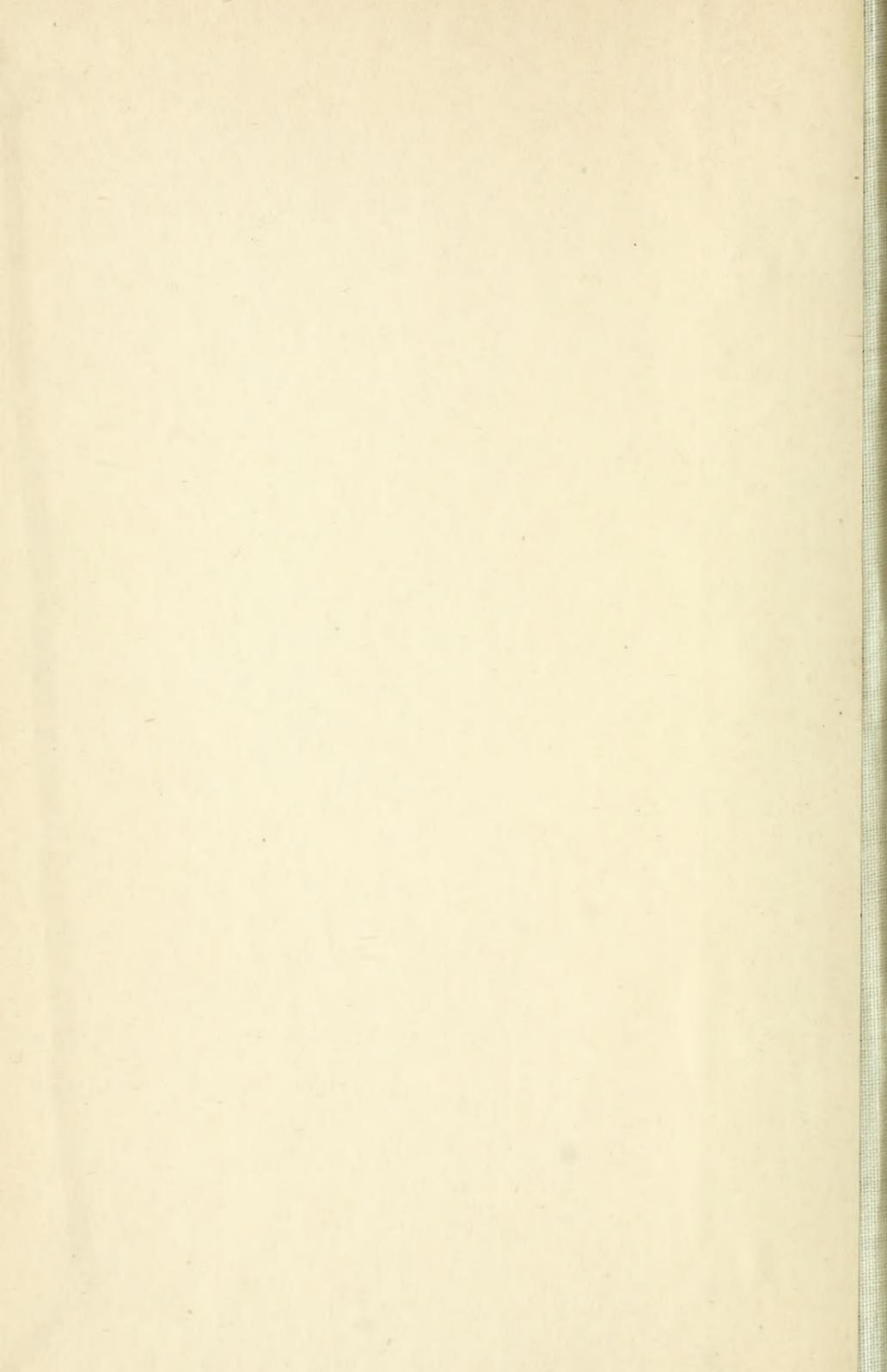
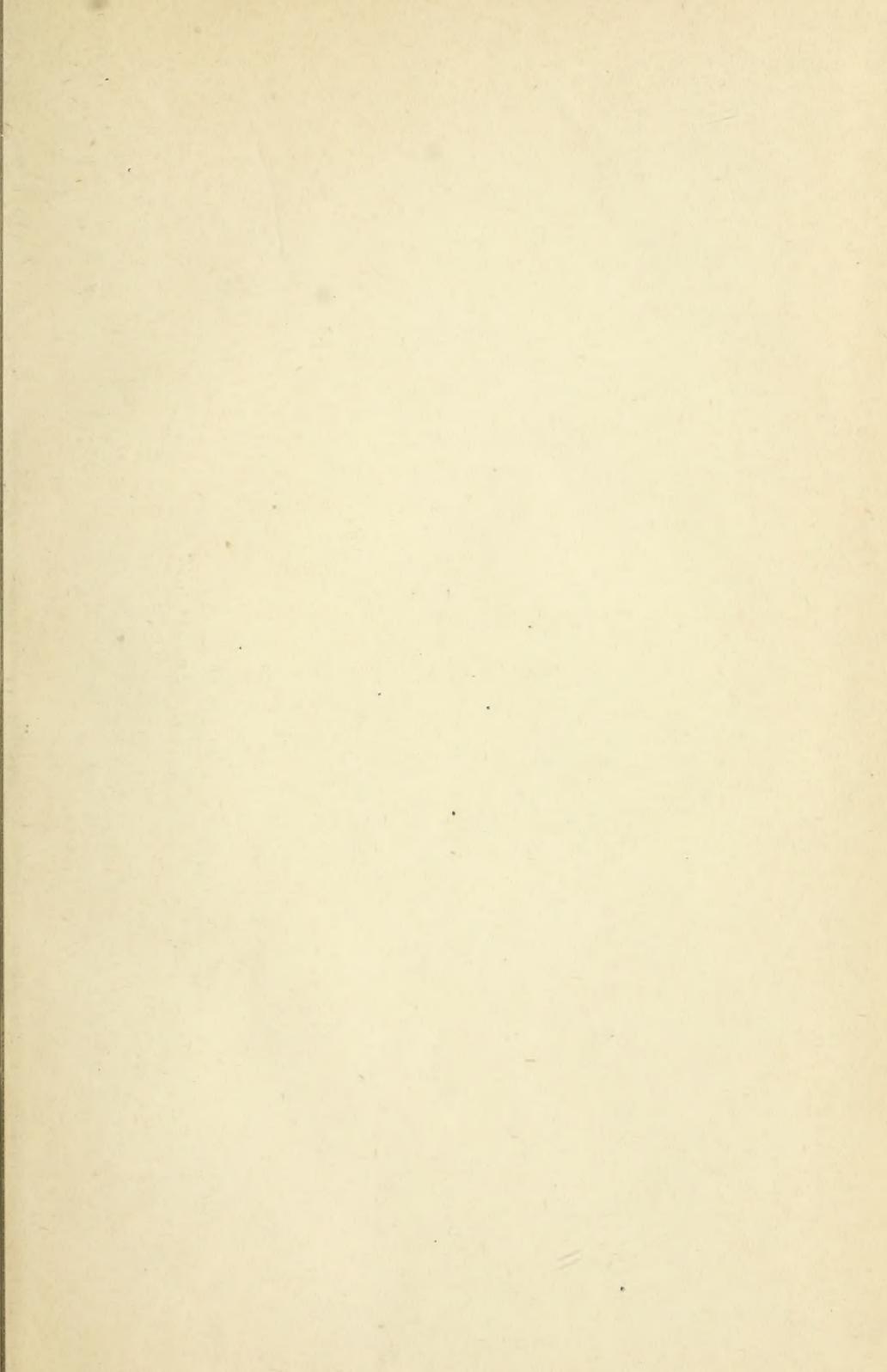
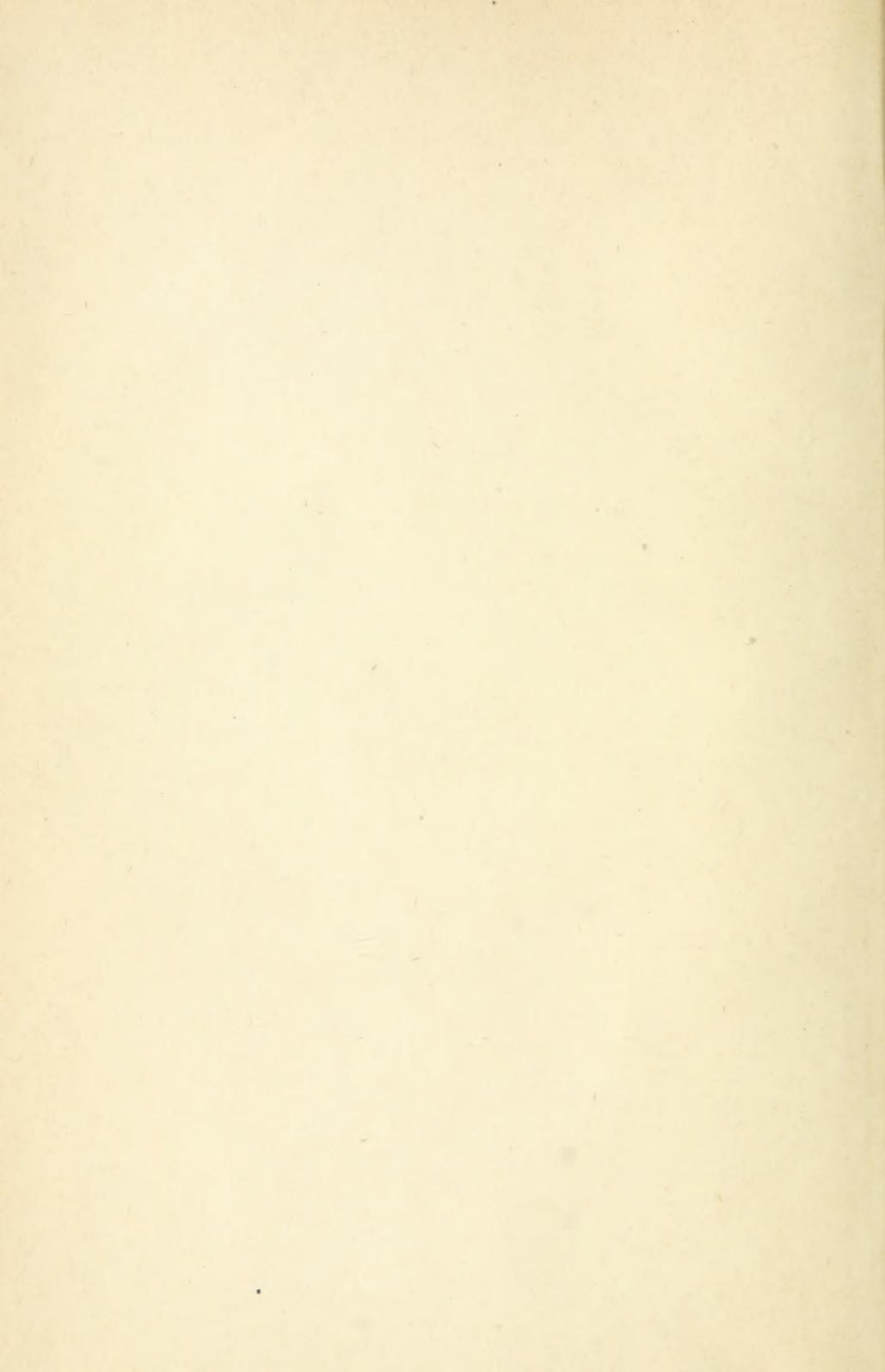
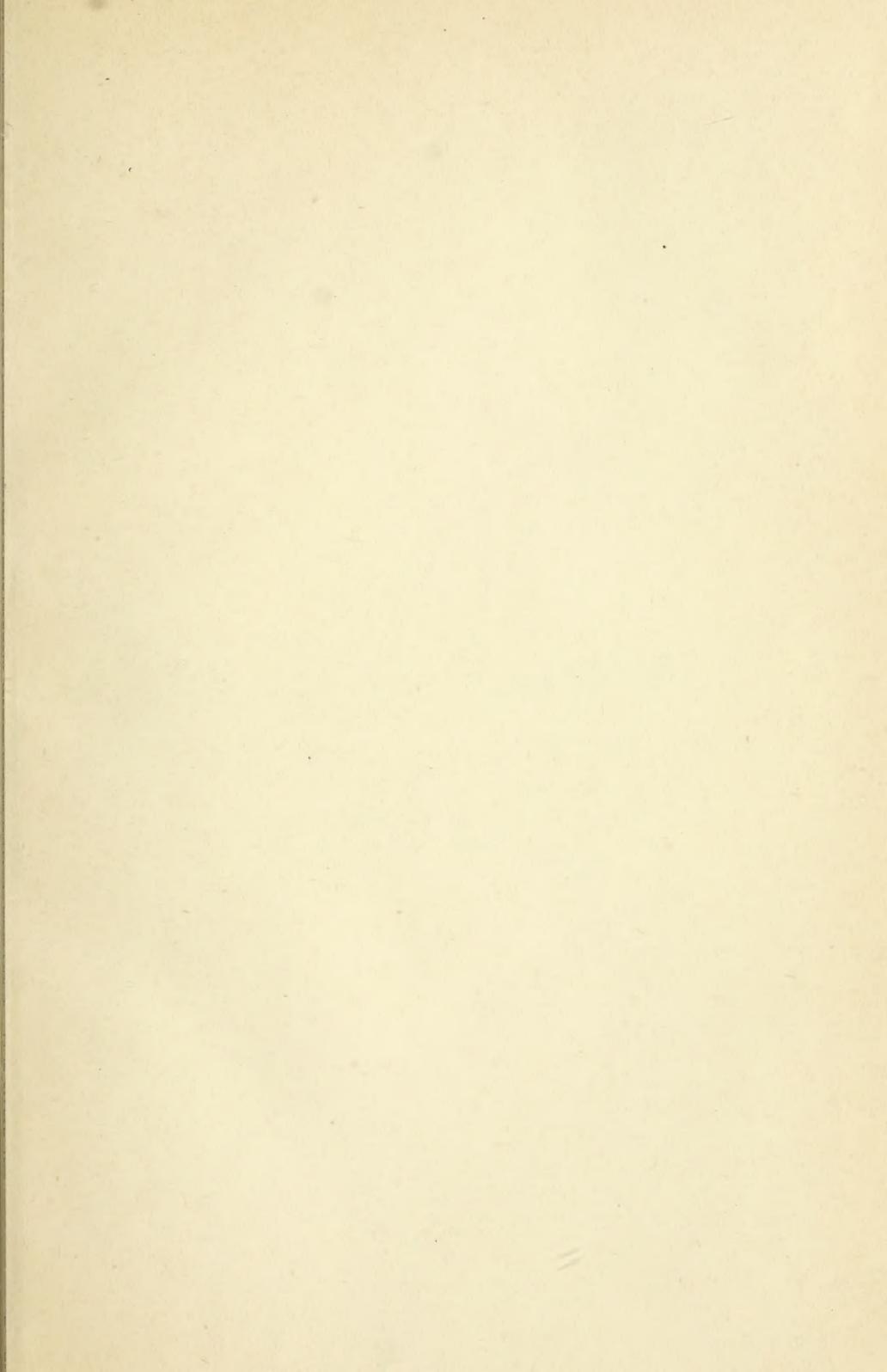


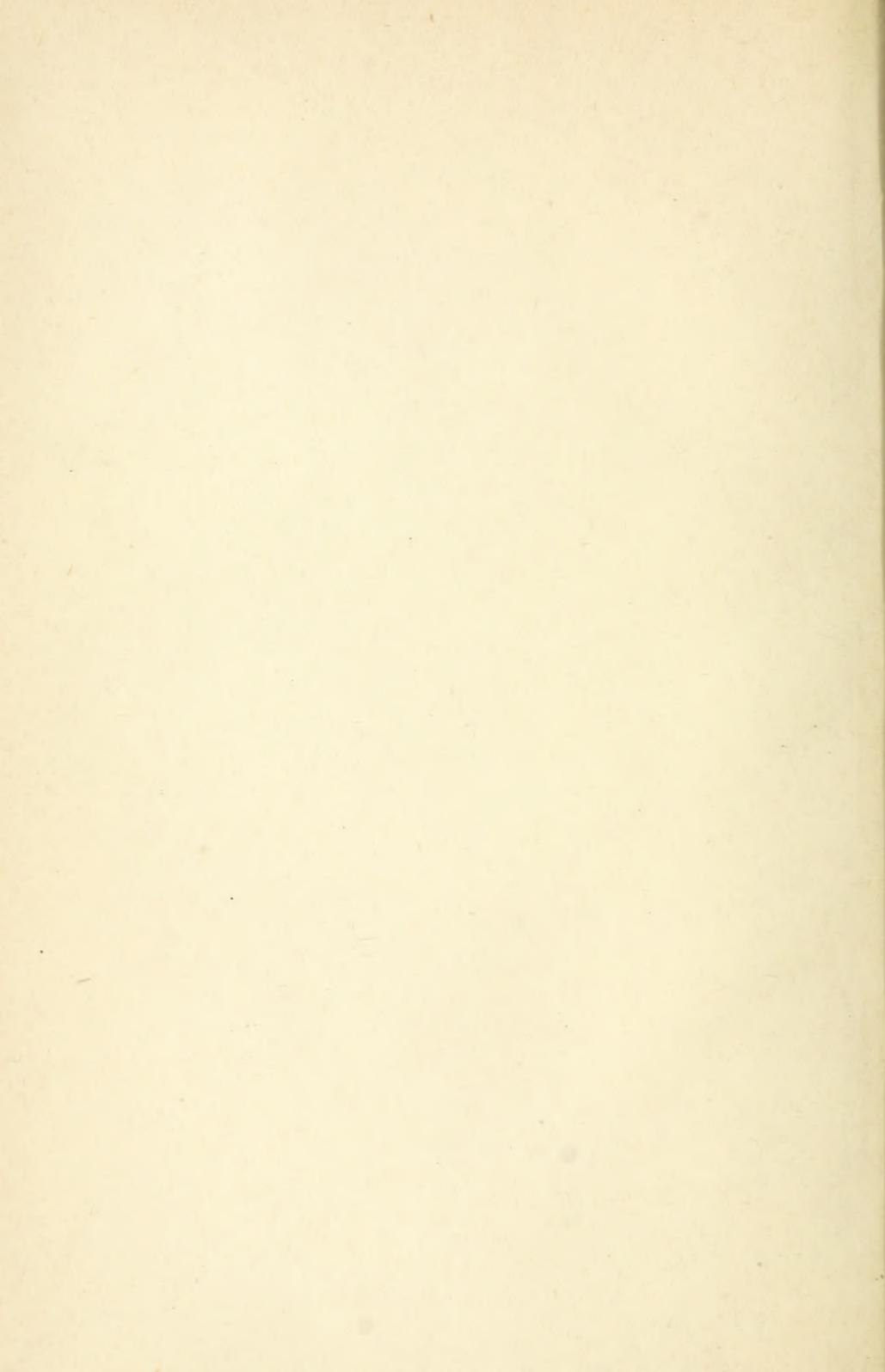
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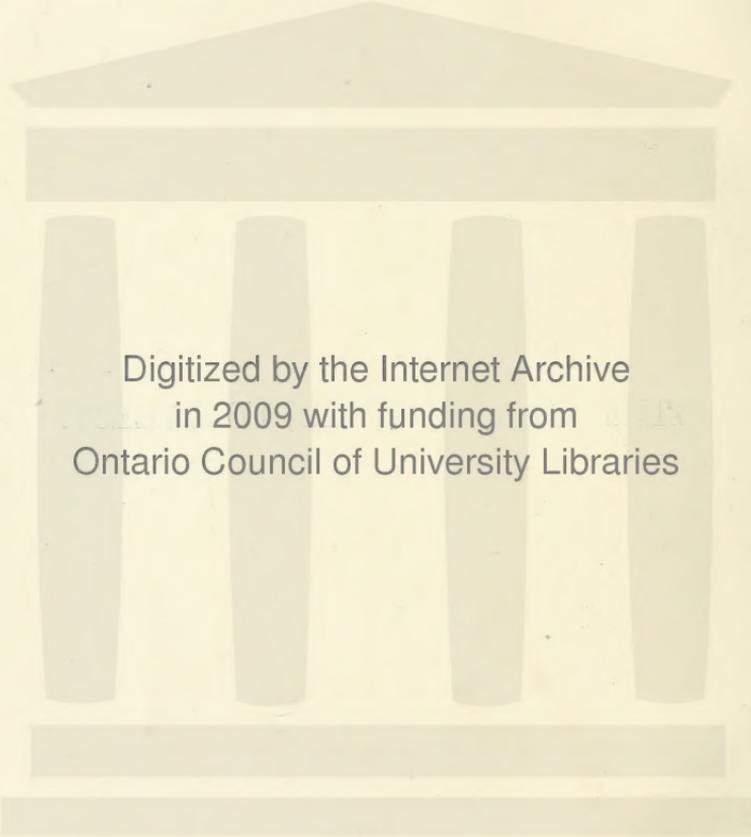






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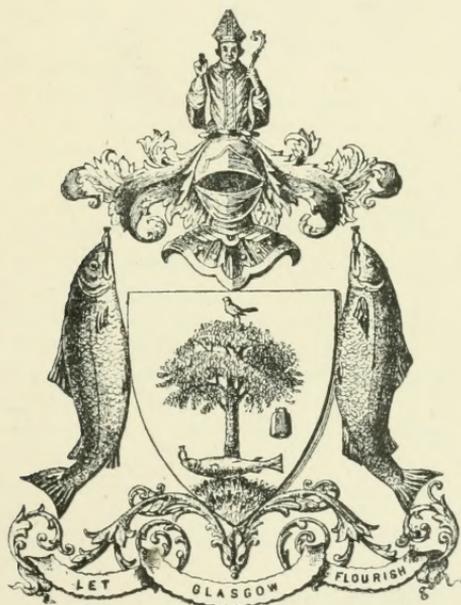
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The Glasgow :: Naturalist

THE JOURNAL OF THE
NATURAL HISTORY SOCIETY OF GLASGOW

(Including the *Transactions and Proceedings* of
the Society, Third Series).



(Vol. I.)

EDITED BY

D. A. BOYD AND JOHN PATERSON.

1909.

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The Glasgow Naturalist

The Journal of the NATURAL HISTORY SOCIETY
OF GLASGOW

(Including the *Transactions and Proceedings* of the Society, Third Series).

Vol. I., Parts 1 and 2.]

[November, 1908, and February, 1909.

A Day on the Lowther Hills.

By D. A. BOYD.

[Read 27th October, 1908.]

It is always interesting to trace the course of a great river to its head-waters, till at length the stream we have followed is found to have its beginning in a tiny rivulet oozing from a moorland swamp, or dripping from a wet rock, or gushing forth from a cool, mossy spring. It was partly to indulge this interest that I determined to pay a visit to one of the head-waters of the River Clyde; but I also desired to learn something regarding the botanical features of a comparatively remote region of the Clyde area, from which, particularly in the departments of research in which I am specially interested, almost nothing had been placed upon record. After considering the comparative merits of the various head-waters of the Clyde, my choice fell upon the Potrail, as apparently the most accessible for me, as it could be reached by an easy walk of not more than four miles from Carron Bridge Station, on the main line of the Glasgow and South-Western Railway. Accordingly, on the morning of Saturday, 30th May last, I proceeded to carry my intention into effect. Between Old Cumnock and New Cumnock Stations the line passes from the drainage area of the Clyde to that of the Solway. At this point there is little to indicate the crossing of so important a water-shed, as the ground is somewhat flat and swampy, with several little lochs lying in proximity to the railway. A short distance beyond New Cumnock the valley of the Nith is entered upon. For some miles further the landscape is rather bleak and bare, but as the old burgh-town of Sanquhar is approached a welcome change rapidly takes place in the character of the scenery. Southward from Sanquhar the banks of the Nith are richly wooded, and many fine bits of river-scenery

come into view in swift succession as the train speeds on its way. After leaving the railway at Carron Bridge Station the road follows for some distance the pleasantly wooded course of the Carron Water, but soon divides into two branches, the one to the right leading to the Kirktown of Durisdeer, and the other to the left to the Milltown of Durisdeer, and onward through the Dalveen Pass to Elvánfoot and Crawford. The respective villages around the Kirk and Mill of Durisdeer lie about a mile apart.

Turning to the right, in its approach towards Durisdeer Church the highway passes between moss-grown walls, where one is tempted to linger for a while. On the green banks along the roadside several Microfungi were noted, including *Plasmopara nivea* (Ung.) Schröt., on Beaked Parsley (*Anthriscus sylvestris*); *Peronospora grisea* (Ung.) De Bary, on Thyme-leaved Speedwell (*Veronica serpyllifolia*); *P. ficariae*, Tul., on Creeping Buttercup (*Ranunculus repens*); *Synchytrium taraxaci*, De Bary and Wor., on Dandelion (*Taraxacum officinale*: and *Protomyces macrosporus* Ung., on Goutweed (*Egopodium Podagraria*).

The Kirktown of Durisdeer is pleasantly situated, and consists of about a score of houses and buildings, of which the church itself is the most conspicuous. The latter occupies a prominent position in the churchyard, and contains a mausoleum of the Drumlanrig Douglases, whose fine residential castle and estate are situated in the southern portion of the parish. The mausoleum is esteemed one of the sights of the place. Surmounting the sepulchral vault is an aisle, with an elaborately carved marble-monument, commemorative of James, second Duke of Queensberry, and his Duchess, Mary, fourth daughter of Charles Boyle, Lord Clifford, to which lady he was married in 1685.

But besides these associations there are many others that centre around Durisdeer. Various local traditions have been preserved relating to the troublous times which prevailed throughout the south-west of Scotland during the period between the Restoration and Revolution. Close by the east wall of the church is a monument to Daniel M'Michael, a well-known Covenanter, who, early in the year 1685, was shot by a party of soldiers at the mouth of the Dalveen Pass, and was buried here.

North of the church, at the mouth of the narrow mountain pass which runs between Nithsdale and Clydesdale, are the remains of an ancient Roman station, while the pass itself was traversed by a branch of the Roman road which intersected the parish. Chalmers, the author of *Caledonia*, remarks that "this road went up Nithsdale, on the east side of the Nith, passing by the village of Thornhill, and crossing from Carron Water a little above its influx into the Nith. From this passage the road continued its course in a northerly direction, past a Roman fort in a remarkable pass above the Kirk of Durisdeer; from this pass it pushed through the hill by the defile called the Wall-path, and went down the east side of Powtrail Water to its confluence with the Dair." The pass of the Wall-path extends for about two miles by a continuous ascent; and as a strong east wind was blowing downward as through a funnel, it was traversed by the writer under circumstances which proved somewhat fatiguing. Among the plants noted on the way were *Phyllachora juncei* (Fr.) Fekl., found on culms of Rush (*Juncus communis*), and *Sphaerella vaccinii*, Cke., on leaves of Blaeberry (*Vaccinium Myrtillus*). Here, too, were obtained some specimens of a little Discomycete which has since been pronounced new to science, and named *Pseudophacidium Smithianum*, by M. Boudier, the distinguished French mycologist, who will contribute a description of the species to the *Transactions of the British Mycological Society* for 1908. As the specimens submitted to M. Boudier were obtained by the writer on the Ayrshire hills early in May, the subsequent occurrence of this little fungus within the Solway area is a fact of considerable interest.

At the head of the Wall-path Pass I obtained the first view of the hills I had come so far to explore, and it proved somewhat disappointing. They were green from base to summit, and, while very pleasant to look at, did not suggest any great wealth or variety of plant life. The streamlets meandered peacefully down their sides, and did not rush precipitately through those rocky gorges, fringed with vegetation and green with mosses, which elsewhere so often bring joy to the heart of the expectant botanist. At the head of the pass I crossed the water-shed from the area of the Solway to that of the Clyde, and entered the parish of Crawford, Lanarkshire. Proceeding slowly upward,

along the banks of the Potrail, the only plant seen which appeared worthy of notice was an inland form of Scurvy-grass (*Cochlearia officinalis*), specimens of which occurred here and there on the side of the stream. On the ascent of Little Scawd Law (1928 feet), a considerable patch of Cloudberry (*Rubus Chamemorus*), bearing its conspicuous white blossoms, was passed, while the ground was carpeted with Blaeberry (*Vaccinium Myrtillus*), intermingled with Cowberry (*V. Vitis-Idaea*), which here appeared to some extent to take the place of heather. Here, too, again occurred *Pseudophaacidium Smithianum*, Boud., the little Discomycete already referred to as new to science, thus showing its range of distribution to extend into Lanarkshire. In the descent of the north-eastern slope of Durisdeer Hill (1861 feet), after having gathered quite a bouquet of cloudberry-blossoms, I passed to the side of a spring where the bordering vegetation was conspicuous by reason of its uncommon pinky-red colour. Here a welcome discovery awaited me, for the red moss proved to be none other than *Bryum Duvalii*, Voit., for which only another Clydesdale station had yet been reported. The ditches in the bottom of the valley contained a considerable variety of mosses, of which the most conspicuous species was *Hypnum giganteum*, Schp.

The road which ascends by the Wall-path from the Nith valley to the summit of the pass continues as a rough track down the valley of the Potrail for about two miles, until it joins the main road from Elvanfoot above the head of the Dalveen Pass. Near the roadside, opposite the farm of Troloss, a little hillock is crowned with several monumental stones, commemorative of past owners of the farm, and their families and servants. At this part of the way a few Microfungi were observed, notably *Peronospora ficariae*, Tul., on Creeping Buttercup (*Ranunculus repens*); *P. grisea* (Ung.) De Bary, on Thyme-leaved Speedwell (*Veronica serpyllifolia*); *Phyllachora junci* (Fr.) Eckl., on culms of Rush (*Juncus communis*); and *Leptosphaeria acuta* (Moug.) Karst., on dead stems of Nettle (*Urtica dioica*).

Situated on a popular coach-route, the Dalveen Pass is probably too well known to call for any description here, and I may merely remark that it is well worthy of a visit. Its precipitous sides, scarred with black rocks and furrowed by the

courses of numerous streamlets, appeared to offer a far more favourable field for botanical exploration than did the grassy slopes of the Lowther and Green Lowther mountains, as seen from the head of the pass. On the lower rocks, both above the road and over the stream, the unusual luxuriance of the bushes of Blaeberry (*Vaccinium Myrtillus*), and vivid greenness of their foliage, were remarkable. Towards the foot of the pass the loose shingle on the hillside was observed to be covered in places with abundance of bright-green foliage, which, after a rough scramble, I found to be a large cluster of well-grown plants of *Cryptogramme crispata*. For a considerable distance both above and below the road the patches of loose stones were brightened by innumerable fronds of this graceful species, and I had seldom indeed seen it in greater abundance or finer condition. On a grassy spot at the foot of the pass, a monument has been erected to mark the place where Daniel M'Michael, Covenanter, fell when shot in 1685 by a party of soldiers, as already mentioned in the earlier part of this paper. In the neighbourhood of Durisdeer Mill some additional species of Microfungi were noted, including *Peronospora alta*, Fekl., on Greater Plantain (*Plantago major*): *Uromyces alchemillee* (Pers.) Wint., as *Uredo*, on Lady's Mantle (*Alchemilla vulgaris*); and *Melampsora cerastii* (Pers.) Wint., as *Uredo*, on Mouse-ear Chickweed (*Cerastium triviale*).

A pleasant walk down the valley to Carron Bridge Station brought to a close this my first visit to the Lowther range of hills.

The Birds of Lendalfoot.

By CHARLES BERRY.

[Read 24th November, 1908.]

All the birds in the following list, with two exceptions, namely, the Waxwing and Iceland Gull, have been seen within a radius of four miles from Lendalfoot, a small village on the coast of Ayr, seven miles south of Girvan. It is possible the list might have been greatly extended had I asked or taken the assistance of others, but I have thought it better not to add a

single bird but those I have myself seen and, in most cases, handled. As regards geese and swans, I have only mentioned those that I have seen killed. The list contains 162 species, 78 of which I have known to breed within the radius given above, and these are marked thus *, while 17 others, marked thus †, have bred at no great distance outside of the limits given, a few in the latter group being confined to Ailsa Craig.

* *Turdus viscivorus* (Mistle-Thrush).—Fairly common, more so than it was a few years ago. It leaves us early in October, returning early in January.

* *T. musicus* (Song-Thrush).—Very common, and increasing rapidly, probably owing to the mild winters we have had of late years. I saw a nest of this species, with young, on 6th March, 1904.

T. iliacus (Redwing).—Very irregular in making its appearance here, so much depending on the weather. In severe winters we have large numbers, while in mild seasons only a few birds are to be seen, and these usually keep well inland.

T. pilaris (Fieldfare).—Very numerous from the first week in November till about the third week in April. Flocks of many hundreds may be seen together. They never come near the sea-shore unless in hard weather.

* *T. merula* (Blackbird).—Very common at all seasons and still increasing, probably owing to the cause assigned in the case of the Song-thrush, *q.v.*

* *T. torquatus* (Ring-ouzel).—Not very plentiful; still, a few pairs breed annually in suitable places. They usually arrive here about the middle of April, and take their departure in the last week of September, but I have seen a single bird as late as the 10th of October.

* *Saxicola oenanthe* (Wheatear).—This interesting bird is very regular in making its appearance here, arriving annually on the 18th of March. The latest date of arrival for thirty years was the 25th March. The place I am sure to see it first is about half-a-mile south of Lendalfoot on a clump of rocks on the sea-shore. It remains here till near the end of November.

* *S. rubetra* (Whinchat).—Not very numerous here, while in the Stinchar valley I have seen them very plentiful. It arrives

here early in May, and takes its departure in the last days of September, occasionally remaining into October.

* *Pratincola rubicola* (Stonechat).—Not very numerous, and nearly always seen in pairs, each pair seeming to stick pretty well to the same place the year through, although there are slight changes from this rule according to the weather. I took a nest containing three fresh eggs on 30th March, 1884, an unusually early date here. It is usually nearly a month later before laying begins.

Ruticilla phoenicurus (Redstart).—Very rare. When seen, it is usually early in May. Last year (1905) I saw a female on the 20th June. It remained here for a week, and I had hopes it might be breeding, but I did not see a male bird.

* *Erithacus rubecula* (Redbreast).—Very common at all seasons.

* *Sylvia cinerea* (Whitethroat).—Fairly common. It arrives early in May, and leaves in the end of September. This bird usually builds a number of nests before the one it uses for breeding.

* *Regulus cristatus* (Golden-crested Wren).—This bird is only seen during the winter months. It is very common in the Stinchar valley, where I have taken its nest several times.

* *Phylloscopus rufus* (Chiffchaff).—Very common, usually arriving here about the 10th of April. Last year (1905) it was unusually early (25th March). The latest I have seen it here was 10th October, and the earliest I have taken its eggs the 12th May—a full clutch of seven eggs. This pretty little warbler is very numerous in the Stinchar valley.

* *P. trochilus* (Willow-Wren).—Very common, arriving about the same time as the chiffchaff, a bird it very much resembles. So much are they alike in appearance that he is a smart fellow that can tell the difference should they remain silent while under observation. I have never taken more than seven eggs in either of these two birds' nests, although eight are said to be occasionally laid. It leaves us early in October. The earliest I have seen it arrive was 26th March, 1905.

* *Acrocephalus phragmitis* (Sedge-Warbler).—This cheery little fellow is very common. Although you may not always see him, supposing he should be pretty near you, yet, I give you my word

for it, he will compel you to hear him. I have several times taken the nest of this bird suspended amongst reeds from two to three feet from the ground. It arrives here early in May, and leaves amongst the last days of September. The latest I have seen it is 12th October.

* *Locustella naevia* (Grasshopper-Warbler).—One of our rarest summer migrants, many seasons passing without a single bird being seen or heard. I have only taken its nest and eggs once.

* *Accentor modularis* (Hedge-Sparrow).—Very common at all seasons, and still increasing. I think it would be hard to find a prettier sight than the nest of this bird, especially when it has a good lining of brown cow's hair and contains a full clutch of its pretty blue eggs.

* *Cinclus aquaticus* (Dipper).—This species has increased greatly in numbers of late years, being common on all the streams in the district. It breeds early in the season, as I have taken its nest with a full clutch of five eggs as early as the 20th of March. It may seem strange when I say that although I have seen scores of Dippers' nests, I have never seen one that contained more than five eggs. I have seen it remain under water for thirty-two seconds.

* *Acredula caudata* (Long-tailed Titmouse).—Fairly common in autumn and winter, it comes down the valley right into the village and gardens, where it cleans the bushes of destructive larvæ. It is very rare in summer. I have only taken its nest and eggs once.

* *Parus major* (Great Titmouse).—Pretty numerous—more so during winter than summer.

P. ater (Coal-Titmouse).—Not common, and only seen here during autumn and winter. Fairly common in the Stinchar valley and Glen App, near Ballantrae.

* *P. palustris* (Marsh-Titmouse).—Not uncommon, and breeding here occasionally, but it is far more numerous in winter.

* *P. cæruleus* (Blue Titmouse).—Very common at all seasons, and has increased greatly of late years.

* *Troglodytes parvulus* (Wren).—Very common, and everybody seems to know it and all about it. I am often told tall stories about it and the great number of eggs it lays in a clutch, sixteen and twenty being quite common. I have never seen more than eight.

* *Certhia familiaris* (Tree-Creeper).—Pretty common, especially in winter. Very numerous in the Stinchar valley, where I have seen half-a-dozen on one tree at the same time.

* *Motacilla lugubris* (Pied Wagtail).—Fairly common. I cannot say that I know of any difference in the number of this bird for the last twenty years. It does not seem to be either increasing or decreasing. It is absent from here from early in October till February, when an odd bird may be seen, but it is near the end of March before it is in great numbers here.

M. alba (White Wagtail).—Some seasons fairly abundant, while in others not a single bird is to be seen. When seen here it is usually from the 15th to the 20th April, and occasionally it is seen in September.

* *M. melanope* (Grey Wagtail).—Not common. Occasionally a pair or so breeds on the banks of the Lendal Burn, usually on the ledge of a rock. Sometimes great numbers are to be seen in September on their return passage, when they usually remain a few days. This is a very common bird in the no great distant Stinchar valley during the summer months.

* *M. raii* (Yellow Wagtail).—Although far more common than the Grey Wagtail it is not numerous here, unless in September, when they are on their return-passage. Great numbers are occasionally to be seen then.

† *Anthus trivialis* (Tree-Pipit).—Not very common in the Lendal valley, and only seen for a few days on its arrival in April. This bird is fairly common in the Stinchar valley, where I have taken its nest and eggs.

* *A. pratensis* (Meadow-Pipit).—Very common all over the district at all seasons. I have no doubt but it will seem strange to many when I say that, although I have handled a fair number of Cuckoo's eggs, they have all been taken from the nests of the Meadow-Pipit, and all were of the same type.

* *A. obscurus* (Rock-Pipit).—Very common along the whole coast, from Girvan to Ballantrae. I have often found the nest of this species on a grassy bank on the roadside, in which cases seaweed is seldom used for building its nest.

Ampelis garrulus (Waxwing).—One was shot at Bargany, near Girvan, on the 12th December, 1903, by Mr. Thomas B. Wright, Cairnhill, Girvan.

* *Muscicapa grisola* (Spotted Flycatcher).—Fairly common, arriving early in May, and taking its departure about the end of September.

* *Hirundo rustica* (Swallow).—Very common, arriving as a rule about the middle of April. Last year (1905) I saw several on the 21st March. The latest I have seen it was 20th November, 1905, when several were flying about the village here as brisk as if it had been midsummer.

* *Chelidon urbica* (House-Martin).—Not so common as it was some years ago, probably owing to the way the house-sparrow molests it while nesting. It arrives about the middle of April, seldom remaining later than the 12th October.

* *Cotile riparia* (Sand-Martin).—Not very numerous. It arrives early in April. The earliest I have seen it, 30th March, and latest, 16th November.

* *Ligurinus chloris* (Greenfinch).—Very common at all seasons, and still increasing.

* *Carduelis elegans* (Goldfinch).—Very rare. About 20 years ago it was fairly common. I saw one here on the 18th of February, 1906. I had not seen one for four years previous. There are still a few in the Stinchar valley, where it used to breed regularly.

C. spinus (Siskin).—Rare. As a rule only seen in hard winters. I once saw six together, but single birds is the rule.

* *Passer domesticus* (House-Sparrow).—Very common at all seasons, and still increasing.

* *Fringilla cœlebs* (Chaffinch).—Very common.

F. montifringilla (Brambling).—Very rare. I shot one on the 11th February, 1900, a male and a female on the 16th of the same month, and again, a male on the 20th. These are all I have seen near Lendalfoot, while at the time they were seen here they were in hundreds at Girvan, Colmonell, and Ballantrae.

* *Linota cannabina* (Linnet).—Very abundant in autumn, when they congregate. Flocks of many hundreds may be seen together, assisting the farmer in clearing the ground of seeds that in a short time would send forth weeds that would cause him a lot of trouble and expense.

* *L. rufescens* (Lesser Redpoll).—This pretty little bird is very common. Twenty years ago it was a great rarity in the

Lendal valley, but now it is one of our commonest birds, and breeds right down the valley from Pinmore till within a very short distance of Lendal village. A short time ago two albinos were taken from a nest of this bird here.

L. flavirostris (Twite).—Not a common bird here, and when seen it is in autumn. I saw four together on 24th August, 1905. I have seen this bird caught several times here on limed twigs, with a linnet used as a call-bird.

* *Pyrrhula europæa* (Bullfinch).—Seldom seen in the Lendal valley, and then usually in autumn and winter. Very numerous in the Stinchar valley, where as many as a dozen birds have been counted on one tree.

* *Emberiza miliaria* (Corn-Bunting).—Not plentiful. They are absent from here from about the first week in October till the middle of January. In 1906 a flock of about 100 remained here for a week—a very unusual sight here.

* *E. citrinella* (Yellow Bunting).—Common at all seasons.

* *E. schoeniclus* (Reed-Bunting).—Fairly common. More numerous in summer than in winter. It breeds in nearly every marshy place in the district.

Plectrophenax nivalis (Snow-Bunting).—Very irregular in making its appearance here, being seen in hundreds in hard winters while in mild seasons not one is to be seen.

* *Sturnus vulgaris* (Starling).—When beginning to write about such an interesting and useful bird as this to the agriculturist, one would like to forget that he is writing a mere list, so that I can only say here that it is very numerous at all seasons and all over the district, and long may it continue to be so.

* *Pyrrhonorax graculus* (Chough).—I am sorry to say this pretty and interesting bird is not so plentiful here as I have seen it, still a pair or so may be seen occasionally. I have seen it breeding not far from Lendalfoot not so very long ago. I am afraid this splendid bird is decreasing quickly.

* *Pica rustica* (Magpie).—Very common here about twenty years ago, and bred annually all over the district; but now it is a great rarity, thanks to the gamekeepers. They know all about making rare birds.

* *Corvus monedula* (Jackdaw).—Very abundant, and does great service to the farmer by clearing his fields of larvæ that would be destructive to his crops; but it is said they destroy game-birds' eggs, so the gamekeepers have begun to shoot them, and, as in many other cases, I fear they will not know when to stop.

* *C. corax* (Raven).—Although so much persecuted by gamekeepers, this splendid bird seems to hold its ground pretty well. There are several places in the district where it breeds annually.

* *C. corone* (Carrion-Crow).—This is another of the gamekeepers' enemies, so that its numbers are becoming less, and quickly too, so that it will soon be a thing of the past.

* *C. cornix* (Hooded-Crow).—What I have said of the carrion-crow applies to this bird. The hooded-crow is the rarer bird here, but I have handled both the black and the grey, shot while breeding, while it is just as common to get two blacks or two greys breeding without producing what we would call a hybrid.

* *C. frugilegus* (Rook).—This is another bird that is of great use to the farmer, and fortunately it is very numerous, but, as like other members of the family it is said to be guilty of taking game-birds' eggs, we may expect to find its numbers greatly decreased ere long.

* *Alda arvensis* (Sky-Lark).—Very numerous, more so in autumn and winter, although large numbers breed all over the district.

* *Cypselus apus* (Swift).—Very common. A large number breed in an old castle near the village here.

† *Caprimulgus europæus* (Nightjar).—I think this bird is more common than is generally supposed. Owing to its concealing itself by day it is seldom seen till twilight, when it leaves its concealment in search of food. It is very common all over this district. It arrives here about the third week in May, and, as far as I can make out, leaves about the third week in September.

† *Alcedo ispida* (Kingfisher).—Never common in my day here, and when seen it is on the seashore. All that I have seen were in September. It is more common in the Stinchar valley, where I have known it to breed.

* *Cuculus canorus* (Cuckoo).—Fairly common. Some years it is more abundant than others. It arrives about the 13th April

and leaves about the 12th July, but I have seen it remain about a fortnight later.

* *Strix flammea* (White or Barn-Owl).—Not common in the Lendal valley—more common in the Stinchar and Girvan valleys.

* *Asio otus* (Long-eared Owl).—This useful owl being so partial to pine and fir-woods, it is but seldom that we are favoured with its presence; but in the valley of the Stinchar, where plenty of firs abound, it is very common, and I have seen its nest there with three young birds in the second week in March.

A. accipitrinus (Short-eared Owl).—Very rare. I have only seen three that were killed near Lendal.

* *Syrnium aluco* (Tawny Owl).—This is the commonest owl we have in the Lendal valley. In the Stinchar valley it is very numerous.

Buteo vulgaris (Buzard).—Not common. On the 27th April, 1904, I saw one about two miles from Lendalfoot, standing by the side of a small loch apparently resting itself. I have also handled several that were killed in the district.

* *Accipiter nisus* (Sparrow-Hawk).—This active little hawk, although receiving the same treatment as other hawks from the hands of the gamekeepers, is still fairly common in several parts in the district, but when seen here at Lendalfoot it is usually in autumn and winter.

Milvus iclinus (Kite).—Very rare. I saw one here in 1892. It remained for about two months. A week after it left here one was shot by a Mr. Headley, farmer, near Pinmore, possibly the same bird. The two months it was here were October and November.

* *Falco peregrinus* (Peregrine Falcon).—This noble bird is decreasing quickly, owing to the way it is persecuted by gamekeepers. Up till a few years ago this splendid falcon bred annually within two miles of Lendalfoot, and in various other parts in the district. Now it is banished from all its breeding haunts that I know of. What a pity!

† *F. asalon* (Merlin).—This hawk, like the rest of its tribe, is blamed for killing game, and so has to pay the penalty with its life. It is occasionally seen during autumn and winter, when it comes down from the moors to the shore.

* *F. tinnunculus* (Kestrel).—This useful bird is terribly persecuted on account of its being said that it kills game-birds, but I have yet to learn that it does so. I feel sure that small birds, mice, and beetles form the greater part of its diet, and I have watched it eating earth-worms. It is not nearly so common here as it was a few years ago.

† *Phalacrocorax carbo* (Cormorant).—Very common at all seasons.

† *P. graculus* (Shag).—A very common bird, but far more numerous in winter than in summer.

† *Sula bassana* (Gannet).—Very numerous. It is of great service to fishermen, as it draws their attention to the shoals of herrings. It arrives on Ailsa Craig early in February, and leaves in October.

† *Ardea cinerea* (Common Heron).—Young birds are very common in autumn and winter in the burns and on the sea-shore, but old birds are very rare.

Botaurus stellaris (Bittern).—One was shot about two miles from Lendalfoot. It was feeding in a burn when killed. This bird came into my possession, and on opening it I found that its stomach contained six trout, from four to six inches long, all of which were quite fresh. This bird was a male, but, unfortunately, I cannot lay my hands on the date it was killed, and, I fear, I have forgotten it.

Plegadis falcinellus (Glossy Ibis).—A gamekeeper named Murdo Campbell and I saw a pair on the 15th of September, 1889. They were resting at the side of a small loch about two miles from Lendalfoot. Both birds were in adult plumage.

Anser segetum (Bean-Goose).—I shot one out of a large flock, 12th December, 1891.

Bernicla leucopsis (Barnacle-Goose).—Very rare. Mr. Kennedy, Melenderdale, shot one on a pond near his house, 22nd December, 1893. Melenderdale is about three miles from Lendalfoot.

B. brenta (Brent-Goose).—Not common in this part of the Clyde. I have only seen four, two of which were killed.

Cygnus olor (Mute Swan).—Although a large number of swans are seen here during severe winters, this is the only species I have seen killed.

Tadorna cornuta (Common Sheld-Duck).—Seldom seen here, and then usually on the wing. I have seen an old Sheld-Duck with a brood of ten driven ashore here during a gale of north wind, in all likelihood from Arran, where they breed.

* *Anas boscas* (Mallard).—Common all through the year, but far more abundant in winter than summer.

A. strepera (Gadwall).—I shot one on the 21st November, 1902. There was another in its company.

Spatula clypeata (Shoveler).—One was shot on a tributary of the Stinchar, 24th October, 1904, by Mr. John M'Quaker, Craig, near Colmonell. It was a male.

* *Nettion crecca* (Teal).—Fairly common; indeed, it would be very plentiful were it not that it is shot down so, its flesh being considered good eating.

Mareca penelope (Wigeon).—Very rare here, while at the no great distant Turnberry they are very numerous during winter and early spring.

Fuligula marila (Scaup-Duck).—A regular winter visitor, although in some winters they are more numerous than others. Sometimes immense packs may be seen during a gale of wind swimming about on the lee side of a small island here, but, as a rule, in stormy weather they keep well out to sea, returning again as soon as there is a calm. By far the greater number that visit us are females and young birds, although I have counted thirty old drakes in a flock. They usually arrive here early in November, and occasionally an odd bird may be seen as late as the second week in April.

Clangula glaucion (Golden eye).—A very regular winter visitor, but the bulk of the birds that visit us are old females and young, old drakes being rare.

Harelda glacialis (Long-tailed Duck).—Rare. When seen here it is usually in November. They seldom remain here for any length of time. I have never seen more than two together.

Somateria mollissima (Common Eider Duck).—This splendid duck is only an occasional visitor here in very hard winters. I have counted as many as thirty together, males and females being about equal in numbers. In mild seasons not a single bird, as a rule, is to be seen. I have not seen one for the last four years.

Edemia nigra (Common Scoter).—A pretty regular winter-visitor, although never in any great numbers. They are very wary, and keep well out to sea, very seldom allowing a boat to approach so near them that they can be killed. They usually arrive here early in November, and take their departure about the end of March.

E. fusca (Velvet Scoter).—Of very irregular occurrence here. Like the Common Scoter they keep well off shore, and any that I have seen was when out fishing. The greatest number I have seen together is six, although one or two is the rule.

Mergus merganser (Goosander).—Very rare here. I saw one on the 15th December, 1887, and another on 27th December, 1905, both females. More common on the Stinchar and the River Girvan, where both males and females are occasionally shot.

M. serrator (Red-breasted Merganser).—Rare. I saw one on 15th December, 1901 (♂), and on 1st January, 1903, another (♀). A boy of mine found another dead (♀) on 5th December, 1905.

M. albellus (Smew).—I saw one on the 20th of December, 1903. It remained here for eight days, feeding in a small creek, where I had several good opportunities of watching its movements.

* *Columba palumbus* (Ring-Dove).—Very common at all seasons.

* *C. livia* (Rock-Dove).—I now look on this bird as a rarity, that is, in a state of purity, the greater number seen now being crossed with pigeons escaped from dove-cots. It is most surprising how soon these doves can discover any new feeding ground. Quite close to the back of my house early potatoes are planted annually. After they are lifted from the ground, barley is sown as a second crop. I have often seen the barley sown late in the afternoon, and, although not a dove had been seen for months before, I never yet failed to see the so-called rock-doves there by three or four o'clock next morning making a hearty breakfast on the farmer's barley.

Turtur communis (Turtle-Dove).—I shot one (♂) in the village of Lendalfoot on the 28th of November, 1898, the only one I have seen or heard of in the district.

* *Tetrao tetrix* (Black Grouse).—Common on all the moors in the district, great numbers coming down to the low lands in

autumn and winter. Often they come down to the sea-shore, but whether to feed or not I am at present unable to say.

* *Lagopus scoticus* (Red Grouse).—Very common.

* *Phasianus colchicus* (Pheasant).—I must confess that my knowledge of game-birds is very limited, game-laws and game-keepers being so very strict that a person dare scarcely look at them. I should say that pheasants in a wild and natural state are not very numerous, but where they are reared like domestic fowls, I suppose, numbers are a matter of taste.

* *Perdix cinerea* (Partridge).—I think they are not very numerous in this district.

* *Crex pratensis* (Corn-Crake).—Common, although it is more numerous in some seasons than in others. It arrives here about the middle of April, and takes its departure about the end of September, occasionally near the end of October, and it has been seen as late as the middle of November.

Rallus aquaticus (Water-Rail).—More common, I think, than it is generally supposed to be, it being very shy, and when near water, as it usually is, and from its habit of allowing itself to sink, only exposing its bill to the nostrils, it often escapes notice, although it may be very near a person. I have found this bird in almost every marshy place in the district, and occasionally on the shore down near to low water. I have caught old birds on several occasions at the end of April that had every appearance of breeding, but, as yet, I have failed to find either its nest or eggs.

* *Gallinula chloropus* (Moor-Hen).—Very common in every suitable place all over the district. It has increased greatly of late years. A pair has bred on an old ash tree near to this village for the last ten years. The tree has many branches, but the nest is always built in the same fork, twenty feet from the ground.

* *Fulica atra* (Common Coot).—Not common in any part of this district, but it appears to be increasing, and now breeds annually at two small lochs not far distant from Lendal.

* *Egialitis hiaticola* (Ringed Plover).—Very abundant at all seasons. On the 12th April, 1904, I saw four nests of this bird with full clutches, an unusually early date here, as it is usually about the 17th April that they begin laying. Although this

plover usually breeds on the sea-beach not far from the high-water mark, I have several times taken its nest and eggs in a ploughed field a mile and a-half inland.

† *Charadrius pluvialis* (Golden Plover).—Very common. In hard winters immense flocks come down from the moors to the sea-shore. It is very seldom seen here in summer, its nearest breeding place to Lendalfoot being about eight miles away.

Squatarola helvetica (Grey Plover).—Rare. I shot one on the 15th of September, 1874, and another on 27th September, 1882, and a third on 12th September, 1888, all in Lendal Bay, and these are all I have seen between Ballantrae and Girvan, a distance of thirteen miles.

* *Vanellus vulgaris* (Lapwing).—This useful bird is not nearly so common as it was a few years ago owing to the raids that are made on its eggs; indeed, in my opinion, the close time on its eggs has done far more harm than good. Before its eggs were protected, it was almost a general belief that it was punishable to take them, and few did so. Now that it has been made public that its eggs can be lifted up to the 15th April, there is a large number of people that do little else than gather lapwing's eggs during the open season. I am sorry to have to say that the lifting of the bird's eggs does not always stop on the 15th of April, as there are some people who gather them in the open season and sell them to the highest bidder. After the 15th of April they have customers that buy them as long as the birds have strength to lay them. I am grieved to say that this is done in many cases by those that have a far better way of living. As the season advances great numbers of Lapwings may be seen lying dead in the fields and moors. In 1905, in the month of June, I had occasion to pass through the best part that I know of in the district for Lapwing's eggs. I saw a good many nests with one egg each, the others empty, showing, what I know to be true, that they are watched and the eggs lifted every day just like domestic fowls. More might be said. There ought to be something done in the way of giving it better protection, seeing it is such a useful bird to the agriculturist.

Streptilas interpres (Turnstone).—Very common on Ardwell shore, about three miles south of Girvan, while at Lendalfoot it is a rarity, the shore not being so suitable for feeding.

* *Hamatopus ostralegus* (Oyster-Catcher).—Fairly common at all seasons, and more abundant in winter than in summer.

Phalaropus fulicarius (Grey Phalarope).—I found one (♂) dead on the shore on 9th October, 1904.

Scolopax rusticola (Woodcock).—Not very numerous. In very hard seasons I have seen large numbers on the seashore, many of them in a very weakly state.

* *Gallinago caelestis* (Common-Snipe).—Very common. More numerous in winter than summer, still many remain to breed. I have seen a full clutch laid in the middle of March.

G. gallinula (Jack-Snipe).—Although much rarer than the Common Snipe, still a fair number may be seen during winter and early spring.

Tringa alpina (Dunlin).—Fairly common in May and September, but seldom remaining here for any length of time.

T. minuta (Little-Stint).—While I can't call this a common bird, I think I would be just about as far from the mark were I to call it a rarity, seeing that I have shot them several times both in Lendal Bay and Ballantrae Bay. I have shot four in a day. All I have seen occurred in September.

T. subarquata (Curlew-Sandpiper).—I shot one on the 30th September, 1904, a female, and saw another on 2nd February, 1906.

T. striata (Purple Sandpiper).—Fairly common. Its time of arrival here is usually about the middle of October, and if there should chance to be a gale of wind from the north or north-west about that time, I am sure to find a few of them about thirty yards from my house, but should it be fine I have seen November well through before they arrived. In 1906, up till the time this is written (27th January), I have not seen a single one at Lendalfoot, a very unusual thing.

T. canutus (Knot).—Very rare. A gamekeeper and I shot three out of five, 15th May, 1882 (1 ♂ and 2 ♀). I have not seen another knot since anywhere between Ballantrae and Girvan.

Calidris arenaria (Sanderling).—While not so rare as either the Knot or the Grey Plover, it is not a common bird anywhere between Ballantrae and Girvan. The greatest number I have seen together was eight. I have only seen them in September. They never remain here for any length of time.

* *Totanus hypoleucus* (Common Sandpiper).—A few years ago this bird was very common here, many breeding on the banks of the Lendal burn. We seldom have more than a pair or two now. It is very common on the banks of the Stinchar.

* *T. calidris* (Redshank).—Very common, especially in winter. It breeds in almost every suitable place in the district, from within about one hundred yards of the sea to twelve miles inland.

T. canescens (Greenshank).—Very rare. I shot one on 27th September, 1883, a female. First noticed near Lendal, I had to follow it for five miles before it came within shooting range.

Limosa lapponica (Bar-tailed Godwit).—Not very common. The greatest number I have seen together was four (in May with Whimbrels), but the rule is single birds, usually in September.

* *Numenius arquata* (Common Curlew).—Very common at all seasons. Of course they are far more numerous on the shore in winter than in summer owing to their breeding inland.

N. phaeopus (Whimbrel).—Not very numerous, still there are few years that pass but we have a call from them. The largest number I have seen together is eight.

Sterna cantiaca (Sandwich Tern).—Very rare. I saw a pair on 12th May, 1898. They were resting on a box that was kept afloat in the sea, and at anchor, for keeping lobsters alive. The birds seemed to be very tired, and allowed the boat to approach within four yards of them. Both were in adult plumage.

† *S. fluviatilis* (Common Tern).—Up to a few years ago this pretty tern only paid us a visit in autumn, remaining only a short time. About seven years ago I saw some in Lendal Bay from early in June till well over in autumn, and was much disappointed at not finding them breeding, as I felt pretty sure they must have been doing so somewhere in the district. In July, 1904, Mr. Alfred Lamb, Ballantrae, told me that they bred near Ballantrae, a large colony amounting to several hundreds, and that they had bred there for about seven years. On 7th June, 1905, I called on Mr. Lamb, who kindly gave me the use of his boat and directed me to where the Terns had bred. I was rather disappointed in the number of birds, there being only about fifteen pairs. I found two nests, with two eggs each, and one with three eggs. I had not far to seek for the decrease in the numbers of the birds, as every here and there were small heaps

of stones that I felt sure had been used in former years as guides to the nests when the birds were laying. I also observed a great number of empty cartridge-cases lying all over the place, which told their own story.

Larus minutus (Little Gull).—Very rare. I shot one (♀), 16th December, 1902, after a gale of north-west wind. It was feeding on maggots amongst decayed seaweed. It was very tame.

* *L. ridibundus* (Black-headed Gull).—Very common. There is a small loch called Drumbowie, about a mile and a-half from Lendalfoot, where a small colony of five or six hundred birds has bred since 1883. I have seen eggs taken as early as the 3rd April. There are several larger colonies in the district.

L. canus (Common Gull).—This is one of the rarest of gulls at Lendalfoot.

† *L. argentatus* (Herring-Gull).—Very common. It arrives on Ailsa Craig early in March, and leaves in October.

† *L. fuscus* (Lesser Black-backed Gull).—Very common, arriving and taking its departure about the same time as the Herring-Gull.

L. marinus (Great Black-backed Gull).—Fairly common in winter and spring, usually seen in pairs. It has been said that a few pairs of this Gull breed on Ailsa Craig. Although I have examined a good many Gull's eggs that were taken there, I have never seen an egg of this species among them. Whatever it may have done in the past, I fear at the present time it does not breed there.

L. leucopterus (Iceland Gull).—One was shot at Girvan Harbour on 19th January, 1903, a male in immature plumage, by Mr. A. McCreddie, who kindly presented it to me.

† *Rissa tridactyla* (Kittiwake Gull).—Very common. It arrives on Ailsa Craig in the end of April, and leaves in September.

Megalastria catarrhactes (Great Skua).—One seen, 22nd October, 1907, about two miles north of Lendalfoot.

Stercorarius pomatorhinus (Pomatorhine Skua).—Only seen occasionally, usually in September. Any that I have seen were in immature plumage.

S. crepidatus (Richardson's Skua).—Like the last species only seen occasionally. I have a fine old male I shot many years

ago in Lendal Bay—one of the light form, and I shot an adult—of the sooty form—on the 11th April, 1904. Birds in immature plumage are more common, and are usually seen in September.

† *Alca torda* (Razorbill).—Very numerous, arriving on Ailsa Craig about 28th February, and leaving about 1st August. When the razorbills have hatched their young, they often pay us a visit here when in search of young herrings for feeding their young, often coming very close inshore.

† *Uria troile* (Guillemot).—These birds very seldom pay us a visit here. They usually keep well out to sea, so that a person wishing to have a good look at them must go out in a boat for a mile or two or, better still, to Ailsa, where they arrive and depart about the same time as the last species.

U. grylle (Black Guillemot).—Not very common. I have only seen it in winter. Though this species has been shot on Ailsa Craig in summer, neither the eggs nor young have ever been taken there as far as I know.

Mergulus alle (Little Auk).—One was found dead on the shore half a mile south of Lendalfoot on 9th February, 1906, by a fisherman. This bird came into my possession. Another found near Colmonell after a northerly gale many years ago I also got. Both these birds were males. The only one I ever saw alive was on 25th February, 1885, off Bannan Head, when returning from the fishing.

† *Fratercula arctica* (Puffin).—Arrives on Ailsa Craig about 12th April, sometimes earlier and sometimes later, according to the season. Like the Guillemot the Puffin seldom comes near the shore. I am indebted to Mr. Gib. Graham, Girvan, for the dates of the appearances and departures of the rock-birds on Ailsa Craig.

Colymbus glacialis (Great Nothern Diver).—Fairly common, and is to be seen the greater part of the year. It often comes to grief by being caught in the salmon-nets. The finest specimen I ever saw was caught in this way at Turnberry on 21st May, 1903.

C. arcticus (Black-throated Diver).—Not nearly so common as the last or the next species. I have seen it taken in salmon-nets, but it is seldom seen here.

C. septentrionalis (Red-throated Diver).—By far the commonest of the divers here, and is usually seen during winter and early spring.

Podiceps cristatus (Great crested Grebe).—One shot in Woodland Bay, a mile and a-half south of Girvan, on 24th December, 1902, by Mr. George Purdon.

P. griseigena (Red-necked Grebe).—On the shore on 27th March, 1882, I found a male in immature plumage dead.

P. nigricollis (Eared Grebe).—I shot a male in the sea, near Lendalfoot, on 27th January, 1906. It was here for a month before I was able to secure it. Its stomach contained an immense number of "opossum" shrimps, also a good number of feathers apparently from its own body.

* *P. fluviatilis* (Little Grebe).—Not very common. I have killed several in the sea. It breeds occasionally in the neighbourhood.

† *Procellaria peiagica* (Storm-Petrel).—Fairly common in this part of the Firth of Clyde. I have handled both old and young and eggs that were taken on Ailsa Craig. On rare occasions it comes very close inshore. I remember once watching one while I was sitting in the shelter of a rock during a strong gale of north-west wind. A very heavy sea was running at the time, but the little fellow seemed quite at home. Several times I saw it touch the water with its feet, advancing forward with outspread wings, and skimming about in rather curious fashion. Now and again it would dip its bill in the water. I thought it probable it would be feeding on some small crustaceans. I have handled several that have come to grief through being driven far inland.

Puffinus gravis (Great Shearwater).—I found one dead on the shore in Lendal Bay on 3rd October, 1904, a female.

P. anglorum (Manx Shearwater).—A boy of mine found one dead on the shore, a male, on 21st September, 1904.

Fulmarus glacialis (Fulmar).—Four have been found dead at different times over the past ten years, all, however, in good condition, the last a female, on 14th July, 1897. Another female, in good condition, was caught in a field at the back of my house, alive, on 3rd February, 1908, during a strong gale from the north-west.

A division of the Dipterous genus *Phora*, *Latr.*,
into sub-genera.

By J. R. MALLOCH.

[Read 27th September, 1908.]

ONE of the points which strikes the beginner in the study of the Phoridae is the immense number of species in *Phora*, *Latr.*, and, to anyone who has an acquaintanceship with the other groups of Diptera, the retention in one genus of so many species which can with accuracy be divided into a number of sub-genera is remarkable. In point of fact the retention of this method of classification is not, in my opinion, in accordance with the generally accepted ideas of genera. In proposing to sub-divide this genus I do not take the initiative, as in America Mr. C. T. Brues has already divided it into four sub-genera, if we reckon *Plastophora* as including *formicarum*, *Virr.*, which, according to Dr. Wood, it can hardly do. While this division has obviated the use of Becker's Group I. and Group II. definitions for those species with reclinate and proclinate post-antennal bristles respectively, I fear that the genus *Aphiochaeta* will require to be still further sub-divided to prove useful. The characters which I have used to distinguish the sub-genera in the following table are those used by Dr. Wood in his monograph on the British species, which appeared in the *Entomologists' Monthly Magazine* in 1907, to separate the groups of species, and these characters are evidently constant. Small although the points of difference may be at first sight, it is evident, upon close examination, that they separate groups of species which may be said to be the descendants of parent-species possessing those characters which are now possessed by those groups. By sub-dividing groups like this large one into a few smaller groups, we facilitate the study of the species, and, leaving out of consideration even that potential fact, I firmly believe that where a number of groups of species are recognisable by the possession of one or more characters in common, those species might be placed in sub-genera. These are the considerations which have caused me to undertake the creation of the sub-genera in this article.

In the following table I have included *Hypocera*, Brues, and *Aphiocheta*, Brues, as they are both represented in our British species:—

TABLE OF GENERA.

- 1 (14) Anterior frontal bristles reclinate.
 2 (12) Mid tibiæ with two strong bristles at the base.
 3 (13) Third thick vein forked.
 4 (5) Fourth thin vein indistinct or abbreviated, tibial bristles weak, - - - - - 5. *Trupheoneura*, n.g.
 5 (4) Fourth thin vein generally distinct and always reaching the margin.
 6 (7) Third thick vein with short bristles, 2. *Chatoneura*, n.g.
 7 (6) Third thick vein bare.
 8 (11) Scutellum with four bristles.
 9 (10) Sub-apical spine on mid tibiæ small and weak, situated on the outer side near the tip; hind tibiæ with a row of small bristles on the outer hinder side in addition to any stronger bristles which may be present; anal protuberance long and finger-like; first thin vein almost straight at base, - - - - - 4. *Phora*, Latr.
 10 (9) Mid tibiæ, with sub-apical spine always well developed and situated on the outer side at about one-third from the apex; hind marginal small bristles absent; first thin vein bent at base, - - - - - 3. *Spiniphora*, n.g.
 11 (8) Scutellum, with two bristles, one hind tibial bristle, sub-apical mid-tibial bristle weak or absent, frontal bristles strong, - - - - - 6. *Stenophora*, n.g.
 12 (2) Mid tibiæ, with one basal bristle; frontal bristles comparatively weak, - - - - - 7. *Woodia*, n.g.
 13 (3) Third thick vein unforked, - 1. *Hypocera*, Brues.
 14 (1) Anterior frontal bristles proclinate, - 8. *Aphiocheta*, Brues.

The order in which these genera ought to appear in the list is, in one or two cases, not very clear, but if *Conicera* is the genus immediately preceding the first of these, and *vitripennis*, Mg., and *citreifformis*, Beck., be included in *Hypocera*, Brues, there is no doubt that that genus should come first, and if the almost entire absence of spines on the legs may be said to be an

approach to *Aphiochaeta*, then *Woodia* should appear next to that genus.

Hypocera, Brues, is distinguished from *Conicera*, Mg., in the Table of Phoridae given in *Williston's Manual of North American Diptera, 1908*, by its having the third antennal joint usually rounded, and the seventh vein (fourth thin vein) distinct. The wing figured in the above publication as *Hypocera* is similar to that of *femorata*, Mg. This definition would, therefore, include the following British species: *mordellaria*, Flor.; *incrassata*, Mg.; *carinifrons*, Ztt.; *femorata*, Mg.; *citreiformis*, Beck.; and *vitripennis*, Mg. The European species *coronata*, Beck.; *agilis*, Mg.; and *bernuthi*, Egg., will also fall into this genus, unless *agilis* may be more properly referable to *Chatoneura*. The third vein is stated to be generally unforked, and the exact position of the species in any table of genera would require to depend upon other characters.

Chatoneura, nov. gen.—This genus is easily distinguished from its allies by the bristly vein. The species so far described are all large and easily separated from each other. In all the species the scutellum has four bristles, the mid tibiae have two basal and one sub-apical spines all equally developed, the costa reaches beyond the middle of the wing, the first thin vein is distinctly bent at its base, and the fourth thin vein is distinct. The British species of the genus are *urbana*, Mg.; *fennica*, Beck.; *thoracica*, Mg.; and *curvinervis*, Beck. The only other species which I know of with the bristles on the third vein are *agilis*, Mg., and *Hypocera mordellaria*, Flor.

Spiniphora, nov. gen.—This genus is possibly more nearly related to the foregoing than to *Phora*, Latr., with which it is compared in the foregoing table, but the absence of the bristles on the third vein places it in a systematic table at least nearer *Phora*. The characters possessed in common by the species are—scutellum with four bristles, fore tibiae with one bristle, mid tibiae with three equally large bristles situated two on the basal third and one on about the base of the apical third; the first thin vein is distinctly bent at its base, and the fourth thin vein is distinct. The British species of the genus are *dorsalis*, Beck.; *Bergenstammii*, Mik.; *maculata*, Mg.; *domestica*, Wood; and *erythronata*, Stobl. The European species which evidently fall into this genus are

excisa, Beck.; *bohemanni*, Beck.; *chlorogastra*, Beck.; and *unicarata*, Beck. The peculiar species *spinosissima*, Strobl., may be more properly referable to *Dorniphora*, Dahl., it certainly does not seem to be congeneric with those species above-mentioned.

Phora, Latr.—In this genus I have placed the oldest species, so far as I know, of the group now under consideration, viz., *abdominalis* Fln., = *florea*, Fab. (1794). Besides the fact of this species being possibly the oldest, the other species, except *abbreviata*, v. Ros., are the commonest of the group. The species are all very similar in form, and the long anal protuberance of the ♂ ♂ serves to distinguish them from other *Phoridae* at a glance. The characters common to all the species are—apical spine on mid-tibiæ very small; hind tibiæ with an outer hind marginal row of small bristles; anal protuberance of ♂ very prominent; first thin vein nearly straight at its base, and four distinct thin veins. The British species of the genus are—*abdominalis*, Fln.; *abbreviata*, v. Ros.; *crassicornis*, Mg.; and *concinna*, Mg.

Trupheoneura, nov. gen.—This genus is, under the present arrangement, the largest so far as the number of species is concerned, and is one of the most characteristic. The species have all the fourth thin vein abbreviated or indistinct (*lugubris* ♀), and the tibial armature is weak. The number of scutellar bristles varies from two to four, some species having two bristles and two hairs. The general colour of the group is black, and the genitalia are usually large and very complicated. The species occur in late autumn, and through the winter to the spring. Taken all over, this is a very distinct group. The British species are—*palposa*, Ztt.; *trinervis*, Beck.; *perennis*, Mg.; *vitrea*, Wood; *luteifemorata*, Wood; *lugubris*, Mg.; *intermedia*, Mall.; *opaca*, Mg.; and *subluquoris*, Wood.

Stenophora, nov. gen.—This genus of very active little species is very generally distributed, and may be distinguished by the scutellum having only two bristles, the mid tibiæ two basal and one very weak apical bristles, the hind tibiæ one hind bristle; the third vein is forked, and there are four thin veins present. The British species of the genus are—*unispinosa*, Ztt.; *nudi-palpis*, Beck.; *autumnalis*, Beck.; and *pubericornis*, Mall. The cavernicolous species *aptina*, Schin., may be congeneric with these species.

Woodia, nov. gen.—This peculiar genus is closely allied to *Stenophora* in general appearance but differs in the almost entire absence of the tibial bristles. The scutellum has two bristles; the frontal bristles are very weak, especially the anterior row; the legs are very long and in the ♂ much thickened. In both sexes there is a small spine present at near the base of the mid tibia; the wings have the costa to about the middle of the wing; the third thick vein is forked and much dilated in both sexes; four thin veins present. The only British species is *gracilis*, Wood, which was described in 1907 by Dr. J. H. Wood, after whom the genus is named. *Aphiochorta*, Brues, contains all those species with the anterior frontal bristles proclinate, but as there is such an immense number of species, and so many groups that can be defined at least as sub-genera, the likelihood is that the name will have to be restricted to some particular group. I do not at present know the generic distinctions other than that mentioned, so I cannot say whether or not it embraces all our British species, but it is unlikely that this genus, founded on one particular character, common probably to some hundreds of species, will remain long unbroken. Many of the Dipterous groups are broken into genera upon much less strongly marked distinctions than those possessed by the species in *Aphiochorta*.

Notes on the Eagles of Ayrshire.

By JOHN PATERSON.

[Read 22nd December, 1908.]

HOWEVER hard it may be, there is no recourse left to the naturalist but to reconcile himself to the inevitable changes in a country's fauna, even when these involve the disappearance of a race of birds possessed, traditionally at least, of some of the attributes of nobility. While there is no recourse, there might be some compensation were the mistakes of the past redeemed as

much as possible by a more enlightened policy in the future, but unhappily it is too often the case that, as Coleridge has said, experience to most people is like the side-lights of a ship, which illumine only the track over which the vessel has passed. So far as the subject of these notes is concerned, it has to be said that the Eagles of Ayrshire are so much things of the past that they must quickly escape human memory, and consequently there is nothing left to be done but to gather together such notices of their existence in past time as remain. The earliest notice of Eagles in Galloway that I have seen is in an article on "The Glenkens in the Olden Time" in the *Transactions of the Natural History and Antiquarian Society of Dumfries and Galloway*, 1895-6, where it is stated, on the authority of one Symson (1684), that Eagles, both grey and black, bred in Galloway. Fully a century later the *Statistical Account of Scotland* appeared, but the accounts of Ayrshire parishes in that work in the meagre notices of the natural history of the county contain no references to Eagles. In 1811, however, appeared Aiton's *General View of the Agriculture of Ayr*, and in this work we are informed that "Eagles formerly abounded so much about Loch Doon, in the higher parts of Carrick, as to prove formidable enemies to the helpless sheep for many miles round their haunts. They have been much reduced in their numbers by the shepherds, but they are by no means extirpated. They still hatch in the most inaccessible rocks, and occasionally carry off, in their powerful talons, a lamb to feed themselves and their young."

In 1812, the year following the publication of Aiton's work, in the issue of the *Dumfries Courier* of 11th August, the following interesting notice appears:—"On the island of one of the lochs on the farm of Stair, Parish of Straiton, and County of Ayr, the Eagle has from time immemorial fixed his residence, and from his almost inaccessible eyrie made incursions and committed depredations on the lambs, the moor-game, and the poultry in that neighbourhood. The following stratagem was lately successfully employed to root out the family of the sovereign of the feathered tribes. An adventurous youth swam to the island and brought away an Eaglet from the nest, which he tethered on the shore of the loch, and planted traps close by

it. The two parents, coming to the relief of their young one, were by this means ensnared. The female had her leg broken, and though, owing to her not being pinioned when taken from the trap, she made her escape and soared out of sight, yet from the circumstance of her bill being tied fast with a string, it is supposed she has perished. The male was caught by one of his toes, and though encumbered with a trap seven pounds in weight, he flew across the loch with it suspended to his foot, but being taken when he alighted he was brought here and exhibited for a day or two. His colour is light grey, with a belt of pure white across his tail." For this information, and for a letter which I shall shortly quote, I am indebted to Mr. Robert Service, of Dumfries. I may here say, however, that it appears, from the letter just mentioned, that the hero of this episode was William Gemmell, who was later for many years gamekeeper to Sir John Cathcart, in the Cumnock district. Gemmell was still living and in Dalmellington in 1886. The loch where the incident above narrated took place is identified in this letter as Loch Mackaterick. Though beyond our borders, it may be mentioned that Sir Herbert Maxwell tells a picturesque story of the last Galloway Eagle—a bird taken from an eyrie on Cairnsmore of Fleet in 1834, which escaped from confinement in 1836, the yard which was its prison being destroyed by a great gale in that year. What was believed to be the same bird was killed by a packman in January, 1837. This was the Golden Eagle, but it appears from Sir Herbert's narrative that the White-tailed or Sea-Eagle bred on Cairnsmore till 1862, when the old birds were destroyed, as he says, "by some ever-to-be-execrated gamekeeper." One of their progeny, however, taken in 1858, survived as a captive at Cairnsmore House till the summer of 1900—so that, with the closing of the nineteenth century there disappeared one of the last living links of the long chain of Golden and White-tailed Eagles bred south of Forth and Tweed.

Returning to 1837, there appears under that year the accounts of the Ayrshire parishes of Straiton and Dalmellington in the *New Statistical Account of Scotland*. In the account of Straiton we read:—"Two pairs of Eagles usually have their eyries in the higher part of the parish, and one more than seven

feet between the extremities of the wings was lately shot on the farm of Stair (*New Statistical Account of Scotland*.—"Ayrshire"—page 336). In the account of Dalmellington we read:—"Wild ducks abound in the Bogton Loch, and frequently tempt the Eagle from the Star mountains to a comfortable meal." In a letter, dated Ayr, 20th, 1886, Mr. S. White writes to a Mr. Bruce—"The only birds of the tribe you mention which have built in the district about Loch Doon or Loch Enoch are the Falcon and Buzzard since I commenced to travel the hills. Within the last forty or fifty years, however, what was called the Eagle used to breed somewhere on the Starr Hills, and they used to visit down about Berbeth and the Bogton Loch, but of what species they were I am not certain. They used to pay the district an occasional visit years after they had ceased to build their nest in it, and I have frequently seen them. There were two different sizes of them, the one a good deal larger than the other, but I can hardly think they were of the Osprey sort." Ospreys built in the region Mr. White refers to at the period he writes about, and he may very well have seen this species and a species of Eagle without distinguishing them specifically.

The account of the Parish of Carsphairn, in Kirkeudbrightshire, in the *New Statistical Account of Scotland*, dated 1844, contains the following:—"The Eagle is frequently seen soaring betwixt Cairnsmuir and Carline's Cairn, but his place of greatest security is about the rocky mountains of Star, in the Parish of Straiton." From Mr. Service's notebook, under date 18th September, 1886, we get the following information:—"Mr. Welsh, tea merchant, Dumfries, informs me that in 1849 he knew that the Golden Eagle bred in Ach-na-top, near the Ayrshire march." At a meeting of this Society on 24th May, 1862 (*Proc. N. H. Socy., Glasgow, I.* page 39), Robert Gray continues "An account of Ailsa Craig and its birds from personal observation," and enumerated, on Mr. Wm. Sinclair's authority, the birds observed by latter while living night and day on the Craig during part of a season eight years ago. The account of this paper in the *Proceedings* states that "among the more important of those were the Golden Eagle and White-tailed Sea-Eagle, both of which are now but rarely seen." This would be about 1854. In 1862, it may be remembered, Sir Herbert Maxwell

tells us of the destruction of the Cairnsmore of Fleet birds. To *The Ibis*, in 1865, Mr. A. G. More contributed his paper on "Distribution of Birds in Great Britain during the Nesting Season," and the information therein relating to Ayrshire was supplied by Gray. There we are told that the Golden Eagle has "ceased to nest in Ayr."

The next link is from Mr. Service's notebook, under date 25th September, 1886, where we read:—"Mr. Hastings, taxidermist, Dumfries, tells me that 'about twenty years ago he saw a fine White-tailed Eagle, before it was skinned, in the possession of Thomas Maxwell, Allanton Mill, Dumfriesshire (a man whom I knew well), that had been shot somewhere in the Starr Hills.'"

In April, 1869, when Gray and Anderson's "Birds of Ayrshire and Wigtownshire" was submitted to this Society (*Proc. N. H. Socy., Glasgow, I.* page 273), the Golden Eagle was described as then but a stray visitant to Ailsa Craig, "especially in Spring, when the rabbits are being trapped and disembowelled on the rock," while in the account of the White-tailed Eagle we are told that "within the last thirty years this Eagle has been gradually becoming scarcer, and can now only be regarded as a very rare straggler. Wandering examples of the bird are still met with in the Firth of Clyde, resting occasionally on Ailsa Craig, where the species formerly had an eyrie." According to Mr. Service's notebook, January 25th, 1881, Mr. James Ferguson told him that "Eagles" bred on the Ayrshire side, near Loch Doon, in 1870, but Mr. Service adds a note that he does not put much reliance *on the date*.

The last note bearing on our subject is based on conversation which Mr. John Robertson and I had in 1896, when staying at the head of Loch Doon for a few days with Mungo Baird, an elderly shepherd. Baird told us he last saw an eagle at Loch Doon in 1881, and that formerly (forty years ago—about 1850-60) they were not uncommon in Dee. Baird told us that a former nesting site in the Loch Doon district was at the Slock of Mullwharchar.

With the Cryptogamic Society of Scotland and British
Mycological Society at Drumnadrochit.

By D. A. BOYD.

[Read 27th October, 1908.]

THE thirty-third annual conference of the Cryptogamic Society of Scotland was this year so arranged as to be held jointly with the meetings of the British Mycological Society at Drumnadrochit, Inverness-shire. The united party numbered 32.

The first excursion took place on Tuesday, 15th September, to the woods and policies of Beaufort Castle, near Beaully, which were explored by the kind permission of the proprietor, Lord Lovat. The long drive over the hills between Drumnadrochit and Beaufort added greatly to the enjoyment of the excursion. On arrival at Beaufort, the visitors were met by Mr. Brown, forester, and conducted by him through the woods. The young pine plantation at Dunballoch was found to be particularly rich in fungi, and one of the most interesting discoveries was a species of *Tricholoma* unknown to the mycologists present. Some species, occasionally found sparingly in our own district, occurred here in unusual abundance. Among these were *Hydnum auriscalpium*, Linn., hundreds of which grew upon decaying fir cones; and *Spathularia clavata* (Schæff.) Sacc., numerous groups of which were observed in the wood. Among the parasitic micro-fungi noted were *Puccinia arenarie* (Schum.) Wint., on *Sagina procumbens*; *Pseudopeziza cerastiorum* (Wallr.) Fekl., on *Cerastium triviale*; and *Ephelina prunelle*, A. L. Sm., on *Prunella vulgaris*. The last-mentioned species is interesting as a recent addition to the British Flora from specimens obtained in the Clyde area. Attention was directed to the damage occasioned by *Fomes annosus*. Fr. (*Trametes radiciperda*, Hartig), which is developed on the roots of living pine-trees, and proves very destructive to the growing timber. For the protection of the trees, deep trenches had been dug in the ground at various places, so as to arrest the progress of the parasite, and prevent its access to unaffected areas.

In the evening the visitors were entertained to dinner at Balmacaan House, with true highland hospitality, by Mr. Bradley Martin, President of the Cryptogamic Society for the current year. In replying to a vote of thanks, he referred to various species enumerated in a list of fungi found in North Carolina, many of which were also common to the British flora.

On Wednesday the 16th, and Thursday the 17th September forays were made to the woods in Glen Urquhart, access to which was kindly granted by Mr. Bradley Martin. Here, too, were observed many interesting forms seldom, if ever, seen in southern districts. On Wednesday evening the annual meeting of the Cryptogamic Society was held, when the usual reports were submitted. It was unanimously agreed that next year's conference should be held at Stranraer. The annual meeting of the British Mycological Society was held the same evening, when the President, Mr. Carlton Rea, B.C.L., M.A., delivered an address "On Basidia and Spores, and the Classification suggested by their Study." The latter society also met on Thursday evening, when various papers were read. In a paper on "Some New British Micro-fungi," Miss A. Lorrain Smith, F.L.S., referred to the various species which had been added to the flora of the British Isles during the past year. Most of these, it may be noted, were from Scotland, and from our own western district. In a paper on "The American Gooseberry-Blight (*Spherotheca mors-uvæ*, Berk. and Curt.)," Professor R. H. Biffen, M.A., Cambridge, described this destructive parasite, which has threatened to wipe out the gooseberry-crop in the United States, and has during recent years been introduced to England, where it has spread over many of the southern counties. A paper, illustrated with lantern views, "On the Sexuality of the Ascomycetes," was read by Miss H. C. I. Fraser, D.Sc., F.L.S. Mr. W. C. Crawford, M.A., F.R.S.E., exhibited a series of beautifully-coloured lantern slides, illustrative of various species of agarics and others of the larger fungi.

During the course of the conference, a named collection of the larger fungi obtained at the excursions was laid out for inspection in a small hall in the village, and proved a source of attraction, not only to the members of the Society present, but to many visitors from the hotel and village, who seemed much interested in

observing the great variety in size, form, and colour of the species represented. Among the most notable fungi on view were *Lepiota gracilentata* (Krombh.) Fr., *Armillaria robusta* (A. and S.) Fr., *Tricholoma equestris* (L.) Fr., *Clitocybe fumosa* (Pers.) Fr., *Collybia semitalis* Fr., *C. mephitica* Fr., *Mycena rosella* Fr., *Pleurotus decorus* Fr., *Pholiota caperata* (Pers.) Fr., *P. spectabilis* Fr., *Inocybe hystrix* Fr., *I. calamistrata* Fr., *Cortinarius (Myxacium) mucifluus* Fr., *C. (Dermocybe) lepidopus* Cke., *Hygrophorus russo-coriaceus* B. and Br., *Lactarius sanguifluus* Fr., *Fistulina hepatica* Fr., *Fomes applanatus* (Pers.) Fr., *Polyporus Schweinitzii* Fr., *P. umbellatus* Fr., *Hydnum imbricatum* Linn., *Sparassis crispa* Fr., *S. laminosa* Fr., *Clavaria pistillaris* Linn., *Bulgariella pulla* (Fr.) Karst., *Cordyceps ophioglossoides* (Ehrh.) Link., *Elaphomyces variegatus* Vitt., &c.

A large number of microfungi, extending to 150 species, and including several rare and interesting forms, were also observed during the excursions. Despite the comparative scarceness of some of the larger fungi usually abundant in ordinary seasons, the result of the forays proved satisfactory, and the conference was regarded as one of the most interesting and successful which has been held in recent years.

Jottings from my Note-book.

By CHARLES BERRY.

[Read 22nd December, 1908.]

IN May, 1901, a Blackbird (*Turdus merula*) and a Song Thrush (*T. musicus*) paired, and built a nest in which were laid four eggs, from which four birds were hatched, about twenty yards from my house at Lendalfoot, Ayr. The nest was built in a white-thorn, and about three feet from the ground. I was naturally much interested in this pair of birds, and kept a good look-out, as I intended to rear one of the young. The bush the nest was built in grew at the side of a footpath that led to our village well, so that there was a lot of traffic passed it, and the school

boys soon got wind of it. As a consequence, first one bird, then another got killed, till only one remained. This last was in the nest when it was twelve days old, but on looking in on the following day it was gone. On searching about for it, I found it amongst some weeds, and put it back in the nest, thinking it young enough to rear by hand, but I did not again see it on returning. I could see no difference in the appearance of this bird from a young blackbird of the same age. The old blackbird was unusually shy, and only once did I see him on the nest while incubation was going on, as he always disappeared from the other side of the tree when I approached.

In the summer of 1902 Rats (*Mus decumanus*) were very numerous in the valley of Lendal. They took to eating birds' eggs at such a rate that few escaped them, and, in many cases, the birds were eaten also. Several times I caught them in the act of eating eggs. On one occasion I was looking through a hawthorn to see if there was any nests when I saw a rat standing with its hind legs on a branch and its fore legs inside a blackbird's nest. Its head was down in the nest so that I could not see what it was doing, but, on giving a branch a slight shake, it raised its head. On seeing me, it looked to one side, then to the other, as if taking its bearings, then began to back very gently out of the nest. When clear of it, it had another good look all round. The branch being too delicate for it to turn, it again backed for about a foot, had another good look round, and, seeing the way clear of branches below, dropped right to the ground, a distance of four feet, and made off into the nearest cover. I was so much interested in its movements, it went about its work in such a masterly way that I could not think of killing the rascal. When it was gone, I looked into the nest, but all that was left was about half an egg, with part of a bird in it that would probably have been out of the shell in a few days. A few days later I chanced to be passing a sand-bank near the shore, where a burn had washed the sand away, forming a slanting bank. On this bank a number of blackbirds had built their nests. These nests were built with dry sea-weed, and lined with the fine roots of bents. I tried to remove several of these nests, but found I could not do so by taking hold of the exposed part of it without destroying it, so, pushing my hands well down

in the sand below the nest, I was then able to lift it without harming it. I was surprised at the weight of these nests, and, on examining them, I found that the birds had scratched a hole in the sand and put soft clay in it. This was done, I suppose, to prevent the nest from slipping on the slanting bank. The fact of the blackbirds building there would, no doubt, be due to the rats repeatedly robbing them of their eggs.

While walking through a field one day, just as I was passing a large rock I caught sight of something that looked strange. Some weeds had been gathered from the field and thrown down in a loose way close to the side of the rock, and on top of this heap of weeds was built a kind of spire with the weeds themselves. When first I saw it the spire measured eighteen inches in height, and was twelve inches at the base, gradually tapering upwards. I examined it well and felt pretty sure it had not been done by human hands, and so made up my mind to watch, and in due time I had the pleasure of seeing an ordinary blackbird's nest built on the top of it. From the base of the spire to the top of the nest when finished it measured three feet four inches. Just above the nest was a piece of rock projecting out eighteen inches, and to a person standing in front of it the nest was quite hidden. Between the nest and the projecting rock there was just room for the bird to pass in and out. Surely not a bad piece of planning in a blackbird (*Turdus merula*), and I cannot help thinking that the bird had the protection of the projecting rock in view from the start, and that this was the sole cause of the spire being built.

In the month of January, 1894, I was engaged with others repairing an embankment on the side of the public road between Girvan and Lendalfoot, that had been washed away by a high tide. There had been a good spell of frost, and snow was lying on the ground, so that birds suffered terribly. On going out to start work one morning I saw a pair of Stonechats (*Pratincola rubicola*), male and female, in a very deplorable looking state, apparently suffering from cold and hunger. On starting work, and after we had turned over a large stone, the two stonechats made their way into the hole that was left by the removal of the stone. I observed the male bird pick up something, probably a sandhopper, and give it to his mate who swallowed it greedily. This was repeated several times. Next morning on going out to

work the female stonechat was nowhere to be seen, no doubt having perished. The male bird kept hanging about all day but that was the last that was seen of him. I may add that in the two following years I did not see a single stonechat in the district.

In the beginning of June, 1881, while walking along a road here, I heard a slight flutter, and, on looking in the direction the sound came from, I saw something fluttering out from the side of a large rock. I crossed a wall to see what was going on, and was surprised to see a young Chaffinch (*Fringilla cœlebs*), fully fledged, entangled with a piece of sheep's wool. The wool was fast to a sprig of ivy close to the nest the chaffinch had been hatched in, and the other end of the wool was fast around one of the bird's legs. The leg was twisted out of shape and much thicker than the other. Judging from the appearance of the nest, I think the bird must have been entangled for a long time. The parent birds had fed it all the time. I need scarcely add that I gave the little fellow his liberty, which he seemed to enjoy.

Burns on Trees and Birds.

By JOHN PATERSON.

[Read 26th January, 1909.]

THE English poet, Cowper, Burns's great contemporary, has said—

“The love of Nature's works
Is an ingredient in the compound, man,
Infused at the creation of the kind.”

The claim is a large one, and is hardly borne out by the fact that it is only within the last two centuries that the sentiment of nature-love has appeared as a claimant for a much larger share in English literature, and for increased importance as one of its elements. As one of those who derived direct from nature, like his predecessors in Scottish literature, Burns presents no nature-problem or nature-philosophy to expound or explain. His was a “bare-foot muse,” as Mr. Lowell says, and the chief formative influences in his life as regards nature, were his environment and his occupation, the latter taking him, from his youth up, out

into the great world of out-of-doors in all seasons. Infinitely more than of any other poet of note could this be said of him, that all through life he had been familiar with

“The seasons’ difference, as the icy fang,
And churlish chiding of the winter’s wind.”

The country in which he was reared is pleasantly varied, but without striking physical features, and it is common knowledge that, though during the most active period of his poetical production, while residing at Mossgiel, he would have on all clear days within his purview the splendid range of the hills of Arran, the fact nowhere appears in his verse. There is evidence of a positive nature, indeed, that to him the hills were only a kind of horror. He writes from Arrochar, during a tour in June, 1787, “I write this on my tour through a country where savage streams tumble over savage mountains, thinly overspread with savage flocks, which sparingly support as savage inhabitants;” and again referring to his tour through the Highlands, he went “many miles through a wild country among cliffs grey with eternal snows, and gloomy, savage glens, till I crossed Spey and went down the stream through Strathspey, so famous in Scottish music.” The correspondence of Burns is indeed most singularly barren of any references to nature or to natural objects or phenomena, and an oft-quoted letter to Mrs. Dunlop does not show him at his best. He writes, “I have some favourite flowers in spring, among which are the mountain-daisy, the hare-bell, the fox-glove, the wild-brier rose, the budding birch, and the hoary hawthorn, that I view and hang over with particular delight.” It is to be feared, however, that at Lochlea or Mossgiel, or in the woods of Ballochmyle, he would have had some difficulty in hanging over the hare-bell or fox-glove in spring, and as for the budding birch and hoary hawthorn, a curious tale will call for attention later. Though quoted by Lockhart, Carlyle, &c., with approbation and enthusiasm, this passage is a bit of purely conventional writing.

Mention has been made of the absence of allusions to mountains in Burns’s works, but of some of the physical features of the country with which he had all along been familiar, he has made a liberal use, especially of its burns and rivers, and he has not neglected to give credit to them for a share in his education.

In his local patriotic endeavour to sing the praises of the streams of Ayrshire he has not fallen short of his ideal. The music of rills and streams, as has been said, runs through all his work. "Bonnie Doon," which needs no explanation; "well-fed Irwine," referring to its tributaries; "Auld hermit Ayr," from its well-wooded banks; the "haunted Garpal," "brawling Coil," and "stately Lugar," Girvan's "fairy-haunted stream," the Feal, which "wild woody coverts hide," and Greenock winding its "moorland course," testify to the poet's happy faculty of conveying to his reader the characters of his streams often in a single word.

When the veracity and sincerity which, by the consensus of opinion, distinguished Burns's poetry in the vernacular, and his faculty for conveying a picture in a line, sometimes in an epithet, are considered, it is indeed curious how readily he fell into a fatal habit of using, in a conventional way, a few pet phrases to describe or introduce but two or three trees into his pictures. In this respect he fell conspicuously behind his English contemporary, Cowper, while the distance between Tennyson and Burns in this respect is immeasurable. Burns's trees are pretty much like a scene-shifter's tree machinery, restricted in range and conventional in design. One might be led, indeed, to think that there must have been a paucity of trees in the districts in which he lived and wrote, so few kinds are honoured with mention, and among them two or three preponderate to such an extent. But this is not so. There must have been a good deal of planting along the river valleys at any rate. Does the line in the "Vision,"

"Auld hermit Ayr staw through his woods,"

and the reference in his *Commonplace Book* to "the romantic woodlands and sequestered scenes on Aire," not point to a river lost to view under thickly-wooded banks, conditions which actually exist at the present time? Indeed, some wood of great size extant in Burns's time has been cut down for very many years. Thus the Beech Holm on the Ayr, just below the auld brig at Barskimming, is traditionally pointed to as the scene of the composition of "Man was made to mourn." A photograph in my possession, taken from a painting, shows this holm

before it was denuded, as it has been for several decades, of all its trees; and their stumps, which show them to have been of great size, remain as witnesses of the condition of things that existed in the poet's time. It is true that Cowper opens one of his poems with the lines,

“ In Scotia's realm, where trees are few,
Nor even shrubs abound ;”

but this could not be held to apply to the districts about Ayr or Mauchline. No part of lowland Scotland known to me boasts of more sylvan roads, the beech being universally planted in lines and strips. Exact information regarding the date of this very extensive planting of beeches by the roadsides in the Mauchline district of Ayrshire is not available at the moment, but some light is thrown on the subject if we bear in mind that much of our finest beech dates from the first half of the eighteenth century—that, indeed, seems to have been the period when the planting of this species was most in vogue. I am indebted to Mr. John Renwick and Mr. Hugh Boyd Watt for some of the following particulars relating to this matter. In Dr. Walker's *Essays* (1812) we are told that “the beech was not copiously planted in Scotland till a little before and after the Revolution.” Mr. Renwick has measured beeches planted at Auchencruive about 1700. At Loudon is one planted before 1714, and the laird of Loudon's planting was interrupted by his departure to take part in the stirring events of 1715. At Dalziel are beeches planted in 1721, and others planted in 1732 at Nether Pollock. At Dawick Sir James Nasmyth began planting about 1725, and the beech there is said to be “far beyond the average of Scottish woods.” At Blair Drummond, along the side of the Teith, there is “a grand row,” planted between 1725 and 1730 by James Drummond, the second laird of Blair Drummond, who died in 1739,* while at Gask there is a “row of splendid” beeches, under which the Laird of Gask regaled Prince Charles's soldiers in 1745.† The low wall under the celebrated Meikleour Beech-hedge was in course of erection in 1745, but the workmen then employed left the work unfinished to take part in the

* Hunter's “Woods, Forests, and Estates of Perthshire (1883).”

† *Op. cit.*, page 203.

battle of Culloden. The hedge itself was planted in 1746 or earlier. The great beech-wood so familiar to us near Glasgow, Cadder Wilderness, was designed to represent the arrangement of lines in the battle of Dettingen (1743), and from the size of the wood we should say immediately thereafter.* From a consideration of the great amount of beech planting in the first half of the eighteenth century throughout Scotland, and the measurements we have of many of these trees taken at different times, from the extent to which the Mauchline district shared in this popularity of the beech, and the fact that Burns was not born till nine years after the close of the half century when this fashion obtained, one cannot avoid the conclusion, that in his time the aspect of the country in respect of planting was different from what has been represented by some recent writers. The poet himself supports this view in representing Sundrum as "hid behind a spreading wood," in speaking of Lord Glenlee at Barskimming roving through "many a wild, romantic grove," and in praying for the greenness of the woods around the Castle o' Montgomery. But while the country probably had many beeches, with birches rare by comparison, the poet's verse is full of birks which are either scented, fragrant, or budding, while the beech is only referred to in the "Verses on the destruction of the Woods near Drumlanrig." Indeed, speaking of trees, when you take out of the poems and songs the milk-white thorns and fragrant birks, little remains. Burns has left nothing to delight the tree lover's heart unless the "ashes cool" and "close embow'ring thorn" in "The humble petition of Bruar Water to the Noble Duke of Athol" to have its banks clothed with trees, a petition which, by the way, was granted. This poem shows Burns's interest in the subject on general grounds, though he has done so little to adorn it in particular cases. So far as the introduction of trees into his poems is concerned, literature is reduced to a cult reminding one of the lines in Cowper's "Table Talk"—

"From him who rears a poem lank and long,
To him who strains his all into a song,
Perhaps some bonny Caledonian air,
All birks and braes, though he was never there."

New Statistical Account of Scotland, Lanarkshire, pages 403-4.

Burns might "never have been there," he did his tree work in the language of a literary tradition or convention. We still wait a poetical description of that effect revealed in photographs of burgeoning beech-woods, while the Scotch elm or Wych-elm, the highest expression of tree-form in these latitudes, with its exquisite lines and delicate spring tracery, is all about and around us, mutely waiting its interpreter. In an interesting passage in his *Præterita* (Vol. II. Ch. iv.) Mr. Ruskin tells of the day, when still a young man, that when drawing a small aspen-tree against the blue sky in Fontainebleau he had a great revelation. He says—"But that all the trees of the wood (for I saw surely that my little aspen was only one of their millions) should be beautiful—more than Gothic tracery, more than Greek vase-imagery, more than the daintiest embroiderers of the East could embroider, or the artfullest painters of the West could limn—this was indeed an end to all former thoughts with me, an insight into a new sylvan world."

That revelation never came to Burns.

It would be impossible to make a comparison between Tennyson and Burns respecting the treatment of trees in their poetry. In proof of this it is only necessary to turn to "In Memoriam," where we are told of the yew that its "gloom is kindled at the tips, and passes into gloom again," where the laburnums are "dropping wells of fire," where the witch-elms "counterchange the floor" of the "flat lawn with dusk and bright," and the "towering sycamore" appears with all its "breadth and height of foliage;" where "rosy plumelets tuft the larch;" where the beech "gathers brown," and the maple "burns itself away."

It is quite a pleasure to turn from this part of the subject to what relates to birds in the poems and songs. Attention has been drawn to the contradictory references to flowers and trees in Burns's oft-quoted letter to Mrs. Dunlop, but the sentence in that letter which refers to birds is a credit to its author, and, as there are few references to birds in his prose, it deserves to be quoted. It is as follows:—"I never hear the loud solitary whistle of the curlew in a summer noon, or the wild cadence of a troop of gray plover in an autumnal morning, without feeling an elevation of soul like the enthusiasm of devotion or poetry."

Directness, sincerity, and close observation are in the main the characteristic features of Burns's references to the feathered tribes. In the poetical works I find some 35 species of birds mentioned. In this number, however, are three that call for a word of explanation. These are the grey plover above mentioned, the stock-dove, and wood-lark. The grey plover (*Squatarola helvetica*) nests within the Arctic circle in the short Arctic summer, and is seen upon our shores in passage northwards in spring and early summer, and again on the return passage in autumn. It is, then, a bird of passage only, and if Burns ever saw a troop of grey plover in an autumnal morning it must have been an accident, and he could have no knowledge of their specific identity. What, as a worker in the fields, he must have been familiar with at all seasons more or less, with the exception of summer, when the birds were at their nesting haunts on the moors, is the golden plover (*Charadrius pluvialis*), and the several references to grey plovers in his works undoubtedly point to this species. The stock-dove (*Columba oenas*), again, has only become a well-known Scottish bird within the past two decades, and it is not clear how Burns came to allude to it. He knew our common wood-pigeon or ring-dove (*C. palumbus*), the cushat, well enough, and mentions it several times. The third bird in the list calling for a word of explanation is the wood-lark, the only bird which has a song specifically addressed to itself. The wood-lark (*Alauda arborea*) is a bird quite unknown to Scottish ornithology. It is confined to portions of England and Ireland. The bird addressed by Burns was no doubt the tree-pipit (*Anthus trivialis*), unfortunately miscalled the wood-lark in many parts of Scotland. It is a summer visitor to Scottish woodlands, is comparatively common, and has a beautiful clear canary-like song. In appearance it is quite like a lark, to which it is nearly related.

In the "Elegy on Captain Matthew Henderson" the following occur among other verses relating to birds:—

"Mourn, ye wee songsters o' the wood ;
 Ye grouse that crap the heather bud ;
 Ye curlews, calling thro' a clud ;
 Ye whistling plover ;
 And mourn, ye whirring paitrick brood ;
 He's gane for ever !

Mourn, sooty coots and speckled teals ;
 Ye fisher herons, watching eels ;
 Ye duck and drake, wi' airy wheels
 Circling the lake ;
 Ye bitterns, till the quagmire reels,
 Rair for his sake !
 Mourn, clam'ring craiks, at close o' day,
 'Mang fields o' flow'ring clover gay !
 And when ye wing your annual way
 Frae our cauld shore,
 Tell thae far warlds wha lies in clay,
 Wham we deplore."

Felicitous description and close observation here go hand in hand, and in the case of each species mentioned something characteristic is noted. Flights of whistling plovers must have been familiar to Burns at most seasons, as has already been said. They seem to have touched his imagination nearly, and the "birring" or "whirring pairicks scraichin' loud at e'en," as he says in his epistle to John Lapraik, are referred to again and again, always with an onomatopoetic epithet recalling the curious call-note of the species. Working much in the busy spring-season in the fields in a good partridge-country, Burns from his youth up would be familiar with that note which he has variously rendered, and which, often repeated at dusk and in the early evening, is one of the most characteristic of spring sounds in the life of the fields. The "Sooty coots" mentioned are again referred to in the song called "Menie," in the line,

"The wanton coot the water skims."

This is a bit of nice observation, and anyone anxious to know what is meant can easily learn by visiting Possil Marsh, three miles north of the place we are met, on an early summer evening. There, as elsewhere, coots, during the excitement of pairing and nesting, indulge in a curious "play," which consists in skimming over the surface of the water, making a great noise, and using their legs and feet as if in the act of running on the water. The reference to the bittern making the "quagmire reel" is most interesting. This remarkable bird is now only an irregular winter visitor to this country, but a century or two since, when much of the land on the low grounds was still unreclaimed, some pairs nested here. The male of this species makes a

remarkable booming noise in the breeding season, whence it is called the "butter bumps," or "bull of the bog," or the "blutter frae the boggie." It is probable that Burns, in his description of it, reflected a personal experience.

There is some temptation to linger on this aspect of Burns's work, but one quotation more by way of illustration from the "Song composed in August" must suffice for this part of our subject—

"The partridge loves the fruitful fells ;
 The plover loves the mountains ;
 The woodcock haunts the lonely dells ;
 The soaring hern the fountains :
 Thro' lofty groves the cushat roves,
 The path of man to shun it ;
 The hazel-bush o'erhangs the thrush,
 The spreading thorn the linnet."

Birds, as we have seen, most powerfully appealed to Burns, who acknowledges them, with a fine turn of sentiment, to be his masters. It may be possible to find among the very numerous references to the "commoners of air," as he called them, some that are conventional, but, taking a line through the mass of them, they are distinguished by fidelity to nature, and by a wide range of subject, both features in striking contrast to his use of trees, as we have seen. So far as his treatment of natural objects is concerned, to take him as has been done is to take him at his worst and at his best. No poet that I am acquainted with has made the same happy and extensive use of birds as he, and it is done withal so sympathetically that in reading his work one feels himself in the company of one who "feelingly persuades" us that "nature's chapel clerks," as the old makars called the birds, ministered to him in his work and his leisure in the open, and in their little joys and sorrows reflected his own.

In any critical review of the list of birds in Burns's work, it is necessary to point out that some species are mentioned only poetically, as the raven—"Come in thy raven plumage, night"—while others, like the "bizzard-gled" and the "gos," we can never probably be quite safe in assigning specifically, through the confused compound of the buzzard and the kite or gled in the one case, and the popular use of "gos" (Goshawk)

for the peregrine falcon in the other. Then there is the mention of the stock-dove, of which, as has already been said, no explanation occurs to me of how Burns came to refer to it. The eagle, the erne ("sailing yearns") and possibly the swan should also be left out of the list of birds which it may be fairly supposed Burns speaks of with personal knowledge, as members of our native avi-fauna. To the ornithologist there is still left a list of great interest, because although, historically speaking, the time in which Burns lived and wrote may be quite recent, ornithologically speaking it is very remote. The history of a Scottish county in an ornithological sense, begins usually with the meagre notices of birds to be found in the *Statistical Account of Scotland*, 1791-3, but the student of the ornithology of Ayrshire, will find a better and a fuller picture of the birds of that county in the poetry of Burns, than in all the accounts of all the parishes by their respective ministers, written a year or two after the poet had ceased to reside there.

Burns is thus, in point of time, our first authority on the birds of Ayrshire. It is interesting to notice that the bullfinch, pheasant, starling, and "geese" are mentioned in the accounts of various parishes, and are not found in Burns, while, on the poet's side, the following are mentioned and do not appear in any of the parochial accounts:—coot, rook ("craw"), corncrake ("craik"), goldfinch ("gowdspink"), hawks (Sp. ?); heron ("hern"), hooded-crow ("hoodie-craw"), linnet (Sp. ?), magpie ("pyet"), owls (Sp. ?) ("houlets"), redbreast ("robin"), and teal. In this comparison the poet is not credited with the mention of any species the identity of which is doubtful, or which for other reasons above stated is excluded from the list given below.

List of birds that Burns introduced into his poems, probably from personal knowledge:—

Blackbird (*Turdus merula*), the "merle."

Bittern (*Botaurus stellaris*), referred to under its English name, and the "blutter frae the boggie" of the old song "My Hoggie" is probably a reference to this species, not to the common snipe as is some times stated, although the heather-bleat is an Ayrshire name for the snipe. In the *Statistical Account* of Galston parish (1791) there is a well-known reference to the "hether blutter,

perhaps it is the bittern (it makes a loud roaring noise),” which settles the contemporary use of “heather-blutter” for the bittern.

Coot (*Fulica atra*), the “sooty coot.”

Ringdove (*Columba palumbus*), the “cushat.”

Common Curlew (*Numenius arquata*), the “whaup.”

Cuckoo (*Cuculus canorus*), the “gowk.”

Corncrake (*Crex pratensis*), the “craik.”

Goldfinch (*Carduelis elegans*), the “gowdspink.”

Grouse (*Lagopus scoticus*), the “moorfowl,” “moorcock,” and “moorhen”—the last not to be confused with the English moorhen (*Gallinula chloropus*), better known in Scotland as the water-hen or “stankie-hen.”

Hawks (spp. ?).

Common Heron (*Ardea cinerea*), the “grave sage hern.”

Hooded Crow (*Corvus cornix*), the “hoodie-craw.”

Lapwing (*Vanellus vulgaris*).

Linnet, the “lintwhite,” probably to be understood generically as embracing the grey linnet, green linnet, and chaffinch, none of them being specifically mentioned, and all of them being no doubt common in Burns’s time.

Mallard (*Anas boscas*).

Magpie (*Pica rustica*), the “pyet.”

Owls (spp. ?), “houlets.”

Partridge (*Perdix cinerea*), the “paitrick.”

Plover, “grey,” should be golden plover (*Charadrius plumialis*).

Redbreast (*Erithacus rubecula*), the “robin.”

Rook (*Corvus frugilegus*), as the “craw” in the line “The black’ning trains o’ craws to their repose.” In a letter to Mrs. Dunlop, dated 17th December, 1788, the poet writes: “I had better been a rook or a magpie at once.” There is nothing to show that he distinguished the carrion-crow (*C. corone*), however appropriate to that species the line “And flee o’er the hills like a craw, man,” may appear, as the comparison might equally well have been inspired by the rook.

Skylark (*Alauda arvensis*), the “laverock.”

Song-Thrush (*Turdus musicus*), the “mavis.”

Swallow (*Hirundo rustica*).

Teal (*Nettion crecca*), the “speckled teal.”

Woodcock (*Scolopax rusticula*).

Wood-lark, to be understood as the Tree-pipit (*Anthus trivialis*).

Of the general impression of the face of nature on the fancy of the poet, we can truly say that this in all its moods is reflected in every page of his work. Though not to be reckoned as our greatest pictorial artist, a claim made on substantial grounds for Scott, he still had a sympathetic glance, which has enabled him to convey to his readers an endless variety of Ayrshire landscapes, while as the poet of weather he has no rival, a fact to be attributed in large measure to his life having been spent perforce in the open air. No part of his work is distinguished by a greater combination of force and ease, than the vignettes from his immediate surroundings, which we find scattered throughout his poems. With some faculty for the essential unity of effect demanded in a picture, he combined a graphic power and a feeling for atmosphere which greatly atoned for a comparative lack of feeling for colour, and eye for form, two characteristics which Scott possessed in measure exceeding any other poet.

As the poet of winter he is supreme. To the old makars this season appealed in vain in any poetic aspect, but a careful perusal of Burns's poetry reveals the curious fact that, to his imagination, it had a quite peculiar attraction. Familiarity breeds contempt, and none of our poets, save Hogg, had the same opportunity as he of getting the feeling of dread, born of an indoor habit, dissipated by a hardening and constant contact with our severe climate.

Responsive to nature in all the varied moods in which she expresses herself in these latitudes, he was, in the case of some groups of natural objects, such as birds, a close observer. All animate things appealed to him with peculiar force, and he helped to bring this to the front as a new element in our literature, but while he thus had a share in introducing new elements he still used nature like the older poets. The spiritual and symbolical elements which appear in Shelley and Wordsworth he had no share in, nor in the love for mountain scenery which distinguished his successors. But he has used the "vision and the faculty divine" with which he was endowed to enrich our literature of description, and of natural objects, to no inconsiderable extent, and for this service alone he deserves our affectionate remembrance, apart from all the rest that we are indebted to him for.

CHARLES BERRY.

It is with great regret that we record in the first number of this Journal the death of Mr. Charles Berry, which took place at his residence in Lendalfoot, on the 1st of February, 1909. He had been in failing health for the past two years, and the fears of his friends that he would not survive the present winter, have unhappily been realised. Born in Girvan, Mr. Berry, then quite a child, was removed with the family to Lendalfoot fifty-three years ago. From his youth up he was an ardent student of the natural history of the attractive region in which his lot was cast, and he collected for his own purposes discriminately many of the mammals, birds, &c., of the district, which he preserved himself, latterly with great skill. His occupation as a fisherman widened his horizon and increased his opportunities of observation. To the past two generations of naturalists and geologists in the West of Scotland, his has been a familiar name, and many members of our Society have visited him from time to time in his home at Lendalfoot, and have had the advantage of hearing from his own lips, with the graphic power which was a characteristic of his speech, the history of many of his specimens. The list of the birds of Lendalfoot which appears in this Journal (*ante*, pp. 5-23) his friends will regret that he did not live to see in this form. Always accessible to those interested in the subjects of his studies, Mr. Berry has left a pleasant memory for his friends to cherish. A man of great sensibility and strong feelings, his convictions were tempered by the tenderness which comes of wide views. He was a widower at the time of his death, and is survived by two sons.

MISS CATHCART OF AUCHENDRANE.

Miss Jane Adelaide Cathcart, of Auchendrane, Ayr, joined the Society on 28th November, 1905.

Members of the Society had previously, in March, 1896, September 1902, and August, 1905, visited Auchendrane to inspect the fine trees growing there, such as the row of fine Silver Firs planted in 1707 to commemorate the Union of the English and the Scottish Parliaments, and the beautiful Birch planted in 1818, and on the last-named visit to take photographs. The interest thus

shown caused her to become a member, and present to the Society photographs of two of her trees, the Birch and the Scots Fir. In 1906 the Society arranged an excursion on the Spring Holiday to the neighbourhood of Auchendrane and, on her invitation, visited her estate. In 1907, the bi-centenary year of the planting of the Union Firs, the Society again visited Auchendrane and were hospitably entertained. Other visits by members were made on several occasions.

Miss Cathcart was the eldest of "the three Sisters of Auchendrane," all of whom were alive on the occasion of the earlier visits of members of the Society above mentioned. Miss Mary Cathcart died in May, 1905, aged 82, Miss Margaret E. Cathcart in January, 1907. Miss Cathcart was born 24th May, 1820, and died 25th January, 1909, at the ripe age of 88 years. They were buried in the churchyard of Alloway. They were of the finest type of county ladies, dignified, courteous, kindly, interested in the affairs of the country, the county, the estate. Miss Cathcart seemed to know every one of her trees, and could tell "how and where they came from, and were planted by her tree-loving ancestors," of the row of Norwegian Pines, or Silver Firs, planted by her ancestor John Muir, in 1707; of the Scots Fir planted at the same time; of the Silver Fir planted by her great grandfather, Dr. Muir, in 1757; of trees planted by her grandfather, Lord Alloway, which are doing very well now; of the Birch planted by her mother, and how it came from Hamburg in 1818; of the rare trees planted by her father in the avenue; of the Scots Fir that up till about 30 years ago had a remarkable branch, much prized and admired, which they called the "wishing branch," and in which they thoroughly believed, as they knew of two wishes made under it and both came true! She could explain that a strange grass (*Poa Chaiwii*, Vill.) was originally brought from Switzerland by the "Old Laird," her great grandfather.

The information as to the exact age of these trees is of great value. Miss Cathcart welcomed visitors who were interested in her favourites, and last year was gratified to "find that the grand old trees have become an Education now," Schoolmasters besieging her "for a holiday here for their young peoples' benefit."

Proceedings of the Society.

THE first meeting of the Fifty-eighth Session took place on 29th September, 1908, Mr. D. A. Boyd, President, in the chair.

Reports on excursions to Rosneath, Ben Voirlich, and Hunterston were read.

The observations made at Hunterston, as reported by Mr. Boyd, were confined to micro-fungi, of which the following species were gathered:—

Bremia lactuce, Regel., on *Senecio elegans*; *Puccinia menthae*, Pers., on *Mentha*; *P. malvacearum*, Mont., on *Althea rosea*; *Melampsora farinosa* (Pers.), Schröt., on *Salix caprea*; *M. betulina* (Pers.), Wint., on *Betula alba*; *Uncinula aceris* (DC.), Sacc., on leaves of *Acer Pseudo-Platanus*; *Phyllosticta tiliae*, Sacc. & Speg., on leaves of *Tilia*; *Coniothyrium concentricum*, Desm., on dead leaves of *Yucca*; *Septoria petroselinii*, Desm., on *Petroselinum sativum*; *S. stachydis*, Rob. & Desm., on *Stachys sylvatica*; *Phleospora aceris* (Lib.), Sacc., on *Acer Pseudo-Platanus*; *Melasmia acerina*, Lév., on *Acer Pseudo-Platanus*; *M. punctata*, Sacc. & Roum., on *Acer Pseudo-Platanus*; *Glæosporium umbrinellum*, B. & Br., on *Quercus Robur*; *G. betulæ* (Lib.), Mont., on *Betula alba*; *Cladosporium fulvum*, Cke., on *Solanum Lycopersicum*.

Mr. Boyd exhibited the following mosses and fungi:—*Neckera pumila*, Hedw., on trees, Rosneath; *Habrodon Notarisii*, Schpr., on trees, Rosneath; *Naucoria erinacea*, Fr., on a dead branch of rose, Kilwinning; *Trametes rubescens*, Fr., Shropshire, per Mr. W. B. Allen; *Geaster Bryantii*, Berk., Sevenoaks, Kent, per Mr. E. M. Holmes, F.L.S.; *Ecidium strobilinum* (A. & S.), Wint., on scales of cones of *Pinus abies*, Inverness-shire; *Geoglossum difforme*, Fr., on the ground amongst grass on the seashore between Kames and Ardlamont.

Mr. Peter M'Nair, F.R.S.E., F.G.S., exhibited fossil bones from strata sixty feet below the bed of the Blue Nile, Khartoum, and gave a short account of their geological position.

Mr. James J. F. X. King, F.E.S., exhibited a collection of diptera belonging to the family Trypetidae. He described briefly the habits of the flies of this family, and mentioned the plants fed on by the larvæ.

Mr. Johnstone Shearer exhibited the black nightshade (*Solanum nigrum*, L.,) found growing wild in Rouken Glen, and *Veronica peregrina*, L., found growing as a weed in Camphill Gardens. The latter plant had been sent to Kew Gardens for verification.

Mr. J. R. Malloch read a paper on "A division of the Dipterous genus *Phora*, Latr., into sub-genera" (page 24).

Mr. P. Ewing, F.L.S., presented his report of the meetings of delegates from the various corresponding societies at the British Association meeting at Dublin. Mr. Ewing mentioned that he was glad to find that the status of the amateur was better than in the earlier days of the British Association meetings.

The Fifty-seventh Annual General Meeting of the Society was held in the rooms, 207 Bath Street, on 27th October, 1908, Mr. D. A. Boyd, President, in the chair.

The Honorary Secretary (Mr. A. Ross) read the report of the Council on the work of the Society during the preceding year, which showed that the membership of the Society was 256, made up as follows:—Honorary Members, 16; Corresponding, 35; Life, 17; Ordinary, 188; and there are 11 Associates.

During the Session four members were removed by death, namely, the Rev. John Ferguson, of Fern, Lord Kelvin, Dr. Alex. Frew, and Francis Martin.

A valuable series of papers on micro-fungi was read. The departments of phanerogamic botany, ornithology, and entomology were well represented, and two papers on crustacea of the Clyde sea-area were contributed.

Twelve excursions were carried out during the season, and were fairly well attended.

The question of finding a meeting-place in a more central position had engaged the attention of the Council during the past year, but they recommended that the Society in the meantime should give up the idea for reasons stated. On the motion of Mr. John Robertson, seconded by Mr. A. Ross, this matter was again sent back to the Council for consideration.

In pursuance of the policy of taking an active interest in the natural history portion of the Corporation Museum, the Research Committee, in company with the Conveners of Sections of the Andersonian Naturalists' Society, met with Mr. M'Nair, Curator,

and made a working arrangement with him. Attention was drawn to the success of the exhibition of fresh plants during the season in the People's Palace.

The Honorary Treasurer (Mr. John Renwick) submitted his annual abstract statement of accounts for the past session, which was approved (page 60).

A satisfactory report on the Society's Library was given by Mr. James Mitchell, Honorary Librarian, and Mr. John Paterson, Honorary Editor of *Transactions*, reported on the position of the Society's publication.

The following Office-bearers were elected:—As President, Mr. John Paterson; Vice-President, Mr. John R. Lee; Hon. Secretaries, Dr. Robert Brown and Mr. Alex. Ross; Hon. Treasurer, Mr. John Renwick; Hon. Librarian, Mr. James Mitchell; Hon. Editor, Mr. D. A. Boyd; Members of Council, Prof. David Ellis, D.Sc., Ph.D., Messrs. Robert Dunlop, John Ballantyne, and William Rennie.

Messrs. James Jack and Joseph Somerville were reappointed as Auditors.

Miss Evelyne Gilmour, The Craigs, Duntocher; Miss Agnes Stevenson Brown, 25 Westminster Terrace, Sauchiehall Street; Mr. Andrew Barclay, 14 Lorne Terrace, Maryhill; and Mr. Thos. H. Wilson, 17 Craigielea Street, were admitted as ordinary members of the Society.

On the motion of Mr. Wm. Stewart, seconded by Mr. John R. Lee, it was agreed to associate with such members of the Andersonian Naturalists' Society as may be appointed to form a committee to be called "the Glasgow Parks Mycological Committee," for the purpose of investigating and recording the species of fungi which occur in the various public parks in and around the city.

A nematode worm found under decaying wet turf at Muirkirk was exhibited by Mr. John Smith, Dalry.

Mr. K. Buchanan exhibited a death's-head moth (*Acherontia atropos*, L.) from Thorntonhall, and Mr. Angus McLeod another captured by a school-boy on a stair in Craigton Road, Govan.

The Chairman (Mr. D. A. Boyd) read a paper entitled "A Day on the Lowther Hills" (pp. 1-5), and another on the meetings and excursions of the Cryptogamic Society of Scotland, held in September at Drumnadrochit, Inverness-shire (pp. 33-5).

The President (Mr. John Paterson) read a communication from Mr. James Murchie on "The Eagles of Arran." In this communication Mr. Murchie had brought together the meagre notices of Pennant, Headrick, and the Landsboroughs (father and son), and the more detailed account by Robert Gray in the fourth edition of Bryce's *Geology of Arran*. Attention was also drawn to a curious notice in Smellie's *Account of the Institution and Progress of the Society of Antiquaries of Scotland*, Part Second, published in 1784. From this it appears that on the 7th May, 1782, a paper entitled "A History of a Remarkable Large Eagle shot in Lamblash Island," by Mr. James Hamilton, Lamblash, was read to the members. On the same date it is recorded that Mr. James Hamilton presented to the Society a large grey eagle shot by him in Lamblash Island. "This curious bird, which is a female, has been traced, by the knowledge and tradition of the people of that neighbourhood, for 130 years back, and was so much venerated that none of the country people would kill her, though high rewards were offered for that purpose." Mr. Murchie's communication further stated that, ten or twelve years ago, a written copy of the Duke of Hamilton's scale of payments for the destruction of Arran birds of prey and their eggs, was found somewhere in Ayrshire, on the demolition or repair of an old building. This was printed in a Glasgow newspaper, but Mr. Murchie had not preserved the article. For two years (about 1827-9) Mr. Murchie's father acted as shepherd on the hills adjoining Balmichael Farm, near Shiskine, of which farm his grandfathers was then tenant, and during that time (and probably before and after) he was very familiar with the flight of the eagles of Arran. The late Mr. Alex. Fullarton, Farmer, East Knowe, Brodiek, pointed out to Mr. Murchie on the north side of Glencloy the Eagle's Rock, so named, as he explained, because eagles nested there, and Mr. Murchie was informed in the summer of 1908 by Mr. Donald Hamilton, of Ardlui, King's Cross, Arran, that his brother, the late Mr. Lewis Hamilton, Ferryman, King's Cross, knew where eagles used to nest on the Holy Isle. On concluding reading the paper, Mr. Paterson pointed out that while the older writers unite in describing eagles as having been as familiar as one would expect in Arran, persecution had altered the status of the species in Gray's time, so that it was then only

a "rare or uncertain visitant." In recent years the golden eagle has recovered its position to some extent, a recovery which naturalists will fervently hope will be maintained.

The third meeting of Session 1908-9 took place on 24th November, 1908, Mr. John Paterson, President, in the chair.

The following ordinary members were admitted:—Messrs. George Crane, M.A., B.Sc., 36 Robertson Street, Greenock; George Henry Gibson, 14 Boleyn Road, Pollokshields; and Archibald Shanks, Mount Pleasant, Dalry, Ayrshire. Mr. Harry Windsor, 45 Winston Street, Parkhead, was admitted as an associate.

Reports on excursions to Bardowie and Dougalston (which appears in *Transactions*, Vol. VIII., Part II.) and Ardlamont (page 59) were read.

On behalf of Mr. John Smith, Corresponding Member. Mr. A. Ross exhibited some plants from a blaes-bing at Dalry, Ayr, among which were *Echium vulgare*, *Potentilla reptans*, *Reseda luteola*, and *Melilotus alba*. Mr. Smith also sent for exhibition *Neuropterus heterophylla*, Brongt., from the lower coal-measures.

Dr. T. B. Henderson exhibited a specimen of a so-called Water-snake (*Tropidonotus viperinus*, Latreille) from Spain. He described its peculiarities, especially with reference to its aquatic habits, and drew attention to the resemblance it bore in appearance to the common adder.

Mr. James J. F. X. King, F.E.S., exhibited a collection of the British Neuroptera-planipennia, and, in the case of several families and genera, explained where the larvæ lived, and upon what they fed, also the habits of the perfect insects. Some of the species shown were very rare, e.g., *Psectra diptera*, the occurrences of which are—one taken in Somersetshire in 1843, two in Wexford (of which one was shown), and another in the South of Scotland. Another interesting case was that of *Drepanopteryx phalaenoides*, which occurs very rarely in the north of England and the south of Scotland. Of this species, one was taken by Mr. Walker at New Lanark early last century, while much more recently, but rarely, Mr. K. Morton and Mr. King have taken it at Cleghorn. The collection included some of the Chrysopidae, the "golden-eyed stink flies" of the Germans,

so-called on account of the points of gold eyes and the obnoxious smell of the flies when taken in the hand. Of the Scorpion-flies a long range of variety was shown, including the well-marked varieties *apicalis* and *borealis*, and attention was drawn by Mr. King to the extraordinary *Boreas hyemalis*, which lives in moss during the late autumn and early spring, the perfect flies having peculiar saltatorial habits.

Dr. T. F. Gilmour, Port Ellen, Islay, sent for exhibition a large specimen of *Solanum nigrum* gathered in Islay. Mr. P. Ewing, F.L.S., stated that this plant was often found in the vicinity of pheasant-rearing ground.

The President (Mr. John Paterson) submitted a list of the birds of Lendalfoot, communicated by Mr. Charles Berry (pp. 5-23).

The fourth meeting of session 1908-9 took place on 22nd December, 1908, Mr. John Paterson, President, in the chair.

Mr. Arthur Ballantine and Mr. Hew Ballantine, both of 101 Buchanan Street, were admitted as ordinary members.

Excursions to Ardgowan and Shilford Wood were reported on.

Mr. Robert Dunlop exhibited two fossil ferns (*Neuropteris heterophylla*, Brongt., and *N. gigantea*, Sternb.) and *Lomaria fluviatilis*, a fern of the present day from New Zealand. For comparison with these Mr. P. Ewing brought a species of *Nephrolepis* to demonstrate a matter under discussion, the falling of the pinnae from certain kinds of ferns.

Mr. J. Ballantine exhibited the speedwell-leaved whitlow-grass (*Draba muralis*) collected by him near Abington. Mr. Ballantine stated that this plant was becoming very plentiful along the banks of Clyde in that district.

Mr. D. A. Boyd exhibited *Dicranum strictum*, Schleich., from Roslin Woods—the only known Scottish locality for this moss. Mr. Boyd also exhibited the creeping spike-rush (*Scirpus palustris*), gathered at Ardeer, having the floral organs affected by a parasite producing elongated horn-like growths of a blackish colour. These were a form of ergot, and represented a resting state of the mycelium of *Claviceps nigricans*, a fungus which had not previously been recorded for the Clyde district. Mr. Boyd gave a short account of the ergots.

Mr. G. A. Hardy exhibited and described examples of a species of Coleoptera (*Clinocara undulata*, Kr.) from Dumfries, Dumbartonshire, being the first record for the Clyde area.

The President (Mr. John Paterson) exhibited a series of lantern-slides of natural-history interest, and read some jottings from the note-books of Mr. Charles Berry (pages 35-8). Mr. Paterson also read a paper on the Eagles of Ayrshire (pages 28-32).

The fifth meeting of session 1908-9 took place on 22nd January, 1909, Mr. John Paterson, President, in the chair.

Mr. Charles Kirk sent for exhibition the head of a gannet (*Sula bassana*) shot on Ailsa Craig, showing an extraordinary deformity of the upper mandible, which was bent backwards from its base, and was perpendicular to the lower mandible. Another curiosity sent by Mr. Kirk was the head of a pheasant (*Phasianus colchicus*) with a claw developed on one of the sides of its head.

Mr. W. R. Baxter exhibited a series of lantern-slides dealing with the summer bird-life of the district around Garelochhead. The slides were greatly admired for their interest and their technical excellence. Mr. Baxter added interest to his exhibition by the particulars of the distribution of species he gave, and the President pointed out that we want information from the north-west of the Clyde area almost more than from any other, to enable us to take a more complete view of the distribution of some of our summer-visitors and other species.

The President (Mr. John Paterson) then read a paper on "Burns and Nature: with special reference to the Poet's treatment of Trees and Birds" (pp. 38-49).

Mr. Robert Brown, M.D., F.L.S., read a paper entitled "Notes of a Visit to the Western Pyrenees, with Specimens of its Alpine Flora," and exhibited, among other plants, *Vicia pyrenaica* (Pourr.), *Linaria supina* (Desf.), *Pinguicula grandiflora* (Lam.), *Erica arborea* (Linn.), *Dianthus attenuatus* (Sm.), *Viola cornuta* (Linn.), *Saxifraga umbrosa* (Linn.), *S. hirsuta* (Linn.), *Genista pilosa* (Linn.), *Linaria origanifolia* DC., *Meconopsis cambrica* (Vig.), *Scilla verna* (Huds.), and *Cardamine latifolia* (Vahl).

Excursions.

ARDLAMONT, 28th September, 1908.—Conductor, Mr. D. A. Boyd. This excursion was attended by six members of the Society, who travelled by rail to Greenock, and thence by steamer "Lord of the Isles" to Tighnabruaich. After leaving the pier, the party walked through the villages of Tighnabruaich and Auchlochan, to Kames. Turning to the right they proceeded to Millhouse. A fine range of heather-clad hills, varied with grey rock and wooded glen, lies to the north of Tighnabruaich. At Millhouse, about a mile from Kames Pier, the main road up Loch Fyne, by way of Otter and Strachur, turns away to the right, while another road turns to the left, and passes down the valley towards Kilbride Bay, near the mouth of Lochfyne. The latter was the route followed by the party. Although somewhat bare in the neighbourhood of Millhouse, the scenery improves as Kilbride Church is approached, beyond which the road ascends through coppices of birch to a high level, from whence fine views are obtained of the rocky shores and blue waters of the loch stretched out below. Ardlamont is pleasantly situated between the road and the loch. About a mile beyond Ardlamont the road descends once more to the Kyles of Bute, and closely skirts the shore all the way to Kames, a distance of about three miles. In spite of a few showers the weather proved favourable, and, as the country traversed was unfamiliar to most of the party, the walk through its pleasantly varied scenery was greatly enjoyed.

(CONTINUED.)

ABSTRACT STATEMENT OF ACCOUNTS—SESSION 1907-1908.

<p>1907.—Sept. 1. To Balance— Life Members' Fund— Debitures, £55 0 0 In Bank, 102 10 0 £157 10 0</p> <p>Ordinary Fund— In Bank and on hand, 124 5 5 £281 15 5</p> <p>1908.—Aug. 31. To 132 Ordinary Members' Subscriptions, @ 7s. 6d., 49 10 0 " 20 Members' Arrears, 8 5 0 " 9 Associates' Subscriptions, @ 5s., 2 5 0 " 1 Associate's Arrears, 0 5 0 Interest, 7 1 9 " Transactions sold, 2 0 0 " Donation, 0 7 0</p>	<p>1908.—Aug. 31. By Rent and Attendance, £6 18 6 " Postage, Stationery, &c., 10 1 11 " Printing Circulars, 13 3 0 " Printing Transactions, 33 6 2 " Lantern Expenses, 1 0 10 " Carriage, Transactions, 1 7 3 " Library—New Books, 47 9 7 " Bindings, 4 16 6 " Insurance, 0 12 0 " Stationery, 0 5 2</p> <p>Marine Biological Association (2 years), 13 3 3 " Balance—Life Members' Fund, 2 2 0 " Debitures of the Modern Permanent Building and Investment Society, Melbourne, £45 0 0 " In Bank, 112 10 0 £157 10 0</p> <p>Do., Ordinary Fund, In Bank, £117 19 10 Less due to Treas., 5 3 7 112 16 3</p> <hr style="width: 100%;"/> <p style="text-align: right;">£351 9 2</p>
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*From the balance of £112 10s. 3d. is to be deducted
the cost of Transactions for three sessions.*

£351 9 2

GLASGOW, 19th October, 1908.—We have examined the Accounts, and compared same with relative Vouchers and Securities, and find them correct. Cash due to Treasurer, Five pounds Three shillings and Sevenpence.

(Signed) JAMES JACK,
JOSEPH SOMMERVILLE, } *Auditors.*

The Glasgow Naturalist

The Journal of the NATURAL HISTORY SOCIETY
OF GLASGOW

(Including the *Transactions and Proceedings* of the Society, Third Series).

Vol. I., Part 3.]

[May, 1909.

REV. ALEXANDER STODDART WILSON, M.A., B.Sc.

IN the death of the Rev. A. S. Wilson, on 8th February, 1909, at the age of fifty-five years, this Society lost one of its oldest and most respected members, and the country one whom it has reason to regret, as few naturalists, even of his generation, did more to encourage natural history studies than he.

As a student in the University of Glasgow he won the Clark Fellowship in Natural Science, and he graduated M.A. with the highest honours in science. For a period of seven years he was Lecturer in Botany in Anderson's College, Glasgow, and during the greater part of this time he acted as assistant in the chemical laboratory of the City Analyst of Glasgow. At the close of the series of popular lectures in Botany in Anderson's College in 1885 a proposal was made by Mr. William Cumming, one of the students, that an arrangement should be made for those who had done field-work under Mr. Wilson's guidance to continue to take excursions together. The organisation which arose out of this proposal is the Andersonian Naturalists' Society, of which Mr. Wilson was the first president, a position he continued to occupy for five years. Mr. Wilson had naturally a good deal to do with the early success of that society, which has done a great work in the twenty-four years of its history in popularising the study of natural history in the Glasgow district. In 1881 he entered upon the ministry of the Free Church congregation of North Queensferry, and remained in this charge till his death. Although not endowed with an attractive pulpit style, his scholarship and reverence impressed all with whom he came in contact in carrying out the duties of his office. As a natural result of the graces of his character, he was bound by ties of endearing affection to all his flock, and to his old students

and the members of the various natural history societies in which he was interested. He was a zealous and fearless champion of temperance reform, and in public matters beyond the sphere of church-work he commanded the attention of the directors of the North British Railway at one time and of the Admiralty at another. For some time previous to, and until his death, he was a member of the School Board of Inverkeithing.

Of this Society he became a member in 1879, and was elected as a vice-president in 1883. He was from the year he joined the Society until 1894 a fairly regular contributor to our *Transactions* and *Proceedings*. From the titles of his communications to the Society the range of his interest may be guessed—"Unwelcome Flower Guests" (1879), "The Functions of the Carpellary Leaves in Angiosperms" (1880), "The Morphology of Underground Stems" (1881), "The External Configuration of Plants in Relation to Wind-Pressure and Water-Currents" (1885) "The Dispersion of Seeds and Spores" (1888-9), published at length in our *Transactions* (New [Second] Series), Vol. III., "The Movements of Plants" (1892), "The Homologies of Flowering Plants and Cryptogams" (1894).

Mr. Wilson, who is survived by a widow and several children, was interred in the Churchyard of Inverkeithing.

Occurrence in Ayrshire of *Chrysophlyctis endobiotica* Schilb., the Fungus of Black-Scab Potato-Disease.

By D. A. BOYD.

[Read 27th April, 1909.]

TOWARDS the end of last year, Mr. John Gunson, nurseryman, Saltcoats, brought to me some potato-tubers which had been obtained in the garden of a villa in Caledonia Road, in the west end of that town. Each of the tubers was disfigured with large outgrowths or warty excrescences of a pale-brown colour, and I was informed that most of the potatoes grown in the same garden last year had been similarly affected.

As I had not then had an opportunity of examining the Black-Scab disease on fresh or newly-dug potatoes, I failed at first to recognise its presence on the tubers submitted to me, and these were accordingly laid aside for further examination. After some weeks had elapsed, the potatoes were found to have shrunk considerably, owing to the evaporation of the moisture within them, while the warty tumours had become correspondingly contracted and much darker in colour. In this dry condition I at once recognised their close resemblance to English specimen which I had seen last autumn, and the presence of the disease was subsequently confirmed by microscopical examination, and fully established by a report from the Board of Agriculture, to whom one of the affected tubers was submitted.

“Black-Scab” is quite distinct from the common potato-disease, and produces effects in no way resembling those occasioned by that well-known foe of the agriculturist. The latter is due to the agency of *Phytophthora infestans* (Mont.) De Bary, which causes discoloration and decay of the affected tubers; while Black-Scab is occasioned by *Chrysophlyctis endobiotica*, Schilbersky, a parasitic fungus which produces warty outgrowths or excrescences, chiefly on the tubers, but also to some extent on the haulms and lower leaves of the host-plant. The sporangia, which are developed most abundantly in the outer layer of the warty tumours, are thick walled, golden brown in colour, sub-spherical in shape, and vary considerably in size, measuring about 60-70 by 50 μ . They contain zoospores, which are liberated at maturity. When a spore is brought into contact with a fresh tuber, it commences to grow, and the fungus forces its entrance into the potato at the portion known as the “eye.” The tissue of the potato is so stimulated by the fungus as to develop rapidly in an abnormal way. In this manner, large and irregularly shaped outgrowths, covered with small warts and wrinkles, are formed on the surface of the tuber. When infection has occurred at several points, the entire surface of the potato may be covered with a rugged scab. When fresh, the scabbed growth much resembles a small piece of cauliflower of a dirty yellowish colour, but becomes dark blackish-brown when dry. Potatoes so affected are not only disfigured in appearance, but rendered quite unfit for food.

When diseased tubers or haulms are allowed to decay on the ground, the spores are liberated and find their way into the soil. They may then be conveyed from field to field in manure, or even by implements of agriculture, or on the boots of labourers. If neglected, the soil of a field or garden may in a few years become so impregnated with spores as to render almost impossible the growing of potatoes within it. It has been ascertained that the spores of this fungus may lie dormant in the soil for more than four years without losing their vitality.

Although known to potato-growers in the Liverpool district for about fifteen years, the disease was not brought under public notice until 1901, when it was described by Professor M. C. Potter, M.A., from material obtained in Cheshire.* Diseased tubers from North Wales were submitted in 1902 to the Royal Agricultural Society, and examined by Miss A. Lorrain Smith, who afterwards published a description of the fungus.† It has also been described and figured in *Leaflet No. 105*, issued by the Board of Agriculture and Fisheries, which contains valuable information as to preventive and remedial measures.

Chrysophlyctis endobiotica has been regarded by Dr. Magnus as identical with *Edomyces leproides*, Trabut, which produces large nodulose fleshy tumours on the upper part of the root of beet, although the accuracy of that view has been questioned.‡

As the disease has now been reported from numerous counties in England, several in Wales, and several in Scotland, it is desirable that the utmost vigilance should be used to make sure that tubers intended for use as seed potatoes, and particularly those which have been imported from other districts, are free from taint before being put into the ground. Grocers and dealers should also keep a sharp look-out for diseased potatoes amongst their supplies, and report any when found, so that sources of infection may be ascertained and remedial measures adopted. The necessity for such precautions is emphasised by the "Destructive Insects and Pests Order of 1908" of the Board of Agriculture, wherein the Black-Scab or Warty-Disease of potatoes is scheduled as one of the pests to

* Journal of the Board of Agriculture, vol. ix. (1902), pp. 320-323.

† Transactions of the British Mycological Society for 1902, p. 31.

‡ Ibid., p. 16.

which the Order applies, and penalties, not exceeding £10, are prescribed for neglect to notify any outbreak of the disease, or refusal to permit examination of growing crops, or exposure of diseased potatoes for sale.

Now that the Black-Scab disease has been definitely ascertained to occur within the Clyde area, it is to be hoped that farmers and others interested will do all in their power to prevent its spread; for in a district such as ours, where potatoes are so extensively grown for the market, anything approaching to a general outbreak of the disease would have results most disastrous to agriculturists, many of whom depend on the potato crop more than any other for payment of their rents.

On Some Additions to the Flora of Dumbartonshire.

By LAURENCE WATT.

[Read 30th March, 1909.]

It is now ten years since Mr. P. Ewing, F.L.S., published his *Glasgow Catalogue of Native and Established Plants* for the Western and Central Counties of Scotland, and nearly eight years since the lists were prepared for the Fauna and Flora of the Clyde area, and published by the local committee for the meeting of the British Association held in Glasgow.

These lists, to all workers in Natural History, served a good purpose by stimulating them to see how many they can find in their own locality, and by so doing they are often led to add to the knowledge of their county.

In working here and there through the county I have gathered a few plants that are not mentioned in the lists named above, while others that are mentioned therein, but are so rarely seen in flower, I have also included.

Of those new to the county two are also new to the West of Scotland, and one, *Limosella aquatica*, Linn., has only been recorded by Mr. A. Bennett, F.L.S., for four counties in Scotland.

Cochlearia Armoracia, Linn.—Found on waste ground, near the shore, at Row. I saw the root-leaves of this plant two years previous, but the fruit-stalks were all gone. In the month of June I got it in flower. The difference between the narrow leaves of the stem and the large crenated root-leaves is notable. Hennedy calls it an outcast of gardens.

Polygala oxyptera, Reich.—This I found on a sloping bank near Law Farm, east of Edinbarnet, on the lower slopes of the Old Kilpatrick Hills, at an altitude of 400 feet. This is the first record for the West of Scotland. It differs considerably from *P. vulgaris*, Linn., of which Babington makes it only a sub-species. Now it has attained specific rank. *P. vulgaris*, Linn., grows almost straight up from the rootstock, and has often coloured flowers, while *P. oxyptera*, Reich., creeps along the ground, then throws up its flower-stalks, and the flowers are all pure white, the leaves are smaller and sharper than is generally found on *P. vulgaris*. Hooker gives it from Perth southward, local.

Sagina apetala, Ard.—This was gathered in the Clyde marshes at Old Kilpatrick. It grows on the walls west of Bowling, and walls are mostly its habitat. The one shown was found in a marsh nearly covered at every tide, which was, I thought, a strange locality for such a plant. In his note Mr. A. Bennett referred to it being supplied with fresh water, which it is, as the Lusset Burn runs through the marsh.

Sagina maritima Don. \times **apetala**, Ard.—This curious hybrid grows on the walls at Craigendoran. Mr. Bennett says the leaves are half *apetala* and half *maritima*. The leaves are longer and narrower, and the flower-stalks shorter than what *S. maritima*, Linn., generally has. The leaves are also longer than those of *S. apetala*, Ard., but the flowers are nearly the same.

Sagina Reuteri, Boiss.—This was also growing at the bottom of and on a wall at Craigendoran. This, I think, has not been recorded previously for Scotland. It was considered an alien brought from Spain, but as it has been found in various parts of the country far from any seaport, it has now got its place as a native plant. In the *Journal of Botany* for April, 1908, Mr. F. W. Williams, F.L.S., writes—"I have received for examination so many specimens of *S. Reuteri*, Boiss, from the

North of England and from inland localities as to preclude the idea that it has been imported from Spain. I am quite prepared," he says, "to reverse the early view of the habitat of this plant, and now hold that it is a casual or alien in its native habitat near Madrid, and a native of more northern countries." It is also recorded from Skipwith and Strensall Commons, Yorkshire, by Mr. W. Ingham and Mr. J. A. Wheldon, who describes the difference between the three species thus—*S. Reuteri*, Boiss, is distinguished from *S. maritima*, Don., by its texture and longer capsule, from *S. apetala*, Ard., by its erect sepals and shorter peduncle, and from *S. procumbens*, Linn., by its central stem always elongating and flowering. As it is a free fruiting species, it would soon spread. I gathered it on the wall round the *Dane John* in Canterbury and now at Craighendran.

Vicia angustifolia, Linn., var. *Bobartii*, Koch.—This vetch grows on a flat bit of ground at Erskine, just east of the ferry on the Renfrewshire side of the Clyde opposite Dumbartonshire. This species spreads itself on the grassy bank, but is easily observed by its long pods.

Rubus podophyllus, P. J. Muell.—I gathered this in the open wood near the Glen, Garelochhead. The Rev. E. F. Linton, to whom I submitted the plant, said he had no idea it grew so far north.

Rosa glauca, Vill., var. *Reuteri*, Godet.—I found this growing in a hedge near Edinbarnet. It is rather rare in Dumbartonshire. According to Hooker the leaves are glaucous; bracts, stipules, and branches turning red.

Hieracium holosericeum, Bockh.—It was a very stormy day when I gathered this rare hawkweed on Ben Vorlich, and being late in the season the flowers on the specimen shown are gone. The thick white black-based hairs are also weathered off a little, but the leaves are all right. I gathered it at an elevation of 2,700 feet, where it was sheltered by a friendly cliff.

Vaccinium uliginosum, Linn.—This was growing fairly plentifully along with *V. Myrtillus*, Linn., among sheltered rocks, 2,000 feet up on Ben Vorlich. There was plenty of fruit on both plants. This, too, is the first record for Dumbarton.

Lysimachia thyrsoflora, Linn.—This was gathered on the right bank of the Leven, just above the bridge at Balloch.

Among the soft muddy banks it is spreading rapidly, but it flowers sparingly. I turned over hundreds of plants and only got thirteen with flowers. It has spread over the pools that *Utricularia vulgaris*, Linn., flowered so well in. Now *Lysimachia* has killed it out, which is a case of the weakest going to the wall. It grows on the banks of the Leven at the north end of Dumbarton Common, but I never saw it in flower there. Possibly from its being so much exposed, the plants are small.*

Symphytum officinale, Linn.—The first time I had the pleasure of gathering this plant in flower, it was growing on a dry bank at Craigendoran along with the var. *patens*, Sibth., which is the common form in the Clyde district. One writer in the *Journal of Botany* says that *S. patens*, Sibth., is only found near water, and that is why I mention that I found the two now exhibited on a dry bank a considerable distance from water.

Limosella aquatica, Linn.—When I asked Mr. A. Bennett, F.L.S., what records he had for Scotland he wrote that this species was found in Ayr, Haddington, Forfar, and Kincardine. Those from Kincardine are very inconspicuous. It grows up to Swedish Lapland and also in Russian and Finnish Lapland, and it is a good acquisition to a locality so near Glasgow. I believe it may be often overlooked from the fact that the broad blade of the leaf being on such a long stalk gets easily knocked off, and the flowers are so small that it would be passed as *Littorella lacustris*, Linn., among which it grows. I noticed the plants that were on the side of the dam, exposed to the air and the ducks, had scarcely a leaf left on them, while those on the water were all right. The elevation of this dam near Hardgate, Duntocher, where it grows, is 350 feet.

Salix nigricans, Sm., and **S. phyllifolia**, Linn.—These two different willows have always been put down as *S. nigricans*, Sm. I have had considerable correspondence with the Rev. E. F. Linton over them, however, this last year. He asked me to gather the autumn leaves from the different trees, so that we might get the matter settled. In *S. nigricans*, Sm., there is a marked difference between the spring and autumn leaves, and more so

* Has been recorded previously from Inchmoan (*Annals of the Andersonian Nat. Socy.*, I., p. 58), and from Caldarvan Loch (*loc. cit.*, III., p. 25). Eds.

perhaps on the stipules. In its earlier flowering stages the stipules are very small, while in autumn they are large and as prominent as those on *S. aurita*, Linn., and both spring and autumn leaves turn black in drying.

Salix phylicifolia, Linn.—The spring and autumn leaves of this willow show very little difference. Those gathered in the flowering stage have a tendency to get darker when drying, while those gathered in autumn show little or no difference in colour, and the stipules are very small in both cases, entirely different from those on *S. nigricans*, Sm. The Rev. E. F. Linton agreed they were two different willows, and named them so. On the Loch Humphrey Burn *S. phylicifolia*, Linn., grows at an altitude of 450 feet, and *S. nigricans*, Sm., at 350 feet.

Juniperus communis, Linn.—This was growing over the top of a rock on Ben Vorlich, near where the vacciniums are found, a little over 2,000 feet. From its spreading habit I gathered it for *J. nana*, Willd. It grows up to 2,700 feet in Westmoreland.

Carex saxatilis, Linn.—In the new *London Catalogue* the name of this sedge is changed from *C. pulla*, Good., to the older name *C. saxatilis*, Linn. I got a surprise on finding this *Carex* on Ben Vorlich, as I had almost given up hope, but seeing a yellow patch at the foot of a rock with some carices on it, I was not long in picking up *C. saxatilis*, Linn., though they are poor specimens compared with those that grow on Ben Lawers. Mr. Bennett called them starved specimens of *C. saxatilis*, Linn., but they represent Dumbartonshire!

Carex saxatilis, Linn. × *flava*, Linn.—Mr. P. Ewing, F.L.S., is more in favour of above naming, as he says there is not much of *saxatilis* in the specimens exhibited. They were found on Ben Vorlich, a little below the others, from 2,300 to 2,500 feet. There were more of the cross species than the species itself. Though Ben Lomond is so near there is a considerable difference between the flora of the two mountains, as I never saw anything approaching *C. saxatilis*, Linn., on Ben Lomond.

The Return of Summer-Birds to the "Clyde" Area in 1908 and 1909.

By JOHN PATERSON.

THE spring migration season of 1908, which ultimately proved the most remarkable in the recollection of ornithologists in this district, began quite normally with the appearance in the Harbour of Glasgow of the Lesser Black-backed Gull (*Larus fuscus*) on 18th March; the White Wagtail (*Motacilla alba*), of which seven males were observed on the River Kelvin on 22nd; Wheatear (*Saxicola oenanthe*) on Corkindale Law and in the south of Arran on 28th; and Sand Martin (*Cotile riparia*) on 31st at Lamrash. After this quite unsensational opening, there followed a period of three weeks during which almost no migration whatever was observed, a period often, if not invariably, fruitful in results to observers in "Clyde." Locally the conditions were no worse than they had been in some previous years, when many migrants were here; it is, indeed, not so unusual to have a cold period in April as it is to have so much dry and sunny weather as we had in 1908. Under these circumstances the cause of the interruption in the flow of the tide of migration to these parts must be sought beyond our borders, and this was not hard to find in the extraordinary conditions which obtained throughout England till after a late Easter. Writing in the *Zoologist* for May, 1908 (p. 177), Mr. W. Warde Fowler says—"I have this afternoon (17th April) had the unique experience of strolling for some three hours in fields and woods in Oxfordshire without seeing or hearing a single summer migrant." In his "Ornithological Report for Norfolk (1908)," *Zoologist*, April, 1909, Mr. J. H. Gurney says that "all kinds of warbler were far short of their usual numbers, whitethroats were not to be seen, and the deficiency in reed and sedge-warblers was pointed out to Mr. Bird on the Broads. Something must have befallen them, and in all probability the cause was the snow which fell on April 23rd, and which, though not so deep in Norfolk as in many counties, began to freeze again while it was still melting, and the next morning greenhouses exhibited rows of icicles." Apparently our bird-visitors could not get through this zone

south of us where such unseasonable weather obtained, and consequently, though the conditions locally were not unsuited to their reception, and were very favourable for their appearance being observed, the fact remains that for three consecutive weeks the stream of migration was cut off. Thereafter, following upon an alteration in the conditions throughout the country—warm, still, muggy weather prevailing in the last two days of April—the migrants' opportunity had come, and those due then in a normal season, and all those overdue owing to the abnormal conditions throughout the month, arrived together.

Continuing the list of appearances in the order of their occurrence, a solitary Swallow (*Hirundo rustica*) was observed at Cambuslang and another at Beith on the 12th of April, but it was not till the end of the month that the main body of this species arrived. A solitary Willow-wren (*Phylloscopus trochilus*) was reported at Caldwell on 15th April, but it was not till the first days of May that it became common. Other species as they appeared were as follows:—Common Sandpiper (*Totanus hypoleucus*), Dalry, 19th April; Wood-wren (*Phylloscopus sibilatrix*), at Dunoon, and Chiffchaff (*P. rufus*), at Dalry, 20th; Tree-pipit (*Anthus trivialis*), Rouken Glen, 26th; Ring-ouzel (*Turdus torquatus*), Lam-lash, and Cuckoo (*Cuculus canorus*), Caldwell, 27th; Common Tern (*Sterna fluvitilis*), Possil, and Swift (*Cypselus apus*), Caldwell, 29th; house-martin (*Chelidon urbica*), Lam-lash, 30th; yellow wagtail (*Motacilla raii*), Beith, and cornerake (*Crex pratensis*), Dalry, 1st May; sedge-warbler, (*Acrocephalus phragmitis*), at Possil, on 3rd, but this was an isolated occurrence, as it was not till the 14th that several appeared, and it does not seem to have been up to the numbers of previous years; redstart (*Ruticilla phoenicurus*), Carmichael, 3rd; nightjar (*Caprimulgus europæus*), Lam-lash, 4th; whinchat (*Pratincola rubetra*), Beith, 9th, and spotted flycatcher (*Muscicapa grisola*), Carmichael, same date. On the 10th of May the following species were first reported:—whitethroat (*Sylvia cinerea*) Beith (Ayr) and several localities in East Renfrew: blackcap (*S. atricapilla*) and garden-warbler (*S. hortensis*), Rouken; and grasshopper-warbler (*Locustella naevia*) Darnley Glen.

The conditions in April, 1909, have been happily extremely different from those of the preceding year. There has been no

interruption whatever of the flow of the tide of migration. The subjoined list shows that all the species it contains appeared when due in a normal year—in several cases, even earlier. Were the years all alike, the inquiry would lose some of its piquancy, but the contrast in the last two has surely been violent enough to please the most fastidious in such matters.

LIST OF ARRIVALS OF SUMMER BIRDS IN THE ORDER OF
THEIR APPEARANCE IN 1909.

- Lesser Black-backed Gull (*Larus fuscus*), Glasgow Harbour, 13th March (4) (H. Wilson).
- Wheatear (*Saxicola amantæ*), Lendalfoot. 18th March (Andrew Berry).
- White Wagtail (*Motacilla alba*) (4). Lamlash, 21st March (Fullarton).
- Chiffchaff (*Phylloscopus rufus*), Dalry, 3rd April (Shanks).
- Willow-wren (*P. trochilus*), Beith, 6th April (Craig), but nowhere common till 21st at Darnley (Paterson).
- Swallow (*Hirundo rustica*), Heienseburgh, 8th April (Ure).
Beith, 8th April (Craig).
Possil Marsh, 8th April (Rennie).
- *House-martin (*Chelidon urbica*) (3), Cardross, 10th April (Geo. Robertson).
- Ring-ouzel (*Turdus torquatus*), Shutterflat Moor (Ayr), 11th April (M'Keith).
- Yellow Wagtail (*Motacilla raii*), Beith, 14th April (Craig).
- Common Sandpiper (*Totanus hypoleucus*), Dalry. 14th April (Shanks).
- Sand Martin (*Cotile riparia*), Loch Loskin, 16th April (M'Leod).
- †Cuckoo (*Cuculus canorus*), Dalry, 21st April (Shanks).
- Corncrake (*Crex pratensis*), Beith, 18th April (Craig).
- Tree-pipit (*Anthus trivialis*), several at Cadder, 19th April (Paterson and Ross).
- Redstart (*Ruticilla phæniceurus*), Carmichael, 19th April (Gibson).
- Whinchat (*Pratincola rubetra*), Possil, 23rd April (Baxter).

* Seen by a neighbour the previous day, Mr. Robertson informs me.

† Mr. M'Keith is satisfied that the cuckoo was in the Caldwell district before this, as it was reported to him on 16th, 18th, 19th, and 20th, and he places reliance on nearly all these reports, certainly on that of the 16th.

- Swift (*Cypselus apus*) (2), Beith, 25th April (Craig).
 Sedge-warbler (*Acrocephalus phragmitis*), Possil, 29th April (Rennie).
 Common Whitethroat (*Sylvia cinerea*), Beith, 2nd May (Craig);
 Cardross, 4th (Geo. Robertson).
 Spotted Flycatcher (*Muscicapa grisola*), Dalry, 5th May,
 (Gardener at Blair, per Shanks).^{*}
 Grasshopper-Warbler (*Locustella naevia*) (Dalry), 8th May (Shanks).
 Garden-Warbler (*Sylvia hortensis*), Rouken, 10th May (Paterson).

The compiler of these notes cordially thanks all those who have contributed information for this report.

On the Beeches in the Clyde Drainage-Area.

By JOHN RENWICK.

[Read 23rd February, 1909.]

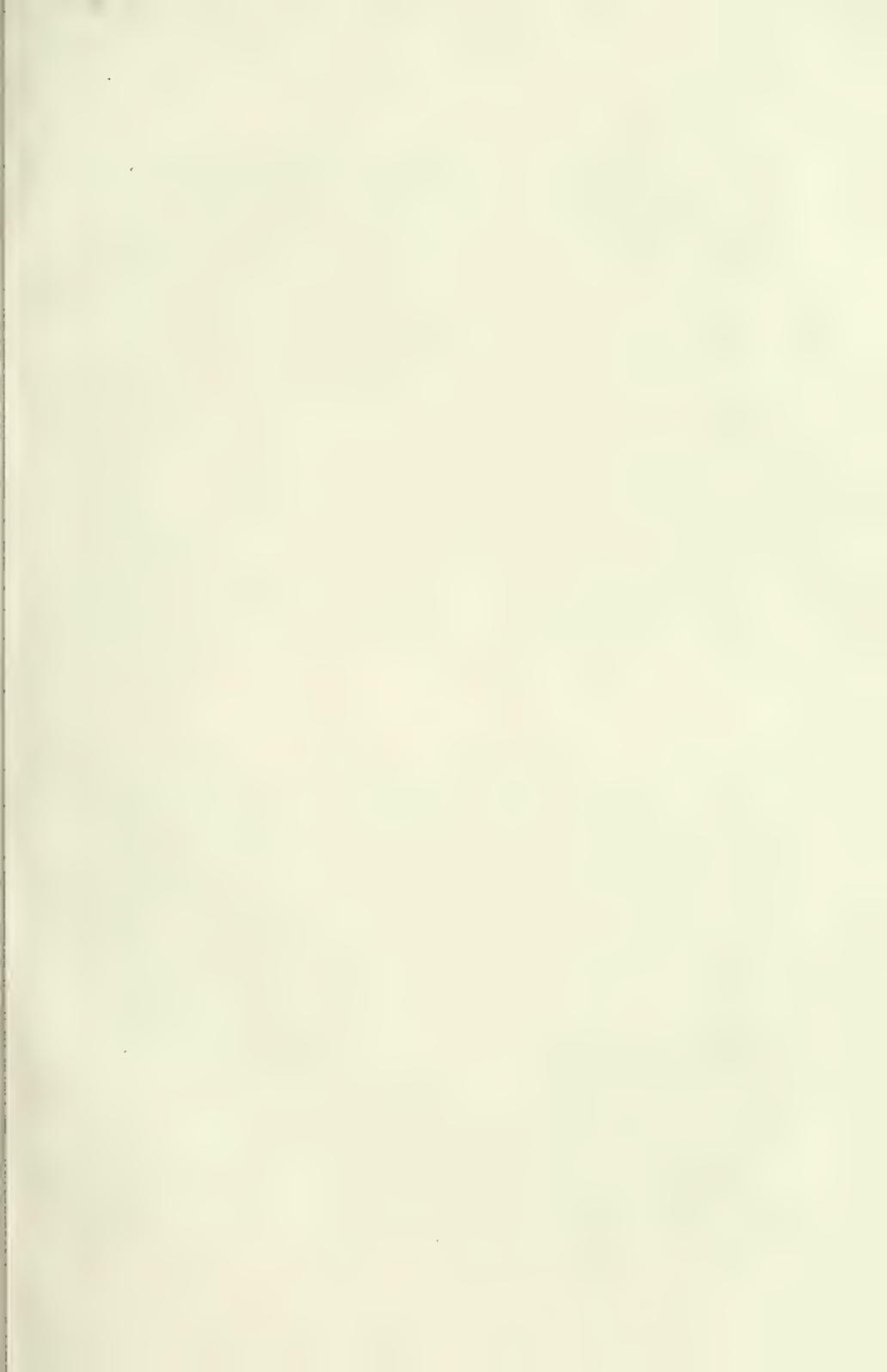
THE following notes refer chiefly to measurements of Beeches made by Mr. R. McKay and myself during a number of years. I have records of a greater number of large Beeches than of any other species, and if this be any indication of the frequency of the various kinds, it would go to show that, leaving conifers out of account (a very large omission), the Beech is the most abundant tree in our neighbourhood, a view confirmed by ordinary observation.

Out of 105 Beeches with a girth of 12 feet and upwards, Ayr produced 41; Lanark, 22; Dumbarton, 22; Renfrew, 14; Argyle, 3; Stirling, 2; Bute, 1. The preponderance of Ayr is owing to the circumstance that at Eglinton Castle there are twenty Beeches with a girth of 12 feet and up. In Lanarkshire the estate of Daldowie, on the Clyde, near Glasgow, shows splendid examples of the Beech (Plates I. and II.). Near the entrance is a large mound of gravel and sandy loam, rising to a height of about 40 feet above the road (Plate I.).

^{*} Mr. Shanks writes that last year the gardener at Blair showed him the nest of this species, the beam-bird, on a beam of wood at Blair.

It is planted with twelve avenues of Beeches radiating from a centre near the summit of the mound. Growing close together, most of the trees rise in clean, nearly straight trunks to a height of 70 or 80 feet. One of them, with a girth of only 4 feet 5 inches at 5 feet, rises to a height of 60 feet before throwing off any branches. These avenues are supposed to have been planted about 1810. The mound is called Mount Lockhart, and sometimes "Mount Zion," from the twelve avenues. The road to the house passes through a grand Beech avenue (Plate I.). There is a double row of trees on each side, rising to a height of 70 to 80 feet, and meeting overhead. The largest tree noticed has a girth of 13 feet 3½ inches at 6 feet up, with a bole of 26 feet. According to Mr. John Grant, the grieve, who has been on the estate for 30 years, and to whom I am indebted for information as to dates, &c., the appearance of the avenue is not so fine as it was formerly. It has suffered from the effects of coal workings underground. At one time it was possible to see through it for its full length, a distance of 720 yards, but now the view is interrupted by several depressions, one of them as much as 5 or 6 feet. The foliage, also, is not so dense overhead. There is still a considerable thickness of coal to be taken out, so that the surface damage is not fully developed yet. At the junction of the Clyde and the North Calder is a grove containing a number of tall Beeches, 100 to 118 feet in height, with long, straight branchless boles of 26 to 50 feet, and girths of 10 to 13 feet (Plate II.). On the haugh in front of the house are several tall Beeches, one of which in 1898 had a height of 100 feet, with a bole of 45 feet. Farther down the Clyde is a row of Beeches with spreading branches of the Burnham-Beeches type, the largest of which girths 12 feet at 5 feet, bole 10 feet. Most of the Beeches on the estate—other than those on Mount Lockhart—are considered to have been planted about 1720, when the older portion of Daldowie House was rebuilt. This has been confirmed by counting the rings of growth in trees which have been cut down. If one wishes to study Beech trees there is ample scope in Daldowie.

To the north of Glasgow, and within two miles of the city boundary, the plantation called Cadder Wilderness contains many Beeches, and has obviously been laid out as a beech wood, all the trees of large size and all the avenues, lines, and circles





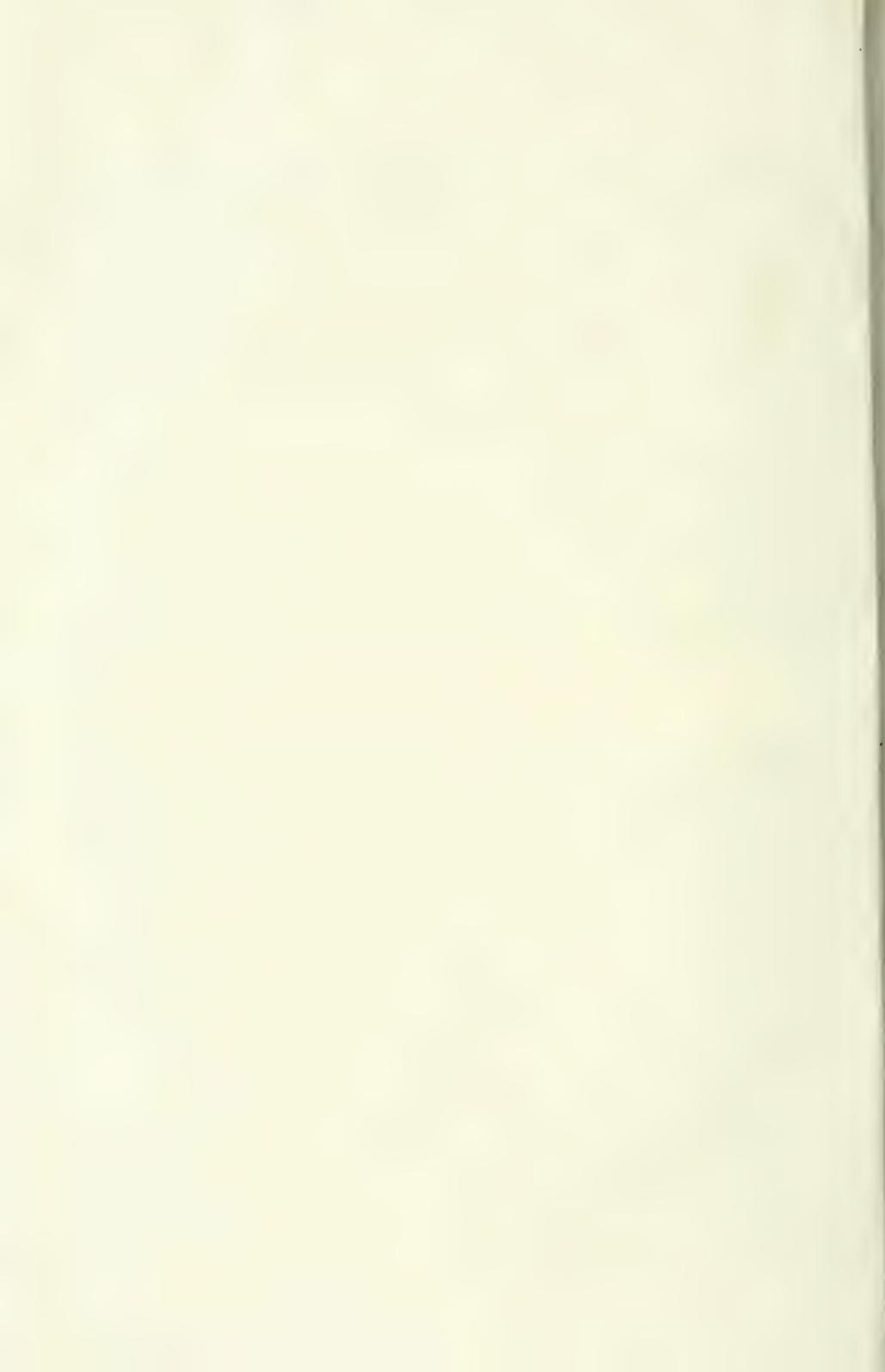
ONE OF THE AVENUES ON MOUNT LOCKHART, DALDOWIE.



MAIN AVENUE, DALDOWIE.



BEECHES AT JUNCTION OF NORTH CALDER AND CLYDE.



forming the original design being of this species. The planting is said to have been laid out on the lines in which the troops were disposed at the battle of Dettingen. If so, it dates from shortly after 1743.

I have very few records for Bute, Stirling, and Argyle. There are many Beeches at Inveraray, including a fine avenue—the “town avenue”—of large trees, with spreading branches, one of them known as “the marriage-tree,” from its inosculating branches. It is just possible that some of these trees may have been planted between 1674 and 1685. Ramsay of Ochtertyre* records a statement that William Edmonstone of Cambuswallace “imbibed a taste for planting, &c., when he and the other gentlemen of Menteith accompanied the Marquis of Athole [in his raid] to Argyleshire [1685]. The Earl of Argyll had a little before made noble plantations at Inveraray, which suffered much from the Marquis’s Highland host, by whom some of the young trees were carried off.” In the “Chronicles of the Atholl Family”† a list is given of the booty carried out of the orchard enclosures and shrubberies at Inveraray in 1684 or 1685. It comprises no fewer than 34,400 trees of various species, some of them of sixteen years’ growth. These were valued at £13,553 6s. 8d. Scots, and the claim was settled for £13,000 Scots, or £1,083 6s. 8d. sterling. Among them were 600 Beeches, valued at £600 Scots, or 1s. 8d. sterling each.

John Walker, D.D., Professor of Natural History in the University of Edinburgh, in his *Essays*, published posthumously in 1812, gives a catalogue of some of the most considerable trees in Scotland. The largest four Beeches were at Newbattle

* *Scotland and Scotsmen in the Eighteenth Century*, Vol. II., p. 108.

† Quoted by Elwes and Henry, *Trees of Great Britain and Ireland*, p. 587. Mr. Elwes states—“At Blair Atholl there are some curious old pines in a row by the Inverness Road which the Duke of Atholl informs me are probably part of the booty carried off by his ancestors in 1684 from Inveraray. . . . Nothing can better illustrate the importance which was paid to trees and planting even at this early period when the Highlands were hardly civilised than that so many exotic trees should have existed at Inveraray, and that it should have been thought worth while to carry them to such a distance when wheeled carriages could not have traversed the country.”

Abbey, Taymouth, Ormistonhall, and Oxenford. Writing apparently about 1800, he says (page 21):—"The Beech was not copiously planted in Scotland till a little before and after the Revolution; and the trees planted about that period do now form, in many places, considerable timber, as at Inverary, Arniston, Hopetoun House, and elsewhere. But the four trees last mentioned, which appear to be nearly contemporary, are of a much more remote era. They seem to have been planted single, and merely as a curious foreign tree, in the garden of some eminent person. From their dimensions, and manner of growth, they may be presumed, at least, to have been planted between the years 1540 and 1560, so that they may now be estimated at between 240 and 260 years old. From the state of the Ormistonhall and Newbottle trees it may be concluded that the Beech, if it meets with no accident, will grow, with sound timber, for at least 250 years."

In 1892, when the Newbattle Beech would, according to Dr. Walker's estimate, be between 330 and 350 years old, Dr. David Christison* concluded that its age did not likely exceed 320 years, and might possibly not be above 250 years.

I measured this tree in 1896, and found its girth to be 19 feet $3\frac{1}{2}$ inches at 6 feet 6 inches.

In Auchencruive (Ayr) I measured with Mr. George Leven, the forester, two Beeches, which, he informed me, were planted about 1700.

There is a Beech in Auchendrane (Ayr) about the same size as these, which may have been planted about 1707. The late Miss Cathcart informed me that, according to an old document, her ancestor, John Muir, sold, in 1698, £300 worth of Oaks, and quite possibly this Beech was planted some time thereafter.

At Kilkerran (Ayr) I counted in a Beech tree cut down this year about 200 rings of annual growth. It was one of seven trees behind the house, evidently planted about 1710.

At Mountstuart, Bute, in 1903, I measured with Mr. James Kay, the forester, a Beech, a Sweet Chestnut, and an Evergreen Oak, of which he wrote, in 1878,† "in all probability they

* *Transactions, Bot. Soc., Edin.*, Vol. XIX., p. 481.

† *Transactions, Scottish Arboricultural Society*, Vol. XI.

date from the beginning of the mansion house in 1712. From repeated examinations of sections of different trees, the number of annual rings corresponds to this date."

To the south of Loudoun Castle (Ayr) is an avenue including Beech and Elm, which the Earl of Loudoun is said to have planted before 1714, ere leaving to take part against the Rebellion of 1715.

Planting is stated to have been carried on at Loudoun, Eglinton, and Sorn between 1730 and 1740. Some of the large Beeches at Eglinton appear to be quite as old as the earlier of these dates. Aiton * records that "Alexander, Earl of Eglinton, planted clumps of trees to the extent of from one to three acres on a vast number of the heights of his extensive domains.† He furnished trees to plant the heights on the estates of other proprietors." This seems to have been the tenth Earl (1723-1769), whose operations can hardly have been begun till after 1740. His mother was Susanna, the beautiful Countess of Eglinton (1689-1780), whom Dr. Johnson visited at Auchans in 1773, to their mutual pleasure. The Countess of Loudoun, resident at Sorn Castle, is said to have been displeased at the traveller's remark about the absence of trees in Scotland, and to have exclaimed, "Deil tak' the man, whaur was his e'en when he didna see my Elms?" This lady was an enthusiastic lover of trees, and planted many at Sorn Castle, principally English Elms and Beeches. She died there in 1779, aged 99 years. She was the daughter of John first Earl of Stair (1648-1707), sister of John second Earl of Stair (1673-1747), wife of Hugh third Earl of Loudoun (died 1731), and mother of John fourth Earl of Loudoun (1707-1782). The second Earl of Stair was a Field Marshal, and served at the battle of Dettingen in 1743. He planted a good many clumps of trees at Stair House, "arranged, it is said, precisely after the manner in which the British troops were drawn up at the battle."‡ The fourth Earl of Loudoun "is said to have planted upwards of a million of trees, consisting principally of Elm, Ash, and Oak. Loudoun

* *General View of the Agriculture of Ayr.*

† Some plantations at Eglinton are locally known as "munts" (mounts) though situated in hollows.

‡ Paterson, *History of the County of Ayr*, II., 435.

Castle was one of the first places in the West of Scotland where foreign trees were planted. He formed one of the most extensive collections of willows anywhere to be found in this country. During his long military services abroad he sent home every sort of valuable tree he met with.*

At Dalziel House (Lanark) is a row of Beeches on the bank of the Clyde, stated to have been planted in 1721, and mentioned in the description of the parish in the *New Statistical Account*. "We are not aware," says the writer, "of anything like it in Scotland to the same extent, and in such a favourable situation."

In the estate-book of a former proprietor of Nether-Pollok (Renfrew) there is recorded, among other things, the dates of planting of a number of trees. Mr. John Boyd, the late forester, from his local knowledge, identified five Beeches still growing as having been planted in 1732.

The planting of trees round mansion-houses appears to have been quite common much earlier than the eighteenth century. Ramsay gives credit to "the middling and smaller gentry that sprang up in great numbers during the fifteenth and sixteenth centuries. . . . The policy of feuing out the Crown and Church lands, which was at its height in the sixteenth century, proved exceedingly favourable to the planting of trees. Though commonly confined to a small spot hard by the house, it must ere long have altered the appearance of the house very much to the better. The frequency of the plantations compensated in some degree for their want of size. . . . A number of our best trees were undoubtedly planted by feuars of one denomination or another. . . . In many cases a shrewd guess of the age of the feu may be formed from that of the oldest trees, where these have not suffered from avarice or false taste. When there are well-grown trees of different ages, the younger ones may commonly be referred to some second founder of the family, concerning whom traditions are preserved. The want of authentic registers of the age and progress of the trees is much to be regretted. Strange that naturalists should pay so great attention to shrubs and flowers, things of short duration, and yet suffer fruit and forest trees—the noblest productions of the vegetable world—to pass almost unheeded! At best, we can only

* *Op. cit.* II., p. 314.

trace them by tradition, which is too uncertain a guide to warrant any conclusions. Though within memory of man the trees of this country have suffered great havoc, some fair ones still remain—monuments of the skill and industry of our forefathers. One can hardly forbear a wish that some legal restraint was laid on the greed or caprice of landed men. A noble tree is in some measure a matter of public concern; nor ought its proprietor to be allowed wantonly to strip his country of its fairest ornaments.”*

In 1457, by Act of Parliament, tenants were required to plant trees near their steadings, and hedges round their fields. But farmers and country people generally appear to have been much opposed to the planting of trees, “having a notion that they spoiled the ground, and eat the heart out of the soil. It was common for the country people to watch their opportunity, and come in great numbers and destroy the trees.” Such complaints appear in 1710,† 1716,‡ 1726,§ 1731.|| 1733,¶ &c. But by the latter part of the century this prejudice appears to have abated, and planting to have gone on more extensively.

A reference to the tables appended will show that the largest Beeches known to us in respect of girth of trunk are at Kilkerran, Stair, Eglinton, Dalquharran, Blair, and Auchencraive, in Ayr; Catter House, Ross Priory, Dougalston, Strathleven, and Killermont, in Dumbarton; Inveraray, in Argyle; Erskine, in Renfrew; Duntreath, in the part of Stirling which is in “Clyde;” and “The Lee,” Mauldslie, and Cadder House, in Lanark. The relative sizes as regards the counties are in the order above given, beginning with Ayr and ending with Lanark. The information about the heights attained is not full enough to make any comparison just or valuable, but the tallest are at Daldowie, in Lanark; Craigton, Killermont, and Catter, in Dumbarton; Stair and Eglinton, in Ayr.

* *Scotland and Scotsmen in the Eighteenth Century*, Vol. II., p. 103.

† Dr. E. Calamy, *Own Life*, ii., 162, quoting Sir A. Gilmour, 1710.

‡ *Acts of Parliament, 1716*.

§ Cockburn of Ormiston. *Farmer's Magazine*, 1804.

|| *Annals of Viscount Stair*, ii., 183.

¶ Proclamation and Penalty in 1733 against Destroying Trees. All above as quoted in *The Social Life of Scotland in the Eighteenth Century*. By H. G. Graham, 1906, p. 199.

Among park-like trees with beautiful spreading heads, the one at Kilkerran, Ayr, is first, with a diameter in 1909 of 120 feet in one direction, and 116 feet at right angles thereto. This tree is probably the one mentioned in Loudoun (*Arboretum, &c.*, 1844) as having a diameter of head of 96 feet, and being about 130 years old. It would thus be about the same age as the tree cut down this year. Next comes one at Cadder House, Lanark, with a greater diameter in one way of 122 feet, but less at right angles, 106 feet in 1899. Another Beech there had a span of foliage of $90\frac{1}{2}$ feet. In the Deer Park at Eglinton Castle are two wide-spreading Beeches, one $113\frac{1}{2}$ feet in 1899, the other 101 feet. At Blythswood, Renfrew, is one with a spread of $105\frac{1}{2}$ feet in 1899. In the neighbouring estate of Elderslie is one with a span of 105 feet in 1900. At Cochno, Dumbarton, at an altitude of about 450 feet above sea-level, is one with a spread of 104 feet. At Garrion Tower, on the Clyde, is a very fine Copper Beech, with a diameter in 1903 of 103 feet in one direction and 100 feet at right angles. At Catter, Dumbarton, there was in 1900 a Beech with a span of $98\frac{1}{2}$ feet, but it was blown down about 1907: the larger tree there, already mentioned, extended to 96 feet and 78 feet. At Dougalston, Dumbarton, one had in 1908 a spread of $89\frac{1}{2}$ feet and 87 feet; in the *Highland and Agricultural Society's Transactions* for 1864 it is recorded as having a spread of 68 feet. One at Auchendrane, Ayr, was 98 feet in 1909; and one at Duntreath, Stirling, in 1899, 90 feet and $73\frac{1}{2}$ feet.

Regarding rate of growth, it may be interesting to give details of the trees of whose date of planting we have information, namely, (a) date of our earliest measurement, (b) girth at (c) 5 feet or at narrowest part of the bole, (d) length of bole, (e) height of tree (when taken), annual rate of increase in girth—1st, (f) during the period (g) from date of planting till date of first measurement, and 2nd, (h) during period (i) between date of our earliest to that of our latest measurement.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Two beeches at Auchencruive (Ayr), planted about 1700—									
		Ft. In.	Ft.	Ft.		Inch.	Years.	Inch.	Years.
1.	1905.	15 7 $\frac{1}{2}$	5	17	...	·91	205	...	...
2.	„	14 10 $\frac{1}{2}$	5	17	...	·86	205	...	...

One cut down at Kilkerran (Ayr), 1909, 200 annual rings—

	Ft.	In.	Ft.	In.	Inch.	Years.	Inch.	Years.
1909.	12	11½	5	32	...	78	200	...

Nine at Daldowie (Lanark), planted about 1720—

1.	1898.	10	4½	5	35	...	70	177	11	11
2.	„	10	10	5	40	118	73	177	...	...
3.	„	10	10½	5	50	...	73	177	20	11
4.	„	12	7½	5	26	111	85	177	39	11
5.	„	10	8¾	5	45	100	72	177	...	...
6.	„	12	9½	5	25	...	86	177	54	11
7.	„	13	0	3.2	10	...	87	177	27	11
8.	1909.	12	5½	5	18	...	74	188	...	...
9.	„	12	0	5	10	...	71	188	...	...

Three at Dalziel House (Lanark), planted about 1721—

1.	1893.	13	8½	4.8	12	...	96	171	88	14.8
2.	„	12	7	5.0	...	...	88	171	...	...
3.	„	11	11	5.9	...	...	84	171	...	...

Six at Nether-Pollock House (Renfrew), planted 1732—

1.	1899.	12	8	5	18	...	91	166	09	5.9
2.	„	12	2½	3	34	...	88	166	42	5.9
3.	1892.	13	3	7.7	25	92	1.00	159	21	12.9
4.	„	11	6½	5.5	15	...	87	159	33	12.9
5.	„	10	10½	5.3	15	..	82	159	11	12.9
*6.	„	11	6	4.5	...	...	83	159	43	12.9

* No. 6 probably planted at same time, 1732.

One at Mountstuart (Bute), planted about 1712—

†1870.	13	0	5	21	73½	98	158	70	33
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† *Fide* Mr. James Kay.

One at Loudoun Castle (Ayr), planted about 1714—

1899.	13	0	7.9	12	...	80	156
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Six at Methven Castle (Perth), planted about 1750—

1.	1909.	14	8	4	1.11	158
2.	„	12	6	4	95	158
3.	„	11	10	4	...	...	90	158	...	...
4.	„	11	10	4	...	...	90	158	...	...
5.	„	10	6	4	...	...	80	158	...	...
6.	„	9	4	4	...	...	71	158	..	...

For the Methven Castle trees, which are outside of the area treated of in this paper, I am indebted to Mr. James Whitton, Superintendent of Parks, Glasgow, who wrote to Colonel Smythe, of Methven Castle, who kindly measured six of his beeches planted about 1750.

The first four trees at Daldowie (in table above) grow at the confluence of the Clyde and North Calder. No. 5 is farther away from the Clyde, lower down the river, and like Nos. 1, 2, and 3, is of the long-boled branchless type, showing a smaller rate than the more fully foliated trees. The increase for the last 11 years is at a much smaller rate than that for the previous 177 years, evidently indicating that the smoke from the great city to the west, and from surrounding collieries, &c., near at hand, is increasingly affecting the growth of the trees. The highest rate for 177 years, that of No. 7, is probably due to its being a short-boled, well-branched tree, overhanging the river, while the low rate for the last 11 years is partly accounted for by the loss of a large branch, and by general decay, of which there are various symptoms.

The high rates for one at Pollok, an inch yearly, and for one at Dalziel, '96 inch, may be in part due to each being "near planted by a river," but probably more to their being well branched, full-foliated trees. It is not surprising that the trees at Pollok are not growing well now, they receive too much smoke from "a' the airts the wind does blaw." Smoke does not agree with the Beech,—those in our parks are being suffocated.

Messrs. Elwes and Henry, in their great work "The Trees of Great Britain and Ireland" (page 23), say "The self-layered Beech at Newbattle Abbey . . . must be looked on as the most remarkable, if not the largest, of all the beeches of the park or spreading type now standing in Britain. . . . There are two beeches standing on a mound near the road to Lochfynhead in the Park at Inveraray, which are known as the Doom trees, because in former times they were said to have been used as a gibbet for criminals. The largest of them measures 75 feet by 16 feet 5 inches. The Duke of Argyll, however, doubts this tradition. There is another very fine beech, the largest I [Elwes] know of in the West Highlands, at Ardinglas, under which Prince Charles's men are said to have camped in 1745. Though of no great height, it has a girth of 18 feet 8 inches, and spread of branches 30 yards in diameter.* . . . In England there is, at Ashridge Park, Bucks, a celebrated tree called the Queen Beech, which is about 135 feet high, the greatest height known to be attained by any deciduous tree but the Elm in Britain.†

* *O p. cit.*, p. 25. † *Ibid.*, p. 21.

Table of Measurements of Beeches in Clyde Drainage-Area.

By JOHN RENWICK and RICHARD M'KAY.

LOCALITY.	(a) Date of earliest measurement.		(b) Date of latest measurement.		(c) Average yearly rate of girth increase.		Date of Height and Spread. 1899				
	Date (a).	Girth.	Date (b).	Girth.	Increase in Girth, ann. (c).	Bole.					
	Ft.	In.	Ft.	In.	Years.	Ft.	Feet.				
Ardgartai,	7/1899	12 6	5 0	7/1903	13 0 $\frac{1}{2}$	6.75	4	1.68	12	77	84 x 78
Inveraray Castle,	6/1899	17 9	3 10	...	...	...	...	...	8	...	...
"	6/1899	16 9	5 0	...	...	...	...	...	11	...	...
AYRSHIRE.											
Auchencruive,	9/1905	15 7 $\frac{1}{2}$	5 0	Planted about 1700		187.5	205	.91	17	...	...
Do., ‡	9/1905	12 1 $\frac{1}{2}$	5 0	...		...	...	...	9	...	...
Do.,	9/1905	14 10 $\frac{1}{2}$	5 0	Planted about 1700		178.5	205	.87	17	...	...
Do., †	9/1905	7 11	2 6	...		...	...	...	9	...	...
Auchendrane,	3/1896	13 7 $\frac{1}{2}$	5 0	5/1909	14 9 $\frac{1}{2}$	14	13	1.07	11	78	98
Do.,	3/1896	10 4	5 0	5/1909	11 2 $\frac{1}{2}$	10.5	13	.81	25	67	...

Do.,	-	9/1896	14	1½	5	0	3/1909	15	1½	12	12	1·00	12	...	...	...
Do.,	-	6/1892	13	10½	4	5	7/1903	14	7½	9	11·3	·80	11	...	...	...
Do.,	-	6/1892	13	7	4	6	7/1903	14	6½	11·5	11·3	1·00	12	...	...	...
Do.,	-	9/1896	14	2½	4	6	3/1909	15	5½	15	12	1·25	5	...	...	...
Do.,	-	4/1903	13	5½	5	0	3/1909	13	9½	4·25	6	·71	20	...	...	...
Do.,	-	5/1902	13	3¾	3	10	6/1904	13	5	1·25	2·2	·57	6	...	...	...
Do.,	-	4/1903	13	3½	5	0	3/1909	13	9½	6	6	1·00	18	97	...	1903
Do.,	-	9/1896	12	6	5	0	3/1909	13	5¼	11·25	12	·94	26	...	...	...
Do.,	-	3/1909	14	1	5	0	...	...	...	...	...	...	22	...	...	...
Do.,	-	3/1909	13	1½	3	2	...	...	...	...	...	...	7	...	...	...
Do.,	-	7/1901	12	1	5	0	12/1907	12	5¼	4·25	6·5	·65	15	66	...	1907
Do.,	-	9/1889	9	2¼	4	3	1/1909	10	5	14·75	19	·78	38	76	...	1900
Do.,	-	9/1899	7	10½	4	3	1/1909	8	10½	12·25	19	·65	52	70	...	1900
Do.,†	-	9/1896	8	8½	2	9	4/1907	9	8¾	12·25	10	1·22	4	53	...	1902
Fullarton House,	-	Spring, 1879§	13	5	5	0	7/1903	15	1	20	24·5	·82	11	...	...	...
Do.,†	-	" §	6	1	0	0	7/1903	9	6	39	24·5	1·59	5	...	...	...
Do.,	-	7/1903	13	11½	5	0	...	...	...	...	...	...	32	...	...	...
Kilkerran,	-	9/1904	20	2	2	9	4/1909	21	0	10	4	2·50	5½	68	120 × 116	85

{ Ht. 1904
Sp. 1909

TABLE OF MEASUREMENTS OF BEECHES IN CLYDE DRAINAGE-AREA—Continued.

AYRSHIRE.

LOCALITY.	Date (a).		Girth.		At		Date (b).		Girth.		Increase in Girth.		Rate per ann. (c).		Bolt.		Height.		Spread.		Date of Height and Spread.		
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Years.	In.	In.	Ft.	Ft.	Ft.	Ft.	...	...	...	...	...
Kilkerran,	-	-	9/1904	21 3½	3	0	4/1909	21 9½	6		4	1.50	4		4								
Do.,	-	-	9/1904	14 5	5	0	4/1909	14 8	3		4	.75	4		12	71**						1899	
Do.,	-	-	4/1909	12 11½	5	0	200 annual rings.		155.5		2.00	.78			32								
Do.,*	-	-	9/1904	12 4	5	0	4/1909	12 7½	3.5		4	.87	4		5							73½ × 73½**	1909
Knock Castle,†	-	-	9/1904	5 3	3	6	...	...	...		...	...	...		7½								
Loudoun Castle,	-	-	4/1899	13 0	7	9	Planted before 1714		156		185	.80			12								
Do.,	-	-	7/1908	14 4	5	0	...	...	...		...	...	...		33								
Monkreding House,	-	-	11/1901	15 8	3	2	...	...	...		...	...	...		7								
Shewalton,*	-	-	5/1905	6 5	5	0	...	...	...		...	...	...		20								
Stair House,	-	-	10/1892	17 8½	4	3	9/1903	18 9	12.5		11	1.14			10	100							1903
Do.,	-	-	10/1892	13 9	5	0	9/1903	14 3	6		11	.55			12								
Do.,	-	-	10/1892	13 1	3	6	9/1903	13 6½	5.5		11	.50			8								
Do.,	-	-	10/1892	12 3½	4	6	9/1903	13 0½	9		11	.82			11								
Thornton House,	-	-	Spring, 1879	14 3	5	0	1/1904	15 5½	14.5		25	.58			13	80							1904

°° *Fide* Mr. James Maxwell.§ *Fide* Dr. Landsborough.† *Var. purpurea.*† *Var. incisa.*° *Var. cuprea.*

BUTE.

Mountstuart House,	-	*1870	13	0	5	0	9/1903	14	11	23	33	'70	21	*73½	...	1878.
Supposed planted 1712.																
								156		158		'98				

o *vide* Mr. James Kay.

DUMBAR TONSHIRE.

Balloch Castle,	-	-	4/1900	13	9	4	0	...	...	...	...	...	7	...	...	...
Catter House,	-	-	10/1900	17	0	6	9	10/1908	17	9½	9·5	8	1·19	97	96 × 78	1900		
Do.,	-	-	10/1900	13	6½	5	0	...	Blown down 1906 or 1907							89	98½	...
Cochno,	-	-	4/1895	12	2½	3	6	4/1903	12	8½	6	8	'75	23	68	104	1903	
Do.,	-	-	9/1890	12	4	3	0	4/1903	13	7½	15·5	12	1·29	5	...	...	...
Craigton,	-	-	11/1892	14	0	5	0	3/1900	14	6¾	6·75	7	'96	7½	104	...	...
Dougalston House,	-	-	3/1893	15	6	6	8	8/1908	16	4½	10·5	15·9	'66	18	...	89½ × 87	1908	
Do.,	-	-	3/1893	13	5	4	10	5/1900	13	9½	4·5	7	'64	...	...	...	...
Do.,	-	-	3/1893	13	5	4	8	5/1900	13	9½	4·5	7	'64	...	...	...	...
Edinbarnet,	-	-	5/1893	12	2¼	4	0	3/1901	12	7¼	5	7·9	'63	20	81	...	1901	
Garscube House,	-	-	9/1905	13	0	5	0	...	...	...	...	...	...	16	...	80	...
Killermont House,	-	-	6/1890	14	5½	5	6	3/1909	15	10	16·5	18·8	'88	10	88	...	189	
Do.,	-	-	6/1899	12	6½	5	6	3/1909	12	10½	4	9·6	'42	10	77	...	1899	

TABLE OF MEASUREMENTS OF BEECHES IN CLYDE DRAINAGE-AREA—Continued.

DUMBAR-TONSHIRE.

LOCALITY.	Date (a)	Girth.		At	Date (b).		Girth.		Increase in Girth. Rate per ann. (c).	Bole.	Height.		Spread.	Date of Height and Spread.
		Ft.	In.		Ft.	In.	Ft.	In.			Ft.	In.		
Killermont House.	1/1899	11	2 $\frac{3}{4}$	6	0	3/1909	11	8 $\frac{1}{2}$	5.75	10	.57	25	93	1899
Do.,	1/1899	10	4	5	0	3/1909	10	10	6	10	.60	25	98	1899
Mains,	4/1893	12	8 $\frac{1}{2}$	4	10	3/1903	13	5 $\frac{1}{4}$	8.75	10	.88	35	...	...
Rosneath House.	6/1894	14	10	...	...	...	...	...	...	...	...	...	...	...
Ross Priory,	8/1900	17	7 $\frac{3}{4}$	5	0	...	...	...	...	...	...	19	88	...
Do.,	8/1900	14	1 $\frac{1}{4}$	5	0	...	...	...	...	...	...	30	...	...
Strathleven,	9/1890	15	5 $\frac{1}{2}$	5	6	...	...	...	...	...	...	...	...	...
Do.,	3/1895	14	10 $\frac{1}{2}$	6	0	3/1909	15	10	11.5	14	.82	22	...	...
Do.,	3/1895	14	9	5	6	7/1904	15	8 $\frac{3}{4}$	11.75	9.5	1.23	25	93	1904
Do.,	7/1904	13	3 $\frac{1}{2}$	6	0	3/1909	13	6 $\frac{3}{4}$	3.25	4.5	.72	25	...	...
Tallichewan Castle,	6/1894	13	4 $\frac{1}{2}$	7	0	4/1905	14	0 $\frac{3}{4}$	8.25	10.7	.77	24	...	...

LANARKSHIRE.

Bothwell Castle,	4/1898	12	4	6	0	...	...	...	...	...	...	...	...	...
Cadder House,	6/1890	14	6	6	0	2/1899	15	2 $\frac{1}{2}$	8.5	8.7	.98	18	80	122 × 106 1899

Do.,	2/1899	11	3½	...	...	...	...	...	...	82	90½	1899		
Cadder Wilderness,	1/1891	9	0	3	3	3/1909	9	4½	4.5	18	-25	20		
"	1/1899	7	4½	5	0	...	...	...	...	...	...	93		
Cambusnethan House,	5/1902	12	10	5	0	...	...	...	...	20	...	...
Daldowie House, planted about 1720,	3/1898	12	7½	5	0	2/1909	12	11½	4.25	11	.39	26	111	1898
							151.5	177			.85			
Do.,	3/1898	10	10	5	0	...	...	...	130	177	.73	40	118	1898
Do.,	3/1898	10	8½	5	0	...	...	...	128.75	177	.72	45	100	1898
Do.,	3/1898	12	9½	5	0	2/1909	13	3½	6	11	.54	25	...	...
							153.5	177			.86			
Do.,	3/1898	13	0	3	2	2/1909	13	3	3	11	.27	10	...	...
							156	177			.87			
Do.,	3/1898	10	10½	5	0	2/1909	11	0¾	2.25	11	.20	50	...	...
							130.5	177			.73			
Do.,	3/1898	10	4½	5	0	2/1909	10	5¼	1.25	11	.11	35	...	...
							124.5	177			.70			
Do.,	2/1909	12	5½	5	0	...	...	...	149.5	188	.74	18	...	...
Do.,	2/1909	12	0	5	0	...	...	...	144	188	.71	10	...	...
Dalziel House,	5/1893	13	8½	4	8	8/1907	14	9½	13	14.8	.88	12	...	...
						Planted	1721	...	164.5	171	.96			

Milton-Lockhart, -	8/1893	10 0½	4 10	6/1902	10 7	6·5	8·4	·77	13	...	...
											° Var. <i>cuprea</i> .
RENFREWSHIRE.											
Blythwood House, -	12/1899	14 10½	5 0	...	...	...	...	...	12	75	105½
Do., -	12/1899	12 6½	3 0	...	...	...	...	...	5	65	...
Cathcart House, -	11/1901	12 2¼	5 0	...	...	...	...	...	20	...	...
Duchall House, -	5/1907	14 4½	4 6	...	...	...	...	...	28	...	...
Do., -	5/1907	13 10½	4 6	...	...	...	...	...	30	...	...
Elderslie House, -	3/1900	14 11¾	3 0	...	...	...	...	...	7	71	...
Do., -	3/1900	13 8¾	2 9	...	...	...	...	...	7	...	87½
Do., -	3/1900	11 5	3 0	...	...	...	...	...	25	...	105
Erskine House, -	2/1893	14 8½	3 0	1/1903	16 8½	24	15	1·60	8	83	1908
Finlayston House, -	12/1899	12 4	5 0	8/1907	12 6	2	7·8	·26	30	...	...
Hawikhead, -	9/1906	15 0	5 0	...	...	...	...	...	20	...	...
Do., -	9/1906	12 8	5 0	...	...	...	...	...	16	...	...
Pollok House, -	3/1892	13 3	7 7	8/1904	13 5¼	2·75	12·9	·21	25	92	1899
			Planted 1732				159	1·00	...	...	...
Do., -	2/1899	12 8	5 0	8/1904	12 8½	·5	5·9	·09	18	...	...
			Planted 1732				152	·91	...	...	...

TABLE OF MEASUREMENTS OF BEECHES IN CLYDE DRAINAGE-AREA—Continued.

RENFREWSHIRE.

LOCALITY.	Date (a).		Girth.		At		Date (b).		Girth.		Increase in Girth.		Rate per ann. (c).		Bole.		Height.		Spread		Date of Height and Spread.
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Years.	In.	In.	Ft.	Ft.	Ft.	Ft.	Feet.	Feet.		
Pollok House,	2/1899	12 2 $\frac{1}{4}$	3	0	8/1904	12 4 $\frac{3}{4}$	2	5	9												
		Planted 1732					146	25	166												
Do.,	3/1892	11 6 $\frac{1}{4}$	5	5	8/1904	11 10 $\frac{1}{2}$	4	25	12	9											
		Planted 1732					138	25	159												
Do.,	3/1892	10 10 $\frac{1}{4}$	5	3	2/1899	10 11	7	5	7												
		Planted 1732					130	25	159												
Do.,	3/1892	11 6	4	5	8/1904	11 11 $\frac{1}{2}$	5	5	12	9											
		Planted 1732					130	25	159												
Bankell,	1/1899	12 1 $\frac{1}{2}$	6	0	...	...	...	...	...	...	...	...	...	...	...	12	68	...	...	...	...
Do.,	2/1897	11 6 $\frac{1}{2}$	4	2	1/1899	11 8 $\frac{1}{4}$	1	75	2							10	55	...	...	...	1899
Do.,	1/1899	10 11	6	0	...	...	...	...	...	...	...	...	...	...	...	12	62	...	...	...	...
Duntreath,	10/1891	14 7 $\frac{3}{4}$	6	0	1/1905	15 10 $\frac{3}{4}$	15	13	13							11	84	...	...	...	1898

90 x 74
1899

Notes on *Orchis ericetorum*, Linton, and other
Flowering Plants.

By LAURENCE WATT.

[Read 27th April, 1909.]

Orchis ericetorum, Linton.—In the tenth edition of the *London Catalogue of Plants*, this is put down as a separate species, and not as a variety of *O. maculata*, Linn. The Rev. E. F. Linton, M.A., F.L.S., was the first to bring this, the spotted orchis, under notice, and in his *Flora of Bournemouth* he describes it as being more slender than the type, leaves narrower, more or less recurved, the lower cauline more or less acuminate and folded, spike one to two inches broadly pyramidal, flowers pale, scentless, with rose purple markings, ground commonly white or tinged with pink, the lower lip, instead of being three-lobed, is suborbicular in outline, and crenate or torn on the edges. He further says these two plants have a wide distribution in Britain. The sub-species, *ericetorum*, Linton, has been noted from Caithness and Sutherland to the South of England, also from Co. Wicklow.

In the spring of 1907 Mr. Linton sent me a description of the Orchis, and asked if I could give him a few additional localities for it. I looked over the low grounds where the type is found, but saw no trace of it. Being in the north during my holidays, I spent a day on the Knock Hill, Banffshire, a hill that is very rich in that class of plants, but up to 500 feet it was always the type I found. After passing 500 feet the sub-species, *O. ericetorum*, Linton, began to appear, and from that to 800 feet all the plants seen were of this sub-species. After passing that elevation the Orchis disappeared altogether. After returning to this district I went up the Old Kilpatrick Hills in search of it, as previously I had only gone over the low grounds, but up to 500 feet it was always the type I gathered. On the moor, at an elevation of 600 feet, I found *O. ericetorum*, Linton, and from that up to 800 feet it was always the sub-species I gathered. After that elevation the Orchis again disappeared.

It seems strange that on those hills, so far apart—the Knock Hill, in Banffshire, and the Old Kilpatrick Hills, in Dumbarton—*O. ericetorum*, Linton, should grow so plentifully, and at almost

the same altitude. May it not be that this sub-species is the common orchis on the hills over 500 feet, and has remained unobserved, until noted and described by the Rev. E. F. Linton? The members of this society might look for it during the coming summer in the various localities they visit, and note the elevation it grows at. I submitted the plants gathered on the Knock Hill and Old Kilpatrick Hills to Mr. Linton, and he quite concurred in my identifications. I show those gathered by Mr. Linton himself in Dorsetshire.

Carex magellanica, Linn. — This beautiful little sedge, with its three drooping spikelets, is stated, in the *London Catalogue of Plants* to be found in fifteen counties. The stations mentioned for it in Scotland in *Babington's Manual* are Terregles, near Dumfries, and Ben Mime, near Loch Lomond. I think Ben Ine must be meant. In Dumbartonshire it has a considerable range, growing in spongy bogs at about the same altitude all over.

The most easterly station for it is in a small loch, and partly a spongy bog, on the Old Kilpatrick Hills, before the hills dip down towards Craigton, east of Edinbarnet, at an elevation of 500 feet. It is found there in considerable numbers, proceeding north-west to the low bog just east of the hill-farm of Edinbarnet, at an elevation of 600 feet. It is there in fine condition. Proceeding north-west to the moors between Cochno Loch and Duncomb, and from there to Loch Humphrey, it grows here and there sparingly. From Loch Humphrey I saw no trace of it on the moor west of that to the Long Craigs. Crossing over the Valley of the Leven to the Carman Moors, between Renton and Cardross, it grows there in the flat sphagnum bogs at the same elevation, say, from 500 to 600 feet. Over the hills to the west of that it is found on the moors above Helensburgh, opposite the reservoir, and this appears to be its westerly limit, as I have seen it nowhere else in the county. Thus, for over a distance of fifteen miles from east to west at varying intervals, this sedge is found at an elevation of from 500 to 800 feet. The Rev. E. S. Marshall records it from Mid-Perth.

Saxifraga oppositifolia. Linn.—In Volume VIII. (New Series) of this Society's *Transactions* (pp. 71-3) there is a paper by the late Mr. Somerville on Dr. Gilmour's discovery of this

species on the sea-coast of Islay, and there is a note from Professor Trail that it is also met with on the coast at Eastern Gamrie in Banffshire. It was to support that statement, and also to satisfy the members, that I thought an exhibition of the plant would be interesting. I was at Greenside, which is, however, *west* of Gamrie, the year previous to the paper quoted being read, and I was astonished at the number of plants that are to be found there. The rocks rise almost abruptly from the sea to a height of 200 feet, and are often washed with the spray from the Moray Firth. At the base of these rocks, and for a considerable distance along the shore, the pebbly beach is covered with the blue flowers of the oyster-plant (*Mertensia maritima*, Roth.), and on the sandy bank at the foot I gathered *Thalictrum minus*, Linn., and the grasses *Agropyron junceum*, Beauv., and *A. pungens*, Roem. and Schult. On the rocks there and all along the coast *Sedum rhodiola*, DC., is plentiful. On the grassy slopes the Rock-rose (*Helianthemum vulgare*, Gært.), throws up its yellow flowers, and on the top of the cliffs for a considerable distance, *Kalera cristata*, Pers., is the common grass. On a ridge of rock, sheltered from the sea and facing the west, I got *Saxifraga oppositifolia*, Linn., fairly plentiful, though almost dried up, the seed-vessels being all that was left. I got my friend, Mr. Wm. Craib, who was with me at the time, to send me specimens the following spring. They are now exhibited, and you will see they were gathered on the 9th of April, while those I gathered on Ben Lomond are dated 26th May. The difference in altitude explains the difference in time of flowering between those growing at the sea-shore and those gathered on Ben Lomond at 2,800 feet. The plants shown grow on the west side of the Ben, and it is well worth the climb to see them in flower. I never saw any trace of this plant on Ben Vorlich.

Saussurea alpina, DC.—This is a new record for Dumbarton. I gathered the plants now shown on Ben Vorlich at an altitude of 2,800 feet. There were few plants, and they are very small compared with those got on Ben Lui, while both differ from those gathered in Canlochan, Forfarshire. The leaves of the plants from the last-named locality are whiter on the underside than those from Ben Lui and Ben Vorlich. I submit plants from the three localities for your inspection.

Cerastium semidecandrum. Linn.—This is recorded from very few counties in the West of Scotland, being more of an east-coast plant. I gathered it at Greenside, west of Gamrie, Banffshire, but it was almost withered up. The plants shown were gathered by Mr. Wm. Craib, on the Links of Old Aberdeen. It is easily known by its half-membranaceous bracts.

Myosotis collina. Hoffm.—This small forget-me-not is not recorded at all for the West of Scotland except S. Ebdies, and, being small and flowering early, it may often be overlooked. The plants shown were gathered by Mr. Craib on the Links of Old Aberdeen. One notable distinction is the distance between the first and second flowers.

Proceedings of the Society.

THE sixth meeting of Session 1908-9 took place on 23rd February, 1909, Mr. John Paterson, President, in the chair. Before beginning the business of the evening the President made feeling reference to the loss the society had sustained in the death of two of its members, Miss Cathcart, of Auchendrane (pages 50-1), and the Rev. Alex. S. Wilson, M.A., B.Sc., of North Queensferry, a former vice-president of the society (pages 61-2). Mr. Paterson also referred to the death of Mr. Charles Berry, the Naturalist of Lendalfoot, whose paper on the Birds of Lendalfoot was read at a recent meeting (pages 5-23 and page 50).

Dr. Thomas Beath Henderson exhibited several specimens of reptiles from Uganda. Among them was a skull of *Bitis gabonica* (D. and B.), a reptile whose venom is very poisonous though the animal is not an aggressive one. The upper surface of the head of this species has a curious resemblance to a dead leaf. Other species exhibited were *Atheris squamiger* (Hallow), an active and fierce viper; *Boodon olivaceus* (A. Duméril), a harmless colubrine snake; *Agama atricollis* (A. Smith), the blue lizard of Uganda; and *Rhampholeon peterkii* (Peters), a species of chameleon which haunts the neighbourhood of swamps, where it is found on or near the ground feeding on the insects which abound in such situations. A series of drawings and paintings by Miss Dorothy Henderson served admirably to illustrate Dr. Henderson's remarks.

The topographical features of Cadder Wilderness were next illustrated by a series of lantern-slides, to which Messrs. W. R. Baxter, George Herriot, N. G. Reid, Hugh Wilson, and Alexander Ross contributed.

Mr. John Renwick read a paper "On the Beeches in the Clyde Drainage-Area" (pages 73-92).

A paper "On the Genus *Phoxocephalus*" was read by Mr. Alexander Patience.

The seventh meeting of Session 1908-9 took place on 30th March, 1909, Mr. John Paterson, President, in the chair.

Mr. Gavin T. Maclean, 100 Springkell Avenue, Maxwell Park, was admitted as an ordinary member.

Mr. Alexander Patience exhibited some crustacea from the Merqui Archipelago and East Portuguese Africa which he had received from the University of Aberdeen for examination.

Dr. T. Beath Henderson exhibited an adder (*Pelias berrus*, Linn.) which Mr. Alexander Ross had found at West Loch Tarbert. When caught this specimen appeared of a bright shining-red colour. Dr. Henderson remarked that it was a female, of a distinctly copper colour. This colour is not common in adders, though by no means abnormal. When met with in adders of the usual size they are invariably females, while in the small red variety or species described by Dr. Leighton, both sexes are coloured similarly. Dr. Henderson made some remarks on colour variation in snakes, which were illustrated by coloured drawings by Miss Dorothy Henderson.

Mr. John Smith sent for exhibition *Peziza coccinea*, Jacq., from Hindog Glen, Dalry (Ayr). In a note regarding this species, Mr. D. A. Boyd says, that although not the largest species of its genus, *Peziza coccinea* is by far the most beautiful of the British cup-fungi. When full-grown, it sometimes extends to considerably over an inch in breadth. The brilliant red colour of the surface of the hymenium or cup, renders it a strikingly conspicuous object when seen in the woods, particularly as it occurs at a time when there is little else to vary the sombre tints of decaying leaves and withered herbage. The cups are developed in moist woods during the months of winter and spring, and are usually in their best condition about Christmas time or at the

New-Year. They are attached to fallen branches of hazel, particularly those which have become partially buried in the soil. When seen glowing vividly amid a setting of bright-green moss, well-grown specimens of *P. coccinea* are so beautiful as to attract the admiring notice of even the careless passer by.

This handsome species has been reported from many parts of Britain. In Scotland it appears to be most abundant in the west, where the prevailing mildness of the climate and moisture of the wooded glens along the coast seem to afford conditions very suitable for its development. Among the localities noted in the west are Hamilton Woods (*Hopkirk*), Finlaystone (*King*), Innellan (*King*), Largs, West Kilbride, and Bute.

Several varieties, only differing from the type in the colour of the hymenium, have been reported from time to time. These include a white form (*Science Gossip*, vol. xxi., 1885, p. 67) and a form with cream-coloured disc (var. *albida* Mass., *Brit. Fungus Flora*, vol. iv., p. 378). To these may be added a form with the disc golden-yellow, occasional specimens of which have been observed in winter at Ardneil Bank Wood, near Portincross, Ayrshire, where the typical *P. coccinea* is abundant at that season. This stipitate yellow variety is not to be confounded with any form of *P. aurantia* CEd., which may be distinguished by its sessile habit, more widely-expanded cup, autumnal time of appearance, and different habitat, as well as by the different size and shape of the spores and paraphyses.

It may be noted that certain other red-coloured fungi (*e.g.*, *Amanita muscaria* (L.) (Fr.) occasionally vary to yellow.

Mr. Peter Ewing, F.L.S., exhibited on behalf of Mr. Daniel Fergusson, *Lycopodium inundatum*, Linn., from Caticol, Loch Ranza. This species seems fairly well distributed all over Northern Europe. In Britain it is reported from sixty-two vice-counties. It is recorded in Scotland from Ayr, Westernness, Dumbarton, West Ross, West Sutherland, and the Orkneys, but this is the first time it has been recorded from any of our western islands.

Mr. Laurence Watt read a paper "On some additions to the Flora of Dumbartonshire" (pages 65-9).

In a communication from Mr. Robert Kidston, F.G.S., regarding Mr. Robert Dunlop's exhibit at the December meeting, he

writes:—"The fossil is *Neuropteris gigantea*, Sternb., as Mr. Dunlop mentioned. It is true that the genus *Neuropteris* belongs to the Pteridosperms (= Cycadoflites), but these possess many fern characters—as well as *Cycadacean* characters—and they cannot be either placed in one or other of these groups, but must, as far as we at present see, stand by themselves. Their fronds were filicinian, and the small remains on your specimen are *pinnules*, not leaves. The pinnules of many recent ferns are articulated to the rachis, and become shed when decay of the frond occurs. No better example could be mentioned than the common Royal Fern—the frond of which has a great superficial resemblance to *Neuropteris*—though the two plants bear but little affinity to each other."

An exhibition of lantern slides from the "Paxton" series of remarkable trees was given during the meeting.

The eighth meeting of Session 1908-9 took place on 27th April, 1909, Mr. John Paterson, President, in the chair.

Messrs. Herbert D. Shields, Dunclutha, Dalmuir, and Alex. Scrimgeour, 82 Finlay Drive, Glasgow, were elected as ordinary members.

Reports of excursions to Strathleven, Calder Glen, and Orbiston were given.

Mr. Jas. J. F. X. King, F.E.S., exhibited and described *Tipula nodicornis*, Hgg., from Aviemore and Forres. These are the first-recorded instances of the capture of this tipulid in Scotland.

The President (Mr. John Paterson) exhibited some sections of willow bored and billed by a woodpecker, probably the great spotted woodpecker (*Dendrocopus major*, Linn.), from Glenorchard, near Glasgow, received from Mr. James Bartholomew. The sections of wood and portions of bark exhibited had been submitted to Mr. Robert H. Read, M.B.O.U., a corresponding member of the society, who declared the markings to be undoubtedly the work of a woodpecker. The wood was infested by the clear-wing moth (*Sesia bembeciformis*). Mr. Paterson stated that since he had received these samples of wood, &c., he had found on examining similarly infested willows in Cadder Wilderness evidence of similar borings. Mr. G. A. Hardy stated

that two winters ago, he had seen a woodpecker in Cadder Wilderness which he believed to be the species suggested above.

Through the kindness of Mr. Gib. Graham, the President exhibited a little crake (*Porzana parva* (Scop.)) which had been captured alive a month ago in a fishing boat in Girvan harbour. This is the first record of the occurrence of this species in the "Clyde" area, and there is but one earlier Scottish record (Thornton, banks of the Isla, 1852).

An exhibition of lantern slides illustrating the remarkable trees of the Glasgow district was given by the President.

Mr. Laurence Watt read some "Notes on *Orchis ericetorum*, Linton, and other flowering plants" (pages 93-6), and exhibited the species referred to.

A paper by Mr. Alex. Patience on "Some Clyde Crustaceæ" was held as read.

The President then read some preliminary notes on the appearance of summer-migrants in Clyde in 1909 (pages 70-3).

Mr. D. A. Boyd read a paper on the "Occurrence in Ayrshire of *Chrysophlyctis endobiotica*, Schilb., the Fungus of Black-scab Potato Disease" (pages 62-5).

Notes.

Gadwall (*Anas strepera*) at Bishop Loch.—On 25th April, 1909, in company with Mr. Alex. Ross, I saw a pair (♂ and ♀) of Gadwalls at Bishop Loch. In 1876, when Mr. Gray wrote his account of the birds of Glasgow and its vicinity for the British Association Meeting, he had "not been able to detect the GADWALL as coming within the limits named," i.e., the ten-mile radius. In addition to the occurrence now reported, one was recently recorded as shot at Dougalston (*Annals Scot. Nat. Hist.*, 1908, p. 119).—John Paterson.

Golden Oriole (*Oriolus galbula*) at Port-Glasgow.—On 10th May, 1909, through Mr. Chas. Kirk's kindness, I had the pleasure of handling, in the flesh, a Golden Oriole which had been found dead in a garden at Port-Glasgow. It was in perfect plumage, though somewhat emaciated. It bore no traces of confinement whatever. There is only one old record for this bird for Clyde, one killed in Arran in 1807 (*Fleming History of British Animals*).—John Paterson.

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The Stock-Dove (*Columba œnas*, Linn.) in the Clyde Area.

By ROBERT S. and HUGH W. WILSON.

[Read 30th June, 1909.]

So much is written at present regarding the decrease in numbers of various birds, that it is a pleasant duty to write of a species which is actually increasing, and spreading its range over districts in which, but a short time ago, it was unknown. Such a bird is the Stock-Dove, which forty years ago was known only as a mere straggler to Scotland.

Mr. Robert Gray (*Birds of the West of Scotland*, 1871), mentions only two instances of its occurrence, *i.e.*, from localities so distant as Caithness and Orkney, both without the scope of his work. We may safely assume that these were the only records known to him for the whole of Scotland.

Mr. J. A. Harvie Brown's paper ("The Stock-Dove in Scotland." *Annals of Scot. Nat. Hist.*, 1894, page 3) relates chiefly to the East Coast, where the spread of the species has been much more rapid, or at any rate earlier than it has been in the west, and no mention is made regarding the area at present under consideration.

Before examining the various records, it may be advisable to consider, firstly, from what direction did it come? and secondly, is the bird after all a newcomer, or has it been overlooked? Regarding the first question, there can be little doubt that the Stock-Dove originally came from England, where a rapid increase has taken place in recent years (*A Manual of British Birds*, Howard Saunders, 1899). But did it come direct up the West

Coast through the Solway area to colonise "Clyde," or are our Clyde birds an overflow of the immigrants to the East Coast, spreading through the thirty miles of country lying between the Firths of Forth and Clyde?

From the evidence we have collected there is nothing to show whence, thirty years ago, the Stock-Doves in the valleys of the Irvine and the Ayr came from. Mr. Robert Service (*Vertebrate Zoology of Kirkcudbrightshire*, 7th edition, in Maxwell's *Guide Book to the Stewartry of Kirkcudbrightshire*) heard of the first local Stock-Doves in the winter of 1876-7, and found his first nests in June, 1877. Mr. J. A. Harvie Brown, speaking of 1883, mentions (*Annals of Scot. Nat. Hist.*, 1894, page 4) "a very visible increase has since occurred from localities east of the central range of the Stirlingshire hills." Between those widely separated localities and those mentioned in the following pages there are no intervening instances of its occurrence, and until such are forthcoming the question as to the direction from which it first came must remain unanswered. It is much to be regretted that more information is not forthcoming from Dumbartonshire, as this is the county most likely to have shared in the increase of this species, had such come from the adjoining county of Stirling.

Regarding the second question, as to whether the Stock-Dove is really a newcomer or not, doubt has been cast on the theory of this species being a recent immigrant to "Clyde," based on very slender evidence, we think. In many parts of England Rock-Doves have been reported from inland districts, and when these reports were investigated by competent observers the so-called Rock-Doves have, without exception, been found to be the species at present under consideration. We know of no such reports from the "Clyde" area, save that of Ballochmyle, and this seems rather to show that the latter locality was the first in "Clyde" colonised by the Stock-Dove, more particularly as Mr. John Paterson's Ballochmyle record was not an isolated one, followed by a long blank, as will be seen from the following pages. Pigeons are generally reckoned, by country people, to be destructive birds, and are shot on every possible occasion, in season and out of season, by sportsmen and farmers, and it is quite fair to suppose that, had the Stock-Dove been present

in any numbers prior to the period in which it has become known as a local species, some at least would have come under the notice of ornithologists. If there can be any doubt on this head, there is no gainsaying the fact that there has been, during the last two decades, an increase in numbers and a spread in distribution of the Stock-Dove in the "Clyde" area. In a little glen amongst the Avondale moors we first saw the Stock-Dove, and we have never since ceased to regard it as a bird of the open country. The rocks by the shore, the bare, steep sides of the moorland glens down which the hill-burns flow, and the rocky gorges of the larger rivers, amply clad with vegetation, are its favourite nesting haunts in the Clyde area, but we have not yet heard of it frequenting the sandhills, which are often resorted to in other parts. Usually in some hole, we once saw a nest on the flat top of a large boulder, and open to the sky but for a dense bramble bush which helped to conceal the conspicuous white eggs from any passing crow or jackdaw.

It is a very timid bird, and the slightest sound causes it to dart out from its nest, which otherwise would have been passed by. It has a more twisting flight than the Ring Dove, and its note, a peculiar grunting one, is quite different from the soft coo of that species.

Like other pigeons, it is partial to grain, but it makes amends to the farmer by consuming a vast quantity of the seeds of noxious weeds.

For convenience, we have grouped the various records under the different counties, beginning with Ayrshire.

AYRSHIRE.

What appears to be the earliest evidence of its presence in this county is furnished by Mr. John Paterson, who writes—
 "Just thirty years ago and over I spent several holidays at Mauchline, and during these periods visited Haughholm Farm and the Haugh generally daily, sometimes several times daily. This is a couple of miles above the place where Miss Anderson showed me the Stock-Doves' nesting place. On the steep wooded slope opposite Haughholm Farm, doves which I understood to be Rock-Doves were regularly seen by me. Of course, at that time I knew nothing about birds beyond the very commonest,

and I mention the matter for what it is worth." This decidedly points to the Stock-Dove. Of course there is always the chance of them being domestic pigeons which had reverted to a wild state (a not uncommon fact), but then we have to consider that Miss Fanny Anderson informed several members of this society during the excursion to Barskimming, on June 3rd, 1905, that she had known the Stock-Dove as a bird of the rocky banks of the Ayr at Barskimming for nearly twenty years, and also the fact that it is quite common in that locality at the present day.

On 6th March, 1897, Mr. John Robertson saw five or six at Goldenberry Head, between Fairlie and West Kilbride, but it appears to have established itself there some years previous to this date, for, on asking a former keeper at Hunterston, in 1904, if he knew the Stock-Dove as a local bird, he said he had known some small blue pigeons to have frequented the Goldenberry cliffs for at least ten years, and probably before that time for all he knew to the contrary. His description of them left no doubt on our minds as to their identity, and his name for them, "the wee blue pigeon," is the one by which they are now known to the wildfowlers in that locality. It is still increasing there, and during the early autumns of 1906 and 1907 it was quite abundant between Fairlie and West Kilbride, frequenting the shore in hot days from day-break, when they come down from the fields behind, along with the Ring-Doves. It remains there during the winter, and some can always be seen about, even in the most severe weather, when they have been observed going westward in company with skylarks, thrushes, &c., during a severe snowstorm. The hilly country behind Fairlie and Largs seems quite suited to this species, but so far, probably from want of observation, it has not been reported from there save in one instance, when Mr. John Robertson heard their distinct note on July 18th, 1905, at the head of the Killing Craigs, behind Largs, and in the following year he saw a Stock-Dove at the same place. In the parish of Galston it is reported to have nested for the last three decades (*Kilmarnock Glenfield Ramblers' Annals*, No. 5, page 71). Although no authority is given for this statement, when taken in conjunction with Mr. Paterson's recollection of the doves at Mauchline, it goes far to show that the river-valleys of the Ayr

and the Irvine have been colonised by this bird at a very early period of its history in the Clyde area, if indeed it has not been always there.

Probably the statement about Galston refers to what is known as the "Glen" near Darvel, as we have heard reports of it being present there for some time. We have not observed it there, but on the opposite bank of the Irvine in the Chanque Burn, about a mile above where it joins the Irvine, we saw a nest of the Stock-Dove on 22nd May, 1902 (*Annals of Scot. Nat. Hist.*, 1902). We often visited this place in previous years, but never saw any trace of this species until the above date, and since then have seen very few. Mr. John Paterson believes there were Stock-Doves on Bine Hill, near Girvan, in 1904, and also on the cliffs north of Dunure in the same season, while we have heard from Mr. John Robertson about them having been seen about the Heads of Ayr, but have no data. It is also recorded in the above-mentioned *Glenfield Ramblers' Annals*, from Hareshawmuir, near Fenwick, in 1904, and from Muirkirk in 1905. Mr. Charles Kirk has recently seen a Stock-Dove's nest near the latter place, and tells us that Mr. Fairbairn, the keeper at Wellwood, had never observed the Stock-Dove at Muirkirk until that year (1905), and he has been keeper at Wellwood for 20 years. In 1907 Mr. John Craig, of Beith, told us of a Stock-Dove which had been shot at Hessilhead Castle, near Beith, on 8th April, and we have since seen this bird, which is now in the possession of Mr. R. Kennedy, Beith.

In the same year one was shot at Lendalfoot, on 15th July, by the late Charles Berry.

Since the above was written, Mr. Archibald Shanks, of Dalry, has sent us Stock-Doves' eggs taken this season from Cubs Glen, Glenmore Water, Auchinleck Parish, and states (*in. lit.* 28/6/09) — "The nest was situated in a hole in the rocks. The boys told me it was the nest of the 'Rock Cushat,' but I did not see the birds." He goes on to say "the Dalry station is 'Ravens Craig Glen, South Burn,' and the keeper calls the bird 'Blue Rock.' He shot one accidentally this year, and this also happened a year or two ago. Within half a mile of this, another [nesting] place is among the rocks, below Raeside Farm, Rye Water. I have seen the bird here, &c."

BUTESHIRE.

The earliest record of this bird in the island-county of Bute is by Mr. Bruce Campbell, who observed a pair on the western side of Great Cumbrae, on August 18th, 1896, and believed them to be nesting there (*Annals of Scot. Nat. Hist.*, 1897, page 44). This is an extremely interesting record, when we consider that the Great Cumbrae is only separated from the Ayrshire Coast, where the Stock-Dove was already known, by the narrow Fairlie Roads. In 1899 three birds were observed, on September 8th, between St. Ninian's and Scalpsie Bays, Bute, by Mr. John Paterson and Mr. John Robertson, and on June 5th, 1900, eight were seen by the latter. Writing in 1903 (*loc. cit.*, 1903, page 141), he describes it as "not common. It nests in several localities in Bute." He found his first nest on May 5th, 1902. By the year 1905 it had increased very much in numbers, and nowhere more so than on the sandstone rocks at Kerrytonlia Point, near Kilchattan Bay, where we saw six nests on 24th April, and came to the conclusion that at least fifteen pairs were nesting there at that date. It continued to increase in numbers in 1906, and in 1907 it was pretty well distributed over almost the entire portion of the island south of a line drawn between Kerrytonlia Point and Stravannan Bay. They were frequenting chiefly the rocky coast line and the steep, broken sides of the little glens which abound in this portion of Bute. With such a species as the Stock-Dove, the nest of which is so remarkably easy to find, the number discovered about the same period is a very good indication as to its abundance or otherwise. In 1906 Mr. William Rennie tells us that he knew of twenty nests in Bute, and we have notes of other ten.

At present we believe this bird is more abundant in the nesting season in the island of Bute than in any other locality in the Clyde area.*

* From the adjoining island of Arran, information is remarkably scanty, chiefly we believe from want of observation, and we have to thank Mr. T. Thornton M'Keith for the only records we know of. He writes (*in lit.*, August 3rd, 1909), "During the Fair Holidays (Mid July) I made a careful survey of the Doves nesting in the cliffs between Blackwaterfoot and Corriecravie. Along that stretch there are at least thirty pairs of Stock-Doves nesting. The ground is very suitable for them, being covered with bracken, ivy, and honeysuckle, and many other such plants. Rock-Doves in the caves, &c., were still more common."

LANARKSHIRE.

This county has also proved attractive to the bird under discussion, and the records relative thereto rather tend to show that here, as elsewhere in the Clyde area, if we except the Ballochmyle district, this dove is a newcomer, for it is hard to believe that it could have been overlooked in so many widely scattered districts, especially after it was known to occur in the area. But to consider the various records:—In the *Annals of Scot. Nat. Hist.*, 1897, pages 214-215, the Rev. J. D. W. Gibson, of Carmichael parish, writes—"During the severe weather in January last a pair of doves, which *appeared* to belong to this species, flew round the Manse garden and rested for some time on a beech tree. Mr. D. Pringle informs me that there were two nests of this species this season [in Fiddlers' Gill, near Braidwood] near to his house," &c. Referring to this note, Mr. John Paterson remarks (1909), "I have a photograph of the Stock-Doves' haunt in the 'Gill,' taken by Mr. Robert M. Morton a dozen years ago, *i.e.*, in 1898." On 28th May, 1904, we put a Stock-Dove off its nest, which was situated under the exposed roots of a tree in the same gill, but did not see any others, and we do not think it was at all common there at the time of our visit. Returning to our chronological order, previous to the year 1901 we spent several days in different years in the moorland district at the head of the Avon in Avondale, on the borders of Ayr and Lanark, but it was not until the year mentioned that we saw a Stock-Dove there. On 22nd May, just where the Dipple joins the Avon, on the Lanarkshire side, we flushed a Stock-Dove from under a dense clump of heather, which proved, on examination, to shelter a Stock-Dove's nest, the first we had ever seen (*Fauna, Flora, &c., of the Clyde Area*, page 116, 1901). The year 1903 added another locality in this county, for on May 9th we discovered it nesting in Cartland Crags, on the Mouse Water, near Lanark. This rocky gorge has long been a favourite resort of Glasgow naturalists, so that, had this bird taken up its residence before that date, it must have escaped their notice. It was still holding its own in 1906, despite the numerous Jackdaws which swarm there.

In the Blantyre district it had also established itself. Mr. Walter Stewart records (*Annals of Scot. Nat. Hist.*, 1909,

page 115) that, acting on information received in 1906 from an acquaintance about the Rock-Dove, he found two nests of the Stock-Dove in 1907, and found four pairs breeding in 1908.

In the winter of 1908-9 it turned up in yet another locality, as we are informed by Mr. John Paterson, to whom we are indebted for the following note:—"Murdoch, Mr. Baird of Lochwood's keeper at Bishop Loch, Gartcosh, tells me to-day [25th April, 1909], that there has been a number of Stock-Doves in his neighbourhood during the past winter—they have been both shot and captured. They were at the Pheasants' feeding. At present they are still about a wood on his ground, a little south-west of Bishop Loch."

RENFREWSHIRE.

With the exception of an isolated instance of its occurrence at Pollok (*Annals of Scot. Nat. Hist.*, 1895, page 228), which refers to "a number of small doves, no doubt referable to this species," trapped about twenty years ago by Cox, the keeper at Nether Pollok, nothing was known about the Stock-Dove as a Renfrewshire bird until 1905. In that year Mr. T. Thornton M'Keith heard of a dove's nest which had been found in a rocky bank on the farm of Braeface, a mile west of Neilston Pad, which, from its situation, we may safely assume belonged to the present species. It was next noticed in the immediate vicinity of Glasgow. On the White Cart, about Netherlee, within four miles from the centre of the city, the banks of the river are admirably suited to the requirements of the Stock-Dove, being rocky and precipitous, and amply clad with vegetation. On visiting this locality, long a favourite resort of ours, on the 25th April, 1908, we saw three Stock-Doves at different parts of the river. Two of them appeared to have nests close at hand, and to satisfy ourselves of this fact we returned again next morning in company with Mr. John Robertson, and were successful in seeing both nests. From subsequent observation we came to the conclusion that there were at least three pairs nesting in this stretch of the river that season, and this year (1909), a nest was seen below Netherlee, on 7th April, but they do not appear to have increased very much in numbers as yet. The Cart hereabouts forms the boundary between Lanark and Renfrew, so that

this information belongs to Lanark as well, but it is put under Renfrew for convenience. In West Renfrewshire we saw a Stock-Dove on 17th May, 1908, in Calder Glen, a very suitable haunt.

In the present year (1909), on 18th April, a pair was observed building on the Craig of Carnock, between Mearns and Neilston. (Mr. George McLeod, *in lit.* to Mr. John Robertson).

On May 2nd a nest was found on Mearns Moor, and on the morning of 13th June its very distinct note was heard in Mains Wood, Giffnock, by Mr. John Robertson. This completes the tale for Renfrewshire, a district the eastern part of which has been long familiar to Glasgow ornithologists.

It will be interesting to watch the progress of the Stock-Dove in Renfrewshire, as there can be little doubt that its appearance there as a nesting species is very recent, and, if carefully watched, its increase or decrease, as the case may be, may afford an insight as to what has taken place in other localities.

DUMBARTONSHIRE.

Mr. W. R. Baxter put a Stock-Dove out of a rocky cliff on Douglas Moor, at the foot of the Kilpatrick Hills, in April, 1907, and again, on 3rd May, 1908, and believed them to be nesting there. In the present year, on 24th April, a nest of this bird was discovered by Mr. Herbert B. Shields, at Edinbarnet, close to, if indeed not at, the place where Mr. Baxter had previously observed it.* We have no information as to its occurrence in any other part of this county, and Mr. Charles Kirk informed us that he has never seen it in the Loch Lomond district, a locality he was very familiar with up till seven years ago. Such a paucity of information from so favourable a tract of country as Dumbarton is very remarkable, and seems to point to a regrettable scarcity of observers, rather than the absence of the bird.

ARGYLLSHIRE.

Mr. Robert M. Buchanan believes that a pigeon he put out from the rocks at Ardlamont Point, some years ago, belonged to this species.

* Mr. Herbert B. Shields (*in lit.*, 25th August, 1909), carries this date back to 1903 or 1904, when he found a nest at the same spot from which the young were successfully reared, and in the following year the site was again tenanted. Since then he has visited the locality annually, without result, until the present year as instanced above.

STIRLINGSHIRE.

Our only record comes from Mr. John Paterson, who tells us of a nest which was discovered at Glenorchard, in April, 1908, by Mr. Bartholomew.

We beg to tender our hearty thanks to all who have assisted in this enquiry, and trust that this attempt to gather together the information that exists relating to this bird in the Clyde area, will be the means of bringing forth additional records which may help to remove the mystery as to when and whence it came among us.

**Some Recent Additions to the Fungus-Flora
of the Clyde Area.**

By D. A. BOYD.

[Read 29th June, 1909.]

ALTHOUGH the last two or three years have in general proved comparatively unproductive of unusual forms of the Hymenomyces and other large Fungi, it is satisfactory to note that a considerable number of the more minute species have, during that period, been added to the Scottish list. This was especially the case last year, when 54 species or varieties of Microfungi were recorded as new to Britain, and of these no fewer than 34 were reported from Scotland, 21 being from localities within the Clyde Area.

The following are some of the most interesting species added to the Fungus-Flora of the Clyde Area during the period referred to. With the exception of *Erinella pommeranica*, Ruhl., they have all come under my personal observation. A description of the species reported as new to science, or new to Britain, will be found in the *Transactions of the British Mycological Society*, Vol. III., Parts 1 and 2.

Odontia alliacea, Weinm.—On a fallen trunk: Corsinkell Glen, Stevenston; in October. New to Britain.

Uromyces caryophyllinus, Schröt.—Uredospores forming rust-spots on living carnations in a greenhouse in the gardens

at Finlaystone House, Renfrewshire; in August. New to Britain.

Puccinia Scincideri, Schröt.—On stems of *Thymus Serpyllum*, which it causes to elongate in a remarkable manner; Noddsdale Glen, Largs; in September.

P. millefolii, Fekl.—On *Achillea Millefolium*; Ardeer Sands, Stevenston; in August.

Melampsora pustulata (Pers.) Wint.—As *Uredo pustulata*, Pers., on leaves of *Epilobium*, in marshy places; Possil Marsh and Dalmellington; in autumn and winter.

Physotherma helvocharidis, Schröt.—Producing reddish-brown swellings, which appear as dark patches on living culms of *Scirpus palustris*; Ardeer Sands; in August. Genus and species new to Britain.

Synchytrium aureum, Schröt.—On living leaves of *Prunella vulgaris* in marshy places, Lochwinnoch, Largs, and West Kilbride; on *Plantago lanceolata*, Ardrossan and Stevenston; on *Thymus Serpyllum*, Glen Falloch; in summer and autumn.

Peronospora chryso-splenii, Fekl.—On *Chryso-splenium alternifolium*; Hyndog Glen, Dalry; in May. New to Britain.

Entyloma Henningsianum, Syd.—On living leaves of *Samolus Valerandi*, producing pale yellow spots which become brownish; Dubh Loch, near Inverary; in September. New to Britain.

E. achillea, P. Magn.—On living leaves of *Achillea Millefolium*, producing pale brownish bands or spots; St. Blane's Chapel, Island of Bute; in August. New to Britain.

Ustilago flosculorum (D.C.) Wint.—In anthers of *Scabiosa succisa*; Ardkinglas, Loch Fyne, and Largs; in September.

Urocystis Fischeri, Körn.—On leaves of *Carex glauca*; West Kilbride and Kilwinning; in August.

Ascomyces aureus (Fr.) Magnus.—On living leaves of *Populus*, producing golden spots or blisters; West Kilbride, Ardrossan, Helensburgh, and Kilchattan Bay; in summer and autumn.

- Lophodermium oxycocci*, Karst.—On withered leaves of *Vaccinium Oxycoccus*; Kilwinning and Knockewart Loch, Ardrrossan; in summer and autumn. New to Britain.
- Coccomyces Boydii*, A. L. Sm.—On dead branches of *Myrica Gale*; found at two places in Glen Falloch; in July. New to science.
- C. quadratus* (Schm.) Karst.—On dead twigs of *Vaccinium Myrtillus*; Noddsdale Glen, Largs; in September.
- Pseudophacidium Smithianum*, Boud.—On dead leaves of *Empetrum nigrum*; Kilbirnie, West Kilbride, Ardrrossan (Ayrshire), Crawford and Symington (Lanarkshire); in summer and autumn. New to science.
- Pseudopeziza alismatis* (Phil. & Trail) Sacc.—On withered spots on living leaves of *Alisma Plantago*; Dougalston and Ardrrossan; in summer.
- Mollisia petiolaris* (A. & S.) Sacc.—On decaying petioles of *Acer Pseudo-Platanus*; Kilbirnie, Dalry, and Campsie Glen; in spring and early summer.
- Helotium marchantie* (Berk.) Fr., var. *conocephali*, Boyd.—On the thallus of *Conocephalus conicus*, usually on somewhat pallid spots; West Kilbride, Dalry, Stevenston, &c. (Ayrshire), and Corriegills (Arran); from late autumn to early summer. Variety new to science. This form has been previously reported by me from West Kilbride as *Helotium marchantie*, Berk., and formed the subject of a communication to the Society.* Subsequent examination, however, has shown that the spores are somewhat larger in size than in the type as described by Berkeley, while the fungus occurs on a different host, and the cups are generally seated on a pallid or discoloured portion of the thallus. These circumstances seemed to warrant its description as a distinct variety.
- Erinella pommeranica*, Ruhl.—Found by Mr. W. H. Wilkinson on bark of *Pinus sylvestris*; Rothesay; in August. New

**Trans. Nat. Hist. Soc. Glasg.*, Vol. III. (N.S.), p. 272; *Handbook of the Fauna and Flora of the Clyde Area* (1901), p. 67.

to Britain. "Mr. Wilkinson likens the growing plant to a bird's nest of white coral lined with gold."

Ephelina prunellæ, Phil.—Developed on *Asteroma prunellæ*, Purt., one of the Sphærospideæ, on living leaves and stems of *Prunella vulgaris*; Largs, West Kilbride (Ayrshire), and Corriegills (Arran); in spring. Described as new to science. Common in the undeveloped or *Asteroma* stage. Specimens with the cups fully expanded were obtained by me about twenty years ago, during a period of mild and rainy weather in spring, and were submitted to the late Mr. William Phillips, F.L.S., who pronounced them new to science, and named them *Ephelina prunellæ*. He sent me drawings of the cups, asci, and spores, which I afterwards returned to him, but no description of the species was published during his lifetime. In April of last year, however, at the Society's excursion to Brodick, I was successful in again obtaining specimens with expanded cups, and these were sent to Miss A. Lorrain Smith, F.L.S., who has recently published a description of them. The Ayrshire localities for this species have been reported in *Handbook of the Fauna and Flora of the Clyde Area* (1901), p. 69.

Orbilina marina (Phil.) Boyd.—On stranded and decaying fronds of *Ascophyllum*, *Fucus*, and *Halidrys*; Largs, West Kilbride, Ardrossan, Stevenston, Ayr (Ayrshire), Cumbrae, Arran, Ettrick Bay (Bute), and Ardkinglas, Loch Fyne (Argyllshire); throughout most of the year. Like the last, specimens were submitted to Mr. Phillips, about twenty years ago, and were named by him *Calloria marina*, sp. nov. The species remained undescribed, however, until this year, although as *Orbilina marina* it had been reported by me from time to time from various parts of the Clyde Area.

Vibrissea truncorum (A. & S.) Fr.—On a dead willow-trunk, Glen Falloch; on dead branches of heather in very wet places, Glen Falloch and Glen Douglas; in summer. *Vibrissea* is remarkable for its attenuated spores, which, in the process of drying, are ejected from the ascus and remain for some time attached to it at one end, so as to

hang over the disc, when they present much the appearance of glistening threads of the finest white silk.

V. Guernisaci, Crouan.—On branches of willow submerged in running streams; Glen Douglas, West Kilbride, and Ardrossan; in summer. This appears to occur much more frequently than the last mentioned species, and to descend to a lower level. In the neighbourhood of Ardrossan it occurs at an altitude of less than 150 feet. It produces sessile ascophores of a dull greenish-yellow colour, which, when drying, have their spores ejected in the manner characteristic of the genus.

Meliola Niessleana, Wint.—On living stems and under-surface of leaves of *Vaccinium Vitis-Idæa*; Noddsdale Glen; in summer and autumn. The mycelium produces dark spots, consisting of minute hyphæ which spread in a radiating manner like a tiny spider's web. The black perithecia are developed on the surface of the threads. This interesting fungus has for many years been known to occur on the hills above Largs, but the genus and species have only recently been described as British from specimens obtained by me in Perthshire.

Curreyella aucuparicæ, A. L. Sm.—On dead twigs of *Pyrus Aucuparia*; Auchentibber Moss, Kilwinning; in autumn. Recently described as new to science from specimens obtained in Perthshire.

Pleospora equiseti, A. L. Sm.—On dead stalks of *Equisetum*; Kilwinning; in January. New to science.

Diaporthe detrusa, Fekl.—On dead branches of *Berberis vulgaris*; Dalmellington; in August. New to Britain.

Sphaerella polypodii, Fekl.—On fading pinnæ of fronds of *Asplenium Trichomanes*; Inveraray; in September. New to Britain.

Phyllosticta forsythiæ, Sacc.—On living leaves of *Forsythia suspensa*; Seamill; in August. New to Britain. Produces conspicuous withered spots on the leaves, and these contain lenticular pyrenidia with unicellular hyaline sporidia.

Ascochyta philadelphæ, Sacc. and Speg.—On living leaves of *Philadelphus coronarius*; Seamill; in August. New to Britain. Produces spots and lenticular pyrenidia similar to

those of the last-mentioned species, but the sporidia are two-celled.

Sporonema ooturatum (Fr.) Sacc.—On dead leaves of *Calluna vulgaris*; West Kilbride; in December.

Glæosporium salicis, West.—On living leaves of *Salix Caprea* and other species of willow; Beith and Kingarth. New to Britain. Sporidia unicellular.

Septoglæum salicinum, Sacc.—On living leaves of *Salix viminalis*; roadside between Millhouse and Kilbride (par. of Kilfinan); in September. Genus and species new to Britain. Producing pustules similar to those caused by *Glæosporium*, but with 1-3-septate sporidia.

Melanconium hedere, Preuss.—On dead twigs of *Hedera Helix*; Largs, West Kilbride, &c.; throughout the year. This was formerly reported from Ayrshire as *Coniothyrium hedere* (Desm.) Sacc., with which it may possibly be identical, as is suggested by Saccardo. It is regarded by Miss Smith, however, as a true *Melanconium* corresponding to *M. hedere*, Preuss, and, as such, is new to the British list.

Pestalozzia funerea, Desm.—On dead leaves of *Phormium tenax*; Hunterston (Ayrshire); in September.

Ramularia violæ, Trail.—On living leaves of *Viola Riviniana*; Stevenston; in August.

R. ajugæ (Niessl.) Sacc.—On *Ajuga reptans*; Glen Falloch, Inveraray, and Rosneath; in summer and autumn.

Torula antennata, Pers.—On dead leaves of *Phormium tenax*; Hunterston; in September.

Uromiscium splendens, Kze.—On a mossy stump; West Kilbride; in August.

Stilium tomentosum, Schr.—Parasitic on *Trichia*; Finlaystone, West Kilbride, and Stevenston; in spring and autumn.

I have to express my great indebtedness to Miss A. Lorrain Smith, F.L.S., South Kensington, and Mr. Carleton Rea, B.C.L., M.A., Worcester, for their kind aid in the identification of many species, particularly those which are here reported as new to the British Fungus-Flora.

On the genus *Phoxocephalus*.

By ALEXANDER PATIENCE.

[Read 23rd February, 1909.]

AMPHIPODA.

GAMMARIDEA.

Family, - - Phoxocephalidae.
Genus, . - Phoxocephalus.

1888. *Phoxocephalus* (nom. nov. vice. *Phoxus*, Kröyer, 1842 preoccupied in Entomology) Stebbing, Rep. Voy. "Challenger, V. 29, p. 810.
1891. *Phoxocephalus*, G. O. Sars. "Crustacea of Norway," vol. 1, p. 145.
1891. *Paraphoxus*, G. O. Sars, "Crustacea of Norway, Vol. 1, p. 148.
1896. *Metaphoxus*, J. Bonnier, "Annales de l'Université de Lyon," Vol. 26, p. 630.
1900. *Phoxocephalus*, Norman, Ann. Mag. Nat. Hist., ser. 7, Vol. 5, p. 333.
1906. *Phoxocephalus*, Stebbing, Das Tierreich, Amphipoda Gammaridea, p. 134.
1906. *Paraphoxus*, Stebbing, Das Tierreich, Amphipoda Gammaridea, p. 137.
1906. *Metaphoxus*, Stebbing, Das Tierreich, Amphipoda Gammaridea, p. 138.

The Rev. Thomas R. R. Stebbing in his recent work on the Amphipoda.* has accepted Sars' and Bonnier's genera of *Paraphoxus* and *Metaphoxus* respectively. The genus *Phoxocephalus*, however, as Canon Norman points out, appears to be a natural one, and "attempts to divide it on very slight variations of the mandible break up that natural group. The allied *Harpinia* is a parallel case; it might be split up on several trivial differences in the mandible (see Sars' figures of mandible

* *Das Tierreich, Amphipoda Gammaridea*, 1906, pp. 134-138.

of *H. plumosus*, *H. pectinata*, and *H. crenulata*)." * The same argument might be applied to other genera with equal force. To take one other example: *Pontocrates*, Boeck. The molar expansion of *P. arcticus*, G. O. Sars (Fig. 1) is somewhat different in form and more strongly constructed than in that found in the allied species *P. altamarinus* (Bate & Westw.) (Fig. 2), and *P. arenarius* (Bate), at least in Firth of Clyde specimens. The structure of the molar expansion in these shows an approach to that of *P. norvegicus* (Boeck), as figured by J. S.



FIG. 1.—Mandible of *P. arcticus* (after G. O. Sars).

Schneider† (Fig. 3). If *P. arenarius* is identical with *P. norvegicus*, then the form of this part of the mandible shows an interesting variation in the Scottish and Norwegian examples, even of the same species, as *P. arenarius* is almost similar to *P. altamarinus* in this respect. Schneider states: "Der innere Molarhöcker scheint schwach zu sein;" but adds: "wurde aber nicht gut wahrgenommen."‡ Sars states



FIG. 2.—Mandible of *P. altamarinus*.



FIG. 3.—Mandible of *P. norvegicus* (after J. S. Schneider).

for this genus: "Mandibles moderately strong, molar expansion of the usual character,"§ but gives no figures of the mandible for either *P. norvegicus* or *P. altamarinus*; and Stebbing says, "Mandible normal."|| Unless some more solid reasons therefore can be advanced for splitting up the genus *Phoxocephalus*, it should be retained for the species described under *Paraphoxus* and *Metaphoxus* respectively

* Ann. & Mag. Nat. Hist., Ser. 7, Vol. V., p. 333.

† Ein Beitrag zur Kenntniss der Amphipoden der Artischer Norwegens, pp. 13-20, Pl. I., Fig. 3.

‡ Op. cit., p. 15.

§ Crustacea of Norway, Vol. 1, p. 315.

|| Op. cit., p. 239.

The chief purport of this paper is to advance two lines of argument:—

- (A) That *Phoxocephalus fultoni* (Scott) is but an immature stage of *P. pectinatus* (A. O. Walker), and
- (B) That *Phoxocephalus simplex* (Bate) should be referred to *P. holbölli* (Kröyer).
- (A) *Phoxocephalus pectinatus* (A. O. Walker)=*P. fultoni* (Scott).

REFERENCES UNDER *P. fultoni* (SCOTT).

- 1890. *Phoxocephalus Fultoni*, Scott, "Additions to the Fauna of the Firth of Forth," *Eighth Ann. Rep. Fish. Board, Scotland*, p. 237, Pl. XII., Figs. 10-12, Pl. XIII., Figs. 13-19.
- 1892. *Phoxocephalus Fultoni*, D. Robertson, "Second Contri. Isop. and Amphi. of Firth of Clyde," *Trans. Nat. Hist. Soc., Glasgow*, Vol. III. (N.S.), p. 13 (sep. copy).
- 1893. *Phoxocephalus chelatus*, A. Della Valle, "Fauna and Flora Neapel," Vol. XX., p. 742, t. 5, Fig. 10, t. 35, Figs. 29-35.
- 1896. *Phoxocephalus fultoni*, Calman, "On species of *Phoxocephalus* and *Apherusa*," *Trans. Roy. Irish Acad.*, Vol. XXX., p. 743, Pl. XXXI., Figs. 1-2 (sep. copy).
- 1900. *Phoxocephalus Fultoni*, Norman, "On British Amphipoda," *Annals and Mag. Nat Hist.*, ser. 7, Vol. V., p. 336.
- 1906. *Phoxocephalus Fultoni*, T. Scott, "Crust. of River Forth and Est.," *Proc. Roy. Phys. Soc., Edinr.*, Vol. XVI., p. 148.
- 1906. *Phoxocephalus Fultoni*, Norman & Scott, "Crust. of Devon and Cornwall," p. 61.
- 1906. *Phoxocephalus fultoni*, Stebbing, *Das Tierreich, Amphi. Gammaridea*, p. 139.

REFERENCES UNDER *P. pectinatus* (A. O. WALKER).

1896. *Phoxocephalus pectinatus*, A. O. Walker, "On Two new species of Amphipoda Gammarina," *Ann. and Mag. Nat. Hist.*, ser. 6, Vol. XVII., p. 343, Pl. XVI., Figs. 1-6, and Vol. XVIII., p. 156.
1898. *Metaphoxus pectinatus*, Chevreux, "*Revis de l'Amphi. de la côte océan de France*," Assoc. Franç. pour avanc. des Sciences, p. 477.
1906. *Metaphoxus pectinatus*, Stebbing, *Das Tierreich, Amphipoda Gammaridea*, p. 137.

While carrying out some investigations in Lamlash Bay, on board the yacht "Hilda" (belonging to Mr. J. Rennie, of Helensburgh), during the summer of 1906, I secured with the tow net, on two different occasions, a large number of Amphipoda belonging to the family *Phoxocephalida*. At the time I distinguished three forms which I tentatively set down as follows:—

First, tow-netting between Lamlash Pier and King's Cross—(1) *Phoxocephalus pectinatus* (A. O. Walker), 50 males; (2) *P. fultoni* (Scott), 43 males; (3) *P. fultoni* (Scott), 4 immature males. Second, tow-netting off King's Cross—(1) *P. pectinatus*, 53 males; (2) *P. fultoni*, 67 males. Further, some years previously, I took, off Millport, in the same tow-netting, 14 specimens of *P. fultoni*, 12 males and 2 females (one of the latter carrying ova), and 6 specimens of *P. pectinatus*, male.

It is only recently that I have found time to study these forms more critically, and, after dissecting many specimens and comparing closely the various parts of the three forms, I have been led to the conclusion that *P. fultoni* is but a stage in the development of *P. pectinatus*.

In considering the question it must inevitably strike one as being somewhat significant that the two forms should be so intimately associated, and should turn up together in comparatively such large numbers upon three separate occasions, and in two of these in widely-separated parts of the Clyde sea area. Moreover, they were also taken together many years

before, by the late Dr. Robertson, of Millport. Mr. A. O. Walker observes in this connection “. . . . I have also received a male (*P. pectinatus*) from Mr. J. T. Calman, University College, Dundee, who informs me that it was found with a few others among a number of male *P. fultoni*, Scott, received from Dr. Robertson, of Cumbrae, some years ago.”* In the two localities in Lamlash Bay above mentioned, the tow-net was dragged a short distance only—about 20-25 yards—and the probability is that these forms were captured while swimming closely together. All these tow-nettings were taken in the month of July and after sunset, the tow-net being about a fathom off the bottom.

The difference between *P. pectinatus* and *P. fultoni*, lies mainly in the structure of the first and second gnathopods, and in them particularly in the form of the hands. In *P. fultoni* the hands of the gnathopods have the hind margin running some distance parallel to the front, then diverging, and somewhat in advance of the front margin, so that the palm instead of, as usual, sloping up from the hinge of the finger, slopes down (see Figs. 3^a and 4^a). In other words, in *P. fultoni* the palm forms an *acute* angle with the hind margin of the sixth joint, while in *P. pectinatus* it forms an *obtuse* angle. This structure is more accentuated in the *first* gnathopods than in the *second*. In almost all other respects the two forms are virtually identical, as a comparison of the various figures in the accompanying plates shows, the figures under ^b being taken from a mature male of *P. pectinatus* measuring about 3 mm., while those under ^a are from a male of *P. fultoni* measuring about 2·5 mm. It will be observed that even the peculiar spines on the distal half of the anterior margin of the fifth joint of the fifth peræopods of the male, are common to the two forms. Calman states the number of these spines in *P. fultoni* to be *three*,† but in the majority of my specimens the number is *four*, just as in *P. pectinatus*.

The facts which seem to point to *P. fultoni*—this applies particularly to the male—as not being fully adult are:—

- (1) *All* the specimens I secured are *smaller* than *P. pectinatus*, the largest measuring not more than 2·5 mm.

* *Ann. Mag. Nat. Hist.*, ser. 6, Vol. XVII., p. 344.

† *Trans. Roy. Irish Acad.*, Vol. XXX., p. 746.

- (2) The calceoli on the antennæ, which, as a rule, indicate the *sexual* maturity of the male, appear, in comparison with those on *P. pectinatus*, not to be fully developed, none showing clearly the structure found in the latter form (Figs. 1^a_x, 1^b_x), and the two calceoli, which are prominent on the last joint of the peduncle of the first antennæ in *P. pectinatus*, are absent in some, and only just indicated in others of *P. fultoni*.
- (3) The branchial lamellæ are also comparatively poorly developed, those attached to the second gnathopods and fourth peræopods being most so, while, in the still more immature form of *P. fultoni*, this is even more accentuated (Figs. 5^a, 5^b).

The first of these reasons taken alone may not appear to be of much importance, but, in conjunction with the whole circumstances, especially of the intimate association of the two forms, its value as a part of the argument is at once obvious.

The first, second, third, and fifth peræopods are practically identical, even to the disposition of the setæ. Regarding the last peræopods, Walker states—"In the male the third* joint has no plumose setæ."† These have surely escaped his notice. The disposition and character of the setæ in this joint is similar in both *P. fultoni* and *P. pectinatus*, and show, on the anterior margin, two bundles of three setæ each, the two distal of which are plumose (see Figs. 3^a₂, 3^b, Pl. IV.). The *fourth* peræopod, which is the longest, appears to show some difference in the comparative length, particularly of the last three joints.

For example, in Fig. 2^b, Pl. IV., which represents the fourth peræopod of the adult male, the fourth, fifth, and sixth joints are of the same length. In Fig. 2^a, Pl. IV., representing the fourth peræopod of the immature male, the *fifth* joint is somewhat shorter than the *fourth* and the *sixth* than the *fifth*, while the dactylus is also comparatively shorter than in the adult. Now I find, in comparing the fourth peræopod of the immature male of

* *Note*.—Walker, in his terminology of the limbs, makes the basal joint the *first*, so that his *third* in this instance is really the *fourth* in these notes.

† *Op. cit.*, p. 344.

P. holbölli (Krøyer) with the fully adult, the same phenomena presented. The probability is that, in the growth of the organism, the last three joints are the last to attain their true proportion to the other joints of the limb, as is found in the fully adult specimen. The posterior edge of the basal joint is produced below into a rounded lobe, which reaches to the base of the fourth joint. Above this lobe, close to the base of the third joint, spring two longish plumose setæ. Calman has correctly figured this in his figure of this limb in *P. pectinatus*, but does not show them in *P. fultoni*, although they are present even in female specimens.

The side-plates 1-4 are practically identical in the two forms, although the distal margins of *P. pectinatus* bear one or two more setæ each. In Calman's figure of side-plate 1 of the latter, the anterior corner is produced into a somewhat acute point. In Walker's figure it is rounded. In the Clyde specimens I have examined the form of the side-plate appears to be intermediate between these two, not so acute as Calman's, nor as rounded as Walker's. In both forms pleon-segment 3 carries three minute crenulations on the hind margin, while segment 4 in *P. pectinatus*, which Stebbing states, carries one or two spinules on the dorsal tubercle has its counterpart in *P. fultoni*, although on the latter of course the spinules are not so long, nor the dorsal tubercle so pronounced.

When *P. fultoni* and *P. pectinatus* are viewed together under the microscope, with the gnathopods tucked away under the side-plates, it is practically impossible to distinguish the one from the other, except by the slight difference in size.

But there is still a more immature male of *P. fultoni* to be considered. In this form the flagellum of the second antennæ is considerably shorter, consists of fewer articulations, which are themselves shorter and more robust, and bears no calceoli. The fifth joint of the last pereopods does not possess the peculiar spines already referred to, and the third uropods bear one or two very minute plumose setæ only, which can be made out only under a high power. On examining an immature male of *P. holbölli* I found the structure of the flagellum of the second antennæ to be somewhat similar, while the rami of the third uropods bore no plumose setæ. In all probability these

characters—the calceoli, the plumose setæ on the third uropods, and the spines on the fifth joint of the last pereopod—are of sexual importance, and may arise simultaneously. In the figures of the second antennæ and third uropods of *Phoxus Kergueleni*, Stebbing, the first is somewhat similar in character to the antennæ of the immature males of *P. fultoni* and *P. holbölli*, while the rami of the third uropods bear no plumose setæ.* It is just possible that the author has figured and described the immature male.

This third form agrees perfectly with the description and figures as given by Scott, only it seems to me that he has ascribed the figures of the first and second antennæ—although he does so with some hesitation—to the wrong sex.†

It might be urged that as one of the specimens of *P. fultoni* I captured was an ova-bearing female, it ought to be regarded as mature, and that the validity of the species should not be impugned. Too much weight, however, need not be placed upon this fact. Semper has shown that “*sexual maturity does not necessarily indicate the completion of individual growth.*” “They may, no doubt,” he says, “coincide, but they need not; and instead of being surprised, as is frequently the case, at finding that larvæ, *i.e.*, animals not yet fully grown, are sexually mature . . . we ought rather to wonder that it is only quite recently that such cases have been investigated and considered worthy of record.”‡ This seems to me to be the case with the species under consideration, and even were the males of *P. fultoni* found having the calceoli and the branchial plates as highly developed as in *P. pectinatus*, it may not necessarily follow that the gnathopods will not eventually assume the form as found in *P. pectinatus*, those probably being the last to assume the fully adult form.

That the modification of the hands of the second gnathopods takes place in certain species of *Amphipoda* during post-embryonic development is well known. Barrois has shown the wonderful change which takes place in this limb of the male of *Talorchestia*

* *Rep. Voy. Challenger*, Vol. XXIX., p. 816, Pl. 55.

† *Eighth Ann. Rep. Fish. Board, Scot.*, p. 237.

‡ *Animal Life*, Int. Sci. Series, Vol. XXXI., pp. 125-126.

deshayesii (Audouin). The difference which exists in the hands of the young male of this species (Fig. 4) from that of the adult (Fig. 6) is so remarkable that one could scarcely credit that they belonged to the same species, unless one had watched the development under one's own eyes. Barrois says—"Le deuxième gnathopode subit des métamorphoses considérables, telles, qu'au début de mes recherches, n'ayant pas eu entre les mains des matériaux en nombre suffisant, j'avais cru rencontrer une espèce nouvelle dans le stade représenté Fig. 10"* (Fig. 5).

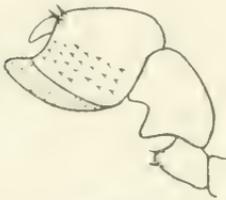


FIG. 4. — *Talorchestia deshayesii*, 2nd gnathopod, ♂, 1st stage (after Barrois).

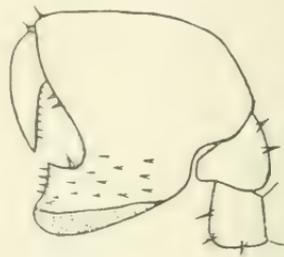


FIG. 5.—*T. deshayesii*, 2nd gnathopod, ♂, intermediate stage (after Barrois).

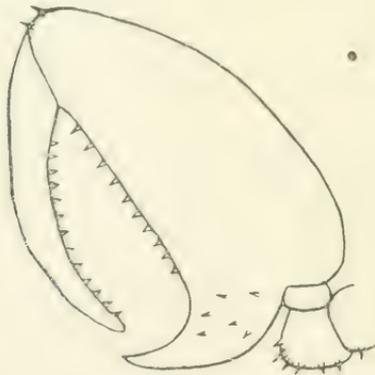


FIG. 6.—2nd gnathopod, ♂, *T. deshayesii* adult (after Barrois).

There are two points in connection with these figures of the gnathopods of *T. deshayesii* which may be worthy of considera-

*Note sur quelques points de la morphologie des Orchesties, p. 8. Lille, 1887.

tion—(1) the overwhelming importance of the *fifth* joint in the young male (Fig. 4) with its comparative insignificance in the fully adult individual (Fig. 6); and (2) the direction taken by the palm of the hand in the young male with that which it eventually assumes in the adult. These have their parallel in *P. fultoni*, although, probably, in a less exaggerated degree. Fig. 5, gn. 1, pl. iv., represents the last four joints of the first gnathopod of a young male of *P. fultoni* measuring about 2.1 mm., and the wrist is obviously longer, in comparison with the length of the hand, than is found in a slightly larger specimen represented by Fig. 3^a, pl. iii. The hand also is somewhat longer in comparison to its breadth than in the just-named. Evidently, at each moult, there is a decrease in the size of the wrist, and an increase in the size of the hand, and also, as it were, a regular pushing in of the palm until the final form is fixed.

Barrois has, of course, been able to show in *T. deshayesii* the various phases in the transformation of the hand, but was fortunate in the selection of the species, which is a shore-living form, the material for study being generally at hand when required. It is far otherwise with the species of *Phoxocephalus*, which, although inhabiting comparatively shallow depths, may not readily be found when wanted, for their habitation to-day may not be that for the morrow, and when one's dredge is cast into the deep, it is usually by sheer good luck if the "spoor" is found. Consequently, to study such forms amidst their *natural conditions* is obviously a task beset with many difficulties.

Looking to the whole circumstances, therefore, it seems to me, that one is compelled to regard *P. fultoni* as a stage in the development of *P. pectinatus*, and I venture to say that future researches will bear out the correctness of this view.

(B) *P. simplex* (BATE) = *Phoxocephalus holbölli* (KRÖYER).

REFERENCES UNDER *P. simplex* (BATE).

1857. *Phoxus simplex*, Bate, *Ann. Nat. Hist.*, 2 ser., Vol. XX., p. 525.
1861. *Phoxus simplex*, Bate and Westwood, "*Brit. Sess.-eyed Crust.*," Vol. I., p. 140.

1888. *Phoxus simplex*, Robertson, "First Contri. Isop. and Amphi., Firth of Clyde," *Trans. Nat. Hist. Soc., Glas.*, Vol. III. (N.S.), p. 23 (sep. copy).
1896. *Phoxocephalus simplex*, Calman, "On species of *Phoxocephalus* and *Apherusa*," *Trans. Roy. Irish Acad.*, Vol. XXV., p. 743.
1900. *Phoxocephalus simplex*, Norman, "On British Amphipoda," *Ann. and Mag. Nat. Hist.*, ser. 7, Vol. 5, p. 335.
1906. *Phoxocephalus simplex*, Norman and Scott, "*Crust. of Devon and Cornwall*," p. 62.

REFERENCES UNDER *P. holbölli* (KRØFYER).

1842. *Phoxus holbölli*, Krøyer, *Naturhist. Tidsskr.* Vol. IV., p. 151.
1861. *Phoxus holbölli*, Bate and Westwood, "*Brit. Sess-eyed Crust.*," Vol. I., p. 143.
1891. *Phoxocephalus holbölli*, G. O. Sars, "*Crust. of Norway*," p. 144, Pl. XLIX.
1900. *Phoxocephalus holbölli*, Norman, "British Amphipoda," *Ann. and Mag. Nat. Hist.*, ser. 7, Vol. V., p. 334.
1906. *Phoxocephalus holbölli*. Norman and Scott, "*Crust. of Devon and Cornwall*," p. 63.
1906. *Phoxocephalus holbölli*. Stebbing, *Das Tierreich, Amphi. Gammaridea*, p. 134.

Dr. Calman, in describing the male of *Phoxocephalus pectinatus* (A.O.W.), refers it to *Phoxus simplex*, Bate, but at the same time suggests that Bate's figure represents an immature male. Upon the latter point I quite agree with him, but not when he seeks to identify it with Bate's species. The whole figure, as drawn by Bate and Westwood, particularly of the lower antennæ and the third uropod, *which shows the rami of equal length*, seems to indicate that the authors had under examination an immature male of *Phoxocephalus holbölli* (Krøyer). I have already indicated the differences which exist between the *immature*

and the *adult* males of that species, which lie principally in the form of the lower antennæ (Fig. P.H. a²) and third uropods, the latter bearing no plumose setæ. Recently I have picked out of about one hundred specimens of *P. holbölli*, which I had gathered in the Firth of Clyde from time to time, six *immature* males, and I find that each could quite reasonably be referred to Bate and Westwood's figure of *P. simplex*, especially in regard to the form of the lower antennæ and third uropods.

In the controversy which has taken place over the validity of the species *P. pectinatus* and *P. simplex*, the character of the *upper* antennæ has figured somewhat largely as a disputable point. Walker, in replying to Calman, draws attention to the differences which exist between the two species, and cites in parallel columns the description of the upper antennæ, given by Bate, of *P. simplex* and the character of this organ in *P. pectinatus*:—

“*P. simplex*.

Superior antennæ having the extremity of the flagellum not reaching beyond the superior margin of the cephalon; the flagellum short, 3-jointed, secondary appendage *longer* than the primary 4-jointed.

P. pectinatus ♀.

Superior antennæ having the extremity of the peduncle reaching to the anterior margin of the cephalon; flagellum 4-jointed, secondary appendage much shorter than the primary 4-jointed.”*

Later, however, Bate and Westwood state: “*accessory* appendage consists of but *three* articuli and is nearly as important as the primary, which is formed of four,” † which is a modification of Bate's former statement. Further, the Rev. Dr. Norman points out that a discrepancy exists between Bate and Westwood's figure of *P. simplex* and their written description. He says: “3rd—As regards the antennæ, the description of Bate and Westwood does not agree with the figure, where the rostrum is represented only as long as the *peduncles* of the upper antennæ, and this is the case with the present species; and although the figure in the Brit. Mus. Cat. does agree with the description, is it not more likely that the second figure is more correct than the first?” ‡

* *Ann. Mag. Nat. Hist.*, Ser. 6, Vol. XVIII., p. 156.

† *Brit. sess-eyed Crust.*, Vol. I., p. 141.

‡ *Ann. Mag. Nat. Hist.*, Ser. 7, Vol. V., pp. 335-336.

If Bate's figure of *P. simplex* represents an immature male, and of this I think there can be no reasonable doubt, then it may not be altogether wise to lay too much weight upon seeming discrepancies which might be shown to exist in different descriptions of this organ, as in post-embryonic development, it is quite reasonable to suppose that some slight differences would be discernible at various stages of growth. In fact this does occur, as may be gleaned from a perusal of the following table, which gives the number of joints in the flagellum of the upper antennæ in the six immature males of *P. holbölli*, already referred to, as well as the number of joints in the flagellum of the lower antennæ:—

No. of Specimen.	UPPER ANTENNÆ.		LOWER ANTENNÆ.	
	Number of joints in primary.	Number of joints in accessory.		Number of joints in flagellum.
1.	6	4	1.	16
2.	7	4	2.	19
3.	6	4	3.	14
4.	6	4	4.	17
5.	6	4	5.	12
6.	Right { 4 Left { 5	4	6.	7

In No. 6, which represents the smallest specimen, measuring about 4 mm., it will be observed that there is even a difference between the right and left flagellum of the upper antennæ. In the right the primary and accessory have an equal number of joints, while the *accessory* is nearly as long. In this specimen the flagellum of the lower antennæ has also the fewest number of joints, which are extremely short and robust, the tip of the last joint scarcely reaching to the posterior margin of the second side-plate. In specimen No. 2, which is the largest, measuring about 4.6 mm., the flagellum of the lower antennæ reaches to about the middle of the basal joint of the fourth peræopod.

The objection which seems to me to be fatal in making *P. pectinatus* square with *P. simplex*, and which has also been urged by Walker, is found in the difference in the relative sizes of both these forms. The length of the adult male of the

P. pectinatus, as given by Walker, is 3 mm. only, and this measurement agrees fairly well with the Clyde specimens, and even allowing for Norman's especially fine specimens from Valentia, measuring 4 mm., we have still to account for the fact that the *immature* male of *P. simplex* also measures 4 mm., and if my contention regarding *P. fultoni* is right, then the *immature* male of *P. pectinatus* measures only about 2.5 mm., and if the still more immature stage—where it presents features like *P. holbölli* in the structure of the lower antennæ and third uropods—is considered only 2 mm., exactly one-half the size of *P. simplex*.

The late Dr. Robertson of Millport has recorded "*Phoxus simplex*, Bate" from the Clyde. He says, "This species is *very minute*. In their description of the species Bate and Westwood appear not to have seen the eyes. These are small, round, and white, having a few red spots placed at regular distances near the circumference."* It is quite reasonable to conclude that the words "very minute" were used in a comparative sense, probably to emphasise the difference in size between the species he had under consideration and the one he was next to deal with—*P. holbölli* (Krøyer). Be that as it may, Robertson's short description of *P. simplex* would quite readily fit the female of *P. pectinatus* (the *fultoni*-stage). Moreover, Robertson was evidently unacquainted with the characters of *P. fultoni* when this statement was published, although he had, as a matter of fact, sent Dr. Norman specimens of this species under the name of *P. holbölli*. Under "*Phoxocephalus fultoni*, Scott," Dr. Norman writes, "I consider that this is the *Phoxus holbölli* of Robertson's 'First Contributions,' as he sent me at that time specimens taken in the tow-net under that name."† And it is just as probable that he had missed the characters of *P. fultoni* when he recorded *P. simplex*, as he had done on the occasion cited. His identification of the species therefore, must be accepted with a considerable amount of reserve.

Both Norman and Calman seem to think that the want of the eyes in *P. simplex* may have been due to the specimens losing this organ in some special medium which Bate had employed.

* *Cat. Amphi. and Isop.* Firth of Clyde, p. 23.

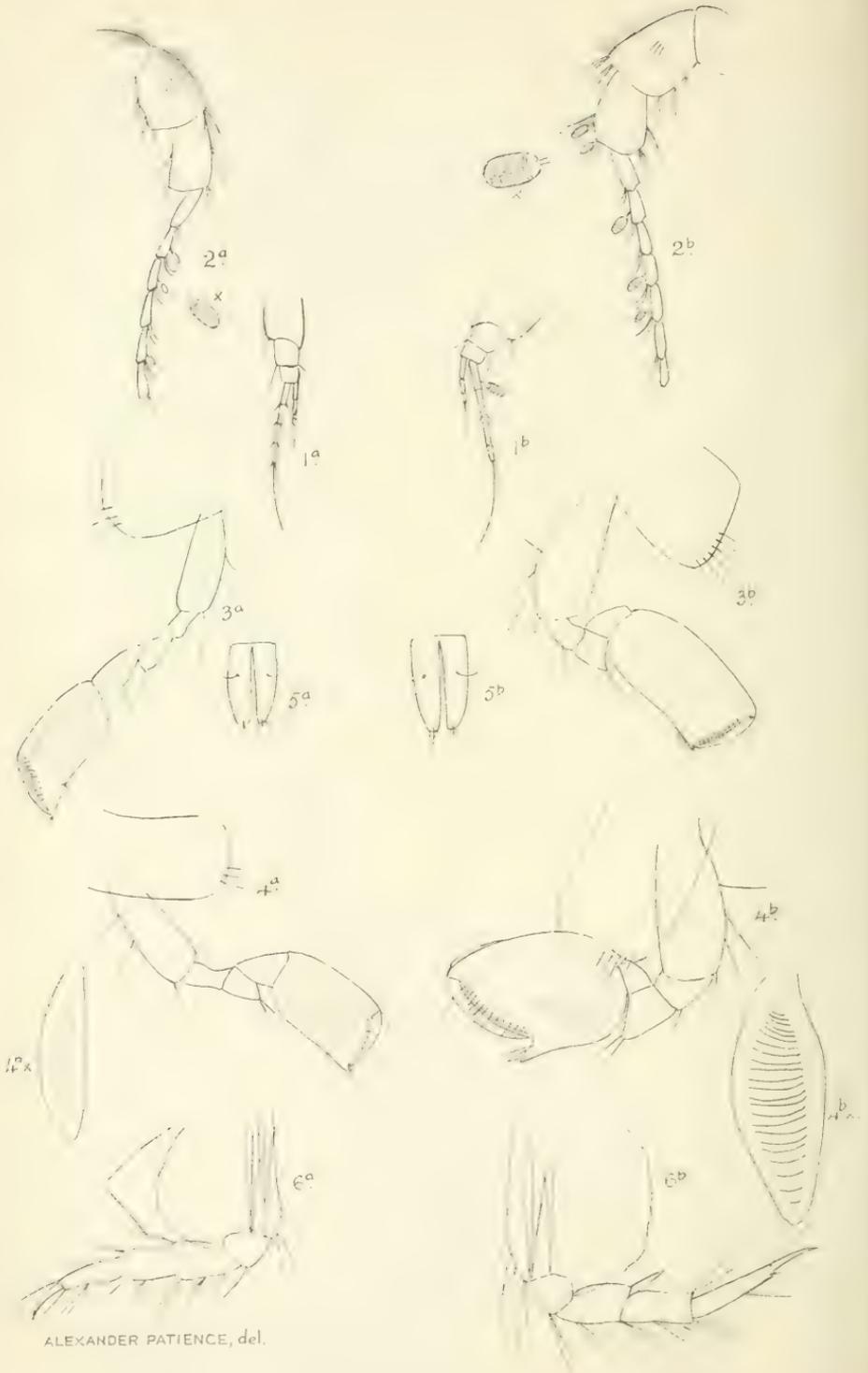
† *Op. cit.*, p. 336.

This argument is, I fear, scarcely tenable. Robertson's specimens, which lie in the Millport Museum, are now nearly twenty years old, and have evidently been preserved both in alcohol and formaline, but the eyes of all the specimens examined are as well preserved to-day as when newly caught.

Again, the peculiar structure of the fifth joint of the last peræopod of the male is one which would inevitably attract attention when the limb is examined, and it is scarcely conceivable that so excellent a naturalist as Bate could have overlooked so obvious a character as the comb-like row of spines on the distal half of the anterior margin. Lastly, Bate's specimen in the British Museum of *Phoxus simplex* has been referred to *Phoxocephalus holbölli* by Mr. Walker. He says—"The single specimen is in bad condition, but the rostrum straight, and not curved downwards, as supposed by Bæk. It appears to be an immature male of *Phoxocephalus holbölli* (Kröyer). The upper antennæ is badly figured, the flagellum is wanting, but the accessory appendage remains, having four longish-joints." And a careful consideration of all the circumstances goes, I think, to show that Walker's view is the right one.

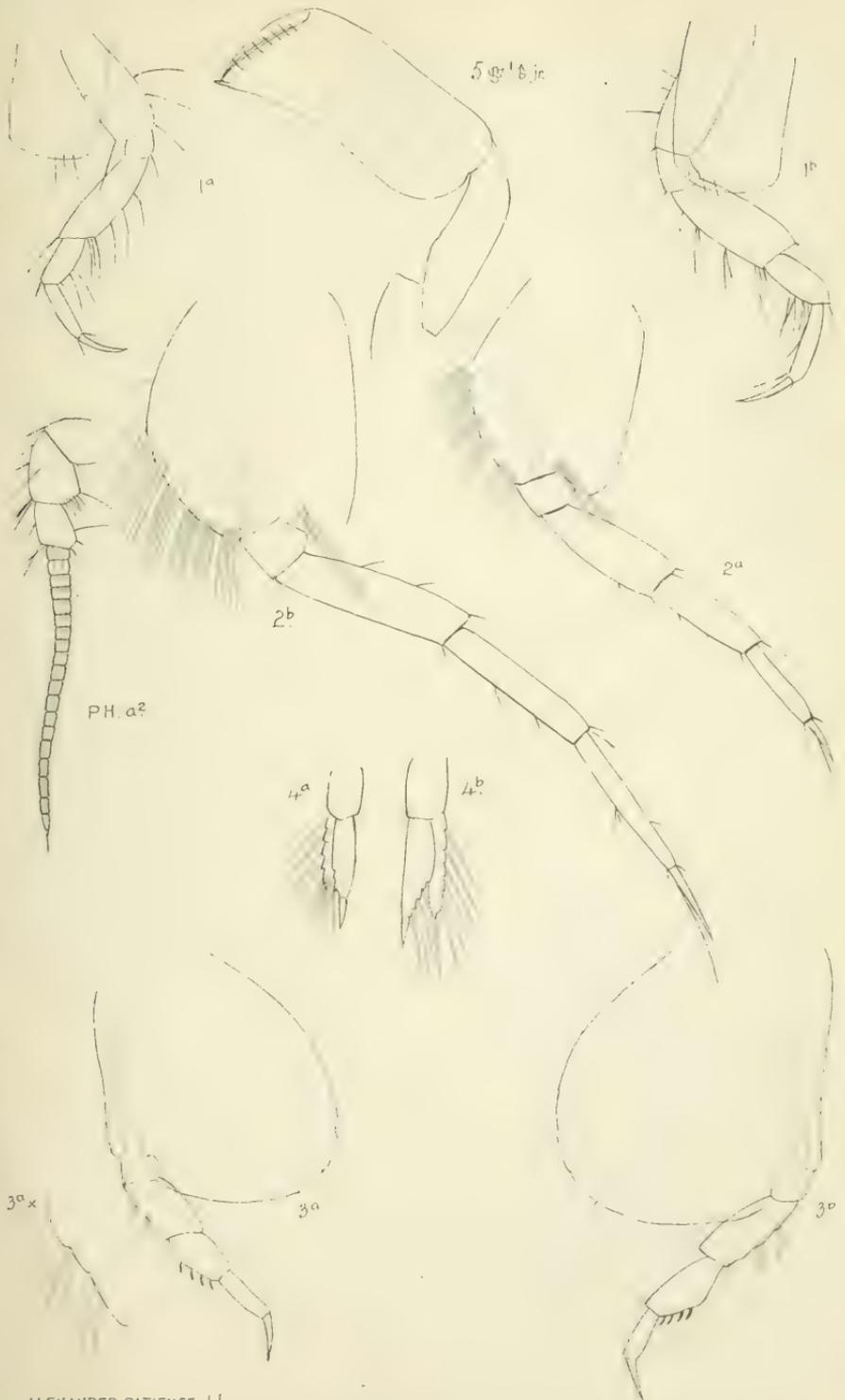
Phoxocephalus oculatus (G. O. Sars).

1880. *Phoxus oculatus*, G. O. Sars, "Crust. et Pycnog. in itin. 2 et 3 Exped. Norveg. inventa," *Archiv. for Mathem. og Naturvid.*, 1880, p. 441.
1885. *Phoxus oculatus*, G. O. Sars, *Norske Nordhavs-Exped.*, V. 6, Crust. I., p. 154, t.13, Fig. 4 a-e.
1891. *Paraphoxus oculatus*, G. O. Sars, *Crust. of Norway*, Vol. 1, p. 119, Pl. 51.
1893. *Phoxocephalus oculatus*, A. Della Valle, *F. Fl. Neapel*, p. 740, Pl. V., Fig. 5, Pl. XXXV., Figs. 19-28.
1900. *Phoxocephalus oculatus*, Norman, *Ann. Mag. Nat. Hist.*, Ser. 7, Vol. V., p. 334.
1906. *Paraphoxus oculatus*, Stebbing, *Das Tierreich, Amphib.*, Gam., p. 137.



ALEXANDER PATIENCE, del.

PHOXOCEPHALUS



ALEXANDER PATIENCE, del.

PHOXOCEPHALUS

I have taken two female specimens of this species off Cumbrae, in 19 fathoms, a few years ago. It may be readily distinguished from *P. holbölli* by the somewhat longer dactyli of the anterior peræopods and by the long and slender mandibular-palp which is usually seen projected when the specimen is laid on its side.

DESCRIPTION OF PLATE III.

- 1^a.—Upper antenna of male of *P. fultoni*.
 2^a.—Lower " "
 x.—One of the calceoli, more highly magnified.
 3^a.—1st gnathopod of male of *P. fultoni*.
 4^a.—2nd " "
 4^ax.—Branchial plate attached to "
 5^a.—Telson of male of *P. fultoni*.
 6^a.—3rd peræopod "
 1^b.—Upper antenna of *P. pectinatus*.
 2^b.—Lower " "
 x.—One of the calceoli more highly magnified.
 3^b.—1st gnathopod of male of *P. pectinatus*.
 4^b.—2nd " "
 4^bx.—Branchial plate attached to "
 5^b.—Telson of male of *P. pectinatus*
 6^b.—3rd peræopod. " "
- 4^ax and 4^bx.—Magnified on a slightly higher scale.

DESCRIPTION OF PLATE IV.

- 1^a.—1st peræopod of male of *P. fultoni*.
 2^a.—4th " "
 3^a.—5th " "
 3^ax.—inner edge of do. more highly magnified.
 4^a.—3rd uropod of male of *P. fultoni*.
 1^b.—1st peræopod of male of *P. pectinatus*.
 2^b.—4th " "
 3^b.—5th " "
 4^b.—3rd uropod " "
- 5 gn. 1♂.—Last four joints of 1st gnathopod of young male of *P. fultoni*.
 P.H. a (2).—Lower antenna of immature male of *P. holbölli*.
 5 gn. 1♂.—Is magnified on a higher scale than the rest of the figures.

Mr. A. O. Walker, after perusing the above, writes as follows :—

Metaphorus Fultoni (SCOTT) and *Metaphorus Fultoni* (T. SCOTT)
and *M. pectinatus* (WALKER.)

“ Mr. A. Patience has expressed the opinion that the above species are identical, *pectinatus* being only the mature form of the older species *Fultoni*. He admits the difference of structure in gnathopods 1 and 2 of the two forms, but holds that this might change at the final moult. He also admits that there are apparently adult (as well as immature) males and females with ova of *Fultoni*, but quotes Semper to the effect that “sexual maturity does not necessarily indicate the completion of individual growth.” This may be, and probably is, true as regards size, but I know of no evidence of a change of *structure* subsequent to sexual maturity, certainly not in the Amphipoda. Mr. Patience has evidently been led to the above conclusion by the fact that he has taken a large number of males of both forms in association in the Firth of Clyde, viz. :—in all, 103 males of *pectinatus*, and 126 males and 2 females of *Fultoni*. These were taken in the tow-net after sunset, and about a fathom from the bottom. Now it is well known that the males of many species of Crustacea swim near the surface after sunset, leaving their females at the bottom, and, as both species seem to be abundant in the Firth, it is not surprising that the winds and currents should mix them up; an exploration of the bottom would probably show that the two species form separate colonies.

I have taken the two species as follows :—

M. Fultoni.—Menai Straits—7 females, 1 adult male, 1 immature male.

M. pectinatus.—Guernsey—1 female, 1 male.

M. pectinatus.—Valentia—3 females, 2 adult males, 1 imm. male, 2 young.

“ The young, which are less than 2 mm. long, have gnathopods like those of the adults, and consequently cannot be *Fultoni*. All were taken on the bottom.

“ As far as I know, *M. pectinatus* has never been taken in the Menai Straits or any part of Liverpool Bay, including the Isle of

“Man; nor has *M. Fultoni* been recorded from the Channel Islands or Valentia. This is remarkable, to say the least, if they are only different stages of development of the same species.

“In conclusion, let me say that I heartily join in Canon A. M. Norman and Mr. Patience’s protest against the genera Parapoxus and Metapoxus. But, as they have been adopted by Mr. Stebbing in *Das Tierreich*, it is perhaps better to use them.”

Mr. Walker evidently lays some weight upon the fact that there appears to be no evidence of a change of structure—at least in the Amphipoda—*subsequent* to sexual maturity. I do not think it can be held that scientific research has gone sufficiently far in studying the development of the Amphipoda to warrant the assumption that no such change takes place. In the higher order of the Isopoda, at least a case is cited on the authority of Mr. Stebbing, which shows that a change of structure happens *after* the female is sexually mature. In the Cryptoniscidæ “the adult female, without becoming unsymmetrical loses the characteristic shape of an Isopod and *all or most of its appendages*. The Epicaridea in general pass, according to Giard and Bonnier, from the embryo, or first stage of their development, to a second or cryptoniscian stage, in which they resemble the males of this family. According to Dr. Fraisse, the free swimming Cryptoniscidæ have a quite peculiar smell, *and the female becomes sexually mature before adopting a parasitic life*. Notwithstanding Professor Kossmann’s scepticism regarding the latter statement, I believe that it is correct. At all events, a minute specimen taken in the tropical Atlantic, *retaining all its appendages*, and of the shape usual in the cryptoniscian stage *appears to have ovaries crowded with eggs*.” (The italics are mine.)

I have not been led to the conclusion advanced in these notes, as Mr. Walker evidently assumes, by the fact alone of the two forms being found in association, but by an impartial investigation of the whole circumstances. Through the courtesy of Mr. Elmhirst, the Director of the Marine Biological Station, Millport, I was able quite recently to examine a tube in the “Robertson” collection, labelled “*Phoxenus holvelli*, Krøyer, 2.658, Cumbrae,” containing, however, not that species, but about one or two hundred specimens of the two forms *fultoni* and *pectinatus*.

There is no information given whether they were taken at the surface or at the bottom, but, in any event, it would certainly be a remarkable fact if the currents were found to be responsible for the mixing up of the species in so methodical a manner, as an interval of about eighteen years has elapsed between Robertson's gatherings and mine.

The two forms dredged by me were not found at or near to the surface, but, I believe, not more than a fathom off the bottom. I was tow-netting in 10-12 fathoms.

I have shown that transformation *does* take place as the male develops. In the first stage noticed the 3rd uropods have no plumose setæ, the fifth joint of the last pereopod does not bear the peculiar spines, and the flagellum of the lower antennæ is quite different from that of the adult or nearly adult. The next is the *fultoni* stage, where the only difference is in the form of the gnathopods, and in them particularly of the fifth and sixth joints, and I have shown that these also undergo a certain amount of change in the shortening and broadening of the joints, and it requires only a very slight transformation to produce the hand of *pectinatus*, which probably happens at the final moult.

Preliminary description of a new British Amphipod,
Isaea elmhirsti, sp.n.

By ALEXANDER PATIENCE.

Genus, ISAEA, M. Edwards, 1830.

Isaea elmhirsti,* sp.n.

LENGTH of adult male and female about 7 mm.

COLOUR of the living animal yellowish brown, speckled with dark spots.

EYES black and smaller than in *I. montagui*, M.Edw.

* In compliment to Mr. R. Elmhirst, Director of Marine Biological Station, Millport.

ANTENNÆ comparatively longer than in *I. montagui*; in antennæ 2 ultimate joint of peduncle equal in length to penultimate.

MANDIBLE having 3rd joint of palp shorter than 2nd.

GNATHOPODS comparatively stouter than in *I. montagui*; in gnathopod 2nd palm of 6th joint not so oblique, the margin being more precisely defined, especially in male.

PEREPODS 1-5 comparatively shorter than in *I. montagui* and not so spinose, the spines on the palm of 6th joint being less stoutly constructed. Pereopod 3 shorter than 4th and 5th, basal joint longer than broad, the distal two-thirds of posterior margin straight.

PLEON-SEGMENT 3 with the lateral corners terminating in a short blunt point, posterior edge evenly curved and smooth.

FIRTH OF CLYDE, clinging to hairs on sternum of the common lobster, *Astacus gammarus* (Linn).

Proceedings of the Society.

THE ninth meeting of Session 1908-9 took place on 25th May, 1909, Mr. John Paterson, President, in the chair.

Mr. Thomas Morton, Mure Place, Newmilns, was elected as an ordinary member.

Reports of excursions to Devol's Glen (p. 142), Port-Glasgow, and Duncombe, Kilpatrick Hills (p. 143), were submitted.

Mr. Robert Dunlop exhibited a dotterel (*Eudromias morinellus*) which had been picked up by him on 20th April, on the road near Bellshill, Lanarkshire. It had been newly killed by flying against a wire.

In connection with the discussion at a recent meeting on colour variation among serpents, Mr. David Bruce showed a living specimen of a young reddish-brown adder (*Pelias berus*, Linn.), and two full-grown specimens (a black and a brown) preserved in spirit, all of which had been obtained in Caithness. Mr. Bruce believed that the reddish-brown varieties are not uncommon, and that closer observation will reveal a wide distribution.

Dr. Thomas Beath Henderson exhibited a sloughed skin of a triton in an almost perfect condition, and made some remarks on sloughing in reptiles.

Mr. Thomas Anderson showed a parasitic worm obtained from a minnow. The latter was taken from a small stream which flows into a reservoir near Loch Thom, Greenock, on 22nd April, and it died on 8th May. When dead it lay at the bottom of the aquarium in the position assumed when alive, viz., dorsal surface upwards. The pectoral fin was extended at right angles to the body. On making a slight cut on the ventral surface, the worm was found just under the skin. When alive, the minnow was very greedy, which is not to be wondered at, considering the size of its messmate, which measured over four inches in length, while its host was only two. Dr. J. F. Gemmill, to whom the specimen was sent, identified it as a "larva" of the cestode, commonly known as *Ligula simplicissima*. The Ligutæ or strap-worms infest the peritoneal cavities of the cyprinoid fishes, where they attain to almost their full size and complexity of structure. The short final stage of their life-history is passed within the food-canal of one or other of the water-birds. An allied genus (*Schistocephalus*) is found in the stickleback.

Mr. D. A. Boyd exhibited bladder-wrack (*Ascophyllum nodosum*, Le Jol.) from Saltcoats, having the conceptacles or "pods" dotted over with the minute black perithecia of *Mycosphærella ascophylli*, a parasitic pyrenomycete which has recently been described for the first time by Mr. A. D. Cotton, F.L.S., Kew. It is very abundant in the Ardrossan district, and will probably be found to be generally distributed around the shores of the Firth of Clyde. Mr. Boyd also showed specimens of *Orbilina marina* (Phil.) Boyd, a minute discomycete which grows on stranded and decaying fronds of various brown seaweeds at Stevenston.

Through the kindness of Mr. Wm. Horton, Glasgow, Mr. Charles Kirk exhibited a specimen of the golden oriole (*Oriolus galbua*). The bird (an immature male) was found dead in a garden at Port-Glasgow on 8th May (p. 100).

Mr. P. Ewing, F.L.S., showed a fine series of lantern slides, illustrating alpine plants *in situ*, and described the conditions under which the various species occurred.

Mr. James Whitton, Superintendent of Parks, submitted a paper entitled "Meteorological Notes and Remarks upon the Weather during the Year, 1908, with its General Effects upon Vegetation."

In comparing the records of 1908 with those of previous years, it was noted that the rainfall (33.58 inches), was below the average, which in this district is about 39 inches. The wettest months were January (4.58 inches), March (4.01 inches), and September (4.17 inches.) The driest month was April, the rainfall being only 1.06 inches. The range of atmospheric pressure was only 1.80 inches. The monthly averages of temperature were somewhat high.

In comparing the notes on the weather conditions of 1908 with those of 1907, the only points of similarity are the absence of very severe frosts and an undue preponderance of easterly winds. There was more sunshine and greater warmth, especially in the midsummer months. As the weather of the previous season was not conducive to thorough maturation of growth, there was not the tendency to early growth in the bulk of plants, even had the weather been favourable for early development. Excepting in the case of those plants which are easily excited to growth, and generally regarded as precocious subjects, there was, on account of the dry, cold weather in spring, a slow movement in growth, and until the third week in May vegetation was reckoned as being about ten days behind the usual time. With the improved weather conditions, however, after that period, there was a remarkable development in vegetation, and by the middle of July it was more forward than it was at the same time in 1907.

Trees and shrubs did not come up to the average in flower, and the blooming was very erratic and short lived. The later development as to the growth of shoot and foliage was in every sense satisfactory, and as the weather conditions proved favourable for the maturation of growth, trees and shrubs give every promise for a brilliant display in 1909.

The tenth meeting of Session 1908-9 took place on 29th June, 1909, Mr. John Paterson, President, in the chair.

Mr. James L. Barnsley, 309 Golfhill Drive, Dennistoun; Mr. William Cousin, 180 Sauchiehall Street; and Mr. Fred.

L. McKeever, Meadow Park, Burnside Road, Cambuslang, were elected as ordinary members.

Reports on excursions to Cambusnethan (p. 143) and Inchlonaig (p. 144) were submitted.

Mr. John Muir sent for exhibition an interesting series of natural history specimens from Alabama, U.S.A.

Mr. Alexander Ross exhibited specimens of *Goniomyia schistacea*, Schum., a tipulid from Inchlonaig, Loch Lomond, which is now recorded for the first time for the West of Scotland. He also showed *Leicopus nebulosus*, Linn., a longicorn beetle from Incheallach, Loch Lomond. This has been recorded only once before for the Clyde Area, viz., at the meeting of the Society held on 23rd June, 1908.

Mr. James J. F. X. King, F.E.S., showed other two longicorn beetles, viz., *Grammoptera tabacicolor*, De G., now first recorded for the Clyde Area, and *Rhagium indagator*, Fabr., an insect seldom met with in our district. Both specimens were taken in the Gorge of Avon.

Mr. John R. Lee exhibited *Leptodontium recurrijolium*, Lindb., from Glen Falloch. He described the distribution of this rare moss, and remarked that it had never been found in fruit in the Clyde Area.

The President exhibited *Polyporus lucidus*, Fr., a striking reddish coloured fungus, shining above as if lacquered, which was obtained on old yews on Inchlonaig by Mr. H. B. Shields. He stated that the only other local record is for Bothwell, and was published in *Grevillea* over thirty years ago.

Mr. William Stewart showed *Xylaria polymorpha* (Pers.) Grev., obtained in the Glasgow Botanic Gardens, but not mentioned in the local Handbook for the British Association, published in 1901.

Mr. D. A. Boyd exhibited a remarkably fasciated peduncle and flower-head of *Pyrethrum roseum hybridum*, grown in the nurseries of Mr. John Gunson at Saltcoats.

Mr. Johnston Shearer showed *Vaccinium Oxycoccos*, Linn., from Inchlonaig, and *Chenopodium Bonus-Henricus*, Linn., from a wood at Cathcart.

Mr. D. A. Boyd read a paper entitled "Some Recent Additions to the Fungus-Flora of the Clyde Area" (p. 110).

Messrs. Robert S. and Hugh W. Wilson submitted a paper on "The Stock Dove (*Columba oenas*, Linn.) in the Clyde Area" (p. 101).

Mr. James Whitton contributed a note on the pugnacity of the water-hen (*Gallinula chloropus*, Linn.). Early in June, in Tollcross Public Park, a water-hen and young were feeding at one of the food-troughs. A starling, desirous of a share in the feast, landed on the box. The parent water-hen, a male bird, rushed at the intruder, caught it by the neck, dragged it down to the water, and held it under till it was drowned (*see* p. 145).

EXCURSIONS.

(Continued from page 59.)

ARDLAMONT (*continued*).—Owing to a strong breeze, and to the wetness of herbage and foliage, insect captures were not numerous. About 39 species of microfungi were noted, including *Puccinia calthæ*, Link., on *Caltha palustris*; *P. polygoni* Pers., on *Polygonum amphibium* var. *terrestre*; *P. glomerata* Grev., on *Senecio Jacobæa*; *P. arenarie* (Schum.) Wint., on *Sagina procumbens*; *P. annularis* (Strauss) Wint., on *Teucrium Scorodonia*; *Milesia polypodii* B. White, on *Lomaria spicant*; *Geoglossum difforme*, Fr., on the grassy sea-shore between Ardlamont and Kames; *Plowrightia ribesia* (Pers.) Sacc., on dead bark of *Ribes rubrum*; *Phyllosticta sambuci* Desm., on *Sambucus nigra*; *Coniothyrium Boydeanum* A. L. Sm., on dead bark of *Fuchsia*; *Septoria stellarie* Rob. and Desm., on *Stellaria media*; *S. hydrocotyles* Desm., on *Hydrocotyle vulgaris*; *Phleospora ulmi* (Fr.) Wallr., on leaves of *Ulmus montana*; *Glæosporium ribis* Lib., on leaves of *Ribes rubrum*; *Septoglæum salicinum* Sacc., on leaves of *Salix viminalis*; *Ramularia variabilis* Fekl., on *Digitalis purpurea*, &c.

ARDGOWAN and SHILFORD WOOD, on 19th September and 17th October, 1908.—Conductor, Mr. R. B. Johnstone. These excursions were arranged jointly with the Andersonian Naturalists' Society, and were duly carried out in fine weather. The attendance at the former was 25, and at the latter 19. In both

woods the larger fungi were scarce, probably, in some measure, on account of the timber being comparatively young. Among the Agarics, no remarkable finds fall to be recorded. Special mention may be made of *Helvella crispa*, Scop., unusually large specimens of which were found growing in considerable quantity under some trees by the roadside, just before Shilford Wood was entered.

At Ardgowan, 35 species of Hymenomycetes were noted; and at Shilford Wood, 26 Hymenomycetes, 3 Gastromycetes, and 35 Microfungi. Among the last mentioned were *Namacyclus niveus* (Pers.) Sacc., found on fallen fir-leaves; *Sclerotinia baccarum* (Schröt) Rehm., as sclerotium in dead berries of *Vaccinium Myrtillus*; *Erinella apala* (B. and Br.) Mass., on dead culms of *Juncus communis*; *Phyllosticta sambuci*, Desm., on leaves of *Sambucus nigra*; *Glaeosporium ðetula*, Lib., on leaves of *Betula alba*; *G. fagi*, Desm. and Rob., on leaves of *Fagus sylvatica*; *G. salicis*, West., on living leaves of *Salix fragilis*; and *Isaria farinosa* (Dicks.) Fr., on dead lepidopterous pupa.

STRATHLEVEN, 27th March, 1909.—Mr. John Renwick, Conductor. The first excursion in 1909 took place to Strathleven, the property of Mr. Alex. Crum Ewing. Near the front of Strathleven Mansion-house is an old ivy-covered holly tree, which the gardener said was brought from the former Glasgow residence of the family, which stood at the head of Queen Street. Glasgow, where the North British Railway Station is now. There are many fine trees at Strathleven. Near the River Leven is a curious old Oak. When we first saw it, in 1890, it measured 23 feet 5 inches at the narrowest part of a short trunk of 8 feet. On our next visit in 1895, the tree was decaying, and large pieces of the bark and wood falling off, so that the girth was reduced 4½ inches. But in 1904, Mr. M·Kay and I found that the old tree had apparently taken a new lease of life, and was growing vigorously, the girth having increased to 23 feet 7 inches. It is now 23 feet 10 inches. The hole caused by the decaying wood has been built up. Another Oak, near the highway, girths 21 feet at the narrowest part of a short bole of 6 feet. With both of these trees we took the tape round in an irregular line, in order

to avoid knots that would have swelled the measurements considerably. Two Oaks growing together near the house measure in girth respectively 14 feet $2\frac{1}{2}$ inches and 14 feet $4\frac{1}{2}$ inches, at 5 feet, with fine boles of 20 feet, while another has a bole of 25 feet and a girth of 13 feet 10 inches. A Turkey Oak, in a field near the highway, measures in girth 8 feet 1 inch, bole 17 feet, and another in a strip of planting has a fine long trunk of about 50 feet, and a girth of 7 feet $4\frac{1}{2}$ inches. In the same plantation is a Gean with a bole of about 45 feet and girth 6 feet $3\frac{1}{2}$ inches. On the side of the approach to the house is a very fine Walnut with a girth of 11 feet $9\frac{1}{2}$ inches, at 3 feet bole 7 feet. We know of only a few Walnuts in "Clyde" about equal to this.

Near the walnut is an oak, clasped by two thick stems of ivy, the larger of which measures, at the narrowest part, 2 feet 8 inches. In a field to the east of the house is a fine spreading ash, with a diameter of foliage in 1904 of $85\frac{1}{2}$ feet, girth in 1909, 15 feet $5\frac{1}{2}$ inches at 5 feet 8 inches, bole 11 feet. A tall wych-elm, with a bole of 30 feet, has a girth of 17 feet 2 inches, but this is not all good wood, the trunk being much swollen with excrescences. In the front of the house are many fine beeches, the largest with a girth of 16 feet 2 inches, and a height of about 90 feet. These beeches are very probably among the trees planted by William Cochrane, between 1670 and 1717. On the riverside is a black poplar, 89 feet high, 12 feet $9\frac{1}{4}$ inches girth.

Strathleven estate comprises the lands of Murroch, on which is Murroch Glen, well known as showing splendid sections of the Ballagan series of rocks. Near Murroch Farm-house is a yew tree with a girth of 12 feet 6 inches at 3 feet, bole 8 inches in 1906.

The estate is situated in the east side of the river Leven, in the parishes of Dumbarton and Bonhill. On the west side of the river are two pieces of low-lying haugh-land, one above, the other below the house, which, though apparently in Cardross parish, are shown in the map as in Dumbarton, and are said to still pay rates there. The river has evidently changed its course since the parish boundaries were laid out, and taken great sweeps to the east, adding more than a mile to its length.

CALDER GLEN, Lochwinnoch, 3rd April, 1909.—Mr. D. A. Boyd, Conductor. This excursion took place during very unfavourable weather. In the Glen vegetation was found to have made considerable progress, and several of the early flowers were observed in bloom. These included *Chrysosplenium oppositifolium*, *C. alternifolium*, *Corylus Avellana*, *Alnus glutinosa*, &c. *Adoxa Moschatellina*, *Mercurialis perennis*, and *Ulmus montana* were in bud and almost ready to open their flowers. Owing to the almost continuous rainfall and wet condition of the herbage and ground few cryptogams were noted, but the following species may be mentioned as seen:—*Polyporus brumalis*, on dead willow trees; *Botryosporia dothidea*, on living branches of rose; *Colpoma quercinum*, on dead branches of oak.

ORBISTON ESTATE, 24th April, 1909.—Mr. J. Ballantyne, Conductor. This was a joint excursion with the Hamilton Natural History Society, and, notwithstanding the inclemency of the weather, there was a large turn-out of members, especially from Hamilton. Orbiston was the scene of a remarkable experiment on social and communistic lines by David Dale and Robert Owen, and within the present mansion-house—which had no tenant at the time of our visit—Mr. Alex. Cullen, F.R.I.B.A., gave those present an admirable exposition of what led up to the experiment, and an account of its inception and collapse in 1827, after a brief career. The following plants, although not in flower, were noticed:—*Anchusa sempervirens*, Linn., of which there was a large number; *Tulipa sylvestris*, Linn.; *Arum maculatum*, Linn., in great abundance, and also a few plants of *Arum italicum*, Linn.

DEVOL'S GLEN, 8th May, 1909.—Mr. Thomas Anderson, Conductor. This was a joint excursion with the Greenock Natural History Society. The weather was dry and warm. There were twenty-eight members and friends present.

Devol's Glen is a wild and rugged ravine, well wooded, with a small stream running its entire length. A good number of flowers was observed, but, owing to the recent cold weather, only about twenty species were in bloom.

During the excursion thirty-seven species of birds were noted, amongst which were the Whitethroat (*Sylvia cinerea*), the Wood Wren (*Phylloscopus sibilatrix*), and the Yellow Wagtail (*Motacilla raii*).

DUNCOMB, 22nd May, 1909.—Mr. Lawrence Watt, Conductor. This was a most successful excursion. Over thirty members of the Geological and Natural History Societies met at Singer's Station, Clydebank. The party proceeded up the hill to Hardgate, near Duntocher, then up through Fairley to the filter ponds for Clydebank water supply. They inspected the new water pipes, which are made of concrete throughout instead of the cast-iron ones at present in general use. At this point the sandstone is left, and we come on to the trap rocks

Owing to the late spring few plants were to be seen. *Ranunculus Ficaria*, Linn., and *Caltha palustris*, Linn., were gathered at Greenside reservoir, the elevation of which is 750 feet. *Cryptogramme crispa*, Br., grows plentifully at the base of Duncomb at 950 feet elevation. On the rocks, at 1,100 feet, we got *Vaccinium Vitis-Idæa*, Linn., and *Empetrum nigrum*, Linn., and *Oxalis Acetosella*, Linn., was in fine flower at 1,200 feet. All were on the top of the hill at 5.40 p.m., and a fine view was got of Loch Lomond and all the bens that form the outposts of Stirling, Perth, Argyll, and Dumbarton.

CAMBUSNETHAN, 5th June, 1909.—The excursion to Cambusnethan was a joint one with the Hamilton Natural History Society, and was well attended. The toothwort (*Lathræa squamaria*) which was found on the last visit of the Society was again discovered. The following trees were measured:—Great Maple (variegated), near gate into Glen. 7 feet 5½ inches at 5 feet, bole 15 feet; Wych-Elm, near mansion-house, 11 feet 0½ inches at 5 feet, bole 13 feet; English Elm, near gate into Glen, 10 feet 5½ inches at 2 feet 2 inches, bole 5½ feet, increase in girth in seven years 7.5 inches; Turkey Oak, in field, 9 feet 11 inches at 3 feet 6 inches, bole 7 feet, spread 86 feet; another, 9 feet 2½ inches at 5 feet, bole 9 feet; Spanish Chesnut, 22 feet 8½ inches at 5 feet 6 inches on high side, 3 feet 2 inches on low, bole 15 feet, height 70 feet, increase in girth in seven years 4 inches; Beech, near house, 13 feet 3½ inches at 5 feet, bole 20 feet, increase in girth in seven years 5.5 inches; another, the "bell" tree, 12 feet 7¼ inches at 5 feet, bole 20 feet; Black Poplar, opposite offices, 11 feet 8½ inches at 4 feet, height 102 feet;

Populus monilifera (sp. ?), at foot of burn, 10 feet $11\frac{1}{2}$ inches at 5 feet, height about 100 feet, increase in girth in seven years 4 inches.

INCHLONAIG, LOCH LOMOND, 19th June, 1909.—Mr. John Paterson, Conductor. Fine weather prevailed at this excursion, and it was much enjoyed by those present, fifteen in number. Inchlonaig, or the Yew Tree Isle, is distinguished by possessing the most remarkable collection of yew trees in Scotland. The western end of the island is said to have been replanted after the collection suffered from fire, but other causes have been at work, as in Johns's "The Forest Trees of Britain" (ed. 1886), there is a statement about Inchlonaig supplying 300 yews to the axe, evidently in comparatively recent times. There are, however, still a hundred or two left, which give us an adequate idea of this species as a forest tree. A few of them were measured by Mr. John Renwick. One between the keeper's house and an outhouse had a girth of 11 feet $2\frac{1}{2}$ inches, at 3 feet 7 inches; one near outhouse, west of keeper's house, 10 feet 1 inch, at 4 feet 7 inches, bole 6 feet; one on north shore, 6 feet $8\frac{1}{2}$ inches, at 5 feet, bole 9 feet; on east side of a small valley on the north-east shore, one 12 feet 3 inches, at 2 feet 9 inches, bole 3 feet. There is apparently little alder now on the island, but about twenty years ago English clog makers were to be seen encamped there, working at this species. The coming tree is the birch—here as elsewhere—and this tree, with the yew, forms the chief sylvan feature of the island. Some of the birches attain a large size, and one was found to be 8 feet 9 inches, at 3 feet 6 inches, bole 10 feet, which is remarkable for this species. Two interesting fungi were got on the old yews, viz. :—*Hormiscium pithyophilum*, Nees, which has been seldom met with in the "Clyde" area; and *Polyporus lucidus*, Fr., which is new to its fungus-flora. A tipulid *Goniomyia schistacea*, Schum., new to the "Clyde" area, was also got. The island has a heath flora, and the common ling-heather grows to an extraordinary height. There is a small herd of roe-deer on the island.

Notes.

Hoopoe (*Upupa epops*) in Lanarkshire.—A Hoopoe in fine plumage was picked up in an exhausted state on a roadside, near Leadhills, on 1st June, 1909, and died on the following day. Prior to this it is said to have been seen near Abington, but of this I can get no authentic information.—Geo. W. Campbell, Coatbridge. [This species is not known to have occurred in Lanarkshire before, but there are single records from Renfrew, Bute, Dumbarton, and Argyll, and two from Ayr.—*Eds.*]

Fulmar (*Fulmarus glacialis*) in Fife.—On 4th July, 1909, when passing along the shore between King's Barns and Cambo, in company with Mr. Hugh W. Wilson, I picked up a dead Fulmar in good condition. In Mr. Harvie Brown's recently published *Vertebrate Fauna of Tay* this species is entered as—"Rare. Occasional occurrence." Two records only are given, one in 1895, and the other a museum specimen, labelled 1868.—John Paterson.

Pugnacity of the Water-hen (*Gallinula chloropus*).—That pair at Tollcross Park [Glasgow], of which I wrote (*ante* p. 139), have had a second or rather a third nest—the first one was robbed—and have hatched two chicks. As in the case of the first chick the parents are extremely attentive and watchful, and have the assistance of the first chick. On Saturday the birds were feeding and a Thrush joined in; before it had got a right start the *female* bird pounced on the Thrush and held it down and literally squeezed the life out of it. Apparently this particular pair have a double dose of pugnacity, or the position and circumstances have enabled their ferocity to be better observed.—James Whitton, Superintendent of Parks, Glasgow, 6th July, 1909.

Quail (*Coturnix communis*) in Fife.—The Quail was a well-known species in south-west Scotland, even as late as 1869, when Mr. Gray's "Birds of Ayrshire and Wigtownshire" was published, but here, as in other parts of Great Britain and Ireland, it has become very rare in the interval. Mr. W. C. S. Fergusson informed me of one shot out of a flock of five at Greenan Castle, on the shore below Ayr, on 3rd August, 1890; and in the

Glenfield Ramblers' list of Ayr birds one is stated to have occurred at Parkhead, Fenwick, in 1904, but these are the only reports for several decades now in "Clyde." In 1893 it was widely reported throughout Scotland, although not in this neighbourhood, and some districts, particularly on the east coast seem still to be favoured. In 1906, at Balcomie, Crail, I heard it for the first time, and on revisiting Crail in July this year I had the pleasure of hearing it call on 2nd and 4th July in five places within a mile of the station.—John Paterson.

Ruff (*Macchetes pugnax*), **Spotted Redshank** (*Totanus juscus*), and **Black-tailed Godwit** (*Limosa belgica*) in East Renfrew (autumn, 1909).—On 29th August, with Mr. Hugh W. Wilson, I saw one Spotted Redshank and one Black-tailed Godwit at Waulkmill Glen Dam. Again, on 12th September, I saw what were probably the same birds at the same place, and also four or five common Redshanks and two Greenshanks (*Totanus canescens*). It was a rare experience to see these four species flying together in a small flock and emitting their several notes at the same time. On the same day (12th September), at Balgray Dam, I saw two Ruffs in prettily chequered plumage. On 18th September I again saw the Ruffs and the Dusky Redshank at Balgray Dam, and they were seen the following day by several members of our Society. The Ruff occurs frequently at Balgray Dam, where I believe it to be an annual autumn visitor; but unless the dam is low enough to expose a margin of mud they do not remain and consequently are not observed. The Spotted Redshank has occurred twice (1898 and 1899) and the Black-tailed Godwit once before (1899) at Balgray Dam.—John Robertson.

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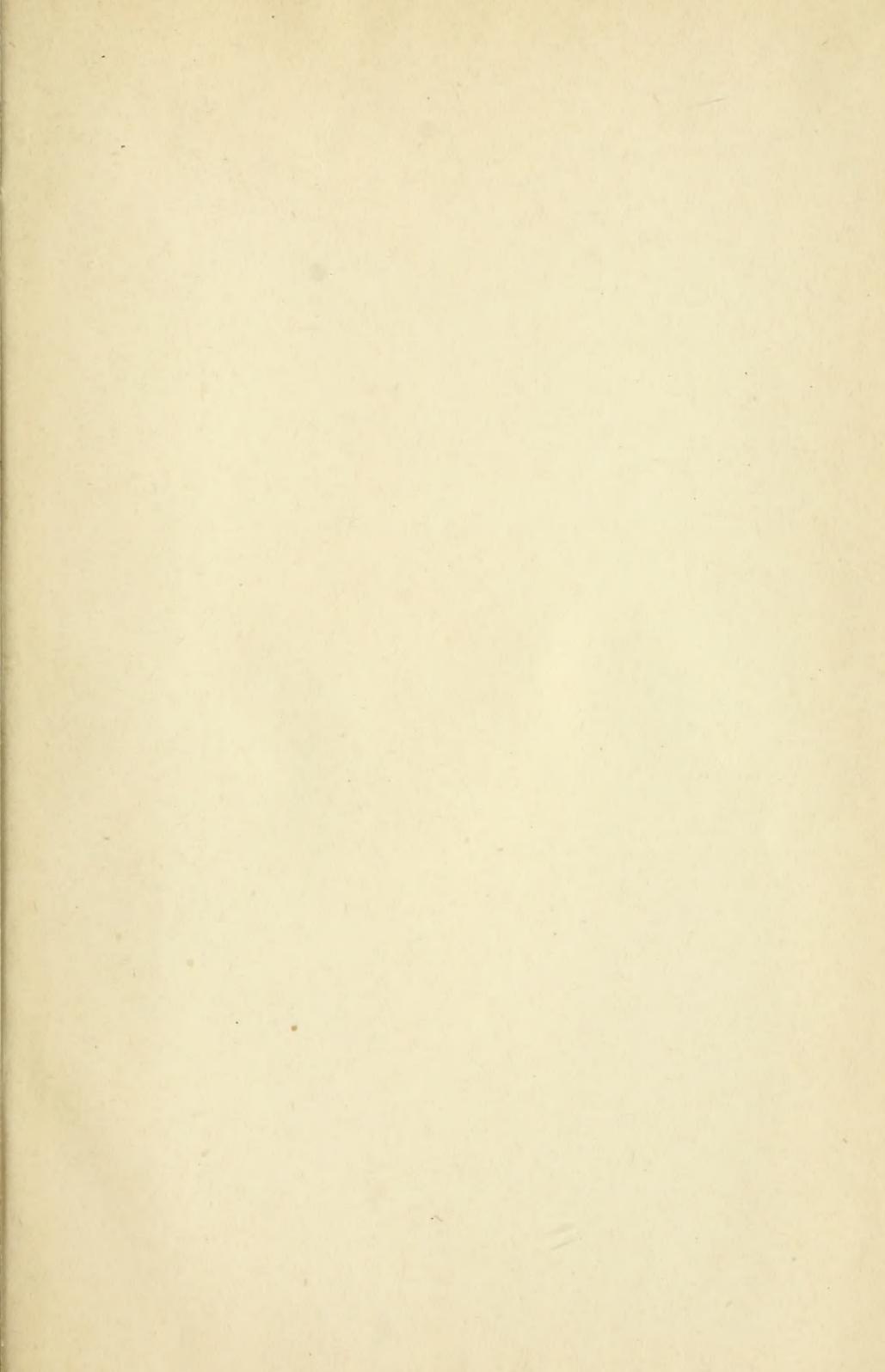
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