *M. lepadella* *Ehr.* In lakes, ponds and ditches.
Forfar; Perth; Fife. Common.
189. *M. oxysterna* *Gosse*. Abundant in Black Loch and Stormont Loch, Perth.
190. *M. bractea* *Ehr.* Common in marshes and ditches.
Perth; Fife.
191. *M. triptera* *Ehr.* Lundie Loch and Black Loch.
Perth; Forfar. Not common.

GENUS.—*Monura Ehr.*

192. *M. colurus* *Ehr.* In tide-pools.
Firth of Tay.
193. *M. loncheres*. In tide-pools.
Invergowrie, Firth of Tay. Common.

GENUS.—*Mytilia* Gosse.

194. *M. tavina* Gosse. In Firth of Tay, Fife and Forfar.
195. *M. pœcilops* Gosse. In tide-pools.
Firth of Tay, Invergowrie, Forfar. Common.
196. *M. producta* Gosse. In tide-pools.
Firth of Tay, Fife. Rare.
197. *M. teresa* Gosse. Lucky Scalp, Firth of Tay. Marine.
Rare.

GENUS.—*Cochleare* Gosse.

198. *C. turbo* Gosse. Numerous in Black Loch, Perth; elsewhere not common.

FAMILY.—*PETERODINIDÆ*.

GENUS.—*Peterodina* Ehr.

199. *P. patina* Ehr. Common in ponds and ditches and lochs.
Perth; Forfar; Fife.
200. *P. valvata* Huds. In lochs (Lundie, Black Loch, Stormont), Perth and Forfar. Not rare.
201. *P. clypeata* Ehr. Plentiful in salt-water. Firth of Tay.
202. *P. truncata* Gosse. Rea Loch, Perth. Very rare.
203. *P. truncata* Gosse. *Var.* In Loch Lundie, and pond near Dundee. Rare.

FAMILY.—*BRACHIONIDÆ*.

GENUS.—*Brachionus* Ehr.

204. *B. urceolaris* Ehr. *Var.* In ponds, ditches and marshes.
Perth; Forfar; Fife. Common.
205. *B. Mülleri* Ehr. In salt-water pools, in Firth of Tay.
(Marine). Plentiful.
206. *B. rubens* Ehr. In ponds and marshes.
Fife; Forfar. Rare.
207. *B. pala* Ehr. In ponds and ditches.
Forfar and Perth; sometimes plentiful, but usually not common.
208. *B. angularis* Gosse. In ponds and ditches.
Forfar. Common.
209. *B. tridens*. In salt-water tide-pools.
Firth of Tay. Rare, marine.

GENUS.—*Noteus Ehr.*

210. *N. quadricornis Ehr.* In Black Loch, Lundie Loch ; sometimes in the Dundee water supply.
Perth ; Forfar. Rare.

FAMILY.—*ANURÆIDÆ.*GENUS.—*Anuræa Gosse.*

211. *A. hypelasma Gosse.* In lochs (Lundie, Rescobie, Balgaves, Stormont, Black).
Perth and Forfar. Common.
212. *A. aculeata Ehr.* Common in ponds and marshes.
Perth ; Forfar ; Fife. Common.
213. *A. cochlearis Gosse.* In lochs around Blairgowrie, Loch Lundie. Perth and Forfar. Common.
214. *A. serrulata Ehr.* In ponds and ditches.
Fife and Forfar. Not common.
215. *A. tecta Gosse.* In ponds and ditches.
Forfar. Not common.

GENUS.—*Notholca Gosse.*

216. *N. thalassia Gosse.* In tide-pools at Tayport near Dundee.
Firth of Tay. Common.
217. *N. scapha Gosse.* In tide-pools at Carnoustie and Tayport.
Firth of Tay. Common.
218. *N. spinifera Gosse.* In tide-pools. Firth of Tay. Common.
219. *N. jugosa Gosse.* In tide-pools. Firth of Tay. Rare.
220. *N. rhomboidea Gosse.* In Firth of Tay. Common.
221. *N. labis Gosse.* In pond in Emmock Wood, Forfar. Not common.
222. *N. longispina Kellicott.* Stormont Loch. Perth. Rare.

GENUS.—*Eretmia Gosse.*

223. *E. cubeutes Gosse.* In Black Loch. Perth. Rare.
224. *E. pentathrix Gosse.* In Stormont Loch. Perth. Rare.

LIST OF PLANTS SEEN IN THE VALLEY OF BRAEMAR AND ON MORRONE.

BY PROF. C. C. BABINGTON, M.A., F.R.S.

MY object in drawing up this list is to record the plants found in and about the village of Braemar, and on the slopes of the hills to a moderate elevation: the top of Morrone (2819 feet) being the highest point attained. The bridge at Braemar is 1,160 feet above the sea; and the highest cultivation is at the farm of Tomantoul, on the slope of Morrone, at 1500 feet. Castleton of Braemar is situated almost upon the 57th degree of north latitude, and at an elevation of 1160 feet above the sea.

It seems to me that more attention should be bestowed upon the plants which grow in such elevated valleys as this, and on the weeds of cultivation found in them, than is usually given by botanists. The cause of this neglect is not far to seek. Botanists visit such districts as Braemar for a few days at a time in order to gather the rare plants growing on the hills, especially the more elevated ones; and it is only such as myself, who go there to spend many weeks, who have time to attend to the less interesting, because less rare, plants of the fields and road sides.

I have spent six or eight weeks in Braemar, in several successive years, during the months of August and September; and have not found it desirable to attempt the ascent of the higher mountains, several of which I visited many years since in company with the late Prof. J. H. Balfour. I have therefore not recently gathered many of the plants of those elevated regions: only such of them as descend as far as the top of Morrone. To the plants inhabiting that hill I have paid considerable attention.

Persons who are not able to scale the higher mountains will find Morrone well worthy of their attention. Its top is well deserving of a visit, not merely for the very beautiful view obtained from it, but also for the plants inhabiting its apparently barren ground, which careful observation will soon show not to be really barren. This hill is easy of access; and, in addition to its higher parts, the beautiful woods covering its lower slope for some distance to the west of Tomantoul are very rich in interesting plants. The ravine of Corriemulzie is well deserving of

careful and repeated examination; also the banks of the two rivers, Dee and Clunie, are rich in plants.

My district may be described as extending from a little below Invercauld Bridge to Glen Derry, up Glen Clunie to Fraser's Bridge over the Clunie, and in Glen Callater to the head of Loch Callater. I have not included the corrie of Loch Candor, so well known for its rich flora; for it requires a young and active man to examine it successfully. It is often visited by botanical parties from Edinburgh, Glasgow, and Aberdeen.

A few species that do not come within the boundaries here defined have been mentioned for special reasons. They are enclosed in square brackets to distinguish them.

I have included a few plants not gathered by myself, but most of which I was shown in a living state.

It has not been my object to describe the exact localities. When the plants are tolerably abundant this is unnecessary; when they are rare it is undesirable.

It should be remarked that Castleton is just on the upper line of growth to which *Ulex europæus* and *Sarothamnus scoparius* extend; only an occasional plant of either of them is to be found; and, I believe, none occur at a higher elevation. (See *S. scoparius*.)

I have appended a list of the species of *Hieracium* observed by my friend, Mr. F. J. Hanbury, near Braemar, as it possesses considerable interest; distinguishing in it those that grow on the higher mountains from the inhabitants of the valleys.

It may be well to point out what especially strikes a botanist arriving at Braemar from the south. He immediately notices the great abundance of *Alchemilla alpina* and the presence of *Rumex domesticus*. His first walk along the bank of the Clunie, toward its junction with the Dee, introduces him to *Carduus heterophyllus* and *Meum Athamanticum*, and probably to roses different from those with which he is familiar. On turning to the higher ground,—for instance at the top of Chapel Brae—he is struck by the abundance of *Pyrolæ*, and finds occasionally a plant of *Trientalis europæa* or, perhaps, of *Cornus suecica*, and also abundance of *Vaccinium Vitis-Idæa* (called Cranberry in Braemar) and of *Arctostaphylos Uva-ursi*. On examining the base of Morrone he would find all these in finer condition; and upon its top *Azalea procumbens* and *Juncus trifidus* in the dry parts; and in wet spots *Vaccinium uliginosum* and *Rubus Chamæmorus*.

Having published this list, I leave it to others to try and add to it, as doubtless those who visit the country early in the year will easily do. The early plants are known to me only by finding them in a withered state in the autumn.

The late Mr. Wm. Gardiner of Dundee printed "Botanical Rambles in Braemar" in 1845, but he took no notice of the plants to be found in the low country, and devoted especial attention to the Cryptogamic plants. It is doubtful if his little book was ever really published, as it bears only a printer's name (James Duff, 29 Hill Street, Dundee) on the title page.

[NOTE.—By Professor Babington's wish, with a view to render the subjoined list more complete a few species have been added, and also notes on certain of the other species, by Dr. John Roy of Aberdeen, by Dr. Buchanan White and by myself. Such notes are in brackets; and the initials R., T. and W. indicate by whom each is added.—*J. W. H. Trail.*]

RANUNCULACEÆ.

Thalictrum alpinum Linn. Borders of Loch Callater, but rare.

Anemone nemorosa Linn. Abundant in the woods.

Ranunculus floribundus Bab. There appears to be a small form of this in the reservoirs. It is probably the *R. aquatilis* of Dickie's "Botanists' Guide."

R. hederaceus Linn. In the valley, but rather rare.

R. Flammula Linn. Common; especially in its creeping and rooting form, which is often mistaken for *R. reptans* Linn.

R. auricomus Linn. In the woods in several places.

R. acris Linn. Common even at high elevations. All that I saw appeared to be *R. Boræanus* Jord.

R. bulbosus Linn. Is probably not unfrequent in the valley.

R. repens Linn. Common.

Caltha palustris Linn. Common. A small form is abundant even to a great elevation.

Trollius europæus Linn. Abundant in the woods.

FUMARIACEÆ.

(*Fumaria officinalis* L. up to 1100 feet, *W.*)

CRUCIFERÆ.

Barbarea vulgaris R. Br. Rarely at Castleton.

Arabis petræa Linn. On the shingles by the river Dee, having been washed down from above.

A. hirsuta R. Br. Rare.

Cardamine pratensis Linn. Common.

C. hirsuta Linn. Common.

Sisymbrium Thalianum Gay. Rare at Castleton.

Erysimum cheiranthoides Linn. On cultivated land at Castleton.

Capsella Bursa-pastoris Moench. Common.

Camelina sativa Crantz. A weed of cultivation, even to 1,500 feet. Common in a field near Castleton.

Sinapis arvensis Linn. Cultivated land.

S. alba Linn. Cultivated land.

Draba verna Linn. Cultivated land.

Lepidium Smithii Hook. Mr. Watson found this on the bank of the Dee at Castleton.

Subularia aquatica Linn. Lower end of Loch Callater.

Raphanus Raphanistrum Linn. Cultivated land.

CISTACEÆ.

Helianthemum vulgare Gært. Common, even to 1,700 feet of elevation.

VIOLACEÆ.

Viola palustris Linn. Common.

V. Riviniana Reich. Common. I suppose that this is the *V. canina* of Dickie.

V. lutea Huds. Common. Usually more or less purple.

V. tricolor Linn. Common on cultivated land.

DROSERACEÆ.

Drosera rotundifolia Linn. Common.

D. anglica Huds. Mr. A. K. Clark found this in Glen Callater. (Between Auchallater and Glen Callater, once, *R.*)

POLYGALACEÆ.

Polygala vulgaris Linn. Common in the typical form.

CARYOPHYLLACEÆ.

Silene acaulis Linn. Low down by Loch Callater.

Lychnis Flos-cuculi Linn. I did not see this, being probably too late for it.

(*L. vespertina* Mill. up to 1,100 feet, *W.*)

L. Githago Scop. Rarely, on cultivated land.

Sagina procumbens Linn. Common.

S. Linnæi Presb. (*S. saxatilis*). High on Morrone.

S. nodosa E. Mey. Common.

Arenaria Trinervis Linn. Rather rare.

A. serpyllifolia Linn. Common.

Stellaria media Vill. Common.

S. Holostea Linn. Rather common.

S. graminea Linn. Abundant.

S. uliginosa Murr. Common.

Cerastium glomeratum Thuill. Common.

C. triviale Link. Common in a very hairy state.

C. alpinum Linn. Dickie found this near Ballater, at an elevation of 1,480 feet. We may, therefore, expect to find it in some damp spot on Morrone; but I did not see it.

[*C. arcticum* Lange. Grows on the high mountains. What is the *C. latifolium* of Dickie, found by Croall on Little Craigen-dall? I have specimens from Croall, but cannot answer this question from them. Those who possess specimens of Croall's collection would do well to examine them with care. We do not seem to possess the true *C. latifolium* in Britain.]

Lepigonum rubrum Fr. Dr. Dickie found this at Castleton. I did not see it there. (Chapel Brae. *R.* Up to 1100 feet *W.*).

Spergula arvensis Linn. var. *sativa*. Common on cultivated land at Castleton.

Scleranthus annuus Linn. On cultivated land at Castleton.

ELATINACEÆ.

(*Elatine hexandra* D.C. Loch Callater, *R.*).

HYPERICACEÆ.

Hypericum pulchrum Linn. Common.

(*To be continued*).

RECORD OF SCOTTISH PLANTS FOR 1890, ADDITIONAL TO "TOPOGRAPHICAL BOTANY."

Ed. 2.

BY ARTHUR BENNETT, F.L.S.

THESE records for 1890 are about 130 in excess of those of 1889. This being so, and from feeling that they occupy so large a space in a quarterly publication, I have not recorded any varieties, or hybrids; these are becoming so numerous that they must be excluded.

Mr. Druce, in "The Journal of Botany" for 1890, p. 40, *et seq.* has recorded many varieties. Dr. F. Buchanan White in the "Journal of the Linnean Society" for 1890, records many hybrids of *Salix*, in a "Revision of the British Willows," which should be consulted by every botanist interested in British plants.

In the way of new plants I have nothing to record; as, although the genus *Hieracium* is still yielding "species" which cannot be placed to any Scandinavian form, they have not yet been published.

Two can be recorded as additional Scotch plants, *viz.*, *Rubus Sprengelii* Weihe, found by Mr. C. Bailey in Kirkcudbright and Wigton, and determined by Mr. J. G. Baker of Kew; and *Utricularia neglecta* Lehm., gathered by Mr. J. Corrie in Dumfries, and sent me by Mr. Fingland. The nearest English station I have seen this from is Cheshire, gathered by the late Mr. A. Croail of Stirling.

The sequence of the counties is the same as before, and abbreviations: *Scot. Nat.* for "Scottish Naturalist;" *J. B.*, "The Journal of Botany"; *sp.* denotes that the writer possesses a specimen from the locality in question; ! that he has seen a specimen, but has returned it to the collector.

72. Dumfries.

(From *Mr. J. Fingland*, unless otherwise shown.)

Cakile maritima.

Ulex Gallii.

Potentilla alpestris. *J. S. Johnstone, sp.*

P. argentea. *Dr. Davidson.*

Rosa rubiginosa.

Rubus Lindleianus.

Saxifraga aizoides. *Rev. W. Bennett.*

S. nivalis.

S. sponhemica.

Epilobium tetragonum.

Eryngium maritimum.

Valeriana dioica.

Crepis biennis. *J. Shaw and Scott Elliot.*

Hieracium sparsifolium *Lindb.*

H. argenteum. *Rev. E. F. Linton.*

Centaurea Cyanus.

Senecio viscosus.

Cichorium Intybus. *Scott Elliot.*

Calamintha Clinopodium. *Rev. E. F. Linton.*

Utricularia neglecta. *J. Corrie sp., ex Fingland.*

New to Scotland, the nearest English station I have seen it from is Cheshire.

Suæda maritima.

Salix triandra.

S. ambigua.

Malaxis paludosa. *J. Corrie, 1887, but gathered by Dr. Grierson some years ago.*

Allium vineale, b. bulbiferum.

Sparganium minimum.

Schœnus nigricans.

Carex atrata. *Rev. E. F. Linton.*

C. pulla.

Phleum arenarium. *Dr. Davidson.*

Hordeum pratense. *J. M'Andrew.*

73. Kirkcudbright.

Thalictrum majus Crantz. *J. M'Andrew, sp.*

T. flavum. „ *sp.*

Vicia lutea. „ *M. S.*

Rubus Sprengelii. *C. Bailey, 1889, ex J. M'Andrew.*

New to Scotland, named by Mr. J. G. Baker.

74. Wigton.

(From specimens sent by *Mr. J. M'Andrew.*)

Ranunculus bulbosus.

Draba verna.

Viola odorata.

Cerastium semidecandrum.

Drosera intermedia.

Geranium pratense. *M.S.*

Trifolium striatum.

Vicia lathyroides.

V. lutea.

Rubus Sprengelii.

R. Lindleianus.

„ polyanthemos Lind.

Rosa mollis. All four *C. Bailey, ex M'Andrew*; named by Mr. Baker.

- Saxifraga granulata. *M.S.*
 Leontodon hispidus. *M.S.*
 Bidens tripartitus.
 Utricularia vulgaris.
 U. Bremii?
 Hyoscyamus niger. *J. Corrie.*
 Orchis incarnata.
 Habenaria bifolia.
 Listera cordata. *M.S.*
 Carex eu-flava.
 C. Cederi Ehrh.
 Bromus asper.
 B. arvensis.
 Festuca arundinacea Schrad., *fide* Hackel.
 Polypodium Phegopteris. *M.S.*
 P. Dryopteris. *M.S.*
 Cryptogramme crispa. *M.S.*
 Polystichum lobatum. *M.S.*
 Cystopteris fragilis. *M.S.*
 Ophioglossum vulgatum. *M.S.*
 Lycopodium selaginoides. *M.S.*
 L. Selago. *M.S.*

75. **Ayr.**

- Carex Bœnninghausenia. *L. Watt, sp.*
 Lepturus filiformis. *Somerville!*

76. **Renfrew.**

- Cicuta virosa. *A. Somerville!*

77. **Lanark.**

- Salix undulata. *R. M'Kay, fide* Dr. B. White.
 Potamogeton Zizii. *Ball herb, at Kew!*

80. **Roxburgh.**

- Salix viridis Fr. *A. Brotherston, fide* Dr. B. White.

84. **Linlithgow.**

- Dianthus deltoides. *J. C. Druce, J.B., 1890, p. 40*

(*To be continued.*)

NEW DISCOMYCETES FROM ORKNEY.

BY WILLIAM PHILLIPS, F.L.S.

THE following species have been detected among some of the material collected by Professor Trail in Orkney, in August, 1888, which I had set aside for further examination.

(All measurements, unless so stated, are in micromillimetres.)

Hymenoscypha Symphoricarpi, n. s.

Scot. Nat. 1889, p. 139, No. 105, as *Hymenoscypha aurea* (Pers.).

Cups scattered, stipitate, cupulate, then expanded, plane, glabrous, or minutely tomentose on the sub-bulbous slender stem; margin entire; bright yellow throughout; asci cylindrical, narrowed at the base; sporidia oblong or oblong-fusiform, rather obtuse, a gutta at each pole; paraphyses filiform, slender.

On dead branches of *Symphoricarpus racemosus*, Binscarth.

Cups 300-500 broad, stem 300-1000 long; asci 60 × 7. This is a slender delicate species, which does not agree well with any described species. It comes near *Phialea vitellina* (Rehm.) Sacc., but differs in the sporidia, and tomentose sub-bulbous stem.

Mollisia (Pyrenopeziza) Carduorum (Rehm).

Pyrenopeziza Carduorum Rehm., *Ascom.* No. 68; *Winter, in Flora*, 1872, p. 526; Saccardo *Syll. Fung.*, Vol. VIII., p. 359.

On *Carduus lanceolatus*, Binscarth.

“Cupulis dense gregariis v. sub-confluentibus, sessilibus, extus glabris, papillatis, opaco-nigro-fuscis, basi pilis hyalinis repentibus cinctis, primo globosis, margine incurvo, papillato-crenato fimbriatove, demum difformibus, apertis, planis, fere emarginatis, disco plano incano-glaucis, 5-1.7 mm. latis; ascis cylindraceutis, sessilibus, 8-sporis, 50-65 × 7; paraphysibus simplicibus filiformibus, hyalinis; [sporidiis lanceolatis], rectis v. curvatis, 4-8-nucleatis, 12-19 × 1.5-2.

“In caulibus putridis carduorum in Franconia,” *Winter, l.c.*

Mollisia (Niptera) cinerella, Sacc.

forma caespitosa, mihi.

On decorticated wood of *Fagus sylvatica*, Binscarth.

The cups break out in caespitose heaps: the sporidia are clavato-fusiform, and are furnished with a gutta near the ends.

Lachnella orbicularis, n. sp.

Minute, scattered, erumpent, sessile, orbicular, when dry black,

when moist fuliginous, clothed near the margin with short, fuliginous, asperate hairs; asci subfusiform, broad; sporidia eight, fusiform, pointed at the ends, tri-guttulate, $10-14 \times 2-2.5$; paraphyses acerose, a little exceeding the asci in length.

On dead culms of *Juncus squarrosus*. Greenay Hill in Birsay.

Cups 100-200 broad, asci $35-38 \times 7$; paraphyses $40-43 \times 2.5$. This has many points in common with *Dasyscypha Rehmii* (Staritz), Sacc.; but differs in being perfectly sessile and much smaller in size.

***Lachnella brunneo-ciliata*, n. sp.**

Scattered, stipitate, cupulate, dark brown; margin ciliated with dark brown asperate hairs; hymenium pale-cinereous; asci cylindraceo-clavate; sporidia eight, oblong-elliptic, or subcymbiform, obtuse, uniseptate, $12-14 \times 3-4$; paraphyses acerose, broad, exceeding the asci.

On dead culms of *Juncus squarrosus*. Shore of Loch of Banks in Birsay.

Cups 300-600 broad; stem equalling in length the diameter of the cup; hairs 60×4 ; asci 65×7 ; paraphyses 80×5 . This is quite distinct from *Dasyscypha Rehmii* (Star.) Sacc.

***Lachnella* (*Helotiella*) *Laburni*, n. sp.**

Cups minute, scattered, sessile, at first globose, urceolate, dirty white or pale brown, margin ciliated with pale brown hairs; asci cylindraceo-clavate, or clavate; sporidia 8, oblong, obtuse, uniseptate, slightly constricted, hyaline, 13×5 ; paraphyses slender, sparse.

On twigs of *Cytisus Laburnum*, Binscarth.

The cups are 200 broad, urceolate; the hairs are non-septate, paler near the base, 60-65 long, 3 broad; the asci are $70 \times 10-12$.

It is remarkable that on the branches of *Cytisus radiata*, in Northern Italy, a minute species—*Niptera Raineri* (De Not.) Sacc., occurs with very similar sporidia. I cannot suppose, however, that they are the same plant, as De Notaris has said nothing about the margin of *N. Raineri* being ciliated.

***Ascobolus stictoideus*, Speg.**

Michelia, Vol. I., p. 474. Saccardo's *Sylloge Fungorum*, VIII., p. 515.

“Laxissime gregarius v. sparsus, minutus, vix $\frac{1}{3}-\frac{1}{2}$ mm. diam., externe aquose albidus, disco dilute olivaceo ex ascis exsiliantibus nigro-punctato, totaliter in fimo immersus, non v. labiis tantum

exsertis, crassiusculis atque laceris; ascis paucis, 5-10, magnis, 150-160 × 40, clavato-saccatis, breviter et crasse stipitatis, superne crassiuscule tunicatis, octosporis; paraphysibus septulatis, apice curvulis, obvallatis; sporidiis distichis vel irregulariter polystichis, ellipticis, 25 × 14, primo hyalinis, levibus, dein amoene violaceis, minute ac densissime verruculosus, postremo roseo-fuligineis. Tunica ascorum iodi ope obsolete cœrulescit."

On dog's dung, at Howan, in Birsay.

Cenangium Empetri n. sp.

Cups scattered, minute, at first nestling beneath the epidermis, then erumpent, subturbinate, or barrel-shaped, margin connivent, then erect, torn; externally vertically wrinkled, granular, black, coriaceous; hymenium nearly black; asci cylindraceo-clavate; sporidia 8, elliptic, becoming fuliginous grey, 15-17 × 7-9; paraphyses filiform, occasionally branched.

On dead leaves of *Empetrum nigrum*.

Cups 300 broad in the widest part, and the same in height; asci 100 × 15, cell-wall conspicuous.

BOTANICAL NOTES.

By G. Claridge Druce, M.A., F.L.S.

Scotch Equiseta, *Equisetum arvense*, L. var. *alpestre*, Wahl., Cairn y Daimh, E. Perth; Tolmount, Forfar. *E. silvaticum*, L. var. *serotinum*, Milde, Ben Lawers; Mid-Perth. *E. palustre*, L. var. *nudum*, Duby, Glen Sheer, E. Perth; beside the White Water, Forfar; var. *polystachium*, Vill., Coninish Valley, Argyll. *E. limosum*, L. var. *Linnaeanum*, Döll, Boat of Garten, Easternness. *E. maximum*, Lamk., var. *serotinum*, A. Br. Munloch, Wigton.

Cerastium arcticum, Lange. This occurred on the north side of Cairngorm, in Easternness.

Don's Plant of Ranunculus nivalis. While recently staying with Miss Palmer I examined a few specimens collected by George Don for her grandmother, the fourth Countess of Aylesford, which I had not previously seen. One of these was labelled, "*Ranunculus nivalis*, Sp. Pl. 1321. High mountain near Mar Lodge, Aberdeen." This is not the *Linnaean nivalis*; but is closely allied to *R. acris*, L. var. *pumilus*, Wahl., which I have collected from Corrie Scheadna, Easternness, and Glen A'an, Banff.

It may interest Scotch botanists to learn that the very interesting and beautiful drawings of British plants made by the Countess of Aylesford are now in the possession of her grand-daughter, the Countess of Dartmouth. They probably include several of Don's plants.

ZOOLOGICAL NOTES.

Notes on the Badger.—Mr. Cooke records the capture of a Badger (*Meles taxus*) in Lanarkshire on 18th April, 1890. I am sorry to hear of it. The animal is well nigh extinct in the Lowlands now. They are quite harmless, the utmost grudge gamekeepers can have against them is because they dig young rabbits out of the burrows and eat them. It is also alleged that they destroy eggs, and it is quite true that, being omnivorous, they will eat an egg if it is offered them; but they are strictly nocturnal in their habits, and by night every decently-behaved game bird is on her eggs. I have succeeded in re-establishing them in Wigtonshire, having, some years ago, turned out a dog and four bitches.—HERBERT MAXWELL, Monreith, Wigtonshire.

Wild Cat in Shetland.—Several communications have been received on the subject of the Wild Cat in Shetland, recorded from "The Zoologist" in our last number. The purport of these is that there are no true Wild Cats in the Islands; and the one shot at Bressay is to be regarded as nothing more than a specimen of the domestic animal living in a feral condition.

Daubenton's Bat in Mid-Lothian.—I have recently examined specimens of this probably much overlooked species which were captured at Liberton, near Edinburgh, in July, 1880, and supposed to be specimens of the Pipistrelle (*Vesperugo pipistrellus*). Daubenton's Bat (*Vespertilio daubentonii*) has not, I believe, been hitherto recorded for the county.—WM. EAGLE CLARKE.

Chiff-Chaff in Inverness-shire.—For several years, both by personal observation, and through the medium of resident friends, I have been endeavouring to discover if the Chiff-Chaff (*Phylloscopus rufus*) had ever been identified in Glen Urquhart, or any of the neighbouring glens that branch off Loch Ness. Although rumours more or less confirmatory of its occurrence have reached me, it was not until June, 1890, that all doubts upon the point were dissolved and the species actually located. While upon a visit to the district, in the above-named month, I both saw and heard a pair in the Pass of Inverfarigaig, one of the most romantic of our Highland gorges. They were haunting a dense clump of fir trees not far from the spot where Dr. Bryce, the geologist, was killed while in pursuit of his favourite science, and from the fact of their occurring in June the inference might be drawn that they were breeding. Upon this latter point, however, no authentic information is as yet forthcoming, more especially as this locality is sparsely populated, and the few people who do take any interest in ornithology seem to be unacquainted with the difference between this bird and its congener the Willow Warbler (*Phylloscopus trochilus*). I may state that having an intimate knowledge of the species in various parts of England there is not the slightest doubt of its having been identified as stated above.—ARCHIBALD CRAIG, Edinburgh.

Lesser Redpoll in Perthshire.—A lesser Redpoll (*Linota rufescens*)

was to be seen in Lochearnhead Hotel garden, in August last. It was certainly this species and not a Twite.—J. H. GURNEY, Keswick Hall, Norwich.

An Undomed Nest of the Long-tailed Tit.—While staying at Aberlady last May, the keeper at Gosford asked me to look at a nest, in a thorn hedge close to his house, which puzzled him. The nest, he said, was like that of a *Shilfa* (Chaffinch), but contained three very small white eggs speckled with minute red dots. On going to the spot I found, as the keeper had indicated, a nest which to all appearance was that of a Chaffinch; but on closer inspection it was seen to be occupied by a Long-tailed Tit (*Acredula rosea*). The bird was very reluctant to quit its charge; and, drawing itself deep into the nest, did not leave it till my finger touched the rim. Only two of the seven eggs laid got the length of hatching, and the tiny young ones disappeared also before they were many days old. I then took the nest, which, with one of the eggs, is now before me. It is exactly like that of a Chaffinch, only a little deeper, perhaps, in proportion to its breadth. The outside is beautifully covered with lichen, and the inside warmly lined with a profusion of Pheasants' feathers. In depth it is fully $2\frac{3}{4}$ inches inside, and $3\frac{1}{4}$ outside; across the top it is $3\frac{3}{4}$ inches. The rim is uniformly finished all round and shows no signs of ever having had a dome. In none of the works I have consulted is there any reference to an undomed nest of this species.—WILLIAM EVANS, Edinburgh.

Bittern (*Botaurus stellaris*) in Berwickshire.—On 24th December last, I saw in Mr. Hope's Shop, George Street, a fine specimen of this bird which had been shot the previous day at Lowhaughs on the Whitadder. It proved, on dissection, to be a male, and is the property of Mr. W. A. Miller of Berwick-on-Tweed.—WILLIAM EVANS, Edinburgh.

Little Bittern in Shetland.—An example of this bird killed in the island of Whalsay so far back as 1883, was recently forwarded to me for identification. The sender was under the impression that it was a Little Egret, but though the specimen was in a very dilapidated condition, Mr. Harting, who kindly compared it for me, had no hesitation in confirming my identification of it as *Ardetta minuta*. It was shot by John Lawrenson, on Whalsay, in the "middle of August, 1883," and roughly stuffed by him. This is the first record as far as I have been able to ascertain of the occurrence of this bird in the Shetland Islands.—H. RÆBURN, Romford.

Bewick's Swan on Loch Lomond.—During this winter a flock of Bewick's Swans (*Cygnus Bewicki*) have frequented the Loch. On the 26th December, 1890, as I was standing on the public road about 4.30 P.M., a pair (both old birds) passed close over my head. The same evening a gamekeeper shot a pair quite near the same place. They came over his head as he sat at the edge of the loch waiting to get a shot at wild ducks. This pair are now in my collection of local birds here. The one is a fine old bird and the other a young one in immature plumage. It is only in very severe winters that Wild Swans of any kind are met with on Loch Lomond. This winter has not been very hard here. There has been a

good deal of light frost but not much hard frost. This may rather surprise some of our friends in the South, who look upon Scotland in winter as a sort of small Arctic region. I wonder if London or Loch Lomond have been the most like the Arctic regions this season.—JAS. LUMSDEN, Arden, Loch Lomond.

Hybrid Pheasant and Capercaillie.—Mr. James Brown, High Street, Forres, has, as a taxidermist, for several years been the medium of making known many additions to the fauna of the Province of Moray. This season there were sent to him two handsome, robust birds, giving no uncertain sound as to their parentage—hybrids, between the Capercaillie and the Pheasant. Mr. B. has compared them with the description given on pp. 38 and 59 of our last number, and finds them agreeing with Mr. Lumsden's bird. He is under the impression that the two specimens he got were part of a brood of hybrids, and that there are still some members of it among the *fera nature*.—G. GORDON, Elgin.

Land-Rail in Mull and Jura in Winter.—On the 20th December, 1890, in shooting the Home Covers, the snow knee-deep, I shot two Land-rails (*Crex pratensis*) right and left. Mr. Evans, the tenant of Jura Forest, informs me that he shot a bird of this species at Jura, on the 3rd of the same month.—MACLAINE OF LOCHBUIE.

Sabine's Snipe in Clackmannanshire.—A fine specimen of this melanistic form of the Common Snipe (*Gallinago cœlestis*), was shot on 13th December last on Grassmainston Moor close to a sheet of water named Gartmoor Dam, by R. Gate, gamekeeper to Lord Balfour of Burleigh. His Lordship has presented it to the British Museum.—J. J. DALGLEISH, Edinburgh.

Incident in the Life of a Dunlin.—On January 6th, I shot a Dunlin (*Tringa variabilis*) with a cockle, nearly the size of a walnut, tightly clamped on to the end of its long, slender bill. It puzzled me at first to know what it was, for it got up from my feet and flew heavily away with what appeared to be a ball of something hanging to one of its feet. I believe this is not an uncommon occurrence, but how it happens is not quite clear, for the bill of a Dunlin is not adapted for extracting a cockle, whether dead or alive, from its shell.

[The bird had, no doubt, unwittingly inserted its bill into the open valves of the buried mollusc when probing the shore in search of food.—ED.]

Buffon's Skua in Aberdeenshire.—A fine specimen of *Stercorarius parasiticus* was killed at Blackpool, Millbrex, Fyvie, on the 2nd Oct., 1890.—GEORGE SIM, Gourdas, Fyvie.

Eared Grebe on the Firth of Forth.—On December 31st last, I shot a specimen of the Eared Grebe (*Podiceps nigricollis*) in Aberlady Bay, which proved to be a male. When first noticed, it was diving close to some rocks at nearly high water. The gizzard contained a brown fibrous

mass of what seemed to be half-digested feathers and a lot of small crustaceans like small white shrimps. I have seen these feathers before in the gizzard of the Black-throated Diver, and I am told it is usual to find them also in Grebes. Where does the bird get them from, and why are they swallowed?—To help digestion in some way?—CUTHBERT CHRISTY, Edinburgh.

[The crustaceans were submitted to Mr. Thomas Scott, F. L. S., for identification, and he kindly informs us that they all belonged to one species, *viz.*, *Mysis vulgaris*, Leach, one of the "opossum shrimps." Mr. Scott counted the remains of about fifty specimens. This species of *Mysis*, Mr. Scott remarks, is common above Queensferry, and in ponds of the brickfield at Seafield, near Dunbar.—ED.]

Wildfowl in Scottish Solway Faunal Area.—Wildfowl has been plentiful on the shores of the Scottish Solway this winter; but the only uncommon bird (for the locality) that we heard of, on the Scotch side, was a Great Crested Grebe (*Podiceps cristata*), shot near Gretna in January.—H. A. MACPHERSON, Carlisle.

Bird Notes from the Solway District.—During the past winter there have been few rarities among the birds. A Buffon's Skua (*Stercorarius parasiticus*) in October, and the Smew (*Mergus albellus*) in December are the most noteworthy. I hear also of a Common Bittern (*Botaurus stellaris*) shot in the third week of January on Greenlaw, and sent to Mr. Burnett Haugh, Castle-Douglas, for preservation. During the dark stormy weather in November, Mr. James M'Call, Carsethorn, informs me he saw Storm Petrels occasionally off Southerness. There has been a most unusual immigration of Bramblings (*Fringilla montifringilla*) or "Cocks o' the North," as they are more usually termed. I heard of them from many different localities—from one place in the Stewartry a flock computed to be over a thousand strong was reported. In this immediate neighbourhood they were very abundant wherever there are beech trees, on the seed of which tree they are very fond of feeding. I have seen several flocks of probably two hundred birds in each. It is many years since these pretty finches appeared in such vast numbers. A flock of Whooper Swans (*Cygnus musicus*) was observed at Cally House, on the 14th of January.—ROBERT SERVICE, Maxwelltown.

Anchovy in the Solway Firth.—Towards the end of November, when skinning a Black-throated Diver (*Colymbus arcticus*) (which, by the way, is not at all a common species in the Solway Firth), I found the remains of many small fishes in its stomach. With one exception these had been so far digested as to be irrecongnisable, but the exception was a little Anchovy (*Engraulis encrasicolus*) about two inches in length. It may be remembered that Anchovies were found pretty numerously in the Solway last June, and that those captured then were the first that had been known to be taken on the west coast of Scotland. Judging from the size of the specimen thus taken from the Black-throated Diver's gullet, there is a very reasonable inference that the little fish may have been bred in the Solway. If so, it is a matter of considerable interest to ichthyologists. Although it is improbable that

Anchovies will ever become of commercial importance within the limits of our Firth, still if they should be ascertained to visit the deeper parts of the Galloway coast with any regularity in future for the purpose of spawning, their systematic capture might soon prove remunerative.—ROBERT SERVICE, Maxwelltown.

REVIEW.

The Naturalist of Cumbrae.—A True Story, being the Life of DAVID ROBERTSON. By his friend the Rev. THOMAS R. R. STEBBING, M.A. London: Kegan Paul, Trench, Trübner & Co. 1891.

In the Rev. Mr. Stebbing, David Robertson, the Cumbrae Naturalist, has found an able and appreciative biographer. He has gathered together a large body of facts in the life of his friend, and if he has erred in marshalling too many before the public, the error may be ascribed to his anxiety to do his friend full justice. "Though left without education in his boyhood," David Robertson has become, in mature age, "a distinguished votary of science." His remarkable life is another example of the success and distinction which the poorest may achieve. He was well advanced in life before his mind took a bent for Natural History, and his biographer places before the reader, who is assumed to be ignorant of the subject, a popular account of the pursuits and investigations of a Naturalist.

The leisure of the last thirty years or so of his life has given Mr. Robertson opportunity for continued and fruitful scientific work. Among the Cumacea, Copepoda, Ostracoda and Foraminifera he has done specially good work. Among these lowly forms of marine life he has discovered several species new to science, and a genus, as well as numerous species, has been named in his honour. His large collection of microscopical forms of the marine fauna, found round the Cumbrae islands, has frequently been referred to by well-known scientists, several of whom have had to appeal to him for living specimens of some of the rarer species. Mr. Robertson, however, is no mere collector of specimens, although his collections have tended greatly to advance scientific knowledge. He has solved several problems of biological interest in the life-history of the Echinoderms, Crustaceans, and Molluscs. His explorations, too, have not been confined to the Clyde, but have extended to England, Ireland, and the coasts of Norway.

Mr. Robertson's first publication seems to have been a contribution in 1858 to the *Annals and Magazines of Natural History* "On the Habits of the Common Mussel." Since then he has been a frequent contributor to scientific periodicals, including the *Quarterly Journals of the Geological and Microscopical Societies*. Even now, entering on his 85th year, Mr. Robertson's zeal for Natural History pursuits is unabated, for "he is still ready to observe and to record."

The pleasant way in which the story is told makes the biography full of interest from beginning to end. It is a most enjoyable book, and one which will do everyone good to read, whether interested in Natural History or not.

Meetings, etc., of Societies.

The Albany Naturalists' Club, Edinburgh.

Summer Session.

- April 13.—A Paper on the Island of "Iona." Illustrated by Photographic views, Botanical, Geological, and other specimens.—MISS R. FERRIER.
- May 9.—Outdoor Excursion.
- May 11.—Classification of Specimens.—J. L. MITCHELL, Esq.
- June 5.—Botanical Excursion.
- June 8.—Lecture.—A. CRAIG CHRISTIE, F.L.S., &c.

Kirkcaldy Naturalists' Society.

- April 6.—Some Notes on the Climatology and Anthropology of Africa.—R. FELKIN, M.D., F.R.G.S., F.R.S.E., &c.
- April 20.—Annual General Meeting; Reports, Election of Office-Bearers, &c.

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25	2	3s. od.	4	4s. od.	8	6s. od.
50	2	4s. od.	4	5s. od.	8	7s. 6d.
100	2	5s. 6d.	4	6s. 6d.	8	9s. od.

And so on in proportion. Covers charged extra.



THE OLD FUR MARKET OF DUMFRIES.

BY ROBERT SERVICE.

AT what time the old Fur Market in Dumfries became a recognised institution is unknown, and the phrase "from time immemorial" may be set down as more or less aptly applying to its beginnings. In the earliest part of this century it had reached large proportions, and was then regarded "as the first fur market in the United Kingdom" (*Dumfries Courier*, February 27th, 1816). In Brewster's *Cyclopaedia* it is said:—"At the Horse Fair in February a larger quantity of hare-skins is annually disposed of than in any other town in Scotland; not fewer, on an average, than 30,000. And in Fleming's "British Animals" (1828, p. 21) there is another reference to the Fair:—"In Scotland the skins (of hares) are collected by itinerant dealers, and annually sold in the February market in Dumfries, sometimes to the amount of 30,000." And again in the "New Statistical Account" of Dumfries-shire (1835, p. 21) it is stated:—"At the Fair in February an incredible quantity of hareskins is purchased. The average number cannot be under 30,000, and one year no less a sum than £6000 is said to have been paid for that one article."¹ These are all the references I can find in general literature in regard to this once famous trade, and the following statistics have been compiled from the market reports in the old files of the *Dumfries Courier*, kindly placed at my disposal by the proprietors. Of course these figures have been prepared entirely from the naturalists' point of view, but at the same time, I may express a hope that the compilation may prove not altogether without interest to others than naturalists.

Now-a-days the fur market is as unknown to the general populace of Dumfries as if it had never existed, altho' it survived until about 1874. For centuries previous to 1848, it was held on the usual stance in the open street, during the Candlemas Fair,

¹ This quotation bears a strong resemblance to the preceding one from Fleming. Very curiously, my copy of Fleming is the one formerly belonging to the late Mr. Duncan, who wrote the article on Dumfries Parish for the *Statistical Account*.

STATISTICS OF DUMFRIES FUR MARKET,

Formerly held annually in February.

Date.	Harebell's.		Rabbit Skins.		Fountain Skins.		Otter Skins.		Price each Skin.	Notes.
	No. Exposed.	Price p. Furrier's dozen.	No. Exposed.	Price p. Furrier's dozen.	No. Exposed.	Price p. Furrier's dozen.	No. Exposed.	Price p. Furrier's dozen.		
1816		16s		8s to 9s		15s		11s		
1810		12s		14s		18s to 21s		8s to 10s		
1820		12s				16s to 18s		8s to 10s		
1821		16s				18s		8s to 10s		
1822	48,000	16s to 17s				18s		8s to 10s		
1823	50,000	14s to 15s				18s		8s to 10s		
1824	50,000	12s				18s		8s to 10s		
1825	50,000	12s				18s		8s to 10s		
1826	Co. 000	14s to 15s				18s		8s to 10s		
1827	48,000	12s				18s		8s to 10s		
1828	38,400	12s to 14s				18s		8s to 10s		
1829	40,000	14s 6d				18s		8s to 10s		
1830	10,000	12s				18s		8s to 10s		
1831	10,000	12s				18s		8s to 10s		
1832		12s				18s		8s to 10s		
1833	13,258	11s 6d				18s		8s to 10s		
1834	18,000	11s				18s		8s to 10s		
1835	18,000	11s				18s		8s to 10s		
1836	8,000	7s				18s		8s to 10s		
1837	10,000	6s & 6d to 7s				18s		8s to 10s		
1838	10,000	5s to 6s				18s		8s to 10s		
1839	48,000	10s 6d				18s		8s to 10s		
1840	10,000	10s				18s		8s to 10s		
1841	20,000	10s				18s		8s to 10s		
1842	20,000	9s 6d to 10s 6d				18s		8s to 10s		
1843	20,000	5s to 5s 6d				18s		8s to 10s		
1844	18,000	5s 6d to 6s 6d				18s		8s to 10s		
1845	20,000	5s 6d to 6s				18s		8s to 10s		
1846	20,000	2s to 2s 6d				18s		8s to 10s		
1847	4,000	1s 3d to 1s 4d				18s		8s to 10s		
1848		1s 6d				18s		8s to 10s		
1849		1s 6d				18s		8s to 10s		
1850		4s				18s		8s to 10s		
1851	36,000	4s				18s		8s to 10s		
1852	10,000	3s to 3s 6d				18s		8s to 10s		
1853	16,000	4s				18s		8s to 10s		
1854	16,000	5s 3d to 5s 6d				18s		8s to 10s		
1855	37,000	4s 6d				18s		8s to 10s		
1856	30,000	3s				18s		8s to 10s		
1857	40,000	5s to 5s 6d				18s		8s to 10s		
1858	50,000	6s to 7s				18s		8s to 10s		
1859	45,000	7s				18s		8s to 10s		
1860	50,000	6s to 6s 6d				18s		8s to 10s		
1861	70,000	6s to 6s 3d				18s		8s to 10s		
1862	50,000	4s 6d to 4s 6d				18s		8s to 10s		
1863	40,000	3s 6d to 3s 9d				18s		8s to 10s		
1864		6s				18s		8s to 10s		
1865		5s 6d to 5s 6d				18s		8s to 10s		
1866		5s 6d to 5s 6d				18s		8s to 10s		
1867		5s 6d to 6s				18s		8s to 10s		
1868		5s				18s		8s to 10s		
1869		5s				18s		8s to 10s		
1870		4s to 4s 6d				18s		8s to 10s		
1871	45,000*	4s 6d				18s		8s to 10s		
1872		5s 9d				18s		8s to 10s		
1873		5s				18s		8s to 10s		
1874	180,000*	5s				18s		8s to 10s		

* Quantities sold by dealers during the entire winter.

annually held about the third week in February. From 1848, the trade almost entirely left the streets, and became centred in the stores of several large rag merchants and general dealers, and thereafter instead of all the trading in peltry being done during the Fair week, furs were bought and sold the whole winter through.

Many curious items of information about the skin trade, and the animals which supplied the staple, are contained in the old reports, and some of these will be mentioned in the notes that follow the tables. The most prominent features of the annual fairs have been arranged in a tabulated form: as in that way, information may be presented in a clearer and more accessible form. The remarks in these tables marked with inverted commas are the same words used in the old reports from whence I have already stated all the materials of the present sketch have been derived.

The Furriers' Dozen.—The furriers' "dozen" consisted of twelve very best full-sized skins, or a greater number of small-sized, or secondary quality, or torn skins, so that a "dozen" sometimes really consisted of twenty or thirty, or more of inferior skins. The skins were classified into "whole," "racks," and "light." The "whole" were good perfect skins, "racks" were those which had been torn, or were otherwise imperfect; and "light" were half skins or portions of skins.

Localities supplying the Skins.—An extract from one of the market reports (*Courier*, 1829) will fully explain whence the furs were derived:—"In addition to skins received by packmen in exchange for goods in all the parishes of Dumfries-shire, and the Shire and Stewartry of Galloway, supplies were forwarded from various counties—Ayr, Lanark, Peebles, Selkirk, Roxburgh, Cumberland, and even Northumberland."

Where they were sent to.—At the annual fairs furriers were in attendance for the purpose of purchasing supplies from Aberdeen, Perth, Glasgow, Edinburgh, Greenock, Berwick, Penrith, Newcastle-on-Tyne, Preston, Sheffield, Sunderland, Lancaster, Manchester and London. The greater portion of the furs bought were sent south.

What they were used for.—There is not much information to be gathered on this point. The great bulk of the hare and rabbit

fur was used up in the manufacture of the tall head gear, once so indispensable a portion of the daily garb of former generations. Fomart skins were mostly manufactured into ladies' boas, and old wardrobes yet contain specimens of such. There is one of these old boas of fomart fur in the possession of a member of my family, and this article has been in existence for over two score years at anyrate, and probably a good deal more. With regard to otters there is a very interesting passage in the *Courier* for February 21st, 1829:—"About fifty otter skins were exhibited in all, which sold from 8s. to 10s. each. Most of these were from Galloway, and the time has been when a Dumfries dealer bought sixty otter skins from one individual, and then—that is thirty years ago—(say 1800) the price, in place of 10s. was very nearly three times that sum. At the period to which we allude, nearly the whole otter skins, exported to London, were made into purses, highly ornamented with gold and silver lace, and sent out to Africa as presents to an endless number of barbarian princes and others, with whom it was our interest to court an alliance. But after the decay of the African trade we discontinued exporting purses to those who no longer assisted in filling our own, and hence the lessened value of the article in question. Otter skins are now mixed with those of beavers—just as the fur of an Ayrshire rabbit serves as a substratum for the finer material yielded by a crack Galloway hare."

Causes of the Decline of the Fur Market.—This was partly caused by the large increase in the importation of foreign furs, when the import duties were discontinued, but mainly through the opening of steam communication with the South. As soon as steamers began to ply regularly between the Galloway and Dumfriesshire ports, and Liverpool, great quantities of hares, rabbits, and other game were forwarded to the latter port, and of course their skins went with them. It is recorded that early in the winter of 1843, the s.s. *Nithsdale* took at one trip from Dumfries to Liverpool four tons of hares and rabbits. "Twelve tons of game left Kirkcudbright in one day; and to the value of £400 weekly from Kirkcudbright and Wigton" (note by Sir W. Jardine in Jesse's Edition of "White's Selborne," 1851, p. 398). Afterwards railway communication was completed and swept away the remains of the fur market. Minor causes of its decay were found in the fact that about the year 1815, travellers directly representing the great

furriers of the south began to collect the skins at the farm houses, instead of leaving the local pedlars and dealers to do so, and also that silk hats shortly after this date began to supersede the older fashion.

Hares.—It is somewhat saddening from the naturalists' standpoint to see in recent years, since the Ground Game Act came into operation, how helplessly the poor hares have succumbed. The threatened extinction of this valuable animal in the south-western counties, which seemed so imminent only a short time ago, has apparently been sensibly checked, but there is small hope that it will ever again recover its former numbers.

Rabbits.—On the other hand the rabbits seem to be more than holding their own, and in favourable situations are actually more numerous than before the passing of the afore-mentioned Act. But this is rather a digression from the main subject. At our old fur market in Dumfries the skins of Ayrshire rabbits were most valued, and always brought the highest prices. "Rabbits are divided into four kinds, *viz.*, warreners, parkers, hedgehogs, and sweethearts. Burrowing underground is favourable, it appears, to the growth of fur, and the 'warrener,' though a member of a subterranean city, is less effeminate than his kindred that roam more at large. His fur is most esteemed, and after him comes the 'parker,' whose favourite haunt is a gentleman's pleasure grounds, where he usually breeds in great numbers, and not infrequently drives the hares away. A 'hedgehog' is a sort of vagabond rabbit who travels tinker-like throughout the country, and who would be better clad if he remained at home. 'Sweethearts' are tame rabbits, and their fur, though sleek, is too silky and soft to be of much use in the important business of hat making" (*Courier*, February 23rd, 1830). In connection with the rapidly increasing number of rabbit skins, shown by the tables to have been offered at the annual markets, it may be of interest to point out that in 1812, Dr. Singer wrote in the "Agricultural Survey of Dumfries-shire" (p. 384) that "a few rabbits are to be found, but hardly worth mentioning. There is no regular warren."

Foumarts.—"Fitches" was the name invariably set down in the reports for this malodorous quadruped, but this appellation has gone so much out of use that I have preferred the more familiar name. Needless to say the beast has practically dis-

appeared, but many men—alas! they are old boys now!—yet tell how in their youthful days they hunted the polecats for the sake of the skins, which brought them so much welcome pocket money at Fair times. I believed at the time I furnished Mr. J. A. Harvie-Brown with some information about founmarts in this district for his articles on the Rarer Animals of Scotland (see *Zoologist*, 1881, "Polecats," pp. 165, 166); that they were then quite extinct. Within the last few years this opinion has been slightly modified by hearing of stray polecats here and there throughout the Stewartry. It will be seen that the tabulated statistics I have given above bring down the records of polecats in this district a few years later than is given in Mr. Harvie-Brown's paper.

Otters.—These animals are still tolerably numerous throughout our streams, and there is a steady local demand for their skins. Many a young gamekeeper makes his first advance to his sweetheart by offering the fair one an otter skin to make a muff!

Various Skins.—The only miscellaneous skins mentioned as sold at the fur markets in Dumfries are badgers, foxes, and cats. It is almost certain the latter were all the domestic animal. Fox skins were always an illicit article in Dumfries-shire; those offered always came, or at all events were said to come, from Galloway, where foxes still are, as they have always been, *vermin*, and where even the county gentlemen pay a reward for their destruction! Badger skins were never a large item in the fur market—the Dumfries folks set too high a value on the live animal to deprive it of its skin. Dumfries badgers were at one time in great demand by our southern neighbours, and were reckoned the gamest in the kingdom. They were all, however, procured on the Galloway side of the Nith. In the Stewartry it is believed the badger still maintains a precarious existence, but in Dumfries-shire it is doubtful if there is one left, although one was killed at Dalswinton, near Dumfries, so lately as April 12th, 1887.

A PRELIMINARY LIST OF THE BIRDS OF THE MELROSE DISTRICT.

BY A. H. EVANS, M.A., F.Z.S.

WHILE not pretending to be perfect, this list may, perhaps, be useful to anyone requiring information about the birds of the Border country. It includes the whole county of Roxburgh and portions of those of Selkirk, Peebles, Berwick, and Northumberland; while references have purposely been given in many cases to records of species from places near these parts, though hardly within the prescribed limits. Many of the details are due to the late Archibald Jerdon of Jedbank, and the late Andrew Brotherston of Kelso—both extremely accurate and careful observers—while the valuable notes from Mr. George Bolam of Berwick-on-Tweed, and Mr. W. Boyd of Faldonside, with papers by Mr. A. Kelly of Lauder, and Mr. J. Thomson of Stobo in the *History of the Berwickshire Naturalists' Club*, have furnished much additional matter, which would have been otherwise hard to obtain. I hope at some future time to be able to make additions and emendations to the present sketch; of the latter I am conscious many will be found necessary.

Mistletoe Thrush (*Turdus viscivorus*). Here, as in other portions of the Borders, this species has extended its breeding range considerably during the last half century. Owing to the severe winters experienced lately, the number of birds is not at present so great as usual, but is again on the increase.

Song Thrush (*Turdus musicus*). A common resident.

Redwing (<i>Turdus iliacus</i>).	}	Winter visitors in great quantity, usually arriving at the end of September.
Fieldfare (<i>Turdus pilaris</i>).		

White's Thrush (*Turdus varius*). Mr. Forbes Burn obtained a specimen of this rare thrush at Hardacres in Berwickshire in the last week of December, 1876, as recorded in *Hist. Ber. Nat. Club*, viii., p. 518, by the late Andrew Brotherston.

Blackbird (*Turdus merula*). Found breeding everywhere.

Ring Ouzel (*Turdus torquatus*). In the Melrose district proper this bird is not seen in the breeding season, its chief nesting-quarters being in that part of Roxburghshire near Yetholm, where it is common, and in the upper valleys of the Jed and

Leader. In the high parts of Selkirk, Peebles and Dumfries, in the opposite direction, it is again met with ; and, in short, may be said to be a plentiful hill-bird throughout the surrounding country. Nests are found from April to June.

Wheatear (*Saxicola œnanthe*). Very common on the higher Cheviots, and not unfrequently found on the lower hills. It appears, as a rule, about the beginning of April, and begins to breed early in May, preferring holes in walls to any other nesting sites in this countryside, where, indeed, I have not heard of other positions being used. On the East Coast, it nests in holes in the ground commonly.

Whinchat (*Pratincola rubetra*). Not very common in the neighbourhood, but widely distributed.

Stonechat (*Pratincola rubicola*). Breeds locally through Roxburghshire and the neighbouring counties, though I have never noticed it in large numbers at any spot. It is occasionally found high up the Cheviot valleys.

Redstart (*Ruticilla phœnicurus*). Many persons in the district consider that this species has increased considerably of late years, but, in my opinion, the supposed increase is chiefly due to closer observation. Fifteen years ago or more, the bird was certainly not uncommon in certain parts, especially in the valleys of the Cheviots ; and, though many of the nesting-sites were on the English side of the Border, I think that a more careful search would have disclosed an equal number on the Scotch side. At all events it is now to be found breeding in many places in the low country of Roxburghshire and the adjoining counties, as at Faldonside near Melrose, Lauder, and Stobo, as well as high on the hills. I once found a nest close to Great Cheviot with distinctly spotted eggs.

Redbreast (*Erithacus rubecula*). Common and extending to the head of the hill valleys.

Whitethroat (*Sylvia cinerea*). Not a very common bird, though it breeds in many places.

Lesser Whitethroat (*Sylvia curruca*). I have only heard of the occurrence of one specimen of this bird in the counties on the Eastern Borders, though several observers have recorded supposed instances. It is not an especially easy bird to distinguish at a distance, and until further examples are procured

from the neighbourhood, it is better to regard its presence as exceptional. The above instance was at Berwick-on-Tweed.

Blackcap (*Sylvia atricapilla*). Though the Blackcap is far less plentiful near Melrose than it is a hundred miles farther south, it is found breeding in most places where the surroundings are really suitable; it is, however, often overlooked, and few persons distinguish it from the Garden Warbler. At Ormiston, and other places between Kelso and Jedburgh, as also round Kelso, it is always to be found, the valleys of the Teviot and Tweed being well adapted to its habits; but the wild moorland country, which fills so large a part of the district, affords few opportunities for its establishment. An example was taken at Ednam by the late A. Brotherston, on December 25th, 1865.

Garden Warbler (*Sylvia hortensis*). Mr. James Hardy, Secretary of the Berwickshire Naturalists' Club, considers that he has established the fact of this bird's occurrence at Ormiston, while it visits other parts of the counties of Peebles, Roxburgh, and Berwick, such as Stobo, Jedburgh and the Kelso country; but as the note, nest and eggs are so similar to those of the Blackcap, further identification is necessary to define its exact range, and this, it is to be hoped, will be forthcoming, as in May or June it is easy to observe the birds when incubating. I have never seen a nest of this species in the district, but only that of the Blackcap.

Golden-Crested Wren (*Regulus cristatus*). Frequent among the spruce fir woods, and, therefore, rarer towards the hills.

Chiffchaff (*Phylloscopus rufus*). Not so common as the next species, but, nevertheless, breeds here and there in the larger woods and shrubberies. In the hill valleys it chooses the plantations in which the trees are highest, but does not reach so far up the streams as the Wood Warbler, resembling in this respect the Willow Warbler. The nest is almost invariably raised from the ground, often in a large fern or low shrub.

Willow Warbler (*Phylloscopus trochilus*). Sparingly distributed throughout the low-lying portions of the country, less common near the hills. It is, however, reported to be common at Lauder.

Wood Warbler (*Phylloscopus sibilatrix*). I am unable to state the exact distribution of this species at present, but it is very common in some of the Cheviot valleys, where it frequents small

alder plantations; it is also found breeding at Faldonside near Melrose, and is common at Jedburgh, Stobo, and Lauder, and on parts of the Kale Water.

Sedge Warbler (*Acrocephalus phragmitis*). Not unfrequent at such places as the banks of the Tweed between Melrose and the mouth of the Yarrow, or of the latter river itself, as well as in small thickets on brooks.

Grasshopper Warbler (*Locustella naevia*). Though it is stated in the 4th edition of Yarrell's *History of British Birds* that this bird "seems to miss the border counties of Berwick and Roxburgh as well as Selkirk," it is in reality much more common in certain portions of the two first counties than in most parts of Britain. Not only has it occurred and nested in Berwickshire and as far down the valley of the Tweed as Berwick, but it is frequently met with during summer throughout the northern part of Northumberland and thence across the moors to Roxburghshire. On the rough heathery sides of the Cheviots, especially at an elevation of about 1500 feet, it is here and there plentiful, and may, no doubt, be found on the other hills of the neighbourhood.

The nest is extremely hard to find upon these hills, where it can only be placed amongst the moss at the base of tall heather; and this coupled with the fact that the note of the Sedge Warbler is usually mistaken for that of this bird—whence reports of its occurrence are often disbelieved—may, perhaps, account for its supposed rarity.

Hedge Accentor (*Accentor modularis*). Common everywhere and often found near solitary shepherds' houses far up the hills.

Dipper (*Cinclus aquaticus*). Very common on all the streams flowing from the Cheviots, wherever there are suitable rocks or banks for the nest; though not much seen on the larger rivers. Near Selkirk it is less plentiful, but towards the lower part of the Tweed it is very abundant on the tributary waters. A nest has been found in January, while the site is not uncommonly a hole in the ground instead of rocks.

Long-tailed Tit (*Acredula rosea*). In the spring these birds are at times extremely common in the woods at Faldonside and the neighbourhood, as well as at Lauder and elsewhere. The nest does not seem to have been very often found, though instances have occurred at Duns and just across the Border. This

is, no doubt, due to the care with which it is often concealed, and its likeness to its surroundings; as there is no reason to doubt the fact that the majority of the individuals seen are breeding.

Great Tit (*Parus major*). Very common.

Coal Tit (*Parus britannicus*). In most places this is the most abundant member of the genus, and it is certainly one of the characteristic birds of these parts. Nidification takes place extremely early, and it is possible to find young birds in a considerably advanced stage quite early in May, or even in April in forward seasons. Most of the birds breed either in holes in the ground or in stumps very near it, but many nests are placed under the tiles or in the rough thatch of sheds. But the holes must be dry.

Marsh Tit (*Parus palustris*). This bird is hardly so plentiful as might be expected from the nature of the woodlands. It does not by any means find the proximity of water necessary, nor yet does it favour marshes. I have known it breed in the lower Tweed valley, and in the flat country between this and the hills, while the bird may also be found in the hill regions of the Cheviots and on the Jed, near Jedburgh. The nest is generally in rotten stumps, often very small, a rather higher position being chosen than by the Coal Tit.

Blue Tit (*Parus cæruleus*). Very common everywhere.

Nuthatch (*Sitta cæsia*). A nest is said by the late A. Brotherston of Kelso to have been built in "a narrow strip of plantation between Houndridge and Harpertoun, near Ednam," about 1850, "in a hole in the decaying stump of an oak." Mr. Brotherston, quoting from the late R. Gray's *Birds of the West of Scotland*, says that in March, 1857, a specimen was taken at Duns; and on January 18th, 1877, a female was captured at Jedburgh. [See *Hist. Ber. Nat. Club*, vii., p. 503; viii., p. 157.]

Wren (*Troglodytes parvulus*). Common everywhere, reaching to the head of the hill valleys.

White Wagtail (*Motacilla alba*). Not observed nearer than the border between Berwickshire and Haddington.

Pied Wagtail (*Motacilla lugubris*). Common on all the streams, though often found at some distance from them, breeding in ivy-covered walls or on stony banks.

Grey Wagtail (*Motacilla melanope*). One of the most noticeable species of the district, where it is very plentiful, especi-

ally on the smaller streams or on rocky parts of those that are larger. Incubation begins about the end of April, so that it is one of the early breeders on the rivers; the nest being equally often among roots projecting from banks, in holes in walls, or on small ledges of rocks. Unlike the Pied Wagtail, it is seldom absent from the waterside.

Yellow Wagtail (*Motacilla raii*). While Mr. Pow records the annual occurrence of this species on the coast of Haddington in the spring (*Hist. Ber. Nat. Club*, xi., p. 544), it has only been observed on two occasions, as far as I am aware, in these parts, viz., at Jedburgh, before 1874, and at Goswick in June, 1878.

Meadow Pipit (*Anthus pratensis*). Extremely common, especially on the moors. Nests may be found early and late; and so many in June or later that there can be no doubt that two broods are reared.

Tree Pipit (*Anthus trivialis*). Not at all uncommon in the Cheviot valleys, though those on the English side are better wooded, and therefore more adapted to its requirements than the Scotch. Nor is it unfrequent on the lower reaches of the Tweed, from Berwick to Cornhill, at Duns, Lauder, and other parts of the adjoining counties. In many places it is doubtless overlooked by observers unacquainted with the note, as without this it is somewhat difficult to determine.

Rock Pipit (*Anthus obscurus*). Never found inland, and therefore comes no nearer than the neighbouring parts of the coast.

Golden Oriole (*Oriolus galbula*). Not recorded from any place nearer than Belford. [See *Hist. Ber. Nat. Club*, x., p. 387.]

Great Grey Shrike (*Lanius excubitor*). Specimens are not unfrequently shot at various times of year, two of which are preserved in a small collection of local birds at Faldonside near Melrose, belonging to Mr. W. B. Boyd, while others are recorded from Bowhill, Lauder, Lochton, and Carham in spring and autumn. This is the only species which occurs regularly in the neighbourhood, though the Red-backed Shrike probably breeds towards the southern end of the Cheviots, some 50 miles distant, and has been met with near Berwick-on-Tweed on two occasions. A pair of "Ash-coloured Shrikes" were seen on the wall of Fowberry Park on June 27th, 1872, by Mr. C. H. Cadogan, which he believed to be breeding there. [*Hist. Ber. Nat. Club*, vi., p. 301.]

Waxwing (*Ampelis garrulus*). A winter visitor, not uncom-

mon in some seasons, such as those of 1868, 1872 (April and May), 1873 (winter up to February) 1883 (January and February), and 1884 (January). In the immediate neighbourhood examples have been procured at Kelso, Stobo, Rodono, and other places.

Spotted Flycatcher (*Muscicapa grisola*). A common summer visitor, breeding in many places.

Pied Flycatcher (*Muscicapa atricapilla*). Not known to breed regularly nearer than the centre of Northumberland, where it is not very rare in the Alnwick district. It is on record that prior to 1872 a pair were seen to fly out of some ivy at Longshaw on Alwen Water in summer which were probably nesting there; and at Stobo, in Peebleshire, two pairs did so in 1885, and were again seen the next year.

Red-breasted Flycatcher (*Muscicapa parva*). It is well known that an example was obtained by Mr. G. Bolam at Berwick-on-Tweed on October 5th, 1883, but none have been observed hereabouts. [See *Hist. Ber. Nat. Club*, x., p. 387.]

Swallow (*Hirundo rustica*). A common summer visitor, arriving about the first or second week in April, and sometimes leaving as early as October.

Martin (*Chelidon urbica*). Not so abundant as might be expected. Here and there numbers nest, as at Yetholm and on the railway bridge at Roxburgh; but the bird appears to be scarcer than formerly, which, I think, is also the case in most parts of the eastern Borders. It also occurs in the wild country round St. Mary's Loch.

Sand-Martin (*Cotile riparia*). Not uncommon, breeding chiefly in sandy railway embankments. Its arrival is recorded as early as April 3rd.

Tree Creeper (*Certhia familiaris*). A very abundant species in the Border country, where the woods are well suited to its requirements. The nest is found either behind loose sheets of bark on tree stems, under the tile edgings of the roofs of sheds and boat-houses, or in crevices of trunks. A certain preference is shown for the neighbourhood of water.

Goldfinch (*Carduelis elegans*). This bird, which undoubtedly used to be plentiful all along the Border, and may have bred in the district, has now become exceedingly scarce. In some places it has disappeared entirely, in others it has reappeared at intervals.

as at Lauder in 1873 and 1874, and on Tweedside in 1875. All occurrences of late years have been in winter.

Siskin (*Chrysomitris spinus*). Not uncommon in winter and early spring, especially in the hill valleys, where it frequents the small alder plantations for weeks at a time. Mr. John Thomson states that he has found a nest at Stobo, in Peeblesshire. [*Hist. Ber. Nat. Club*, xi., p. 553.]

Greenfinch (*Ligurinus chloris*). Common.

House Sparrow (*Passer domesticus*). Common.

Tree Sparrow (*Passer montanus*). Certainly breeds on the lower reaches of the Tweed and along the Northumberland coast. I believe it will be found to do so near the higher reaches also, though no record of the nest exists at present for that countryside, as far as I am aware.

Chaffinch (*Fringilla cælebs*). Very common, extending far up the hill valleys. Nests containing eggs with blue ground colour are not uncommonly found.

Brambling (*Fringilla montifringilla*). Common in winter as a rule, and if anything more so in the hilly country, though not on the highest hills.

Linnet (*Linota cannabina*). Abundant in gorse covers and similar places in the breeding season, but by no means common everywhere.

Lesser Redpoll (*Linota rufescens*). Occurs at times near Jedburgh, Lauder, and Stobo, probably also elsewhere. It may occasionally breed near these parts, but evidence is at present wanting.

Twite (*Linota flavirostris*). According to the late A. Brotherston of Kelso, this species may be found in summer in the Bizzle ravine on Cheviot. I have never observed it there myself; but the spot is very suitable, and I have no doubt that excellent observer was quite correct in his statement. It is also said to be found in some numbers at Bowhill in Selkirkshire, and again at Peebles. This points to a range extending from St. Mary's Loch and the Moffat Hills to Berwickshire, where it is occasionally met with on the Lammermuirs; but it cannot be called a common bird in the district, and is decidedly less plentiful than in portions of Yorkshire and other counties farther south, or even than in the south of Northumberland, at the other end of the Cheviot range.

Bullfinch (*Pyrrhula europæa*). Very abundant in winter at Faldonside and on the Teviot; no doubt it breeds sparingly throughout the district, as it does also nearer the East Coast. In 1876 it was said to be a recent immigrant at Lauder, where 30 years before it was unknown.

Crossbill (*Loxia curvirostra*). A winter visitor, from September to February, recorded from Lauder in 1850, from Jedburgh, Yetholm, and Haddon-rig, as well as Berwickshire generally, in 1874, and from Stobo in 1873, 1879 and 1883; having no doubt occurred at intervals between those dates, though details are wanting, owing to the bird not being considered especially rare.

Corn Bunting (*Emberiza miliaria*). This bird is not rare in some parts of the country, as for instance at Wooler on the English side of the Border; on the Scotch side it is less plentiful. It is a local species, and only a few places seem to suit its habits.

Yellow Bunting (*Emberiza citrinella*). Common.

Reed Bunting (*Emberiza schœniclus*). Widely distributed, but nowhere very common.

Snow Bunting (*Plectrophanes nivalis*). A winter visitant, common enough as a rule, and in some years very abundant.

Starling (*Sturnus vulgaris*). About the year 1830 the Starling was not very common on the Border, and was only seen in many parts in flocks in autumn. Now it is universal and abundant. In the early part of the century it is said to have been almost unknown in Berwickshire.

Rose-coloured Pastor (*Pastor roseus*). Apparently not recorded from the immediate neighbourhood, though noticed on at least three occasions between 1833 and 1877 in Northumberland.

Chough (*Pyrrhocorax graculus*). Has never occurred in the immediate neighbourhood, nor did it ever breed on the hills, as it does in Wales; but on the East Coast it is well known to have nested near St. Abb's Head, as recorded by the late P. J. Selby. (*Hist. Ber. Nat. Club*, i., p. 253); one pair remained at that station in 1850.

Jay (*Garrulus glandarius*). I find an instance of this bird's occurrence recorded from Lauder in 1873, where another example was seen a short time previously. Before the middle of the century it certainly bred in North Northumberland and Berwickshire;

but there, as in Roxburghshire and the other adjoining counties, it has been exterminated.

Magpie (*Pica rustica*). Decreasing throughout the district where it was formerly common. It still occasionally breeds with us.

Jackdaw (*Corvus monedula*). Common, and perhaps more so nearer the hills, where it nests in rabbit holes on the lower slopes. An entirely grey specimen was once captured at Faldon-side, near Melrose.

Carrion Crow (*Corvus corone*). The Cheviots afford an abundance of quiet and suitable nesting-sites, so that it is not wonderful that the number of crows to be found there is very great. I have never seen so many at any other place in Britain. In the low country they are of course kept down by the keepers, and, therefore, only breed sporadically.

Hooded Crow (*Corvus cornix*). Mr. George Bolam of Berwick-on-Tweed records (*Hist. Ber. Nat. Club*, viii., p. 495) an instance of one of these birds interbreeding with a Carrion Crow at Skirlnaked near Wooler on the English side of Cheviot; and in the more immediate neighbourhood Mr. A. Kelly has noted a similar case at Lauder. On Mr. Bolam's authority we also hear that from 1876 to 1882, or possibly longer, hybrids between this bird and the Carrion Crow were bred on the cliffs north of Berwick-on-Tweed, while even in 1834 the same thing happened at Fowberry near Wooler.

Rook (*Corvus frugilegus*). Abundant. As Mr. J. Smail, of Galashiels, has published an exhaustive list of the Border rookeries in *Hist. Ber. Nat. Club*, x., pp. 159-184, I may refer to that periodical readers interested in the subject of the distribution and habits.

Raven (*Corvus corax*). One pair still breeds on the Cheviots, and occasionally a second nest has been found at a different station on that range, where I have seen the nest on most inaccessible rock-faces more than once. About 1830 a pair frequented Ruberslaw, and at West Hope, near Lauder, the bird is reported to have been then common, though now unknown.

Sky Lark (*Alauda arvensis*). Abundant throughout the district, but said to be decreasing near Jedburgh in 1870.

Wood Lark (*Alauda arborea*). Never noticed near Melrose. Selby gives it as an occasional visitant at Twizell in Northumberland. [*Hist. Ber. Nat. Club*, i., p. 258.]

Shore Lark. Does not seem to leave the coast, where it is seen frequently.

Swift (*Cypselus apus*). A very plentiful summer guest, breeding under the thatch of the cottages in villages such as Yetholm, as well as under tiles where thatch is not obtainable, and in holes inside church towers. I have never seen nests made entirely of glutinous matter, all having a much larger proportion of clean straw. The return migration usually takes place about the end of August.

Nightjar (*Caprimulgus europæus*). This bird may be met with on most of the rough parts of the country adjoining the hills, though rarely on the higher hills themselves; it comes to us in the latter part of May, and nests soon after its arrival. Woods or thickets overgrown with bracken, gorse coverts or hills covered with stunted heather, are its favourite resorts, but even in the cultivated parts it is sometimes found during summer, an example having been observed at Faldonside on one occasion for a month, and others at Roxburgh Moor, Sunlaws, and Stichill.

Great Spotted Woodpecker (*Dendrocopus major*). Often visits the district on migration, in some years in considerable numbers. Recorded in 1868, 1886, and 1887.

Lesser Spotted Woodpecker (*Dendrocopus minor*). An instance of the capture of this bird occurred at Embleton in Northumberland in 1845, and another at Otterburn in Redesdale prior to 1881. I have never heard of others near these parts.

Green Woodpecker (*Gecinus viridis*). Though this species has been known to breed in the south of Northumberland, I have never known of even a supposed case in this district. This information may be useful in connection with the bird's northward range and its limit.

Wryneck (*Iynx torquilla*). Though well acquainted with this bird in the South, I have never seen nor heard it in this country side. As regards its range, it used to breed regularly at Durham, some 30 years ago—in one spot, while Selby, in 1836, noted it from Twizell and Lucker in Northumberland, the latter in the month of September (*Hist. Ber. Nat. Club*, i., pp. 110 and 259).

(To be continued.)

THE FISHES OF LOCH LOMOND AND ITS TRIBUTARIES.

BY ALFRED BROWN.

IN submitting a Catalogue of the Fauna of any particular area, it is perhaps desirable to give a sketch, however slight and imperfect, of the physical conditions and general surroundings of the district under review.

The area with which we are at present concerned is that of Loch Lomond, and the tributary streams which complete its system ;—a district which, towards its northern boundary, presents a landscape barren, steep, and rugged in the highest degree, while in the south it suddenly broadens out into the fertile valleys and rich fields of the Lennox country. The sharp boundaries between these extremes, as seen at Balmaha and Rossdhu, appear to constitute the very gates of the Highlands.

Loch Lomond, then, is a sheet of water some 24 miles long by about 6 miles broad at its greatest width ; narrow and deep at its upper or northern end, and rapidly widening and shoaling at about 9 miles from its lower extremity, where the River Leven, in a deep and rapid stream, carries its surplus waters to the Clyde, which it enters at Dumbarton.

The surface of the loch is but little raised above the sea level, and a subsidence of a few feet would convert it into an arm of the Clyde Estuary, a condition which, without doubt, existed at a very recent geological period, as we find—in the cuttings formed when making drains, and in the clay banks exposed and cut into by the action of the water—numerous shells of marine bivalves, of species still living in the adjacent seas, such as *Mytilus modiolus*, *Pecten maximus*, *Cyprina islandica*, and species of *Tellina*, all of which are characteristic of our post-tertiary deposits.

So far as I know, no extinct species have been collected from these clay banks or cuttings ; but one shell, *Pecten islandicus*,¹ is there found which has since retired from British waters, and is now only recorded from more arctic regions—Norway, Iceland, Labrador.

I imagine that during the period of elevation which culminated

¹ Dr. J. Gwyn Jeffreys obtained this species at depths varying from 80 to 170 fathoms among the Shetland Islands. See Report on Dredging among the Shetland Isles, Brit. Ass. Report, 1867.—ED.

in changing Loch Lomond from a salt to a fresh water loch, there must have been a very great lapse of time before the physical features of the loch itself and the surrounding country assumed their present form, and that during this period a condition of things existed favourable to the presence and propagation of the many groups of coarse fishes which flourish in swampy, marshy surroundings.

It is the presence of a considerable assemblage of such fishes which constitutes the chief distinctive feature of the Loch Lomond fish-fauna; and I believe we may search Scotland in vain for a similar concourse of species; for, as will be seen by the following catalogue, we here find, besides almost all the accepted species of true Salmonidæ known in Britain, and the *Coregonus*, an aberrant member of that group, no less than 14 species of coarse fish which may be considered indigenous, and many of which are rarely met with in the company of the nobler sporting fishes of the salmon tribe.

The most notable absentee is the char, a fish inhabiting many of our Scottish lakes, principally those of an alpine character, and which one would expect to find amongst the inhabitants of a deep, cold, clear loch such as that under consideration. It is probable that the comparatively recent marine condition of Loch Lomond, and its palustrine rather than alpine connection, is a sufficient reason for the absence of this fish.

The tributary streams are numerous, and drain an immense tract of country. Beginning at the head of the loch we have the Falloch, a stream much frequented by sea trout, but whose upper waters are cut off by a precipitous fall, quite impassible to fish. Passing down the Dumbartonshire side we come to the Garabal, a small stream issuing from a loch of the same name high up among the hills, which holds brown trout of very excellent quality. Next is the Sloy water, issuing from Loch Sloy, a lake about a mile long, lying 4 or 5 miles inland, swarming with brown trout of small size; farther down, between Tarbet and Luss, is the Douglas, a stream of some size, but, like the Falloch, cut off as a spawning ground for sea trout by a steep broken fall a short distance from the mouth. Lower down are the Luss and Fruin, which rise in the glens of the same names and afford, during their entire course of six miles and eight miles respectively, excellent spawning ground for brown trout, salmon, and sea trout.

On the Stirlingshire side, except the Snaid which flows from Loch Arklet, there is no stream save the Endrick, which, with its tributary, the Blane water, drains a great extent of country, and brings a large body of water into the loch. Salmon, sea-trout, and brown trout, are numerous throughout the entire course of the Endrick, and in the lower reaches pike, perch, roach, and tench, are also found.

The Leven, which debouches at Balloch, holds all the fish common to the loch (except, perhaps, the Powan), and, in addition, there are occasional shoals of Grey Mullet (*Mugil Chelo?*) which come up with the tide as far as Dalquhurn. The extensive pollution of this river has, however, much impaired its value, both as a fishing stream, and as a highway for the migratory Salmonidæ from and to the sea.

Loch Lomond is studded with numerous islands of considerable size and great beauty. These islands have an important bearing on the presence and abundance of fish, as on their western and northern sides they are fringed by extensive banks of boulders, brought down, doubtless, by ice from the western high lands. Similar deposits and banks of boulders are found all along the Stirlingshire side of the loch, whilst on the Dumbartonshire side, and on the eastern and southern faces of the islands, no such boulders exist; the only exception being Inch Moin, which is little more than floating peat, and probably had no existence at the time the boulders were deposited. These banks are the favourite resort of the Salmonidæ, to the almost entire exclusion of the coarse fish, which seem to prefer a muddy or sandy bottom.

The visible supply of food for all these fish is very meagre. There are but few species of mollusca, and these are not numerous in individuals. After careful search I have only obtained 2 *Ancylus*, 2 *Planorbis*, a *Cyclas*, a *Succinea*, and the ubiquitous *Lymnæa peregra*. The large *Anatina* has lately been found on cleaning out a reservoir at Balmaha, but, so far, has not been observed in the loch itself.

Besides these mollusca there is a fair supply of small water beetles, marsh and caddis worms, planariæ and entomostraca, but on the whole the supply does not seem adequate to the maintenance of such a numerous population. I am inclined to think that the younger and weaker fish pay a heavy toll to their stronger neighbours, and make up the deficit in the general commissariat.

The following is the Catalogue of these fishes so far as observed by me:—

Petromyzon fluviatilis, *Linné*, the River Lamprey. Stone Eel. Nine eyes.

Very common in the loch, remaining there all the year round, and ascending the streams in the month of April to deposit their spawn. When engaged in this operation they assemble in groups of 20 or 30 individuals of both sexes on the shallow fords, where they scoop out a redd, or trench, in the gravel, in which they deposit their spawn promiscuously. The redd is then again covered up with gravel, and the eggs left to hatch out. This small species, which seldom exceeds 12 inches in length, or weighs more than an ounce, attacks and destroys all sorts of fish, but more especially brown trout and powans, the latter falling easy victims to its voracity, and they may frequently be seen floating on the surface of the water with the lamprey attached, its jaws and head buried in the flesh of its victim.

In England this fish is sought after as bait and, occasionally, for the table; but it is not reckoned of any value with us.

Petromyzon marinus, *Linné*, the Sea Lamprey, or Spotted Lamprey.

Very scarce in this district. I have not myself seen it, but am informed by two trustworthy observers that it has been seen in Luss water upon several occasions; the description given of the fish's appearance and actions putting the verification of the species beyond a doubt.

Unlike the smaller species, the sea lamprey is migratory, ascending the rivers from the sea about midsummer, and spawning in pairs, not gregariously, in July or August.

In England this fish is highly esteemed for the table, and is in season from December till May. It never appears in the Scotch markets, as our fishermen look upon it with the utmost disgust and fear.

Anguilla vulgaris, *Leach*, the Sharp-nosed Eel.

This is by far the commoner of the two species frequenting the loch. The young ascend from the sea as Elvers, about the size of a darning needle, in the month of May, and we find them up to all sizes during the whole summer until October, when they disappear. What becomes of them is not certainly known, but it is probable that a portion of the mature eels go down at that time

to the sea, where they spawn in the brackish water in December, the young fry being observed in numbers from February onwards in the tidal waters of the Clyde.

The remainder of the adult eels seem to remain in the loch, dormant, until the following spring, when they are again found in plenty by anyone setting lines or traps for them. This remainder of mature eels probably go down to the sea at the next, or some future period of migration. No upward migration of large eels has ever been observed, and the apparent conclusion—or rather inference—is that when once the eel descends from the fresh water to his birthplace in the sea he never returns.

***Anguilla latirostris*, *Risso*, the Broad-nosed Eel.**

This species has probably much the same habits as its sharp-nosed congener; it is, however, much scarcer in Loch Lomond, and grows to a larger size. From what I have learned from those who angle for eels, and from my own observation, I should say that the present species sometimes attains a weight of 12 or 14 lbs., whilst the sharp-nose rarely exceeds 5 or 6 lbs. It is seldom, however, that examples of these sizes are obtained, the tackle in use for this angling being generally incapable of holding such monsters.

***Salmo salar*, *Linné*, the Salmon.**

The true salmon frequents the loch the whole year round, being most plentiful from July till October. A run of large-sized fish takes place in March or April, but the main run is in July. Grilse are chiefly obtained from middle of July onwards, but occasionally they make their appearance as early as 20th June. The largest salmon I have seen taken by rod and line weighed 31½ lbs., but by net I have a note of one which turned the scale at 41 lbs.; and I am told on good authority that, about forty years ago, a fish weighing 52 lbs. Tron weight (equalling about 70 lbs. avoird.) was taken in the Leven at Dalquhurn. The grilse, as a rule, do not exceed 6 lbs.

The salmon enter such tributary streams as afford them proper shelter early in August, and remain there until they have spawned; but in the shallower waters, such as the Luss, they do not make their appearance until December, when they are ripe for spawning, and return to the loch as soon as that operation is performed. Kelts, or spent fish, remain in the loch until April. Smolts start upon their downward migration in early May in great numbers, and have all passed down to the sea by the first days of June.

Until 1890 the entire district had enjoyed an immunity from the fungoid disease which has been so fatal to the salmonidæ in other parts of Scotland, but in that year the *Saprolegnia* made its appearance, though not in a virulent form. I observed about half-a-dozen cases amongst salmon and trout taken in the nets belonging to the Duke of Montrose, and the fishermen told me they had occasionally, in the same year, got a stray fish so affected; a circumstance which had never occurred in their previous experience. The only other fish attacked at this time were the minnows, which were frequently covered with large snow-white patches of fungus. It remains to be seen whether this slight attack will develop into a severe epidemic in the coming years.

Salmo eriox, *Linné*, the Grey Trout or Bull Trout. This species is somewhat scarce, and but little is known of its habits. It is, however, probable that it does not enter the loch so early as the true salmon, at least, I have never seen one taken earlier than August, and I have not been able to get any reliable information on the subject from the fishermen. The largest example I have taken, or indeed seen, weighed $9\frac{1}{2}$ lbs. Nothing is known as to the time of spawning, or the migration of the young in this district, the present species being generally confounded with the true salmon or the sea trout.

Salmo trutta, *Fleming*, the Sea Trout. The sea trout is to be found during the entire year, but there are probably very few clean fish in the loch before the end of April. The heaviest fish make their appearance in May and June, and a smaller sort from July onwards. The whitling, or blacknebs, run from the middle of July until the end of the season, the principal migration being in August. The sea trout of Loch Lomond are exceptionally large and fine, running ordinarily up to 4 or 5 lbs., and occasionally up to 8, 9, and even 14 lbs., a fish of the latter weight having been taken with rod and line a few years ago. The variations in shape, proportion, colouring, and marking are infinite, and it is not easy to tell where *Salmo trutta* ends and *fario* begins. The sea trout enter the tributary streams with the first floods in June, and continue passing up during the whole summer. They do not spawn until late in October or November, by which time the earlier fish have pushed their way up to the very head waters of the streams. After spawning they gradually drop back into the loch, where they remain for some time, and have not all gone to the sea until the

early days of May. The smolts are numerous in the loch in April and May, and have generally all disappeared by the middle of the latter month.

Salmo fario, *Linné*, the Brown Trout. The common trout abounds in the loch and all the tributary streams, and, like the preceding species, exhibits an infinitude of variation. It occasionally grows to a large size, specimens weighing $8\frac{1}{2}$ lbs., $9\frac{1}{4}$ lbs., and $11\frac{1}{2}$ lbs., having come under my own observation, but these are exceeded by a trout weighing 12 lbs., taken at Inversnaid in 1889, and one of a like weight at Rossdhu a few years earlier. These large fish were all taken by anglers with rod and line; trout of 2 to 6 lbs. are by no means scarce, many such being taken every year.

A few large fish ascend the streams early in summer along with the sea trout, and remain in the upper reaches until spawning has been completed, but the bulk of the brown trout do not visit the spawning beds until they are about ripe—in October and November—when they enter the streams, remaining only a few days and then dropping back into the loch, where they speedily recover their condition.

In addition to the foregoing species of the typical Salmonidæ, we may possibly include the Great Lake Trout from Switzerland, and the Brook Trout from North America, both which species have been introduced. I do not think, however, that they have thriven; or, at least, they have not maintained their identity, as no trace of them has been seen since they were turned in many years ago. The so-called *Salmo ferox* is also said to exist, but I do not think this variety has ever been taken; the name *ferox* being applied to any ugly overgrown brown trout, whilst the true *Salmo ferox* is a very handsome fish, with a perfectly symmetrical body, smallish head, and spotted with very large elliptical spots of a deep purple colour with a yellow halo.

Coregonus clupeoides, *Lacépède*, the Powan. Fresh-water Herring. This aberrant member of the Salmonidæ frequents the loch in enormous numbers, and is captured solely by net, only a few instances being on record in which they have been taken by fly or bait.

The powan spawns from October to December, and, unlike the typical Salmonidæ, does not enter the streams for that purpose, but deposits its spawn on stones and gravel in the shallow bays.

The young powans I have taken in great numbers in small creeks in the month of July. They were then about two inches long, so that they probably hatch out about February, *i.e.*, about the same time as the trout and salmon.

Their food consists, as far as I have been able to ascertain, of small entomostraca, along with a few minute beetles and small worms, with which, and a mass of soft green weed, their stomachs are often quite distended. The powan has a strong smell, somewhat like that of the spurling, and when they float in great shoals on the surface of the water, as is their custom in summer and autumn, the surrounding air for a considerable distance is tainted with their scent.

Owing to their sluggishness, and this habit of lying on the surface of the water, they constitute a favourite food of the larger gulls and cormorants, and are also ready victims to the pike and other voracious fishes.

On an average, this handsome fish does not exceed half-a-pound in weight, but they occasionally attain to as much as two pounds.

Esox lucius, *Linné*, the Pike or Gedd. Common throughout the whole loch, but chiefly frequenting weedy bays and backwaters near the mouths of streams. The pike spawns in April, depositing the ova on sticks and weeds in the shallow waters. The young are found in late summer about 4 or 5 inches long. This fish grows to a great size, the heaviest I have seen and can vouch for, being 24 lbs.; but one came ashore dead a few years ago near Luss, which was estimated at over 40 lbs.; and Yarrell records a specimen from this loch weighing 79 lbs. Yarrell does not give his authority for this monster, but I believe it is recorded in the *Edinburgh Philosophical Journal*.

It has been generally assumed that the pike is not indigenous to this country, but I know of no evidence to warrant such a belief of greater weight than some old rhymes; and the very extensive geographical range of the species tends materially to negative the assumption.

As is well known, the pike has a bad character for its voracity, which, from my own observation and the numerous tales of anglers and others, I fully believe it deserves; but Mr. David Robertson has lately endeavoured to show that the pike is physically incapable of being a very voracious feeder, and adduces evidence of some weight in support of this view.

Tinca vulgaris, *Cuvier*, the Tench. This fish is found only in the vicinity of the mouth of the River Endrick, and in a small pond near the Charcoal Works at Balmaha. All the examples taken from the loch were captured by ground baits, and the largest which has come under my observation weighed 6 lbs. This fish is probably scarce, but from its sedentary habits, and its being only captured by a method of angling now little practised, we cannot be positive on this point. In England the tench spawns in June and July, shedding its ova upon weeds and sticks. It is said that the spawning female is invariably attended by two males.

Leuciscus rutilus, *Linné*, the Roach or Braize. The roach is very common in the shallower parts of the loch, in the upper reaches of the Leven, and in the Endrick. It is a gregarious fish and attains a fair size, the maximum being probably about 2 lbs.

The roach spawns in the loch in June, depositing its eggs on stones in shallow bays, and it is probable that the young hatch out very quickly, as I have taken them about $1\frac{1}{2}$ inches long in July.

Parnell, however, says that they ascend the streams tributary to Loch Lomond to spawn, and that in such vast numbers that they are taken in thousands in baskets and nets by the people inhabiting the banks of these streams. The Rev. David Ure, in a statistical account of the parish of Killearn, corroborates this story as far as the Endrick is concerned.

I have made diligent inquiry of gamekeepers and villagers, and others in the Vale of Endrick on this subject, without eliciting any information; no one whom I have questioned having ever heard of such a phenomenon. On the opposite side of the loch, where I have resided for many years, I am certain that no such migrations take place, although the roach is as abundant in that locality as in any other part of the loch.

Leuciscus phoxinus, *Linné*, the Minnow. This fish is very abundant, frequenting the loch in large shoals, and the lower reaches of the streams in lesser numbers. The minnows spawn in May and June, principally, as I believe, in the loch, depositing their ova on stones and gravel in the shallow bays. They generally spawn in pairs or three together (probably two males and one female), but occasionally I have observed them performing this function gregariously in common. During the spawning time the

male fish assume a dark olive colour on the back, their bellies are blotched with black and crimson, their lips black, their head covered with small, pure white, hard tubercles. These males, after spawning, ascend the streams a short distance, and, assembling in deepish rocky or stony holes, lie together for days in a solid mass which might readily be mistaken for a bed of weeds, or, as suggested by Parnell, of water ranunculus just bursting into flower.

After remaining in this condition for a week or so, they gradually separate, return to the loch, and resume their ordinary appearance. The female does not change her colour during spawning, but retains the beautiful, blackish-grey, mottled back and silvery sides and belly.

Nemachilus barbatula, *Linné*, the Loach or Beardie. This species, in spite of its proverbial fecundity, appears to have become very scarce in the locality. Perhaps, however, its excessively shy and retiring disposition may cause us to believe that it is much scarcer than it really is.

The loach frequents stony ground in shallow water, and is found in some numbers in the pools left by retiring floods. It spawns in April, produces a large number of ova, is very voracious, and, notwithstanding its apparently weak powers of swimming and sedentary habits, is at times irritable and restless, moving rapidly and frequently from place to place.

Pleuronectes flesus, *Linné*, the Flounder. This species still frequents the loch, but is, I think, no longer common. It ascends the Leven from the sea in summer, and enters the loch, passing up at least as high as Luss; but I know nothing whatever of its habits whilst in the fresh water. Not having taken or seen a specimen of the flounder for more than thirty years, and the statement that it existed in the loch being generally discredited, I lately caused lines to be set in likely places, and after some days succeeded in securing two examples, thus proving their continued presence with us. The flounder chiefly inhabits muddy and sandy ground in the brackish water of estuaries, where it is said to spawn in March and April.

Gasterosteus aculeatus, *Linné*, the Stickleback, or Bane-stickle. The three-spined stickleback is exceedingly abundant throughout the district, going about in shoals when young, but becoming solitary when adult. They spawn in the loch in May and June, depositing their ova in holes or crannies in rocks and wood,

and sometimes, as I am informed, in regular nests over which the male fish is said to mount a careful guard until the eggs are hatched. It has not been my good fortune to observe either the nests or the paternal surveillance.

When these fish live in a confined pond, or small river, the males at spawning time assume very vivid colours. The throat becomes bright crimson, the whole body a lively green, and the eyes flash alternately emerald and fire, whilst the motions and actions of the little creature itself are savage and warlike in the extreme. In the broad and ample waters of Loch Lomond, however, no such change takes place; the fish retain their wonted appearance, and the males are not to be distinguished from the females, save by their smaller size and less portly bodies.

This hardy little fish is found throughout the whole kingdom, and is as much at home in salt as in fresh water.

Gasterosteus spinulosus, *Jenyns*, the Four-spined Stickleback. This species, which may indeed be only an abnormal form of the preceding, is very scarce, only two examples having come under my notice. These specimens were taken in July, and although they were along with many hundreds of the common species, there was no hesitation in picking them out as something different from the others. They appeared to be intermediate in shape between *aculeatus* and *pungitius*.

Gasterosteus pungitius, *Linné*, the Ten-spined Stickleback. This, the smallest of the genus, occurs sparingly along with the other species. Its habits are much the same as *aculeatus*, and it is probable that it spawns at the same time and in the same manner as its larger and commoner congener, but I have not had an opportunity of observing and noting the facts.

Perca fluviatilis, *Linné*, the Perch. The perch in former years was exceedingly abundant all over the loch, but it is now not nearly so numerous, although still found in considerable shoals, chiefly of small-sized fish.

Occasionally the perch attains a great size, the largest which I have seen weighing $4\frac{1}{8}$ lbs. and $4\frac{1}{4}$ lbs., both taken by rod and line in Loch Lomond.

This fish spawns in April and May, depositing its eggs on weeds in shallow bays and backwaters, three or four individuals being generally engaged in spawning together. After spawning, the perch quickly recovers its condition, and is quite fit for the table in July

NOTES ON THE "CENSUS OF SCOTTISH MOLLUSCA."

F. BUCHANAN WHITE, M.D., F.L.S., F.E.S.

MR. T. SCOTT'S remarks (in his valuable paper on the Scottish species of *Vertigo*) upon the Fifeshire locality for *Vertigo minutissima* (*Scot. Nat.*, April, 1891, p. 53) rather tend to confirm the impression which a perusal of Mr. Roebuck's "Census" left upon me. That "Census" is a very valuable and interesting contribution to our knowledge of the distribution in Scotland of the Land and Fresh-water Mollusca, but I think that the author has not made it quite clear that it is a "Census," not of the recorded distribution, but of specimens received as vouchers. Hence, in the tabulated statement all the old records are necessarily ignored, and, if it alone is consulted, a very erroneous impression of the actual work which has been done amongst the Scottish Mollusca will be conveyed. In addition to this, doubt *seems* to be cast upon the genuineness of previous records, although I do not believe that Mr. Roebuck intended to do this. In connection with the "Census," I am sorry that Mr. Roebuck did not see his way to indicate the distribution in the faunal areas or districts, that is, of the natural divisions instead of the artificial divisions formed by the counties. Since the whole world is now divided into accepted faunistic areas, and the local faunistic areas of Scotland are coming more and more into use (See Rev. H. A. Macpherson's paper, p. 60), it is retrogression to go back to the artificial boundaries of the counties. Mr. Roebuck has two or three objections I think (his paper is not now beside me) to the use of the natural areas. One is that these are too large. In one case—that of "Moray"—I have for some time been of his opinion, but when I first divided Scotland into faunistic areas (*Scot. Nat.*, vol. I., p. 161, 1872), I did not see my way clearly to sub-divide it. Another objection is that it is difficult to divide England into similar areas. This difficulty is, I think, more imaginary than real. A year or two ago I found that England could be divided into twelve great divisions. Some of these would require to be sub-divided, but that is a matter for English naturalists to settle amongst themselves. It will *have* to be done some day, so the

sooner some attempt is made to do it the better. It might be expedient to have a conference of both English and Scottish naturalists (botanists as well as zoologists) to discuss the matter of natural faunistic areas. A third objection is that a special map is required for the natural districts, whilst any map will show the county boundaries. But in these days of cheap map production this objection is not of much importance. On the other hand, what definition of the county boundaries is to be taken? The old or the new? The old boundaries are shown in our present maps, but what about the alterations in several counties made by the Boundaries' Commissioners of the Local Government Act? If these alterations are given effect to in future maps,¹ the records of counties will in some cases be misleading. (To give an example. I lately found a "station"—not hitherto recorded—for *Helix virgata*, beside the River Forth, and just on the boundary between Perthshire and Clackmannanshire. Now, if that snail had been included in the "Census" of vouchers, it might have appeared in the West Perth—or, as Mr. Roebuck calls it, South Perth—column. But the Boundary Commissioners have handed over this outlying bit of Perthshire to some other county, and I suppose that in future maps it will cease to appear as part of Perthshire.)

In conclusion, I notice that Mr. Roebuck is in doubt as to which vice-county some of the specimens sent from "near Perth," belong. Moreover, if my memory is not at fault, some of the Perthshire localities are placed in the wrong vice-county. It seems a pity, therefore, that on these points local information was not asked for. Several Perthshire collectors of Mollusca would, I am sure, have been pleased to have helped to make the "Census" more perfect, while an examination of the extensive collection of the local Land and Fresh-water Mollusca in the Perthshire Natural History Museum would, I think, have been of service to the census-takers.

¹ Just after writing this I noticed the advertisement of a map "showing the new county boundaries."

NOTES ON THE AUTHENTICATED COMITAL DISTRIBUTION OF SCOTTISH LAND AND FRESH-WATER MOLLUSCA.

BY WM. DENISON ROEBUCK, F.L.S.

I.

IN continuation of the "Census of Scottish Land and Fresh-Water Mollusca," which was published recently in the Proceedings of the Royal Physical Society of Edinburgh, I propose to publish from time to time in the *Scottish Naturalist*, under the above title, such further notes on the comital range of Scottish land and fresh-water mollusca as the kindness of Scottish naturalists may enable me to, and already I have, through the kindness of Mr. J. Charles Smith of Penrith, and of the Rev. J. McMurtrie of Edinburgh, some much-needed additional records to bring forward, and through the kindness of Mr. Bennie an important note bearing on the right of *Limnæa stagnalis* to be regarded as native in one of its authenticated habitats.

Before giving these, however, it is incumbent upon me to say a few words in reference to the adverse criticisms of Dr. Buchanan White which appear on another page. Dr. White not only prunes the branches of my tree but he also lays his axe to the root, in his notes, and I must do what I can to make matters clear in respect to the various points to which he refers. His most important criticisms are those regarding my adoption of Mr. Cottrell Watson's botanical vice-counties instead of Dr. White's own river-basin areas, and my confining myself to the authenticated records of the Conchological Society instead of including all published records.

With regard to the latter point, I had imagined that I had made myself sufficiently clear in my "Census" that it simply dealt with authenticated records. The great advantage of this is, that my paper, instead of being of unequal value (as printed records in the mass necessarily must be), is of uniform and equal value. The determination of the species or variety of each of the numerous records I published is exact and reliable, and, therefore, every record can be quoted with confidence.

No one will imagine for a moment that I doubt the genui e-

ness of records made by competent authorities, whoever they are, but every one will admit that errors of determination are sometimes made in print, and that it would hardly be safe to assume that because a record is printed it is necessarily correct. We have, therefore, the very great advantage of reliability of determination gained by confining the "Census" to authenticated records.

With regard to the question of counties *versus* river-basin areas, we can very readily concede the theoretical superiority of the latter, and I may here say that having been a subscriber to the *Scottish Naturalist* from its beginning under Dr. White's editorship, I was much interested in his proposal to divide Scotland into river-basin areas, and very shortly after it appeared I followed it up for my own personal use by dividing England, Wales and Ireland into similar areas, of which I made for the whole of the British Isles fifty-eight divisions, including Dr. White's Scottish ones. I then tabulated the recorded distribution of British Aculeate Hymenoptera, so that I may fairly claim to have given Dr. White's system a fair and sympathetic trial. I found, however, that the divisions were neither small enough nor numerous enough. Shortly afterwards the Conchological Society was founded, and the authentication system instituted. The whole question was then gone into, and the practical difficulties of subdividing the natural river-basins, their inequality when not subdivided, and the necessity of the areas being more numerous, turned the scale in favour of the Watsonian system of counties and vice-counties, in spite of our natural leaning in favour of a system based on the physical features of the country. The question of maps, too, which Dr. White considers of so little importance, is really a very great difficulty. It would have been impossible for me, personally, to publish a special map, which must necessarily be on a fairly large and detailed scale, and to have it disseminated sufficiently widely; whereas, on the contrary, the boundaries of counties are shown in nearly every map and known with accuracy, while their subdivisions can be indicated without difficulty. So far as concerns the Boundary Commissioners, if I understand Dr. White rightly, their work would seem to have been further advanced in Scotland than here in England. Various changes in the boundaries of my own native county of York have long ago been recommended by them, but the recommendations seem already to have fallen into

oblivion, without any attempt being made to give them legislative effect. It therefore seems to me premature to consider whether we adopt any other than the present definitions of counties.

I am glad to note Dr. White's reference to the willingness of Perthshire collectors to assist in making the "Census" more perfect, and also to the valuable source of information afforded by the Perthshire Natural History Museum; and I need hardly say that I shall be delighted if Perthshire collectors would act in accordance with Dr. White's statement, and forward specimens to the Conchological Society at Leeds for authentication, carefully stating the exact locality and the particular division of Perthshire from which each set of specimens comes. I have placed the "near Perth" records under the vice-county in which the sender informed me he had collected the specimens; but there are some cases in which I was unable to obtain the desired particulars, and these have been subject to the rule that the record must be placed on the same side of the boundary line as the town itself, and it is these latter records that require confirmation.

I hope that I may be able to induce Scottish naturalists generally to do their utmost to assist us to complete the task of recording and authenticating the comital distribution, by sending examples to the Conchological Society of anything which will serve to fill up a blank in the tables of distribution appended to my paper, a copy of which table I will gladly send to any one who is desirous of helping in the work.

I have now to say that I wish to enlist the assistance of Scottish naturalists in another direction. I have never lost sight of the printed records, have diligently collected them wherever I met with them, and have in preparation a Bibliography of published records of Scottish Land and Fresh-Water Mollusca, to be printed at some future time. If, therefore, my friends will kindly draw my attention to any records that have appeared in print, and will assist me to make the Bibliography complete, they will confer upon me a great obligation. The Bibliography, when published, will then form the necessary supplement to the "Census," and will clear me wholly from any suspicion of ignoring published records.

The Introduction of *Limnæa Stagnalis* into Lanarkshire.—It is always to me a matter of gratification to be able to correct errors, and I am much indebted to Mr.

James Bennie, of the Geological Survey of Scotland, for some valuable information as to the introduction of this fine and conspicuous species into one of the three stations given for it in my "Census." In that paper I give it for "Lanark.—Old Quarry at Possil by Glasgow (T. Scott; A. Somerville.)" Immediately the paper appeared I received a letter from Mr. Bennie giving the history of this occurrence, and forwarding me copy of a letter from Mr. Wm. Newton MacCarthy of Glasgow.

It would appear that nearly thirty years ago the late Mr. George Combe, heating engineer, of Glasgow, brought from England a large number of *L. stagnalis* for Mr. MacCarthy's aquarium, so large a number that when the aquarium was stocked Mr. MacCarthy, and a few other members of the Glasgow Natural History Society, took them to Possil Marsh and threw them into the quarry and into the deepest drains of the Marsh. Some years afterwards specimens were obtained by collectors, but it is so many years since Mr. MacCarthy visited the marsh that he does not know if any are to be obtained now. The introduction was made by Messrs. Coutts, Mahony, Newstead, MacCarthy and Combe, and the day must have been a holiday (New Year's Day, Mr. Bennie thinks), as Mr. Mahony had no other days for his outings. Mr. MacCarthy suggests that this shell has in a similar manner been introduced into its other Scottish stations, and Mr. Bennie adds that it was the belief of the introducers that the *L. stagnalis* was at that time exclusively English in its range, and that they were doing a patriotic act in introducing so handsome a species into Scotland. Mr. MacCarthy's supposition is probably correct, and I hope that the full history of the Hawick and Aberlady occurrences, should they have been originally introduced, may be forthcoming. Nevertheless, it is to be noted that the published records of the species in Scotland date back to 1836 (Gulane Loch) and 1833 (pond in Botanic Garden, Edinburgh, E. Forbes), so that the difficulty is increased by the lack of full evidence. There are also Berwickshire and Northumberland records given in 1838 in Dr. Johnston's Berwickshire list.

It is very much to be wished that careful record should invariably be made of introductions of species into new districts, in which case we can entertain no particular objection to the practice.

Banffshire Mollusca.—For the very few Banffshire records given in the "Census" I was indebted to Mr. Lionel W. Hinx-

man, of the Geological Survey of Scotland, who sent me a number of species from Tomintoul. I have since received from Mr. J. Charles Smith, of Penrith, a number of shells collected by him at Aberlour. They are: *Vitrina pellucida*, *Zonites alliarius* and var. *viridula*, *Z. nitidulus*, **Z. purus* var. *margaritacea*, **Z. fulvus*, *Z. crystallinus* var. *contracta*, *Helix arbustorum*, **Vertigo edentula*, *Clausilia rugosa*, *Zua lubrica*, and, from the River Spey, Banff, **Unio margaritifer* and **Anodonta cygnæa*. Of these, the five marked with the asterisk are additional to the list given in my "Census," and raise the number of authenticated Banffshire species from 19 to 24.

I may add that Mr. Smith has most kindly presented the specimens to the Conchological Society, which body is making a series of county collections, and will be pleased to have any amount of assistance in this direction.

Shells of North Ebudes.—The Rev. J. McMurtrie, M.A., D.D., of Edinburgh, has recently forwarded for the Conchological Society's collections a fine series of the Shells of the Island of Eigg, illustrative of an excellent paper which he has sent to be read before the Society, giving full details of the relative abundance or scarcity, etc., and which will be in due time printed in the Society's organ, the "Journal of Conchology." I will not anticipate this further than to say that the collection includes examples of 29 species, of which no less than the following 20 are new to the vice-county of North Ebudes, and raise its authenticated fauna to 31 species: *Arion ater*, *A. subfuscus*, *Limax arborum*, *Zonites cellarius*, *Z. alliarius*, *Z. purus*, *Z. radiatulus*, *Z. crystallinus*, *Z. fulvus*, *Helix aspersa*, *H. nemoralis*, *H. hortensis*, *H. arbustorum*, *H. sericea*, *H. fusca*, *H. ericetorum*, *Pupa ringens*, *P. umbilicata*, *Clausilia rugosa*, and *Zua lubrica*. The example set by Mr. Smith and Mr. McMurtrie is one which I hope will have many imitators, and I shall be only too pleased to have the opportunity of sending to the *Scottish Naturalist* a regular succession of notes under this heading. The counties from which records are most desired are the following: South Ebudes, Shetland Islands, North Aberdeen, Orkney, Hebrides, West Ross, Mid Ebudes, Westerness, from none of which have we had the opportunity of authenticating more than a score of species; while in the South I may name Dumfriesshire and Wigtonshire as areas from which we have seen but very little more.

LIST OF PLANTS SEEN IN THE VALLEY OF
BRAEMAR AND ON MORRONE (*Continued*).

BY PROF. C. C. BABINGTON, M.A., F.R.S.

GERANIACEÆ.

Geranium sanguineum Linn. Dickie found this at Castleton. I have not seen it there.

G. sylvaticum Linn. Common.

G. dissectum Linn. Castleton.

G. Robertianum Linn. Common.

OXALIDACEÆ.

Oxalis Acetosella Linn. Common.

LINACEÆ.

Linum catharticum Linn. Common.

LEGUMINOSÆ.

Ulex europæus Linn. A few weak plants at Castleton which lies at its highest limit of growth.

Genista anglica Linn. Common, but usually quite prostrate.

Sarothamnus scoparius Koch. Very rare about Castleton.

[A prostrate variety grows at a high level on Ben-a-Bour, W.]

Trifolium pratense Linn. A doubtful native in Braemar.

T. medium Huds. Not common.

T. hybridum Linn. Naturalised in fields from cultivation.

T. repens Linn. Common.

Lotus corniculatus Linn. Common.

[*Astragalus alpinus* Linn. The late Prof. Balfour and I found this on Little Craig-an-dal in 1842. I have not been there since.]

Vicia Cracca Linn. Common.

V. sepium Linn. Common.

V. sylvatica Linn. Dr. Dickie found this in Braemar. I have not seen it. (In a hollow on the Carr Rocks, R. T. W.)

Lathyrus pratensis Linn. Rare.

L. macrorrhizus Wimm. Common.

ROSACEÆ.

Prunus Padus Linn. By the rivers at Castleton.

Spiræa Ulmaria Linn. Common.

Alchemilla vulgaris Linn. Common.

A. alpina Linn. Very common.

A. arvensis Linn. Rare.

Potentilla Anserina Linn. Not very common.

P. maculata Pourr. (*P. alpestris* of Dickie). I did not recognise this; but Dickie records it as found at Corriemulzie, Craig Koynach, Carr Rocks, and Glen Callater. (Abundant on the turf behind Tomantoul farmhouse and west of it, *W.* Between Morrone and Chapel Brae, *T.*)

P. Tormentilla Linn. Common.

P. procumbens Sibth. Common.

Comarum palustre Linn. Common in wet marshes.

Fragaria vesca Linn. Carr Rocks.

Rubus Idæus Linn. Common.

R. suberectus Anders. The late Prof. Macgillivray thought that he had found this at Castleton; but I fear that he was mistaken.

R. nitidus (by which I suppose *R. Lindleianus* Lees was intended), is also erroneously, as I believe, recorded by Prof. Macgillivray. (Castleton appears to be above the range of the true fruticose Rubi.)

R. saxatilis Linn. Not uncommon on Morrone.

R. Chamæmorus Linn. Common on the wetter parts of Morrone.

Geum rivale Linn. Not uncommon.

Rosa spinosissima Linn. Rare.

R. Sabini *W.* Glen Clunie.

R. Doniana Woods. Prof. Macgillivray found this by the Linn of Quoich.

R. mollis Sm. Common.

R. tomentosa Sm. Common.

R. inodora Fr. Is recorded by Prof. Macgillivray as between Banchory and Castleton; but I have not recognised it there.

R. canina Linn. Mr. Baker names my specimens from Castleton, *R. verticillacantha* Mérat; *subcristata* Baker, *coriifolia* Fr., and *Watsoni* Baker.

(It is manifest that the Roses require more attention, and at an earlier season, than I have been able to give to them.)

Pyrus Aucuparia Linn. Common.

ONAGRACEÆ.

Epilobium angustifolium Linn. Rare in damp places, such as Corriemulzie.

E. montanum Linn. Common.

E. tetragonum Linn. Is recorded; but I have not seen it.

E. palustre Linn. Bogs and wet ditches, not very common.

E. alsinifolium Vill. On Morrone. Recorded from the Carr Rocks.

E. alpinum Linn. By streams high up on Morrone.

Circæa alpina Linn. Mr. Barron found this at Castleton.

HALORAGACEÆ.

(*Hippuris vulgaris* L. I think I have seen this in a pool between the road and the river west of the village, *W.*)

Myriophyllum alternifolium D. C. In the River Dee, Loch Callater, and other places. This is the only species observed by me in Braemar. (It is the only one observed by us with certainty in Aberdeenshire, *R. T.*)

PORTULACEÆ.

Montia fontana Linn. Common in streams.

CRASSULACEÆ.

(*Sedum villosum* L. In a marshy spot by a streamlet in Auchindryne, a short distance west of the Fife Arms Hotel, *R.*)

SAXIFRAGACEÆ.

Saxifraga stellaris Linn. Morrone.

S. aizoides Linn. Very common.

Chrysosplenium oppositifolium Linn. By streams.

C. alternifolium Linn. Is recorded by Prof. Macgillivray as growing at Corriemulzie. (I gathered it there in April, 1890, *T.*)

UMBELLIFERÆ.

Sanicula europæa Linn. Woods on Morrone.

Carum flexuosum Fr. Common.

Pimpinella Saxifraga Linn. Common.

Meum Athamanticum Jac. By the rivers.

Angelica sylvestris Linn. Common.

Heracleum Sphondylium Linn. Common.

Daucus Carota Linn. Very rare amongst crops.

Chærophyllum sylvestre Linn. Castleton.

Myrrhis Odorata Scop. Very rare; an escape from cultivation.

Scandix Pecten-Veneris Linn. A few specimens were found on the thatch of a house.

CORNACEÆ.

Cornus suecica Linn. Common in the Morrone woods.

CAPRIFOLIACEÆ.

Sambucus niger Linn. Very rare, and apparently not native.

Lonicera Periclymenum Linn. Dr. Dickie found this on Craig Koynach, and Prof. Macgillivray at Corriemulzie. I did not see it.

Linnæa borealis Gronov. On the Carr Rocks ("Ben Beck" is probably the same place), and near Invercauld Bridge.

RUBIACEÆ.

Galium boreale Linn. Common.

G. Verum Linn. Common.

G. mollugo Linn. Near the Manse.

G. saxatile Linn. Common.

G. palustre Linn. Castleton.

Asperula odorata Linn. Carr Rocks, and Corriemulzie.

VALERIANACEÆ.

Valeriana officinalis Linn. Common.

DIPIACEÆ.

Scabiosa Succisa Linn. Common.

COMPOSITÆ.

Tussilago Farfara Linn. Common.

Bellis perennis Linn. Common.

Solidago Virga-aurea Linn. Rather common, especially in its form *cambrica*.

Antennaria dioica R. Br. Morrone.

Gnaphalium sylvaticum Linn. Morrone.

Gn. norvegicum Gunn. I have what appears to be this from Morrone.

Achillæa Millefolium Linn. Not common.

A. Ptarmica Linn. Not common.

Chrysanthemum segetum Linn. On cultivated land, rare.

Ch. Leucanthemum Linn. Common.

Matricaria inodora Linn. Common.

Artemisia vulgaris Linn. Common.

Tanacetum vulgare Linn. About Castleton, only as an escape from cultivation, but quite established beside the Clunie.

Senecio vulgaris Linn. Common.

S. sylvaticus Linn. Castleton.

S. Jacobæa Linn. Common.

Carduus crispus Linn. Castleton.

C. lanceolatus Linn. Castleton.

C. palustris Linn. Castleton.

C. heterophyllus Linn. By the rivers.

C. arvensis Curt. Castleton.

Saussurea alpina Decand. Glen Callater.

Centaurea nigra Linn. Castleton.

C. Cyanus Linn. Cultivated land.

Lapsana communis Linn. Castleton.

Hypochæris radicata Linn. Common.

Leontodon autumnalis Linn. Common.

Taraxacum officinale Web. Common. (Var. *erythrospermum*, roadsides west of the village, *W.T.*)

Sonchus arvensis Linn. Castleton.

Crepis hieracioides *W. & K.* On a rocky mound by the Clunie at Castleton.

C. paludosa Moench. Castleton and Corriemulzie.

Hieracium Pilosella Linn. Common.

H. anglicum Fr. By the rivers.

H. iricum Fr. Castleton.

H. vulgatum Fr. Common.

H. prenanthoides Linn. By the Clunie at Corriemulzie.

H. crocatum Fr. By the Clunie.

H. auratum Fr. By the Clunie.

H. cæsius Einn. Castleton. Is this the "*H. murorum*" of Dickie?

H. boreale Fr. This is doubtful. I did not see it. Croall issued *H. prenanthoides* under this name.

RECORD OF SCOTTISH PLANTS FOR 1890,
ADDITIONAL TO "TOPOGRAPHICAL BOTANY."

Ed. 2.

Continued.

BY ARTHUR BENNETT, F.L.S.

86. **Stirling.**

(From specimens sent by *Col. J. S. Stirling* and *R. Kidston*.)

- Ranunculus hirsutus.
 Meconopsis cambrica. †
 Cochlearia officinalis. *A. Croall.*
 Nasturtium sylvestre. †
 Draba muralis. †
 Sisymbrium Sophia. †
 Sinapis tenuifolia. †
 Thlaspi arvense. †
 Cakile maritima.
 Silene anglica. †
 Cerastium arvense. *Macdougal.*
 Sagina maritima.
 S. apetala.
 Spergularia rubra.
 Hypericum Androsæmum.
 Malva rotundifolia.
 Tilia vulgaris. †
 Acer Pseudo-platanus. †
 Melilotus alba. †
 Trifolium arvense. †
 Vicia angustifolia.
 Potentilla alpestris.
 Rosa tomentosa.
 Alchemilla vulgaris.
 Pyrus Malus. †
 Circæa alpina.
 C. intermedia.
 Epilobium anagallidifolium.
 Lythrum Salicaria.
 Ribes alpinum.

- Viburnum Opulus.
 V. Lantana.
 Helosciadium inundatum.
 Peucedanum Ostruthium.† *A. Croall.*
 Carum verticillatum.
 Daucus Carota.
 Knautia arvensis.
 Arctium intermedium.
 Carduus setosus.†
 Bidens tripartitus.
 Tragopogon eu-pratensis.
 Hieracium umbellatum.
 H. auratum Fr.
 Pedicularis palustris.
 Verbascum nigrum.†
 Veronica Anagallis.
 Solanum nigrum.†
 Mentha alopecuroides.†
 Ballota nigra.†
 Myosotis sylvatica.
 Atriplex deltoidea.
 A. (patula) erecta
 Rumex conglomeratus.
 R. nemorosus.
 Ulmus campestris.†
 Ceratophyllum demersum.
 Pinus sylvestris.†?
 Orchis incarnata.
 Potamogeton obtusifolius.
 P. pusillus.
 P. Friesii, "mucronatus."
 Sparganium ramosum.
 S. minimum.
 Juncus trifidus.
 Scirpus lacustris.
 S. maritimus.
 Carex dioica.
 C. irrigua.
 C. acuta, v. gracilis Almq
 C. lævigata.

Milium effusum.
 Catabrosa aquatica.
 Sclerochloa distans.
 S. maritima.
 Festuca rubra.
 Hordeum murinum.

87. Perth, W.

Saxifraga sponhemica, }
 Salix phylicifolia, } *Marshall & Hanbury.*
 Carex vaginata, }

88. Perth, Mid.

"Rosa agrestis, inodora," Mr. Druce says that Crepin has determined this to be a *tomentosa* form.
 Saxifraga groenlandica, *Druce, J. B.*, 90, p. 42.
 Salix viridis Fr., } *Dr. F. B. White.*
 S. undulata, }
 Poa nemoralis, *fide* Hackel "3000 ft. on Lawers," *P. Ewing*, 1400 ft. higher than on record previously.

89. Perth, E.

Rubus villicaulis, *Marshall & Hanbury.*
 Hieracium holosericeum, *P. Ewing ex. Hanbury.*
 H. Farrense Hanb., *Messrs. Linton, J. B.*, 1890, p. 167.
 Salix undulata, *Dr. F. B. White.*

90. Forfar.

Hieracium umbellatum, *Messrs Linton, J. B.* 1890, p. 167.

92. Aberdeen, S.

Salix undulata, coll. *Trail*, *fide F. B. White (Linn. Soc. Journ.)*

93. Aberdeen, N.

(Recorded by *Prof. Trail, Scot. Nat.*, 1890, p. 366.)

Lepigonum rupestre Kindb.
 Carduus setosus.
 C. tenuiflorus Curt.

95. Elgin.

Callitriche platycarpa.

96. **Easternness.**(By *Mr. Druce, J. B.*, 1890, pp. 40-42.)

Fumaria densiflora.
Rubus pyramidalis Kaltenb.
Lythrum Salicaria.
Serratula tinctoria. † ?
Arctium intermedium.
Aster tripolium.
Primula veris.
Atriplex erecta.
Quercus sessiflora.
Agrostis nigra.
Poa Balfourii.
Glyceria maritima (Nairn).
Triticum junceum (Nairn).

97. **Westernness.**(From specimens sent by *Mr. S. M. Macvicar.*)

Ranunculus Ficaria.
Nuphar intermedium.
Corydalis claviculata.
Arabis Thaliana.
Viola Curtisii (slight doubt).
Honckenya peploides.
Arenaria trinervia.
 A. serpyllifolia.
Cerastium tetrandrum.
Erodium cicutarium.
Geranium dissectum.
Trifolium minus.
Vicia hirsuta. † ?
 V. Orobus.
Epilobium tetragonum.
Circæa alpina ?
Myriophyllum alterniflorum.
Sedum acre.
Hydrocotyle vulgaris.
Sherardia arvensis. †
Sonchus asper (form).
Eupatorium cannabinum.

Erythræa Centaurium.

E. littoralis.

Veronica Beccabunga.

Orobanche rubra.

Stachys ambigua.

Lycopus arvensis.†

Anagallis tenella.

Salicornia herbacea. *A. Somerville, 1885.*

Cephalanthera ensifolia.

Orchis majalis.

Juncus maritimus.

J. Kochii.

ZOOLOGICAL NOTES.

Note on Pupa concinna.—In the *Scottish Naturalist* for April, Mr. Thos. Scott gives a description and figure of a supposed new species of *Vertigo*, proposed to be called *V. concinna*. It is to be noted that long ago Lowe described a species from Madeira as *Pupa concinna*, and as most authors seem now agreed that *Vertigo* is but a sub-genus of *Pupa*, it appears that Mr. Scott's name for the new shell cannot stand.

T. D. A. COCKERELL,

3 Fairfax Road, Bedford Park,
London, May 28th, 1891.

Note on *Vertigo concinna*—Scott.—In my paper on “The Scotch Species of the Molluscan genus *Vertigo*,” in the last issue of the *Scottish Naturalist*, I proposed *Vertigo concinna* as a provisional name for what appears to be an undescribed species from a post-tertiary marl at Kirkland, Leven, Fifeshire. Mr. T. D. A. Cockerell points out in the present issue of the *Scottish Naturalist*, that Lowe has described a *Pupa* from Madeira as *Pupa concinna*; this I was unaware of, and as there is a tendency among recent authors to consider *Vertigo* as a sub-genus of *Pupa* (see preliminary remarks, p. 2. of my paper), I have decided, in order to avoid possible duplication, to change *Vertigo concinna* to *Vertigo levenensis*.

THOMAS SCOTT, F.L.S.

Abundance of Thrushes in Scotland.—During the past spring one of the most striking features of the bird life in the Scottish Midlands has been the great flocks of Thrushes which have visited us. While our English neighbours

have been noting their scarcity or absence, we have had a population far exceeding our normal one. My observations have been made mainly in Stirlingshire, but Mr. Harvie-Brown informs me that he has lately noticed the same phenomenon in Aberdeenshire. The species which has received the greatest increase has distinctly been the Song-Thrush, which has been at least twenty-fold more common than in ordinary years, but the Missel-Thrush has also occurred in very much larger numbers than usual. The Redwing and Fieldfare also appeared to be more numerous than during the past few winters. There was, however, little or no apparent increase in the number of Blackbirds. There can be no doubt but that the extremely severe weather experienced in the south of England during the late winter and spring, compared with the mildness of the same seasons in Scotland, is the chief explanation of these occurrences. The most delicate species, the Song-Thrush, has been almost completely banished from the inhospitable South, and nearly the same has obtained with the Missel-Thrush, while the more hardy Blackbird has been able to withstand the inclement season. I observed the reverse of the present distribution in the spring of 1882, when, in Stirlingshire, I did not come across a single Song-Thrush, the effect of the severe winters of 1879-80, but going to England I found them in great abundance.

Falkirk.

G. LESLIE.

REVIEWS.

Coloured Figures of the Birds of the British Islands.

Issued by LORD LILFORD, F.L.S., etc., President of the British Ornithologists' Union. London: R. H. Porter, 18 Princes Street, Cavendish Square.

We note with much pleasure that a second edition of this splendid and much-needed work has been called for, when scarcely one half of the parts forming the original edition have been issued. That such should be the case, is indeed a remarkable as well as a most significant fact. Those who are familiar with the literature of British Birds are aware that apart from Gould's costly book all the works devoted to the subject are either inadequately or feebly illustrated, and the object of Lord Lilford's "Illustrations" is to supply this want. This it does most admirably; indeed it is not too much to claim for the pictures, as a whole, that they are without rivals. The second edition is limited to four hundred copies.

The Honey Bee: Its Natural History, Anatomy, and Physiology. By T. W. COWAN, F.L.S., F.G.S., etc. London: Houlston & Sons.

This little book, though it treats on what may be considered by some as a much bewritten subject, is nevertheless a very welcome one, bringing as it

does the information on which it treats down to date, besides containing some original matter. Much has been contributed recently to the more perfect knowledge of the Natural History of the Bee, but this has not been put together and presented to the public in a convenient form. Most of the illustrations—and there are many—are quite new; and the subject-matter is treated of in a thoroughly systematic manner. We have formed a very high opinion of the book, and can thoroughly recommend it to all who desire to possess the best account of the Honey Bee. The price of the book, 2s.6d., places it within the reach of all.

Die Vogelwarte Helgoland, Von Heinrich Gätke.—Ornithologists throughout the world, and especially the students of Migration, will give a cordial welcome to Herr Gätke's work entitled "Die Vogelwarte Helgoland," which, in an exceedingly handsome form, has just been issued by Joh. Heinr. Meyer, Braunschweig. After reading it one is almost forced to the conclusion that it constitutes the most important contribution to ornithology which has appeared for many years. It is edited by Professor Rudolf Blasius, who, with questionable taste, has dedicated this eminently Gätkian Volume to Johann Blasius, his father. In a short preface the author narrates the circumstances which led him to the study of the birds of Heligoland, how as a marine painter he came to reside on the island, and how the extreme ornithological richness of the locality forced itself upon his attention. The book begins with a series of chapters on Migration, the first being a general sketch of the distribution of birds in Heligoland from January to December, a charmingly written paper in which Herr Gätke clearly demonstrates that the brush is not the only instrument he uses with pictorial effect. The following chapters are "On the Direction of Flight," "On the Altitude of Flight," "On the Speed of Flight," "On the Meteorological Relations of Migration," "On Migration in Relation to Age and Sex," "On Exceptional Occurrences," "What Guides the Migrating Bird," and the "Causes of Migration." The second part of the book consists of a paper, "On the Change of Colour of Birds without Moulting," and the third part gives a description of the occurrence of the 396 birds which have been observed in Heligoland. This last division, which forms the greater bulk of the volume, will be found to be of extreme interest, and its importance to the students of British ornithology cannot well be over estimated. Herr Gätke's admirable work is one which will be studied by all who profess acquaintance with birds, and its appearance in English translation will be awaited with impatience. G. L.

An Introduction to the Study of Mammals Living and Extinct. By W. H. FLOWER, C.B., F.R.S., &c., and R. LYDDEKAR. London: Messrs. Black, 1891.

The advent of this work has been waited for with much interest, not simply as the product of one possessed of such special qualifications for the task as Professor Flower, but more perhaps as the *joint* product of zoologist and palæontologist. Strange indeed it seems that such a natural union (of fellow labourers in a common field, for such is really the case) should be an event of

rare occurrence, but it is so, and any effort to remove the barrier which has hitherto existed between Biology and Palæontology is, in our opinion, worthy all praise. From this point of view, the work is a most useful one, and we congratulate the authors upon the outcome of their labours.

The work is at once recognised as an expansion of the numerous contributions (especially the admirable article on "Mammalia") to the *Encyclopædia Britannica* by the senior author.

Chapter I. deals with a general definition of the Mammalia, the limits and connections of the class and the economic uses to which they have been put. Following this is a necessarily somewhat lengthy chapter of 74 pages, in which the general anatomical characters are considered. Here the section on the Dental-system may be mentioned as specially good, but its usefulness would doubtless have been enhanced by the introduction of more numerous illustrations had the space permitted it. Chapter III. is devoted to the origin and classification of Mammals. In discussing the phylogamy of the group, the most recent evidence is taken into account, but the conclusions arrived at still tend to support the view long ago advanced by Professor Huxley, that the immediate progenitors of Mammals must be sought for, not among the Samopsida, but as low down as Amphibia. The notes on classification wind up with a concise table of the Orders, Sub-orders and Families—the *extinct* forms being at once distinguished from the living by a conspicuous difference in type. Geographical and Geological Distribution constitute the next section of the work. From Chapter V. onwards the different Orders and Families are taken in succession, beginning with the *Monotremes* and ending with the *Homínidæ*. In this last section the Human Family is dealt with, and we find much information of general interest bearing upon the characters and origin of the different races of Mankind—a subject upon which Professor Flower speaks with special authority as an anthropologist of eminence. It is quite unnecessary to deal with the chapters on the different groups individually, for there is little if anything to criticise, unless it be that we cannot help feeling that in some cases the descriptions of the fossil forms are briefer than we should have wished, for there is no doubt that a very considerable proportion of those who consult the work will come in search of information on the palæontological side. The illustrations are mostly excellent, the majority of which will be familiar to many as having previously done service in the *Encyclopædia Britannica* articles referred to.

Meetings, etc., of Societies.

Perthshire Society of Natural Science.

Summer Excursions, 1891.

- July 4.—Dalguise, by Loch Skiach, to Ballinluig. Train for Dalguise at 9.25 a.m.
- July 18.—Ben Challum (3,354 feet). Meeting of the Mountain Club at Cairn at 3 p.m. Train for Tyndrum at 7.45 a.m.
- Aug. 1.—Strathbraan. Train for Dunkeld at 9.25 a.m. It is proposed to take the Coach for 6 or 7 miles up the Strath and walk back; therefore, parties wishing to join in the Excursion must give in their name by Wednesday, 29th July, so that places may be secured.
- Aug. 15.—Lochearnhead to Edinample, and Shores of Loch Earn. Train for Lochearnhead at 7.45 a.m.
- Aug. 27.—Loch Lubnaig. Train for Strathyre at 7.45 a.m.

East of Scotland Union of Naturalist Societies.

- July 20.—Meeting at Arbroath.
- July 21 and 22.—Excursions.

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MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, &C.

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ON THE OCCURRENCE OF THE SIBERIAN WHITE CRANE (*Grus leucogeranus*) IN THE OUTER HEBRIDES.

BY WM. EAGLE CLARKE, F.L.S., &c.

ON the 19th of August last, Dr. John MacRury shot at Barra a bird, which he thought more resembled a White Stork (*Ciconia alba*) than any other species on the British list; though he was well aware that it differed in several important particulars.

These facts he communicated to Mr. J. A. Harvie-Brown, who, in turn, informed the writer of the occurrence, and also that the bird had been sent to Mr. Bisshopp, of Oban, for preservation. Being in Oban on the 8th of September, I took the opportunity of calling upon Mr. Bisshopp, who kindly showed me the bird, which I was not a little surprised to find was a fine adult specimen of *Grus leucogeranus*, Pallas—an eastern Asiatic species, new to Britain and to Western Europe. The bird, Mr. Bisshopp informed me, was a female, and this is also indicated by the dimensions.

Dr. MacRury first noticed the bird in the evening, resting on the sandy shore near to the mouth of the Cuir River, on the western side of the island. As soon as the Crane caught sight of him, it rose at once, although he was from two to three hundred yards distant, and it was then noticed that the bird appeared to be entirely white with black tips to the wings. Its flight was slow and steady, like that of the common Heron, and it uttered now and then a plaintive whirring note. After circling about for a short time it alighted near the top of a sandy hill, among some rocks, and was stalked to within sixty or seventy yards, and brought to earth with a broken wing by a successful shot from a wire B.B. cartridge. On being approached, the bird turned fiercely on its captor and showed much fight, catching hold of the muzzle of the gun with its bill. As it appeared to be otherwise uninjured, Dr. MacRury hoped it would survive the broken wing, and tried to feed it on small trout, but it seemed to be very wild, and refused all food, and only survived three days.

Dr. MacRury furnishes the following useful notes on the specimen: length from the tip of the bill to the end of the tail, 49 inches; expanse of wing, 84 inches; from tip of bill to end of middle toe, 60 inches; bill reddish-brown; a bare space from the base of the bill to a line behind the eyes of a red colour; irides bright yellow; legs pink; primary quills black, but none of these black features are to be seen when the bird has its wings folded, when it appears entirely white. To these particulars I am able to add the following dimensions: culmen of bill, 7 inches; tarsus, 9.5 inches; wing (straight from the carpal joint to end of longest primary), 21 inches.

The occurrence in Western Europe of Asiatic species of high northern range has, owing to the advancement made during recent years in our knowledge on the subject of migration, come to be no longer regarded as mysterious or inexplicable. In the present instance the occurrence, perhaps, admits of this simple explanation, namely, that on quitting its summer haunts, the bird winged its way westwards instead of eastwards, with the result that it reached the shores of our Western Islands; whereas, had it turned to the left and followed an accustomed easterly route taken by the peregrinators of its kind, it would have reached the islands of Japan, and proceeded hence to its winter retreat.

The true home of *Grus leucogeranus* during the summer is the northern and central regions of Eastern Asia, and it may also be to some extent resident in this vast habitat, for it certainly appears, according to our present knowledge of its distribution, to be nowhere common or generally distributed during the winter months. Its usual winter quarters are said to be the plains of Northern India, where, however, it is described as being somewhat local and rare. On migration it visits China and Japan; and though principally a spring and autumn migrant to the islands of the latter country, it is considered probable that some may remain to winter. This extreme easterly line of migration also indicates, it is thought, that there are winter haunts of this species, which are, as yet, unascertained.

This Crane has, however, occasionally wandered into European Russia, most frequently to the districts around the mouth of the River Volga; but it has not hitherto, I believe, been observed west of St. Petersburg.

A PRELIMINARY LIST OF THE BIRDS OF THE MELROSE DISTRICT.

BY A. H. EVANS, M.A., F.L.S.

(Continued from p. 113.)

Kingfisher (*Alcedo ispida*). Sparingly distributed over the rivers and burns, chiefly the former. A pair or two are still to be found on the Tweed both above and below Melrose; the nest has been found near Kelso, Lauder, and Stobo, while the bird certainly breeds on the Teviot. In 1874 there was a great decrease in its numbers, possibly owing to the great floods of that year spoiling many nests, while the severe winter of 1878-9 again lessened the stock.

Roller (*Coracias garrula*). Only recorded from Northumberland, as far as the Border districts are concerned.

Hoopoe (*Upupa epops*). Not recorded nearer than Northumberland.

Cuckoo (*Cuculus canorus*). A very common bird with us, especially on the heather-covered hills, where it usually deposits its eggs in the nest of the Meadow Pipit. Though never an early breeder, seldom laying before the middle or end of May, it is very irregular with regard to the time; for I have found on the same day a fresh egg in one nest and a partly fledged young bird in another a few hundred yards off, while eggs may be found from May until quite the end of June, or even July. The date of appearance is usually about April 25th.

Barn Owl (*Strix flammea*). About the middle of the century this owl became extremely rare in most parts of the district, and nesting sites on or near the lower Tweed valley were deserted and have never since been occupied; but on the higher reaches of that river and throughout the country round, a considerable number of pairs have always been found, and at the present time they seem to be on the increase at Kelso. At Lauder they used to be common, though they are not so now, and at Cherrytrees near Yetholm a pair built their nest annually in the ivy covering of a larch tree. But the two following species are much more plentiful than the present bird.

Long-Eared Owl (*Asio otus*). Not uncommon in Scotch fir woods, and generally distributed in small numbers where these are to be found, as on the banks of the Jed and at Lauder. It is decidedly less common in our inland parts than it is nearer the east coast. The end of March and the beginning of April are the usual times for laying, but I have known nests with fresh eggs as late as the middle of May.

Short-Eared Owl (*Asio accipitrinus*). This owl having been known to breed as near as the Dumfries-shire hills, and having certainly also done so in one place on the English side of the Cheviots, should have been found nesting also in the wilder parts of the county of Roxburgh; but I am unable to trace any account of its nidification nearer than Lauder, where two or three nests have been found in the month of June. Of course, in autumn, great numbers of migrants visit the coast and sometimes reach farther inland, and in the winter of 1875-1876, and again in that of 1876-1877, the flocks were very large.

Tawny Owl (*Syrnium aluco*). The common owl of the district, frequenting all the thick woods, especially those in the valleys of the Tweed and Teviot, and in Peeblesshire. While not rare even at the very base of the Cheviots, it gives way to some extent to the last species where the country becomes bare and the woods are rather of firs than of deciduous trees. The eggs are found in old crows' or magpies' nests, as well as in hollow trees, and are laid in March, if not earlier.

Tengmalm's Owl (*Nyctale tengmalmi*). Occasionally shot in the neighbourhood in spring, as on Feb. 4th, 1873, at Berwick-on-Tweed, and in 1861 near Embleton.

Marsh Harrier (*Circus æruginosus*). A permanent resident in former times, according to Selby (*Hist. Ber. Nat. Club*, i., p. 256), though it has long disappeared from the Border, nor have I been able to find a recent instance of an example being procured.

Hen Harrier (*Circus cyaneus*). This species, which is now only a rare and occasional visitor, is mentioned by Selby (*Hist. Ber. Nat. Club*, i., p. 256) as a permanent resident in 1841, and for many years afterwards—probably until 1859—continued to breed in some numbers on the higher heaths of the Lauderdale hills; while other nesting sites were tenanted in Berwickshire, Northumberland, Selkirkshire, and doubtless Peeblesshire. On the Cheviots examples were often observed in summer until a still later

date, and probably a few of these were breeding there, as the country afforded so many suitable spots.

Montagu's Harrier (*Circus cineraceus*). No examples are recorded from the immediate neighbourhood, but near Alnwick and Beal in Northumberland single specimens were obtained between 1847 and 1850.

Common Buzzard (*Buteo vulgaris*). No doubt at one time the Buzzard may have bred in the Cheviot region, where many parts of the country are extremely well suited to its requirements; but for many years it has only been known as an occasional visitant—generally from autumn to spring—to different places in the neighbourhood. Sir Walter Elliot says that it used to be common in the Wolfelee district, and in September, 1874, and the spring of 1876, it occurred at Kelso, Duns, and in Lauderdale (where it had been seen before), not to mention innumerable instances in which the record is merely that of a "Buzzard" and the species is doubtful. In 1879 an example was killed on September 17th near Stobo in Peeblesshire.

Rough-Legged Buzzard (*Archibuteo lagopus*). This species is certainly less common than the last hereabouts, though in certain years it occurs in great numbers. Such were 1875 and 1876, especially the latter, when examples were obtained at Selkirk, Kelso, Lauder, Stow, Peebles, and other places in the vicinity, while the immigration extended throughout Berwickshire and Northumberland as well. The times of capture varied from February 13th to November 28th; all I have noticed, however, being in February, April, October, or November, so that in the case of both this bird and the Common Buzzard the migration takes place in spring as well as autumn. A pair [♂ ♀] were noticed on April 28th, 1877, at Innerleithen, of which one was not shot till May 1st, but no signs of a nest were apparent, nor is it likely that they would have remained to breed. Others were reported to have been seen in Peeblesshire up to the second week in May. In 1879 examples were again observed in Peeblesshire.

Golden Eagle (*Aquila chrysaetus*). It has always been believed, and probably rightly, that this bird used to breed in small numbers in the wilder parts of the Borderland. According to Sir Walter Elliot (*Hist. Ber. Nat. Club*, vi., p. 318) in a valuable paper on "Raptorial Birds," Sir W. Jardine, writing in 1838, says that it has not done so for twenty years; while Wallis, as quoted

by Bewick, says that "it formerly had its eyrie on the highest and steepest part of Cheviot." An eyrie is also reported to have existed on the detached hill of Ruberslaw in Roxburghshire, but in this case there is probably some mistake, though no doubt the birds were formerly often seen there. Specimens continue to be obtained at intervals in the neighbourhood, as at Bughtrig on Kale Water, prior to 1882.

Sea Eagle (*Haliaëtus albicilla*). This species used to frequent St. Abbs Head and the neighbouring shores of the Berwickshire coast in the middle of the century, and a specimen was observed there in 1871, but farther inland records of its occurrence are rare; examples at Hunt Law in the Lammermuirs, Marchmont and Bedshiel near Duns, and Bowhill near Selkirk having approached our district more closely than others. February seems to be a favourite month for their appearance. No doubt many are confounded with Golden Eagles.

Goshawk (*Astur palumbarius*). A male specimen was shot at Minto Crags, Roxburghshire, on November 13th, 1869, while other cases of the bird's occurrence are more or less doubtfully reported. As regards the supposed notice in the "Liber de Melros," a confusion has no doubt arisen between this species and the Peregrine, which is often called the "Goshawk"; and the same may be said of the old records from the Moffat hills.

Sparrow Hawk (*Accipiter nisus*). This hawk is plentiful in the valley of the Upper Tweed, where it breeds. It is widely distributed throughout the district, though not equally common in all parts; (see "KESTREL," *infra*). In Lauderdale it is also somewhat abundant.

Kite (*Milvus iclinus*). Used to be common in the south of Scotland a century or more ago, and bred in North Northumberland on Alnwick Moor.

Black Kite (*Milvus migrans*). No specimen recorded from the district. That recorded by Hancock in the 'Ibis' for 1867, p. 253, from Northumberland, was about 50 miles distant.

Honey Buzzard (*Pernis apivorus*). An occasional visitant. Instances are recorded of examples being obtained at Lauder; at Twizell in Northumberland on September 20th, 1846; at Newton Don near Kelso on May 22nd, 1865; at Penmanshiel in Berwickshire on May 29th, 1876, and again in 1879; at Whitsome in Berwickshire on October 26th, 1888; and at three or four places in

the same county in June, 1845, and in the years 1863-4. The occurrences being almost all in summer show that the birds visit us in the breeding season, and would probably nest if unmolested.

Peregrine Falcon (*Falco peregrinus*). The Peregrine does not breed nearer to Melrose than the Cheviots, where one pair still lingers, but it used to do so at the head of Moffatdale, and until 1873 a nesting site was annually occupied, according to Mr. Andrew Kelly, on the Longcroft water near Lauder. It is well known that this fine hawk still has one eyrie on the Berwickshire coast, where four were tenanted in 1850; though Cheviot is the sole remaining spot in North Northumberland where a pair can be found at the present time.

Red Footed Falcon (*Falco rufipes*). Not recorded from the district, though a specimen was once obtained at Hauxley in Northumberland (*Hist. Ber. Nat. Club*, v., p. 469).

Hobby (*Falco subbuteo*). This hawk is very uncommon on the Border, but nevertheless examples are regularly met with in various places, generally in June; the bird may breed with us occasionally, or would do so annually if undisturbed. Instances of its capture have occurred at Lauder, Branxholm, Duns, Bowmont Forest, Kelso, and other localities.

Merlin (*Falco aesalon*). Like the Peregrine Falcon, the Merlin is found breeding at a few spots on the Cheviot range, and is a well-known bird to the shepherds, though many of them confound it with the Cuckoo. No instance of its nesting on the lower hills of that range is, apparently, recorded; but it is not uncommon in a few parts of the Lammermuirs, near Lauder, where it is said to nest, as a rule, on trees. This statement rests on the authority of Messrs. Scott and Kelly. (*Hist. Ber. Nat. Club*, vii., p. 301.)

Kestrel (*Falco tinnunculus*). Near Melrose itself, this bird is comparatively scarce, its place being taken by the much more abundant Sparrow-Hawk; but in the lower ground around Jedburgh the reverse is the case. This is probably due to the nature of each district, and to the consequent food supply; possibly also to the greater abundance of suitable nesting sites for the Kestrel in the latter part of the country. In Peeblesshire the bird is now rare, and in Lauderdale it is almost extinct, while it is always less abundant in the hilly portions of the Border. It

invariably uses the nest of another bird when breeding in trees.

Osprey (*Pandion haliaëtus*). This species is an occasional visitor to the district; it is reported to occur periodically on the Tweed by Sir Walter Elliot in the *History of the Berwickshire Naturalists' Club*, vol. vi., p. 320; while specimens have been observed at Kelso (May 24th, 1873, and September 28th, 1876), at Southernknowe, near Great Cheviot (September 26th, 1881), and on the rivers Leader and Gala. It therefore comes both in spring and autumn.

Cormorant (*Phalacrocorax carbo*). An occurrence at Tollishill shows that it occasionally visits our inland districts. The Shag, as well as this species, breeds on the neighbouring coast.

Heron (*Ardea cinerea*). This species is much less rare hereabouts than in many other parts of the country. Not to mention a large number of heronries in Northumberland and the farther part of Berwickshire, there is one at Wells, close to Ruberslaw; another at Ormiston House, near Jedburgh; and a third, which is smaller, and consists of about a dozen nests, on the upper waters of the Bowmont, at Swindean; a fourth at Dodburn on Allan Water; a fifth at Hendersyde Park, Kelso. At Lauder there are two—in Luggy Wood, and at Olisterdub respectively; while at Mertoun on the Tweed, and at Lithtillum Loch there are two more—all in Berwickshire. In Selkirkshire there is one at the Haining, Selkirk. In Peebles, one at Dawick, and one at Portmore.

Purple Heron (*Ardea purpurea*). Not recorded hereabouts, except from the coast of the Firth of Forth.

Great White Heron (*Ardea alba*). Recorded from E. Lothian in *Hist. Ber. Nat. Club*, viii., p. 51.

Squacco Heron (*Ardea ralloides*). Recorded from Howick in Northumberland in *Hist. Ber. Nat. Club*, x., p. 589.

Little Bittern (*Ardetta minuta*). Recorded from Northumberland in 1872. (*Hist. Ber. Nat. Club*, viii., p. 195.)

Night Heron (*Nycticorax griseus*). Recorded only from Northumberland and Berwickshire, in winter and spring (see *Hist. Ber. Nat. Club*, vi., p. 434).

Bittern (*Botaurus stellaris*). Shot occasionally in the neighbouring counties, but not recorded near Melrose itself. The nearest locality in which it is said to have been resident is Huntley-

wood Moss in the Lauder district; this was the case in 1810. (The American Bittern was recorded from Drumlanrig in 1873, in *Hist. Ber. Nat. Club*, vii., p. 525.)

White Stork (*Ciconia alba*). Unknown in the Melrose district, though one was captured at Newton by the Sea, in Northumberland, in 1843 (see *Hist. Ber. Nat. Club*, ii., p. 78), and another at Scremerston in the same county, January 10th, 1874 (op. cit., vii., p. 180.)

Spoonbill (*Plalatea leucorodia*). Has occurred on the Dunbar coast, but no nearer.

Glossy Ibis (*Plegadis falcinellus*). A specimen was shot on August 28th, 1885, at Mindrum, just on the English side of the Border.

Gray Lag Goose

(*Anser cinereus*).

Bean Goose

(*Anser segetum*).

Pink-footed Goose

(*Anser brachyrhynchus*).

White-fronted Goose

(*Anser albifrons*).

Bernacle Goose

(*Bernicla leucopsis*).

Brent Goose

(*Bernicla brenta*).

Not many records are to be found stating the exact species, though all of these are found in winter on the East Coast and most have occurred as stragglers inland; the Gray Lag in various places, the Bean at Lauder and the Haining, the Pink-footed at Presmenan in E. Lothian, the White-fronted possibly in Roxburghshire, the Bernacle at Yetholm Loch, and the Brent on Oxnam Water.

[**Egyptian Goose** (*Chenalopex aegyptiaca*). In 1878, "One specimen was shot in Selkirkshire on 10th December, and another on St. Mary's Loch on 24th December." (R. Gray, *Hist. Ber. Nat. Club*, viii. p. 500). But this and the following species are kept as tame birds on the lochs around.]

[**Canada Goose** (*Bernicla canadensis*). Specimens, probably escaped from captivity, have been observed at Lauder, Yetholm, Kelso, and other places. In the winter and spring of 1866-7, a large flock visited the district. (*Hist. Ber. Nat. Club*, vi. p. 435.)

Hooper (*Cygnus musicus*). As a rule only recorded from the coast, but often seen inland. Generally the recorders merely report a "wild swan."

Bewick's Swan (*Cygnus bewicki*). Two specimens from

a flock of five were obtained at Shaws, near Selkirk, on November 29th, 1882, and about the same time several were seen on the East Coast.

Sheld-Duck (*Tadorna cornuta*). Only recorded from the coast.

Wild Duck (*Anas boschas*). Common.

Gadwall (*Anas streperus*). I can find no record for the district.

Shoveller (*Spatula clypeata*). Occurs, chiefly in winter, at Legerwood Loch, Bughtrig, Hoselaw, and many other places, while a specimen was obtained at the last on April 8th, 1876, which was probably breeding there. The bird certainly nests in the neighbourhood, as the eggs have been actually found on the Northumberland coast.

Pintail (*Dafila acuta*). Rare in the district, but noticed nearly every year, even among the Cheviots.

Wigeon (*Mareca penelope*). Fairly common from autumn to spring.

Teal (*Querquedula crecca*). Resident, breeding on several of the marshy moors and on sides of lochs in the neighbourhood, as, for instance, at Primside near Yetholm, and at Jedburgh.

Garganey (*Querquedula circia*). Not recorded from the Melrose country, but on March 12th, 1885, a specimen was shot at Falden in Berwickshire. (*Hist. Ber. Nat. Club*, xi., p. 237.)

Pochard (*Fuligula ferina*). Not at all uncommon in winter. Recorded from Yetholm, Hoselaw, Frogden, Bughtrig, Stobo, and the Haining, and also from many parts of Berwickshire. At Faldonside it occasionally stays till late in spring, but has never been known to breed.

Tufted Duck (*Fuligula cristata*). Breeds in Roxburghshire at Yetholm Loch; and, as a young female was shot at Hoselaw Loch close by on August 20th, 1879, its range may have spread to that spot. At many other places, such as the Haining, Bughtrig, and St. Mary's Loch it has been noticed, and it is in fact one of the commonest winter ducks.

Scaup (*Fuligula marila*). Common only at some places, as at Yetholm, where there is a large expanse of water; but met with at times throughout the counties of Peebles, Roxburgh, Selkirk, and Berwick.

Goldeneye (*Clangula glaucion*). Fairly common at the

usual times of year on the Tweed and Teviot, and is recorded from Stobo in Peeblesshire, and even from Bughtrig in the hill country of Roxburghshire. At Faldonside in 1890 one pair remained till well on in May.

Long-Tailed Duck (*Harelda glacialis*). A single specimen has been shot on Yetholm Loch—a young male. (See *Hist. Ber. Nat. Club*, vii., p. 502.)

Scoter (*Ædemia nigra*). Has been shot at St. Mary's Loch, and is occasionally seen in Berwickshire, but does not appear yet to be recorded from Roxburghshire, which lies between.

Velvet Scoter (*Ædemia fusca*). In the summer of 1879 a bird of this species frequented the rocks at Berwick-on-Tweed. (See *Hist. Ber. Nat. Club*, ix., p. 170.) Never seen inland here, as far as I am aware.

Goosander (*Mergus merganser*). Common on the Tweed throughout the district, while generally seen on the spring migration. It is also frequently met with at Selkirk, Hawick, Lauder, on the Teviot and Yarrow, and at Yetholm and Hoselaw Lochs. It never breeds with us.

Red-breasted Merganser (*Mergus serrator*). I can only find one instance of the occurrence of this species in the district, and that on the other side of Cheviot, at Weetwood, near Wooler, in the month of January. But I believe this is due rather to an absence of records than of birds, though they are certainly very uncommon.

Smew (*Mergus albellus*). A pair were obtained at Kelso on January 26th, 1869, a single bird at Bowhill on January 25th, 1877, a couple on the Till previous to 1880 with others which were not preserved and about which no details are procurable.

Ring-Dove (*Columba palumbus*). Plentiful.

Stock-Dove (*Columba œnas*). I can find no record for the immediate district, though the Northumberland and Berwickshire breeding sites are only some 30 miles distant from Melrose. Probably nests will be found, if looked for carefully, in suitable places: these seem to be generally dry banks with holes in them hereabouts, rather than hollow trees. (For the above mentioned counties see *Hist. Ber. Nat. Club*, viii., pp. 134, 528; ix., pp. 165, 351, 562; x., p. 391, and for E. Lothian xi., p. 545.)

Rock-Dove (*Columba livia*). Not recorded from the district. Even the birds at St. Abbs Head are only tame pigeons

which have become wild, and no true Rock-Doves bred there even in 1850.

Turtle-Dove (*Turtur communis*). Whether this species has extended its range of recent years, in the same way as the Stock-Dove, or whether closer observation has caused it to be noticed, must remain doubtful at present; but examples have been obtained in Northumberland during June and October, in E. Lothian or Berwickshire at about the same times of year, and in this district at Clifton Park near Kelso on May 28th, 1874, and at Kilham—just on the English side of the Yetholm Hills—on June 3rd of the same year. These two last were male and female, and it has been suggested that they may have been a pair, as the localities are not very far apart. The eggs in the hen's ovary were "larger than peas." (See *Hist. Ber. Nat. Club*, xi., p. 259.)

Again on June 25th, 1877, an adult female was shot at Stichill, and Sir George Douglas in 1879 stated that the bird has visited Springwood Park, Kelso. A young bird was shot on September 17th, 1880, at Lamberton, in Berwickshire.

Pallas Sand Grouse (*Syrrhaptes paradoxus*). In 1863 examples were obtained in the district, and again in 1888, of which years the irruptions are chronicled in Prof. Newton's well-known paper in the *Ibis* for 1864, and—as far as our district is concerned—by Messrs. Embleton and G. Bolam in the *History of the Berwickshire Naturalists' Club*, 1863 and 1889. To these records I will therefore refer my readers for details.

Black Grouse (*Tetrao tetrix*). Breeds on the Cheviots, in some numbers, and has been seen near Faldonside in September. It is also found in summer on the Lammermuirs near Lauder, and at other places in the neighbourhood.

Red Grouse (*Lagopus scoticus*). Abundant throughout the district, particularly on the Cheviots, where very large bags are made; on the lower hills it also breeds, but in smaller quantities.

Pheasant (*Phasianus colchicus*). Abundant.

Red-legged Partridge (*Caccabis rufa*). Not noticed hereabouts, though introduced near Gullane Links in E. Lothian.

Partridge (*Perdix cinerea*). Abundant; less so towards the hills.

Quail (*Coturnix communis*). An occasional or perhaps even a regular visitor to a few places. Nests have been found at Kelso

and Ednam, while the bird probably breeds at Lauder. (*Cf. Hist. Ber. Nat. Club*, x., p. 392.)

Corn Crane (*Crex pratensis*). Rather local but not uncommon; at Yetholm it breeds in a gorse covert on the river "haugh" in preference to the fields. Arrives fairly early in May.

Spotted Crane (*Porzana maruetta*). Has occurred in October at Gradon Moss, and near Berwick-on-Tweed at Gainslaw.

Water Rail (*Rallus aquaticus*). This bird has been noticed at Ormiston, Stobo, Jedburgh, and Legerwood Loch, while specimens are contained in the small collection of birds at Faldonside, probably shot there; but it has never been detected breeding in the district. The lochs are not, for the most part, surrounded by the style of vegetation it would choose.

Moorhen (*Gallinula chloropus*). Common and universally distributed.

Coot (*Fulica atra*). Breeds abundantly on the small lochs and larger ponds in many places, as at Faldonside, The Haining, Nisbet near Mounteviot, and Stobo.

Crane (*Grus communis*). A specimen was shot at Threepwood near Lauder, before 1874. (*See Hist. Ber. Nat. Club*, vii., p. 305.)

Great Bustard (*Otis tarda*). Except that in January, 1871, a specimen was shot and perhaps another observed at Fenham on the east coast of Northumberland, and that Hector Boece in his *Scotorum Historia* mentions Bustards in the Merse (*Merchia*), no records exist for this district or those immediately adjoining.

Dotterel (*Eudromias morinellus*). There used to be several places in the neighbourhood to which these birds annually resorted in spring and more rarely in autumn, while on migration, though now they seldom occur. None of these were nearer to Melrose than Lauder, and the majority, as Lamberton, Scremerston, Penmanshiel, Abbey St. Bathans, Gullane, &c., were far away. But the birds were occasionally observed at other places, as Langley-ford under Cheviot, Morebattle and Bughtrig on Kale Water; and at these the birds may have been annual visitors also, though overlooked. At Lauder it is very positively stated, on the authority of Messrs. Tilly and Scott, that they "have nested on the outground of Broadshawrig year after year for 10 years," and that a young

bird was obtained there prior to 1874. (*Hist. Ber. Nat. Club*, vii., p. 305.)

Golden Plover (*Charadrius pluvialis*). Common on the Cheviots, and extending to the other hills. It breeds in this district about the beginning of May, being one of the earliest of the moor birds; but late nests may be found in June. The sites chosen are invariably on the higher portions of the hills, and in ascending these one may calculate on meeting with the birds at an altitude, roughly speaking, of 1500 feet.

Grey Plover (*Squatarola helvetica*). Though not uncommon on the nearest part of the East Coast from autumn to spring, no examples are recorded from the interior. It arrives on the shores about August at the earliest, being then in summer plumage.

Ring Plover (*Ægialitis hiaticula*). Breeds on the Tweed near Kelso, and probably has done so near Coldstream, while undoubted instances have occurred near Jedburgh and on the lower part of the Teviot. Most of these places are from 25 to 30 miles from the coast, where the bird is common.

Lapwing (*Vanellus vulgaris*). Curiously local, being very abundant in both wild and cultivated country in some parts, while in others it is almost unknown. In the immediate neighbourhood of Melrose it is not very common.

Oystercatcher (*Hæmatopus ostralegus*). Seldom seen so far inland, but instances have occurred at (Scotch) Belford on the Bowmont and Dryburgh on the Tweed, as well as at Stobo in Peeblesshire.

Red-Necked Phalarope (*Phalaropus hyperboreus*). Only recorded from the Dunbar coast, as far as these parts are concerned.

Grey Phalarope (*Phalaropus fulicarius*). An example was procured at Millerstain in Berwickshire on November 14th, 1875.

Woodcock (*Scelopax rusticula*). This species nests at Bowhill, and a brood was noticed at Abbotsford, on May 26th, 1867, so that both in Selkirkshire and Roxburghshire the bird remains during the summer, as it does in Northumberland and other counties adjoining. No doubt many other instances of its breeding will be forthcoming shortly, as it is apparently increasing on the Borders.

Great Snipe (*Gallinago major*). Occurs occasionally in

autumn, and is recorded at that season from Lauder, Yetholm, and Nisbet.

Common Snipe (*Gallinago caelestis*). Not very common in the breeding season, though in suitable localities a considerable number pass the summer. In winter it is extremely abundant.

Jack Snipe (*Gallinago gallinula*). Common in the winter in certain parts, though hardly so much so as in the counties eastward.

Dunlin (*Tringa alpina*). This bird is not known to nest on the coast of Northumberland, where the salt marshes are, perhaps, of too wet a nature, but a few pairs have long been known to do so at the south end of the Cheviot range, near Hesleyside; while during the last fifteen years I have noticed a couple here and there in the breeding season on the higher parts of the hills between Wooler and Yetholm. Mr. A. Chapman, in his "Bird Life of the Borders," mentions having seen a small colony on Cheviot, and the late A. Brotherston has noticed an occasional bird in summer on Yetholm Loch.

Little Stint (*Tringa minuta*). Not found nearer than the Holy Island mud-flats, where it occurs in September.

Curlew Sandpiper (*Tringa subarquata*). Common in some years on the East Coast in September, but never reaching inland to these parts.

Purple Sandpiper (*Tringa striata*). } Only found on the
Knot (*Tringa canutus*). } East Coast.

Ruff (*Machetes pugnax*). Only on the East Coast, where it is fairly often obtained in autumn or winter.

Sanderling (*Calidris arenaria*). Also found on the mud-flats of the coast, coming in August in numbers, but less common after September.

Bartram's Sandpiper (*Bartramia longicauda*). That recorded by Mr. G. Bolam, from Longhoughton in 1879 (*Hist. Ber. Nat. Club*, ix., p. 167), is the only example from these parts.

Common Sandpiper (*Totanus hypoleucus*). A very common bird in summer upon the smaller and more stony streams, though on the larger rivers it is not so often found, which may be due to lack of suitable breeding places. On the islands in the hill brooks the fairly substantial nest is often met with, generally slightly protected, but never covered, by a branch of gorse, an old log, or a tuft of herbage. Nor is it confined to the islands,

but is met with on the banks as well, where thickets of butterbur (*Petasites vulgaris*), clumps of grass or heather, serve to conceal the eggs. The birds reach their breeding quarters about the fourth week of April.

Green Sandpiper (*Totanus ochropus*). Found in the district in autumn, very rarely, but a specimen was observed at Roxburgh Mill, on the Teviot, in 1875, and another at Crailing, on Oxnam Water, in 1876, both in November.

Wood Sandpiper (*Totanus glareola*). Has not been shot nearer than Holy Island.

Redshank (*Totanus calidris*). An occasional pair may be observed in summer on the moors near Melrose, which no doubt breed there, as they do in inland parts of the neighbouring counties. But the major part of our resident birds on the Borders certainly rest on the coast lands. They may be met with on the rivers in July and August: probably they are then on their way from the higher grounds to the sea.

Spotted Redshank (*Totanus fuscus*). Twice recorded from the sands at Holy Island, but no nearer.

Greenshank (*Totanus canescens*). Not by any means uncommon on the nearest parts of the East Coast in winter; and in 1888 a pair certainly bred on a heather-covered moor, interspersed with small lochs, in Roxburghshire. I saw the hen, unmistakably with young, in the month of August. She flew round in a state of the greatest excitement, with the usual shrill cry, never going many yards away, and occasionally perching on an old rail on the moor; moreover I found a nest, lately used, which probably belonged to the same bird. In September an example has been observed on the Teviot, near Nisbet.

Bar-Tailed Godwit (*Limosa lapponica*). The common Godwit of the East Coast from September onwards, but it does not reach inland to Melrose even as a straggler. Specimens are sometimes shot on the shore in summer plumage.

Black-Tailed Godwit (*Limosa belgica*). Only occurs at long intervals even on the North Northumberland coast, and never inland.

Curlew (*Numenius arquata*). Universally distributed over the moors, where it arrives at the end of April and begins to breed at once.

Whimbrel (*Numenius phaeopus*). Another species usually

confined to the coast, where it is rather rare. It arrives in July and occasionally stays till May or even June. An example has been shot at Greenlaw in September.

Terns. Only on the coast as a rule. One is recorded from Stobo, species undetermined. No doubt other unrecorded birds have visited the district.

Gulls. Most of the ordinary species are occasionally observed in the neighbourhood, but of course the only gull breeding with us is the BLACK-HEADED (*Larus ridibundus*), which is very common. There are colonies at Paston on the lower Bowmont, Hoselaw Loch, Legerwood Moss, a small loch near the Haining, Selkirk, with several between Melrose and Selkirk, on the moors. Pallinsburn, in Northumberland, is only a short way from Kelso, and there are others at greater distances outside the immediate district. The birds come early in March and leave about the middle of July, if undisturbed, which is seldom the case.

Great Skua (*Stercorarius catarrhactes*). An occasional visitor, recorded from Oxnam Water in September, 1875.

Pomatorhine Skua (*Stercorarius pomatorhinus*). In 1879, during the autumn, great numbers of this species frequented the coasts of Northumberland and Berwickshire. (See *Hist. Ber. Nat. Club*, ix., p. 54.)

Richardson's Skua (*Stercorarius crepidatus*). On November 12th, 1874, an individual was shot at Cowdenknowes, while others have been recorded from the coast, near Coldingham, Holy Island, and Beadnel, where they are at times to be found in small, and more rarely in large, numbers in autumn.

Buffon's Skua (*Stercorarius parasiticus*). A single specimen was shot in the plumage of the first year on Rule Water in the first week of September, 1875.

Razorbill (*Alca torda*). In March, 1880, a Razorbill was picked up dead near Morebattle on the Kale.

Guillemot (*Uria troile*). About 1868 an example was found swimming in the Leader at Lauder.

Ringed Guillemot. This variety has occurred on the Teviot, on the Leader, and at Oxtou. The first instance, at least, was in autumn. As it is hardly likely that three specimens of this bird have visited us as against one of the common species,

we may fairly assume that more of the latter have been observed, but not put on record.

Black Guillemot (*Uria grylle*). Only on the coast, and uncommon there.

Little Auk (*Mergulus alle*). This bird has occurred more commonly in the district than any other member of the family. Instances are at Harryburn (Lauder), Hendersyde Park (Kelso), Duns, and on the Tweed below Kelso, besides a large number of cases in Northumberland. In the autumn of 1876, and again in that of 1878, the bird was very plentiful on the coast.

Puffin (*Fratercula arctica*). On August 4th, 1873, a specimen was caught in the Kale at Grahamslaw.

Great Northern Diver (*Colymbus glacialis*). Only found on the nearest part of the coast, where all of the three commoner species of diver are frequently met with.

Black-Throated Diver (*Colymbus arcticus*). In the first week of April, 1876, and again on April 4th, 1877, a single specimen was obtained on St. Mary's Loch in Selkirkshire, while an example was killed at Bowhill on the lower part of the Yarrow shortly before 1876. The continual occurrence of this species in spring, at the same spot, induces the belief that a pair might possibly have remained to breed if unmolested. St. Mary's Loch is wild and suitable, but as it is far from their usual breeding haunts, this must be considered a very doubtful case.

Red-Throated Diver (*Colymbus septentrionalis*). Recorded from Weetwood, near Wooler, just beyond Cheviot, and from Bughrig, on this side of it, the former in January, 1877.

Great Crested Grebe (<i>Podiceps</i> <i>cristatus</i>).	} All birds of the sea-coast, with the exception of an occasional straggler. Slavonian Grebes are recorded from Legerwood Loch, but the Eared Grebe is more common on the coast.
Red-Necked Grebe (<i>Podiceps</i> <i>griseigena</i>).	
Slavonian Grebe (<i>Podiceps</i> <i>auritus</i>).	
Eared Grebe (<i>Podiceps nigri-</i> <i>collis</i>).	

Little Grebe (*Podiceps fluviatilis*). Breeds sparingly in the district, as at Mertoun and Roxburgh, at Nisbet and Lauder. It is often seen in other places, and will no doubt be found breed-

ing at some of them, such as Whitmuir, near Selkirk, a very likely spot.

Fulmar (*Fulmarus glacialis*).

Manx Shearwater (*Puffinus anglorum*).

Great Shearwater (*Puffinus major*).

} Found occasionally on the
East Coast, as in August 1878.
(*Hist. Ber. Nat. Club*, vii., p.
502.)

Fork-Tailed Petrel (*Oceanodroma leucorhoa*). This species was obtained at Glanton, on the other side of the Cheviots, on December 1st, 1867; at Roxburgh, in October, 1873; at Eckford, on December 3rd, 1879; and at Branxton, in Northumberland, on December 3rd, 1885.

Stormy Petrel (*Procellaria pelagica*). Occasionally met with in the district, as at Stichill and at Maxton, and on Rule Water, Roxburghshire (September 23rd, 1876).

CORRIGENDUM ET ADDENDA.

p. 108. Great Grey Shrike.—For two specimens in Faldonside collection, read one.

Mr. Archibald Jerdon contributed the following notes on the Birds of the District to "The Zoologist":—

Note on the Arrival of some of the Summer Birds at Bonjedward, near Jedburgh. "Zoologist," i., 1843, p. 230.

Notes on the Partial Migration of Birds in Roxburghshire, op. cit. v., 1847, pp. 1770-1772.

Note on the Arrival of Summer Birds of Passage in Roxburghshire, in the years 1846 and 1847, t. c. p. 1786.

A List of the Birds of Roxburghshire, op. cit. viii., 1850, pp. 2872-2878.

LIST OF BIRDS THAT BREED ON OR NEAR THE
SHORES OF A MOORLAND LOCH IN PERTH-
SHIRE.

BY LIEUT.-COLONEL W. H. M. DUTHIE.

I WITHHOLD the name of this loch for fear of the Birmingham Oologist, who might make a swoop upon it, and spoil the charm of a place so prolific in its variety of birds that breed in its vicinity.

Although within five miles of a railway station, it lies lonely and secluded, bounded on three sides by heather-clad hills, and on the fourth by fir woods which shield it from the world, and with the exception of two or three sheep farms, there is no sign of human existence to be seen from its shores.

Only two miles beyond the limit which I have prescribed to myself, there is a typical and romantic eyrie, where year after year, within the memory of the oldest inhabitant, a pair of Ravens have returned to rear a brood in the home of their ancestors. I was tempted to enlarge my area in order to bring in this interesting bird, and had I done so, I could have included also the Kestrel, Tawny Owl, Stock-dove, and a few others, but I thought it best to confine myself to the smallest space (*viz.*, one mile from the loch) within which the greatest number of birds breed.

In preparing the accompanying list, many pleasant memories have been awakened of red-letter days, spent in the spring-time of the year at this charming spot.

We remember with what a sense of relief we escaped from the irritating Peewits which had mobbed us all the way up the hill, and plunging into the wood we listened to the cooing of the Ring doves in the pine branches, and the twittering of Tits busy among the fir cones, while the wind stole through the trees with a sound like the sea on a sandy shore.

Perhaps we see a Roe Deer gazing at us with her large lustrous eyes, and do not notice till she moves away that two others are with her, so marvellously do the coats of these animals harmonise with the colouring of the woods. We watch them bounding away

towards the moor, and see them stop every now and then to look back before re-seeking covert.

On clearing the wood the music of the moorland falls on our ears. The Curlews are in splendid voice, and pour out their prolonged, rippling notes as they sail over the heather. The Cuckoo is constantly heard, and high in the sky, the Larks fill the air with melody, while below, numberless small birds—Twites, Meadow-Pipits, and others difficult to distinguish—spring from the ground at our feet, and perch on the heather stems to sing to us as we pass. But the climax of interest is reached at the loch side, when thousands of Black-headed Gulls rise from their nests in the reeds, and from the water: our eyes are fairly dazzled by the flashing and gleaming, and glancing of innumerable wings, and our ears deafened by the cries of the multitudinous hosts of these beautiful creatures floating and swooping in graceful curves around us. It is a curious sight to watch a Mallard startled from the rushes trying to steer a course through the maze of white wings. The sedate Coots and Moor-hens seem unmoved by the uproar, and swim about by the margin of the sedges unconcerned. A Pochard drake may be seen with his handsome red head, and back of powdery grey, swimming backwards and forwards near a tuft of rushes where the duck is sitting on her eggs.

Two or three Shovellers dash past in swift erratic flight, the drakes being conspicuous at a long distance by the broad light band across the shoulders. The loch is rich in breeding ducks, no less than five varieties nest in its vicinity, among them the Tufted Duck, several pairs of which have remained, during the last few years, late into the summer. Their nest has, however, not yet been found, but this year a female accompanied by a young bird was seen on the 3rd of August.

While we are watching the ducks, we notice a small bird with a golden-brown back moving about like a mouse at our feet—it is a Dunlin, whose nest is probably close by in the grass.

We hear the plaintive whistle of a Golden Plover, and see him standing on the top of a bare knoll where the heather has been burnt.

Redshanks with drooping wings fly round us, and add their shrill cries to the chorus of strange, wild music that floats about in the air, and which haunts the memory long after we have left

behind us the lonely loch and breezy moor with its background of grey hills.

✓ **Missel Thrush**, *Turdus viscivorus*. There is generally a pair nesting in the fork of a rowan or birch tree, by the side of the burn which issues from the loch.

✓ **Song Thrush**, *Turdus musicus*. Nests in the wood.

✓ **Blackbird**, *Turdus merula*. Nests in the wood.

✓ **Wheatear**, *Saxicola ænanthe*. Two or three pairs haunt old dykes on the edge of the moor, where they breed.

✓ **Whinchat**, *Pratincola rubetra*. Have seen one nest within the limit, in grass, well concealed under a rose bush.

✓ **Redbreast**, *Erithacus rubecula*. Nests in the wood.

✓ **Golden-crested Wren**, *Regulus cristatus*. Nests in the

✓ **Willow Wren**, *Phylloscopus trochilus*. Nests in the wood.

✓ **Sedge Warbler**, *Acrocephalus phragmitis*. In reeds by loch side.

✓ **Dipper**, *Cinclus aquaticus*. Nests in the bank of the burn.

✓ **Great Titmouse**, *Parus major*.

✓ **Coal Titmouse**, *P. britannicus*.

✓ **Blue Titmouse**, *P. cæruleus*.

✓ **Wren**, *Troglodytes parvulus*.

} Nests in the wood.

✓ **Pied Wagtail**, *Motacilla lugubris*. Near the burn.

✓ **Meadow Pipit**, *Anthus pratensis*. Very common.

✓ **Tree Pipit**, *Anthus trivialis*. Common in plantations below the fir woods, but have seen a nest within the limit.

✓ **Swallow**, *Hirundo rustica*. Nests in the boat-house, and at farm buildings near the loch.

✓ **Martin**, *Chelidon urbica*. At farm buildings.

✓ **House Sparrow**, *Passer domesticus*. At farm buildings, where it is doing its best to banish the Martin.

✓ **Twite**, *Linota flavirostris*. Fairly common, breeding in the heather.

✓ **Chaffinch**, *Fringilla cœlebs*. Nests in the wood, and in bushes by the burn side.

✓ **Yellow Bunting**, *Emberiza citrinella*.

✓ **Reed Bunting**, *Emberiza schœnielus*. Very common.

- **Starling**, *Sturnus vulgaris*. Breeds in Ash trees near farm buildings.
- **Carrion Crow**, *Corvus corone*. Breeds in the fir woods when allowed.
- **Skylark**, *Alauda arvensis*.
- **Cuckoo**, *Cuculus canorus*. Common, generally selecting Meadow Pipits' nests for its eggs.
- **Long-eared Owl**, *Asio otus*. In fir wood.
- **Sparrow Hawk**, *Accipiter nisus*. In fir wood.
- **Merlin**, *Falco æsalon*. One or two pairs nest annually near the loch.
- **Mallard**, *Anas boschas*. Common.
- ✓ **Shoveller**, *Spatula clypeata*. Two or three pairs.
- **Teal**, *Querquedula crecca*. Common.
- ✓ **Pochard**, *Fuligula ferina*. Four or five pairs and increasing.
- ✓ **Tufted Duck**, *Fuligula cristata*. Bred on the loch this season. Two birds, one of them a female, accompanied by a young one, were seen there on the 3rd of August.
- **Ring-dove**, *Columba palumbus*. Breeds in the wood.
- **Capercaillie**, *Tetrao urogallus*.
- **Black Grouse**, *Tetrao tetrix*.
- **Red Grouse**, *Lagopus scoticus*.
- **Pheasant**, *Phasianus colchicus*. A few outlying nests found in the wood and on the moor.
- **Partridge**, *Perdrix cinerea*.
- **Moor-hen**, *Gallinula chloropus*.
- **Common Coot**, *Fulica atra*.
- **Golden Plover**, *Charadrius pluvialis*.
- **Lapwing**, *Vanellus vulgaris*.
- **Woodcock**, *Scolopax rusticula*.
- **Common Snipe**, *Gallinago cælestis*.
- **Dunlin**, *Tringa alpina*.
- **Common Sandpiper**, *Totanus hypoleucus*.
- **Redshank**, *Totanus calidris*.
- **Common Curlew**, *Numenius arquata*.
- ✓ **Black-headed Gull**, *Larus ridibundus*.

VARIATION IN BRITISH LEPIDOPTERA.

BY F. BUCHANAN WHITE, M.D., F.L.S., F.E.S.

WHEN the introduction of the Linnean or binomial system of nomenclature, and the example and enthusiasm of the great Swede and his contemporaries, had imparted new life to the study of nature, there was a tendency everywhere towards a multiplication of specific names. Hence, in the earlier manuals and catalogues, forms which we now know to be merely varieties or conditions, are accorded full specific rank. As time went on, and knowledge increased, naturalists began to see that many of these were merely subsidiary forms, and reduced them to the rank of varieties. More extended studies showed that in some cases even this position was not tenable, and so the names were sunk as mere synonyms. Many varieties were, however, retained, but the real significance of such forms was not understood; no system of classifying them had been tried; no attempt been made to account for their origin. In a word, no Darwin had arisen to instruct naturalists to penetrate, if possible, into the *arcana naturæ*.

Now that the fauna and flora of the British Islands has been, to a large extent, well worked out, naturalists, who are not on the one hand merely collectors, nor on the other purely biologists, have begun to turn their attention to other matters than simply amassing material; and amongst other things have commenced to give a more serious study to the subject of variation and its origin. That the study of variation, as it occurs in wild animals and plants, is still in its infancy must be admitted. At the same time sufficient attention has been paid to it to show that not only is it one of much interest but of no little difficulty. For its proper elucidation a large amount of material, both in specimens and in observations, is necessary. When those have been collected, it is possible that problems which are still obscure may be cleared up. As a help to this desirable result we therefore welcome a recently published work¹ on one group of the British Lepidoptera, a class of the Insecta which, not only on account of the number of species con-

¹ "The British Noctuæ and their Varieties." By J. W. Tutt. London: Swan Sonnenschein & Co. Vol. i. 1891.

tained in it, but from its popularity with collectors, affords ample material for the study of variation.

In the text of his book Mr. Tutt does not enter upon the subject of the cause of the varieties, but in the introduction he refers briefly to some theories thereon; and in a series of articles on "Melanism and Melanochroism" in "The Entomologists' Record" he has discussed at considerable length one aspect of it.

The chief feature of "The British Noctuæ and their Varieties" is the careful manner in which all marked variations from the type of each species are described. There seem to be a few species—but a very few—in which there is scarcely any variation. On the other hand there are some which are quite protean in their inconstancy of coloration and markings. Taking, however, the majority of the species, the rule seems to be that each has several well marked varieties. Although the main object of the book is merely the discrimination of the varieties which exist, and not a discussion of their distribution (though localities are often mentioned) or origin, yet a study of it will show that in the *Noctuæ*, just as in other animals and also in plants, some variations have intimate connection with the localities they inhabit, and hence—it may be supposed—have the cause of their origin in the conditions which surround them—in other words, their environment.

In many cases British specimens are somewhat different from Continental examples of the same species; and specimens from South Britain differ from North British ones. As a rule, though by no means invariably, there is a tendency in the latter to melanochroism or melanism, but in some species the very opposite is the case.

Amongst the *Noctuæ*, there are, according to Mr. Tutt, three modes of variation: (1) in general coloration, (2) in the markings of the wings, and (3) in the size and shape of the insect. All these may be combined in one specimen.

Although Mr. Tutt calls all forms which differ distinctly from the type "varieties," it is evident that all the forms so designated are not of equal value or rank. Staudinger's division of forms into "varieties" and "aberrations," seems to be a preferable mode of classification, but doubtless Mr. Tutt has reasons for the plan he has adopted.

An "aberration" is a varietal form which occurs along with the

type. It may occur only once, or very rarely, or it may be not unfrequent. A "variety," on the other hand, is a form, which in some locality or country has supplanted the type, and which, though only a "local race," might readily be taken (as indeed has happened in some cases) for a distinct species. Whilst the difference between an aberration and a variety thus seems to be sufficiently great, it must not be forgotten that gradations between them sometimes occur; and, moreover; that what is an aberration in one country may attain the rank of a variety in another, or *vice versa*, and that even the type of the species might have to be considered in some circumstances as no more than an aberration.¹

In other families of the *Lepidoptera*, we have in Scotland several well marked examples of varieties or local races, *e.g.* the var. *Artaxerxes* F. of *Lycæna Astrarche* Bgstr.; var. *subochracea* B. White of *Zygæna exulans* H. & R.; var. *borealis* Stdgr. of *Spilosoma fuliginosa* L.; var. *ochracea* B. White of *S. menthastri* Esp.; var. *scotica* B. White of *Thera juniperata* L., etc.; and amongst the *Noctuæ* there are also some forms which are recognised as local races, as, for example, the var. *myricæ* Gn. of *Acronycta euphorbiæ* F. It seems probable, therefore, that some of the numerous varieties mentioned by Mr. Tutt are varieties, in the Staudingerian sense, or local races, whilst others are merely aberrations. With the large amount of material that Mr. Tutt has, and his experience in this family, we may hope that some day he will point out which of the named forms are to be looked upon as varieties, and which as aberrations.

More than half of the species have yet to be dealt with by Mr. Tutt, but, amongst those already treated of, a number of varieties which occur in Scotland are mentioned. Probably many others also occur, but as there is no definite statement to that effect we will not mention them just now.

So far as can be gathered from a brief examination of the descriptions, the following Scottish varieties are melanochoic or melanic, *i.e.*, they are darker (although not necessary suffused with black) in colour than the type of the species:—

Cymatophora duplaris L. β *obscura* Tutt; *Asphalia flavicornis* L.

¹ For example, if in a country where a local race had supplanted the more widely diffused typical form, the latter occurred occasionally, it must be regarded—strictly speaking—as an aberration only, so far as that country is concerned.

β scotica Stdgr. and *γ rosea* Tutt; *Acronycta rumicis* L. *α salicis* Curtis; *Leucania lithargyria* Esp. *γ ferrago* F., *δ extralinea* Tutt, and *ε fulvescens* Tutt; *L. impura* Hb. *α fuligosina* Haw.; *L. pallens* L. *β ectypa* Hb. and *γ rufescens* Haw.; *Tapinostola fulva* Hb. *γ punicea* Tutt, *ξ fluxa* Tr., and *η neurica* St.; *Hydræcia nictitans* L. *δ erythrostigma* Haw. and *ε obscura* Tutt; *H. micacea* Esp. *δ brunnea* Tutt; *Helotropha leucostigma* Hb. *α albipuncta* Tutt; *Xylophasia polyodon* L. *α obscura* Tutt, *β brunnea* Tutt, *γ infuscata* B. White and *δ æthiops* Stdgr.; *X. rurea* F. *ε putris* Hb. *ξ combusta* Haw. and *ι nigro-rubida* Tutt; *Mamestra furva* Hb. *γ infernalis* Ev.; *Luperina testacea* Hb. *γ cinerea* Tutt and *δ nigrescens* Tutt; *Caradrina taraxaci* Hb. *α sordida* Haw.

The following varieties are paler than the type:—

Cymatophora or F. α scotica Tutt and *β flavistigmata* Tutt; *Tapinostola fulva* Hb. *β ochracea* Tutt and *δ pallida* St.; *Xylophasia Zollikoferi* Frey *α pallida* Tutt; *X. rurea* F. *α argentea* Tutt, *β ochrea* Tutt and *δ flavo-ruga* Tutt; *Miana fasciuncula* Haw. *β cana* Stdgr.

Some of the following varieties do not fall into either of the above groups, whilst the position (so far as can be learned from the description) of others is somewhat doubtful:—

Acronycta menyanthidis Vw. *β scotica* Tutt (pale?); *Tapinostola fulva* Hb. *ε pygmina* Haw. (pale?); *Apamea gemina* Hb. *α rufescens* Tutt, *β intermedia* Tutt and *α remissa* Hb.; *Charæas graminis* L. *α gramineus* Haw., *β tricuspis* Esp., *γ rufa* Tutt and *δ rufo-costa* Tutt.

From these lists it will be seen that considerably more than half (28 to 18) of the varieties mentioned are melanochroic (in the sense in which that term is used), thus supporting the statement made above, that in North British specimens there is usually a tendency to a darkening of the coloration.

We look forward with interest to the continuation of Mr. Tutt's valuable work.

NOTES ON SOME SCOTTISH ENTOMOSTRACA.

BY THOMAS SCOTT, F.L.S.

(Naturalist to the Fishery Board for Scotland.)

THE following notes refer to a few species of Entomostraca, which are as yet rare in Scottish waters.¹

Eurytemora (Temorella) hirundo, Giesbrecht. This Copepod was taken some time ago with the tow-net in the upper waters of the Forth, *i.e.* between Kincardine-on-Forth and Alloa. It was comparatively common, and both male and female were obtained,—many of the latter with large ova-sacs. It somewhat resembles *Temora longicaudata*, Lubbock,—a species common all round our shores,—but the abdomen and caudal stylets are much more slender than in that species, and the serration of the terminal spines of the swimming feet is so fine that it requires a high power of the microscope to see the serratures distinctly, whereas the serratures of the terminal spines of the swimming feet of *Temora longicaudata* are coarse and easily made out even with a hand lens. *Eurytemora* has not been observed before in Scotland. Its usual habitat seems to be the brackish water of estuaries and the mouths of rivers. It was first made known to science by Giesbrecht, who discovered it in Kiel inlet, where the conditions appear to be somewhat similar to the upper reaches of the Forth. It is rather singular that though comparatively common in the Forth when first observed, yet, when tow-netting over the same area later on, *Eurytemora* was of a very rare occurrence.

Diaptomus serricornis, Lilljeborg. This species was moderately common among some tow-net material from Loch Mullach Corrie (Maol a Choire) in the district of Assynt, Sutherlandshire. The material was collected by W. S. Caine, Esq., ex-M.P., who was making an examination of this and other Sutherlandshire lochs, and forwarded to me for examination. The material contained a considerable number of Copepoda, including this rare *Diaptomus*, and a species of *Daphnia*, to be presently referred to. Failing to identify the *Diaptomus* as belonging to

¹ For further information on the *Entomostraca* of Scottish inland waters, see Ninth Annual Report of the Fishery Board for Scotland, part iii. (1891).

any British species, I submitted specimens to Prof. G. S. Brady, F.R.S., who recognised it as the *Diaptomus serricornis* of Lilljeborg. Professor Brady informs me that hitherto it appears to have been observed only in Lapland, and is thus an interesting addition to the British Fauna. Both male and female specimens occurred in the material. The male is readily distinguished by possessing a toothed appendage at the distal end of the third last segment of the right anterior antenna.

Canthocamptus northumbrius, Brady. My son, Mr. A. Scott, obtained this species some time ago in Duddingston Loch, Edinburgh. It is quite distinct from any other British *Canthocamptus*, and is easily recognised. Each abdominal segment has two rows of stout setæ round the posterior margin. There are other striking, though less obvious, characters by which the species is distinguished. *Attheyella spinosa*, Brady, is also frequent in Duddingston Loch. This, and the *Canthocamptus*, are described and figured in the Monograph of the British Copepoda by Prof. Brady.

Monstrilla, Dana. This curious genus of the Copepoda is now represented in the Forth Fauna by at least two species, *viz.*, *Monstrilla rigida*, I. C. Thompson, and *Monstrilla helgolandica*, Claus. The first was obtained off Musselburgh, and the other near the Bass Rock, and also west of Queensferry. *Monstrilla* differs a good deal from the *Corycæidæ*, among which the genus is provisionally placed. The mouth organs are almost altogether obsolete in *Monstrilla*, and only one pair of antennæ are developed. There is also present in both male and female a peculiar genital appendage, not observed in any other genus of the family. *Monstrilla* thus differs very markedly from all the other *Corycæidæ*. *Monstrilla* was first added to the British Fauna by Sir John Lubbock in 1857, but for the next thirty years no specimens of *Monstrilla* were recorded from our seas. In 1887, I. C. Thompson, F.L.S., obtained near Puffin Island, Anglesea, the species described by Sir John Lubbock in 1857. Since 1887, *Monstrilla* has been recorded from various places, and there are now seven species described as belonging to the British Fauna. Several specimens have been taken in the Forth, but usually not more than one or perhaps two at a time. I have also taken *Monstrilla*

in St. Andrews Bay. Six species are described by G. C. Bourne, M.A., F.L.S., in the "Quarterly Journal of Microscopical Science," vol. xxx., N.S. (1890). Another is described by I. C. Thompson in *Trans. Biol. Soc., Liverpool*, vol. iv.¹

Daphnia sp. In the tow-net material from Loch Mullach Corrie in which *Diaptomus serricornis* occurred, a species of *Daphnia* was obtained that differs somewhat from any I have previously observed in Scotch inland waters. It comes near *Daphnia pulex*, but may be distinguished by the spine at the extremity of the valves of the carapace being black. The terminal joints of the setæ of the antennæ are also of a black colour.

Graptoleberis (Lynceus) testudinaria (Fischer). This pretty but rather small Cladoceran was taken by hand-net in Lochend Loch, Edinburgh, some time ago. Although apparently of frequent occurrence in some parts of Britain, I have failed to observe it in the tow-nettings from Scotch lochs examined by me, except Lochend Loch and Loch Mullach Corrie, where it also occurred. It is readily distinguished from other British Lynceidæ by its large, erect, hood-like head, which incloses the antennules, straight ventral margin, and the two or three—usually three—comparatively large teeth at the ventral angle of the carapace. Its small size may cause it to be frequently overlooked, its length being scarcely the 40th of an inch. It frequents lochs where the water is pure and bright.

¹ Thompson also (loc. cit.) discusses the classification of *Monstrilla*.

LIST OF PLANTS SEEN IN THE VALLEY OF BRAEMAR AND ON MORRONE (*Continued from page 136*).

BY PROF. C. C. BABINGTON, M.A., F.R.S.

CAMPANULACEÆ.

Lobelia Dortmanna Linn. Loch Callater.

Campanula rotundifolia Linn. Common.

C. latifolia Linn. Corriemulzie.

ERICACEÆ.

Arctostaphylos Uva ursi Spr. Morrone.

Calluna vulgaris Salisb. Common.

Erica Tetralix Linn. Common.

E. cinerea Linn. Not common, but generally distributed.

Azalea procumbens Linn. Near the top of Morrone.

Vaccinium Myrtillus Linn. Common.

V. uliginosum Linn. Wet hollows on Morrone.

V. Vitis—*Idæa* Linn. Common on the hills.

V. Oxycoccus Linn. I possess a specimen of this, gathered by Mr. A. Croall in Glen Callater, and issued as No. 319 of his Plants of Braemar, and Mr. W. Gardiner gathered it in the wet hollows, forming the head of a stream flowing down Morrone into Glen Clunie (it still grows there, *W. T.*). It seems to be very rare. The fruit called "Cranberry" in Braemar, is that of *V. Vitis*—*Idæa*.

Pyrola media Sw. Morrone woods.

P. minor Linn. Morrone woods and Craig Koynach.

P. secunda Linn. Morrone, Ben Beck, Craig Koynach; rare in all the places.

GENTIANACEÆ.

Gentiana campestris Linn. Common.

BORAGINACÆ.

Lithospermum arvense Linn. Introduced with crops.

Myosotis repens Don. Common.

M. cæspitosa Shultz. Castleton.

M. arvensis Hoffm. Cultivated land.

M. versicolor Reichenb. Castleton.

Cynoglossum officinale Linn. Mr. A. K. Clark is said to have found this at Castleton.

Echium vulgare Linn. Mr. Clark found this at Auchallater.

SCROPHULARIACEÆ.

Scrophularia nodosa Linn. Not uncommon. Dickie overlooked it, and gives it only 500 ft. of elevation.

Digitalis purpurea Linn. Rare at Castleton.

Veronica scutellata Linn. Not very common.

V. Beccabunga Linn. Common.

V. Chamædrys Linn. Common.

V. officinalis Linn. Common.

V. serpyllifolia Linn. Common.

V. arvensis Linn. Common.

V. agrestis Linn. Common.

Melampyrum pratense Linn. Common ; especially the variety *montanum* Johnst.

Pedicularis palustris Linn. Common.

P. sylvatica Linn. Common.

Rhinanthus crista-galli Linn. Common.

Euphrasia officinalis Linn. Very common.

E. paludosa Towns. M.S. An interesting plant, found by Mr. Townsend, in 1890, in a spongy bog at Castleton. It belongs to Section "*Gracilis*" of his paper in the *Journal of Botany*, xxii. p. 161.

LABIATÆ.

Mentha arvensis Linn. Castleton.

Thymus serpyllum Linn. Common.

Nepeta Glechoma Benth. Castleton.

Prunella vulgaris Linn. Common.

Lamium amplexicaule Linn. Castleton.

L. purpureum Linn. Castleton.

Galeopsis Tetrahit Linn. Castleton.

G. versicolor Curt. Castleton.

Stachys palustris Linn. Common, also var. *ambigua*.

S. sylvatica Linn. Corriemulzie.

Teucrium Scorodonia Linn. Castleton.

Ajuga reptans Linn. Rather common.

LENTIBULARIACEÆ.

Pinguicula vulgaris Linn. Rather common in boggy places.

Utricularia vulgaris Linn. Rev. J. Brichan found this in Loch Callater. (In a pool between the road and the river, west of the village. *W.*)

PRIMULACEÆ.

Primula vulgaris Huds. Is probably common.

P. veris Linn. Probably common (seen by me only on the ascent to Tomintoul farm, and not common. (*F.*)). I was far too late for these plants, and had to determine them from the leaves.

- Trientalis europæa* Linn. Common in the woods.
Lysimachia nemorum Linn. Common.

PLANTAGINACEÆ.

- Plantago major* Linn. Common.
P. lanceolata Linn. Common.
Littorella lacustris L. Up to 1650 ft. (W.)

CHENOPODIACEÆ.

- Chenopodium album* Linn. A rare weed amongst crops.

POLYGONACEÆ.

- Rumex obtusifolius* Linn. Castleton, but rare.
R. crispus Linn. Castleton.
R. domesticus Einn. Common in the valley.
R. Acetosa Einn. Common.
R. Acetosella Linn. Common.
Oxyria reniformis Hook. Morrone and Glen Callater.
(Shingle along the Dee, extends down the river almost to Aberdeen. F.)

- Polygonum viviparum* Linn. Very common.
P. aviculare Linn. Common and variable.
P. Convolvulus Linn. Castleton.

EMPETRACEÆ.

- Empetrum nigrum* Linn. Common.

EUPHORBIACEÆ.

- Euphorbia Helioscopia* Linn. Castleton.
E. Peplus Linn. Castleton.
Merc uralis perennis Linn. Common.

CALLITRICHACEÆ.

- Callitriche stagnalis* Scop. Common.
C. hamulata Kütz. Loch Callater.

URTICACEÆ.

- Urtica dioica* Linn. Common.
U. urens Linn. Castleton.

AMENTIFERÆ.

- Salix aurita* Linn. Castleton.
S. Caprea Linn. Rare at Castleton.

S. repens Linn. Common. I did not attempt to determine the various Willows in and about Glen Callater and on Morrone. I had not sufficient materials in the autumn to do so: *S. reticulata* (Linn.), forms of *S. nigricans* (Sm.), *S. phylicifolia* (Linn.), *S. Arbuscula* (Linn.), and *S. Myrsinites* (Linn.), may possibly be found there. I did find *S. herbacea* (Linn.), on Morrone.

(*Salix*. I have seen *S. aurita*, *S. caprea*, *S. cinerea*, *S. repens*, *S. nigricans*, and *S. phylicifolia* within the limits. I have seen in some herbarium *S. pentandra*. *S. reticulata*, *S. Myrsinites*, &c., occur beyond the limits. I doubt *S. Arbuscula* occurring anywhere in Aberdeenshire, *W.*)

(*S. Lapponum* L. A bush on S.E. shoulder of Morrone, *T.*)

Populus tremula Linn. Common.

Myrica Gale Linn. Common.

Betula glutinosa Fr. Very abundant. I did not see any other species. The head of Glen Callater should be searched for trees supposed to be *B. intermedia*.

(*B. nana* Linn. Glen Thom, Candlich, at the foot of Little Craigundal, *R.*)

Alnus glutinosa Gœrtn. Common by the rivers.

Quercus Robur Linn. Castleton.

Corylus Avellana Linn. Common.

CONIFERÆ.

Juniperus communis Linn. Common. The bushes are usually prostrate, and seem to show that *J. nana* is not distinct.

Pinus sylvestris Linn. Very abundant. Several other Conifers may also be found; but they have been planted.

(*Larix europæus* L. I have found this, self-sown, on the top of Morrone, *W.*)

ORCHIDACEÆ.

Orchis maculata Linn. Common.

Gymnadenia albida Rich. Morrone.

Habenaria viridis R. Br. Morrone.

H. bifolia R. Br. In the Manse Wood, Castleton.

Listera ovata R. Br. Morrone woods. (Along the banks of the Dee and the Clunie, near their confluence, *T.*)

L. cordata R. Br. Morrone woods.

Malaxis paludosa S.W. Dr. Ogilvie found this near the Linn of Dee.

ALISMACEÆ.

Triglochin palustre Linn. Common.

MELANTHACEÆ.

Narthecium ossifragum Huds. Common.

JUNCACEÆ.

Juncus effusus Linn. Castleton.

J. conglomeratus Linn. Castleton.

J. triglumis Linn. Morrone. I could not find it at the spot recorded at the foot of Craig Koynach by Dickie. (This spot was drained some years ago, R.)

J. trifidus Linn. On the upper part of Morrone.

J. acutiflorus Ehrh. Common.

J. lamprocarpus Ehrh. Common.

J. nigriflorus D. Don. In rather elevated boggy places.

J. supinus Moench. Common.

J. squarrosus Linn. Common.

J. bufonius Linn. Common.

Luzula sylvatica Bichen. Common.

L. pilosa Willd. Common.

L. campestris Willd. Common.

L. multiflora Lej. Common.

L. spicata De Cand. In Glen Callater. Found by Dr. Dickie on the boulder by the roadside between Invercauld Bridge and Castleton.

TYPHACEÆ.

Sparganium minimum Fr. Loch Callater. Castleton. All the specimens of *Sparganium* that I could find belonged to this species.

POTAMOGETONACEÆ.

Potamogeton natans Linn. Castleton and Loch Callater.

P. polygonifolius Pourr. Castleton.

P. heterophyllus Schreb. Loch Callater.

P. lucens Linn. Loch Callater. I did not find *P. prælongus* in Loch Callater, from which it is recorded with doubt by Dr. Dickie.

CYPERACEÆ.

Schænus nigricans Linn. Stated to grow in Glen Callater. I did not meet with it. (We have looked for it in Glen Callater in vain, *R.* and *T.*)

Eleocharis palustris *R. Br.* Common.

Scirpus cæspitosus Linn. Common.

Eriophorum vaginatum Linn. Common.

E. polystachyum Linn. (*E. angustifolium.*) Common.

Carex dioica Linn. At Castleton, but I was too late for that.

C. pulicaris Linn. Morrone and Carr Rocks.

C. pauciflora Lightfoot. Dr. Dickie found this in Glen Callater. (I have gathered it on the moor beyond Loch Callater, *T.*)

C. stellulata Gooden. Common.

C. ovalis Gooden. Morrone.

C. rigida Gooden. Morrone.

C. vulgaris Fr. Common.

C. aquatilis Wahl. Round the head of Glen Callater. Brought to me by General Goddard, who found it below the Breakneck Fall, I believe. (Plentiful on the tableland above the Fall, but never seen by us in the Glen, *R.* and *T.*)

C. glauca Murr. Common.

C. pallescens Linn. Common.

C. panicea Linn. Common.

C. capillaris Linn. Has been found on Craig Koynach. I did not see it, being too late. (Not rare about the foot of the Carr Rocks, *R.*)

C. præcox Jacq. It is stated to be abundant. I was too late for it.

C. pilulifera Linn. Common.

C. flava Linn. Common.

C. Æderi Ehrh. Rather rare.

C. binervis Sm. Common.

C. ampullacea Gooden. Castleton.

GRAMINEÆ.

Anthoxanthum odoratum Linn. Common.

Alopecurus pratensis Linn. Common.

A. geniculatus Linn. I have overlooked this, which is probably common.

- Nardus stricta* Linn. Common.
- Agrostis vulgaris* With. Common; and in the form *pumila* on Morrone.
- Holcus mollis* Linn. Castleton.
- H. lanatus* Linn. Castleton.
- Aira cæspitosa* Linn. Common.
- A. setacea* Huds. In the Manse Wood.
- A. flexuosa* Linn. Common.
- A. caryophyllea* Linn. Castleton.
- Avena pratensis* Linn. Common; variety *alpina* on Morrone, but hardly distinguishable from the typical plant.
- Arrhenatherum avenaceum* Beauv. At Castleton.
- Triodia decumbens* Beauv. Common.
- Koehleria cristata* Pers. Castleton.
- Melica nutans* Linn. Common.
- Poa annua* Linn. Castleton.
- P. Balfourii* Para. "On rocks at the north base of Morrone. Mr. Croall." Dickie. I overlooked it.
- P. nemoralis* Linn. Common.
- P. trivialis* Linn. Common.
- P. pratensis* Linn. Common.
- Glyceria fluitans* R. Br. Castleton.
- Briza media* Linn. Common.
- Cynosurus cristatus* Linn. Common.
- Dactylis glomerata* Linn. Common.
- (*Calamagrostis Epigeios* Roth. Along north bank of Dee, east of Invercauld Bridge, R. & T. Colonel Drummond Hay found this at Corriemulzie; but we could not discover it, W.)
- Festuca sciuroides* Roth. Castleton.
- F. ovina* Linn. Common.
- Bromus* (*Serrafalcus*) *commutatus* Schrad. Castleton, but rare.
- B. mollis* Linn. Common at Castleton.
- Triticum repens* Linn. Castleton.
- Lolium perenne* Linn. Castleton.

EQUISETACEÆ.

- Equisetum arvense* L. Near Castleton.
- (*E. pratense* Ehrh. On the way to, and on Little Craigandal, R. and W.)

E. sylvaticum Linn. Morrone.

E. limosum Linn. Castleton.

E. palustre Linn. Common.

FILICES.

Cryptogramme crispa R. Br. Brought to me from, I understood, the foot of the Breakneck Fall. (Not seen by us below 2500 feet line, R. and T.)

Polypodium vulgare Linn. Common.

P. Phegopteris Linn. Morrone, Carr Rocks, and Corriemulzie.

P. Dryopteris Linn. Rather common.

P. alpestre Hoppe. Glen Clunie.

P. flexile Moore. Glen Clunie. I have a specimen, found near Fraser's Bridge, which I believe is this plant. (Not seen by us in Braemar, R. T. W.)

Lastrea Thelypteris Presb. Rare. I have specimens. (Not seen by us in Braemar, R. T. W.)

L. Oreopteris Presb. Common.

L. Filix-mas Presb. Common.

L. dilatata Presb. Near Fraser's Bridge.

L. Æmula Brack. Near Fraser's Bridge. My specimen leaves a little doubt as to this species. (We have not seen this in Braemar, R. T. W.)

(*Polystichum Lonchitis* Roth. Used to be not uncommon on the Carr Rocks, R. and T.)

Cystopteris fragilis Bernh. Rather rare. Mr. Gardiner says he found *C. dentate* at several places, I saw only *C. fragilis*.

Athyrium filix-fœmina Roth. Rare.

Asplenium Trichomanes Linn. Rare at Castleton.

A. Ruta-muraria Linn. A little above Invercauld Bridge, *vide* Dr. Dickie. It escaped my notice.

A. viride Huds. Corriemulzie, Carr Bura, and a few other places; but rare.

Blechnum boreale Sw. Common.

Pteris aquilina Linn. Up to about 1900 feet.

Botrychium Lunaria Sw. Carr Rocks.

(*Ophioglossum vulgatum* Linn. Found by Rev. J. Crombie near Invercauld Bridgé, R.)

LYCOPODIACEÆ.

Isoetes lacustris Linn. I have seen this from Loch

Kandor; and record it here to put on record the species growing there.

(*I. echinospora*. Discovered in Loch Callater by Prof. Dickson. I have gathered it there, *W.*)

Lycopodium clavatum Linn. Morrone.

L. annotinum Linn. Morrone.

L. alpinum Linn. Morrone.

L. Selago Linn. Morrone.

Selaginella spinulosa A. Br. Common.

CHARACEÆ.

Nitella opaca Ag. Beside the cottage on the Queen's Drive.

Chara fragilis Linn. (*C. delicatula* Braun.) In the reservoirs, and in the streams connected with them.

APPENDIX.

MR. F. J. HANBURY has kindly drawn up a complete list of the *Hieracia* known by him to grow on the mountains of Braemar and in the valley near Castleton. I think it desirable to publish this list without exact localities. The species will all be illustrated in the valuable and beautiful work which he is publishing upon this genus of plants.

1. *H. Pilosella* Linn. Common.

var. *concinatum* Hanb. Ben-na-muic-dhu.

2. *H. alpinum* Linn. General at high elevations.

var. *insigne*. Not so common.

3. *H. holosericeum* Backh. At high elevations.

4. *H. eximium* Backh. On the mica schist at high elevations.

var. *tenellum* Backh. On the granite.

5. *H. calendulifolium* Backh. On Loch-na-gar.

6. *H. granulentum* Backh. On Ben-na-muic-dhu, &c.

7. *H. globosum* Backh. On high ground.

8. *H. nigrescens* Willd. Common, but very variable on the high ground.

9. *H. Backhousei* Hanb. At a high elevation. See *J. of Bot.* xxvii., 74.

10. *H. longulatum* Backh. By elevated streams.

11. *H. Senescens* *Backh.* Glen Callater.
 12. *H. chrysanthum* *Backh.* In the higher glens.
var. *micranthum* *Backh.* Loch-na-gar, &c.
 13. *H. anglicum* *Fr.* Common in the valley.
 14. *H. Iricum* *Fr.* Near Castleton.
 15. *H. lasiophyllum* *Koch.* Little Craig-an-dal. I suppose that
this is in my *H. cinerascens.*
 16. *H. Schmidtii* *Tausch.* By the river from Castleton up-
wards.
 17. *H. onosmoides* *Fr.* Castleton. I did not detect this.
 18. *H. argentium* *Fr.* Rare on the higher mountains.
 19. *H. nitidum* *Backh.* Rare on the higher mountains.
 20. *H. aggregatum* *Backh.* Rare on the higher mountains.
 21. *H. murorum* *Linn.* Common.
 22. *H. caledonicum* *Hanb.* Castleton. See *Journ. of Bot.*
xxvii., 75.
 23. *H. cæsium* *Fr.* Doubtful.
 24. *H. bifidum* *Kit.* In the higher valleys, but rare.
 25. *H. Sommerfeltii* *Lindeb.* In the higher valleys, but rare.
 26. *H. flocculorum* *Backh.* In the higher valleys, but rare.
 27. *H. vulgatum* *Fr.* Common.
 28. *H. Friesii* *Hartm.* (*H. igothicum* *Fr.*) Castleton.
 29. *H. rigidum* *Hartm.* (*H. Tridentatum* *Fr.*) In the valley,
but very rare.
 30. *H. Jarenanthoides* *Linn.* By the rivers at Castleton.
 31. *H. strictum* *Fr.* Near, but above, Castleton.
 32. *H. crocatum* *Fr.* Castleton.
 33. *H. auratum* *Fr.* Castleton.
 34. *H. Eupatorium* *Griseb.* (*H. corymborum* *Fr.*) Castleton.
 35. *H. commutatum* *Lindeb.* (*H. boreale* *Fr.*) Backhouse re-
cords it, but not so Hanbury. Croall issued what he
called "*H. boreale*" (No. 315), but the specimen re-
ceived by me is *H. prenanthoides*, C. C. B.
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RECORD OF SCOTTISH PLANTS FOR 1890,
ADDITIONAL TO "TOPOGRAPHICAL BOTANY."

Ed. 2.

(Continued.)

BY ARTHUR BENNETT, F.L.S.

97. Westernness—(Continued).

Scirpus maritimus.

Carex vulpina.

C. sylvatica.

Agrostis alba.

Poa trivialis.

Festuca rubra.

F. sciuroides.

Psamma arenaria.

Bromus commutatus.

Botrychium Lunaria.

Asplenium marinum.

98. Argyle.

Orobus tuberosus. *T. King.*

Hieracium senescens. *Marshall & Hanbury, J. B., 1890,*
p. 180.

Filago minima. *T. King.*

Lycopsis arvensis. *T. King.*

Sparganium affine. *Marshall & Hanbury.*

Bromus asper. *T. King.*

99. Dumbarton.

(From specimens sent by *Mr. L. Watt.*)

Ranunculus pseudo—fluitans.

Prunus insititia.

Myriophyllum spicatum.

Helosciadium inundatum.

Leontodon hirtus.

Linaria Elatine.†

For *Potamogeton pectinatus*, *Scot. Nat.*, 1890, p. 268, read
P. flabellatus.

Potamogeton rufescens.

Zostera nana.

Carex pendula.

Briza media.

100. **Clyde Isles.**

Carpinus Betulus.† *A. Somerville*.

Avena pubescens. *A. Somerville*.

105. **ROSS, W.**

(By *G. C. Druce, J. B.*, 1890, p. 40.)

Drosera intermedia.

Ulex europæus.

Lathyrus pratensis.

Vicia sepium.

Rubus saxatilis.

R. affinis W. & N.

R. calvatus Blox.

Epilobium obscurum.

Hieracium nigrescens.

H. holosericeum.

Campanula rotundifolia.

Pyrola media.

Lycopus europæus.

Mercurialis perennis.

Myrica Gale.

Cladium Mariscus. *A. H. Evans*.

Carex paniculata.

Elymus europæus.

106. **ROSS, E.**

(Records by *Messrs. Marshall & Hanbury*.)

Ranunculus bulbosus.

Cochlearia danica.

Polygala oxyptera.

Spergularia marginata.

Cerastium tetrandrum.

- Anthyllis Dillenii.
Geranium pusillum.
Vicia angustifolia.
Epilobium -obscurum.
Callitriche platycarpa. *Druce, J. B., 1890, p. 40.*
Æthusa Cynapium.
Ligusticum scoticum.
Caucalis nodosa.
C. Anthriscus.
Hieracium caledonicum. *Hanb.*
Carlina vulgaris.
Inula dysenterica.
Gentiana Amarella.
Veronica Buxbaumii.†
Rhinanthus major.
Myosotis collina.
Suæda maritima.
Salix Smithiana.
S. Caprea.
Juniperus nana.
Orchis latifolia. (*seg.*)
Potamogeton heterophyllus. *sp.*
Scirpus uniglumis.
Carex "Cæderi."
Phragmites communis.
Avena pubescens.
Phleum pratense. *Druce, J. B., 1890, p. 40.*
Poa nemoralis.
Festuca "elatior."
Triticum junceum.
T. pungens?

107. Sutherland, E.

(Records by *Messrs. Marshall & Hanbury.*)

- Nymphæa alba.
Polygala depressa.
Prunus spinosa.
Cratægus Oxyacantha.
Epilobium obscurum.

Saxifraga stellaris.
 Galium boreale.
 Sherardia arvensis.
 Hieracium sparsifolium. *Lindeb.*
 H. Langwellense. *Hanb.*
 Calamintha Acinos.
 Lamium purpureum.
 Myosotis repens.
 Anagallis arvensis.
 Rumex crispus.
 Ulmus montana.
 Betula pubescens.
 Pinus sylvestris.
 Juniperus nana.
 Habenaria eu-bifolia.
 Carex flava. (*agg.*)
 C. pallescens.
 C. fulva.
 Agrostis canina.

108. Sutherland, W.

(Records by *Messrs. Marshall & Hanbury.*)

Drosera obovata.
 Hieracium eximium. *Hanb. Monogr. Hierac.*, p. 19.
 Chenopodium album.
 Salix ambigua.
 Potamogeton prælongus. *Marshall, sp.*
 Melica nutans.
 Polystichum lobatum.

110. Outer Hebrides.

(Records by *Mr. W. S. Duncan.*)

Ranunculus bulbosus, Scarp.
 Arabis hirsuta, Bernera.
 Subularia aquatica, Harris, *sp.*
 Draba verna, Harris, *sp.*
 Orobus tuberosus, Harris.
 Helosciadium inundatum, Harris.
 Sonchus oleraceus, Scarp.

- Carduus heterophyllus, Harris.
Myosotis versicolor, Scarp.
Lysimachia nemorum, Harris.
Polygonum Hydropiper, Harris.
 P. viviparum, Scarp.
Orchis mascula, Scarp.
Habenaria eu-bifolia, Harris.
 H. chlorantha, Harris.
Listera ovata, Scarp.
 L. cordata, Scarp.
Potamogeton pusillus, Scarp, *sp.*
Scirpus multicaulis, Scarp.
Carex pauciflora, Harris.
 C. pallescens, Harris.
Scolopendrium vulgare, Scarp.
Polypodium Phegopteris, Scarp.
Pilularia globulifera, Harris.

112. Shetland Isles.

(Records by *Mr. W. H. Beeby, Scot. Nat.*, 1891, pp. 25-30.)

- Ranunculus Baudotii. *sp.*
 R. trichophyllus. *sp.*
 R. hederaceus. *A. H. Evans.*
 R. Steveni.
Papaver Lamottei.
Subularia aquatica. *sp.*
Brassica alba. †
Arenaria serpyllifolia. *sp.*
Radiola Millegrana.
Geranium Robertianum. *sp.*
Scandix Pecten-Veneris. *A. H. Evans. †*
Carduus "nutans." *A. H. Evans. †*
Arctium intermedium ?
Rhinanthus major (conf.) *sp.*
Veronica Buxbaumii. *sp. †*
Mentha aquatica !
Utricularia minor. *sp.*
 U. intermedia. *sp.*

Rumex propinquus. *J. E. Aresch.*

R. pratensis (acutus).

Euphorbia Peplus.†

Potamogeton pusillus. *sp.*

Scirpus fluitans. *sp.*

S. multicaulis.

ZOOLOGICAL NOTES.

Daubenton's Bat (*Vespertilio daubentoni*) in Elginshire.—It gives me pleasure to record the capture of a fine example (a male) of this bat at Cromdale Church, about two-and-a-half miles below Grantown, Strathspey. The church, which stands within a few feet of the river Spey, is surrounded by a stone-and-lime wall, from five to six feet high. When passing the church about 7 p.m. on 5th instant (September, 1891), a somewhat loud chirping, not unlike that of a young finch, attracted my attention. At first I thought the sound came from an overhanging tree, but I soon traced it to a hole in the top of the wall—a narrow opening between two of the copestones. By removing a few pieces of lime I was able to insert my hand far enough to secure the creature, which, so far as I could discover, was the only occupant of the hole. The sound it uttered was louder and less shrill than that usually made by the Pipistrelle. If I mistake not, this species has not hitherto been recorded from a locality so far north in Scotland. I have shown the specimen to the editor, who confirms my identification.

I take this opportunity of reminding the readers of the *Scottish Naturalist* how very little we know of the distribution of the bats in Scotland. Every opportunity of securing specimens for identification should therefore be taken advantage of.—WILLIAM EVANS.

The Recent Introduction of the Badger into Linlithgowshire.—In June 1881, the Earl of Rosebery sent some badgers from one of his English estates to Dalmeny Park, Linlithgowshire, where a pair were turned down and left to shift for themselves. They very soon disappeared: one was caught on the Hopetoun estate, the other was believed to have met its fate in East Lothian. A more successful attempt was made in 1888, when three badgers were sent from England and put into an old fox's earth, and were fed on dogs' biscuits and rabbits' liver for some time. The badgers soon set about enlarging their den by deepening it; and up to the present time, about two or three tons of sand have been thrown up by them. The den is well hidden among brackens six feet high, and the badgers have several "runs,"

towards the entrance. Towards winter they take in a supply of dry bracken for bedding. Unfortunately one of the three was caught in a rabbit trap, and, after dragging the trap about for some distance, the trap caught on a wooden paling, where it was left with the foot of the badger in it. This badger is believed to have died some time afterwards—at least it was not seen often after that. The remaining pair bred last year, and had at least two young ones, which were seen by the gamekeeper's boy.—BRUCE CAMPBELL, Edinburgh.

Italian Ratcatchers in Scotland in the 17th Century.—It may, perhaps, be as new to others as it was to me, to find that, according to the Register of the Privy Council of Scotland, *Mus rattus* was destroyed by foreign traps. Among the Decreta of the Privy Council of Scotland, given at Edinburgh on July 3rd, 1610, was this: Anthone Auregio, Anthone Soubonga, and Fabian Fantone, strangers, having arrived in this country of purpose to use their "trade and industrie of making of hekkillis and utheris ingyannis for taking of rotonis and myce, the Lords grant them license to exercise their said trade in any part of the country, and discharge all magistrates from hindering them in making and selling their work." (*Register P.C.S.*, vol. ix.)—H. A. MACPHERSON, Carlisle.

Variety of the White Mole.—On the 15th of May last, I received from Mr. James Culton, Dildawn, near Castle-Douglas, a fine pale variety of the mole. It was not exactly white, neither was it the pale cream-coloured variation usually met with, but something between white and pale cream, and was much paler than the usual run of these light varieties. On the under part it had a bright, rusty-coloured stripe, occupying the mesial line, with branches of the same colour towards each of the sockets of the fore and hind limbs. About the same time a similar variety of the mole was sent to Mr. Hastings from the neighbourhood of Thornhill.—R. SERVICE, Maxwellton.

The Nut-cracker in Wigtownshire.—I have pleasure in reporting the occurrence of an extremely rare and interesting visitor to Scotland—the Nut-cracker (*Nucifraga caryocatactes*). My younger son, who is a well-informed naturalist, on whom I am able to rely as a careful observer, watched the bird at Corsemaalzie, Wigtownshire, feeding on mountain-ash berries, and assures me that he could not be mistaken, as he and a companion got quite near the bird. He identified it afterwards by comparison of three authorities, Yarrell, Morris, and Lord Lilford, in all of which it is well figured.

Though common in many parts of Europe, it is a rare visitor in this country, there being only three authenticated instances of its having been shot in Scotland. I trust that a like fate may not overtake the specimen which has ventured to Wigtownshire.—HERBERT MAXWELL.

Hoopoe in Fyvie.—A fine adult specimen of *Upupa epops* was killed in this neighbourhood on the 26th August, and sent to me for preservation. This is the first instance known to me of the occurrence of this elegant bird here.—G. SIM, Aberdeen.

Scops Owl in Aberdeenshire.—A fine female specimen of *Scops giu* was picked up dead, but in a perfectly fresh condition, upon the Great North of Scotland Railway, near Kintore, on September 2nd. This is the second, so far as I am aware, on record for Scotland. The first having been shot at Morvich, near Golspie, May, 1854, as reported by Messrs. Harvie-Brown and Buckley ("Vertebrate Fauna of Sutherland, Caithness, and West Cromarty," p. 163). The example now noted weighed two-and-a-half ounces. Extent of wings, eighteen inches; beak to tail, six and-a-half inches. The stomach was crammed with earwigs and beetles.—GEO. SIM, Aberdeen.

[Col. Drummond Hay recorded (*Scot. Nat.*, vol. ii. new series, p. 365) a pair, male and female, shot at Scone, in May 1846.—ED.]

A late Scaup in the Solway.—A fine female scaup (*Fuligula marila*) was taken not far from Carsethorn on July 4th, and I have had an opportunity of examining the preserved skin. The only explanation of such an unusual occurrence that suggests itself is, that the bird may have been a slightly wounded one that was unable to take the usual northward flight at the migration period.—R. SERVICE, Maxwellton.

Sand-Grouse in Kirkcudbrightshire.—A friend tells me that he saw a Sand-Grouse (*Syrrhaptes paradoxus*) on 30th June at a place in Kirkbean, which I am not at present at liberty to specify more definitely. As this gentleman knows the species perfectly well, having been quite familiarly acquainted with the appearance and daily habits of the birds during their memorable, but transient, visit of three years ago, I have every confidence in accepting the statement. The bird was seen in a turnip field, and rose and flew to another field on my friend's approach.—R. SERVICE, Maxwellton.

The American Red-breasted Snipe in Argyllshire.—A fine male specimen of *Machœramphus griseus*, in first plumage, was shot at Poltalloch, by a son of Colonel Malcolm, on the 2nd of September last. I saw this bird in Mr. Bishopp's shop in Oban, where it had been sent for mounting. This is the third specimen of this North American species known to have occurred in Scotland.—W. EAGLE CLARKE, Edinburgh.

The Gar-Pike in the Solway.—A Gar-Pike (*Belone vulgaris*) was brought to me in May by Mr. Marshall, fish-dealer. It was caught in a hand net near the mouth of the Nith. It was 33 inches long, in splendid condition, and weighed 1lb. 14oz. It was a female fish, and contained large masses of ova nearly ready for extrusion, and the gills and alimentary canal were infested by many small thread-like worms. The Gar fish is seldom met with in our waters, but of late years a few have been taken in the salmon nets in Auchencairn Bay.—R. SERVICE, Maxwellton.

The occurrence of *Timarcha lævigata* in S.-W. Scotland.

—The late Andrew Murray, in his “Catalogue of the Coleoptera of Scotland,” records *Timarcha lævigata* as having been taken in Kirkcudbrightshire by the Rev. Mr. Lamb. Dr. Sharp ignores this record altogether, and Canon Fowler says of it—“the single Scotch record, ‘Kirkcudbrightshire, Murray’s Catalogue,’ is extremely doubtful.” I am glad of the opportunity of vindicating Murray, for, within the last ten days, Mr. Robinson Douglas of Orchardton has captured on Screel nearly a dozen of this handsome, large, and conspicuous beetle. Mr. Lennon has also captured some specimens at the same place. They were found on bare spots surrounded by tall brackens, and seemed to come forth in the hottest sunshine late in the afternoon. I may also mention that the late Rev. Wm. Little, for many years minister of Kirkpatrick-Juxta, was one of Mr. Murray’s coadjutors in the preparation of the catalogue. Mr. Little’s large collection of insects is now in my possession, and amongst the beetles are three specimens of *T. lævigata*. Unfortunately, they bear no locality labels, but two of the specimens are of Mr. Little’s own setting, and may have been collected in Scotland.—R. SERVICE, Maxwellton.

Is the range of *Boarmia gemmaria*, Brahm (*B. rhomboidaria*, Hb.), extending in Scotland?

—In Stainton’s “Manual,” published in 1859, this species is said to be “scarce in Scotland, occurring at the Cumbraes”; but in 1877, in my list of Scottish lepidoptera published in this magazine in that year, I was able to mention four districts in which it had been observed, *viz.*, Tweed and Tay in the East, and Solway and Clyde in the West. At that time it was very scarce in this neighbourhood (Perth), but of late years it has much increased in numbers. Before this season I had not noticed it in my garden, although I had seen a specimen not very far off; but during the past summer many specimens have come in at the open windows, and hence I am inclined to suspect that the range of the moth is extending. Perhaps some of your entomological correspondents may be able to tell us if they have noticed a similar increase in their districts.—F. BUCHANAN WHITE.

BOTANICAL NOTE.

***Linaria minor* L. in Perthshire.**—This plant has—apparently all of a sudden—established itself, at least for the present, in several places in Perthshire. A few years ago a single specimen occurred at Invergowrie station (on the Perth and Dundee railway), a place where usually several “aliens” may be found. I cannot remember noticing it at Invergowrie again till this year; but now it is not only rather common there, but has been seen by, or reported to, me from four other places, all, however, on railway lines, but not near

Invergowrie. These places are Barnhill near Perth, Strathord, Stanley, and Methven. There is little doubt but that the railway traffic has been instrumental in the distribution of the plant, but by what method is not so clear. It would be interesting to know if it is spreading in a similar way in other parts of Scotland. Its recorded distribution is from Lanarkshire and Berwickshire southwards, but it has also been reported as a naturalised plant in Kinross-shire.—F. BUCHANAN WHITE.

REVIEWS.

An Illustrated Hand-Book of British Dragon Flies. By the Editor of "The Naturalists' Gazette." Birmingham: The Naturalists' Publishing Company. London: E. W. Allen.

We have strong feelings on the subject of books of a scientific nature, however small they may be, appearing without the name of the author on the title page; and our confidence in this little book is not enhanced by the fact that its compiler has not cared, for reasons only known to himself, to declare his identity. This is a cheaply got up booklet of 98 small octavo pages, giving descriptions of each species, and some indication of their distribution and time of appearance. The author has thought it well to describe a considerable number of varieties of each species, and to all of these he has given scientific names, chiefly with the authority of "mihi." Unfortunately we have no modern work on this most interesting group of British insects, and we trust that this small treatise may be the means of calling attention to the fact, and that it may not too long continue to be the only work on sale on the subject.

The British Naturalist Catalogue of the Land and Fresh-water Mollusca of the British Isles, with all the Named Varieties. By Theo. D. A. Cockerell (Swan Sonnenschein & Co., London. 8vo. 19 pages).

This list is a reprint of articles contributed to the "British Naturalist," and has evidently involved much painstaking research on the part of its author. It is, however, difficult to understand why the list is published when the Conchological Society's List, of which a new and revised edition is about to be published, may be regarded as the standard catalogue for students in this branch. One point of great practical convenience seems to have been overlooked by Mr. Cockerell—*viz.*, that the generic name should be repeated for every species, which would at once make it available as a label list. There are a few mis-

prints, rather more than a good printer would allow to issue from his press; but for these, of course, it is the publisher and not the author who is responsible.

A Vertebrate Fauna of the Orkney Islands. By Thomas E. Buckley and J. A. Harvie-Brown. Edinburgh: David Douglas, 1891. pp. xxiv and 314. Map and plates.

From an early date in the annals of British natural history, the Orkneys have very justly proved an attractive field for the labours of naturalists. This is due, no doubt, to the importance that attaches to their geographical position and to the charm that surrounds all our northern isles.

Commencing with Sibbald in 1684, a number of books and papers of greater or lesser import have appeared, but strange to say the last, and what promised to be, in some respects, the most useful of these, appeared so long ago as 1848, in the shape of the incomplete *Historia Naturalis Orcadensis*, of which only the first portion treating on the mammals and birds saw the light. Thus it is needless to say that a book dealing adequately with such an important region of the British Fauna was a decided desideratum. This blank is most admirably filled in by the book under consideration, which, from its thoroughness, and the excellent manner in which the subject is treated, will, we have no hesitation in opining, prove as welcome and as useful a volume as any of its predecessors in this fine series. The introductory matter deals in chronological order with the natural historians of Orkney, and includes a list of the works devoted to or dealing with the Fauna of the islands. Then follows a section containing a concise and useful description of each island, with an account or its chief faunal characteristics.

The Orcadian mammals treated of are thirty-nine in number. Among these, as we should naturally expect, the Catacea are strongly represented; no less than fourteen species being included in the list; while in the Pinnipedia, such interesting forms as the Walrus, Greenland Seal, etc., claim a place. It is somewhat surprising that the authors should countenance for one moment the inclusion of such a mammal as the Mouse-Coloured Bat in the Fauna of the isles—a species which can only be regarded as questionably British. This bat and the noctule should surely have been enclosed in the thickest of brackets. On the other hand, the short but interesting note recording the Water-Shrew for Orkney, as given by Messrs. Baikie and Heddle, was worthy of full quotation in place of the mere allusion made to it at p. 65. The authors of the *Historia Naturalis Orcadensis* state that the example obtained was “an undoubted specimen of this species, hitherto unknown to exist in Orkney”; and it has not been known to occur since.

Relating to the two hundred and thirty birds recorded, there is very much of extreme interest, and it is difficult to particularise among so much that is good. However, we cannot pass over without special allusion to the information it has fallen to the lot of the authors to unearth, thus late, relating to that most interesting—alas mainly because extinct—bird, the Great Auk. This occupies pp. 245-257, and forms a contribution of considerable importance to

the scanty literature relating to *Alca impennis* as a British bird. A fine etching of the range of cliffs in Papa Westray, frequented by the last of the *Orcadian* Great Auks, and an autotype picture of the actual cranny wherein they rested, and perhaps nested, are given. Referring to the occurrence of *Charadrius fulvus* at p. 202, the authors not unnaturally expatiate upon the almost wonderful discrimination displayed by the *Orcadian* boatman in detecting the decidedly subtle distinctions between this species and the common bird. Such, if actually displayed, was indeed not a little remarkable; but this reminds us that there is another version relating to the origin of this specimen besides that recorded in "The Field" of December 10th, 1887. According to this unpublished account, the bird, though doubtless from Orkney, passed through the hands of Messrs. W. Johnston & Co., Poulterers, Queen Street, Edinburgh. We mention the above facts with the view of drawing our authors' attention to a subject not unworthy of their further investigation.

Of resident Reptiles there are none, and the class has a solitary representative in such a waif as the Hawks-billed Turtle. The Amphibians are represented by the Toad.

Over one hundred Fishes are enumerated, and the account of the Trouts is especially worthy of the attention of all interested in the variations of these particularly plastic species.

We might dwell further and quote much with advantage, if space permitted us, from the numerous items of great interest in which the book abounds, but we must be content to have given some idea of the scope of the work, and in bearing testimony as to the admirable and painstaking manner in which all the details relating to both the islands and their Vertebrate Fauna have been worked out; and it only remains to say that, in point of illustration and general get up, the book is in all respects a worthy companion to the elegant volumes of this series which have already appeared.

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