

 **Annals**

OF THE

Andersonian Naturalists'

Society.

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From Photo. by]

FRONTISPIECE.

[James Mitchell.

·BAROCHAN CROSS.



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INTRODUCTION.

THE formation of the Andersonian Naturalists' Society in the spring of 1885 was due to Mr. WILLIAM CUMMING and other students then attending the popular Botany class conducted by the Rev. ALEXANDER S. WILSON, M.A., B.Sc., in Anderson's College, Glasgow, and the first members were chiefly drawn from that class. The inaugural meeting was held on 25th August, 1885, when sixteen gentlemen were present, most of whom still remain members of the Society. Mr. WILSON was elected President, and Mr. CUMMING Honorary Secretary: and their successors in these offices have been Mr. ROBERT TURNER and Prof. EDWARD E. PRINCE, B.A., F.L.S., Presidents; and Messrs. JOHN PATERSON, ROBERT BOYD, HUGH BOYD WATT, ROBERT S. HOUSTON, R. D. WILKIE, and THOMAS B. WILKIE, Honorary Secretaries. With the consent of the Governors, arrangements were made to hold monthly meetings in Anderson's College, and these meetings have been continued in the same place under its changed name of Andersonian Buildings, Glasgow and West of Scotland Technical College.

From the first it was determined to aim at doing something to popularise studies in natural science in Glasgow, and to carry on the Society on practical lines within the resources and powers of its own membership; and while its early history was not one of unvaried success, yet, since 1888 (when the question of its continuation was seriously considered), there have been steady progress and increase in membership. A strong feature all along

has been the series of excursions undertaken each season for field work, by means of which members have not only found mutual advantage in collecting and observing as naturalists, but have also become acquainted with many of the rural aspects and phases of interest in the neighbourhood of Glasgow and even about places so distant as Dailly and Tyndrum, Bute and Fife. The photographic camera has been effectively used at many of these excursions, with results not only in the form of happy mementoes, but also frequently of scientific and scenic value. While the botanical interest not unnaturally predominates in the Society, other departments of natural history have also been cultivated, as its records show; and at present sectional committees embracing the following branches are a part of its working constitution:— Botanical, Geological, Microscopical, Photographic, Entomological, Ornithological, and general Zoology.

The publication now issued is the first venture of the Society at giving the permanence of print to some of the work it has done, and the publishing committee desires to express its thanks and obligations to the contributors of articles and illustrations, which it is confident will prove acceptable to the subscribers and of interest to all lovers of nature. From the material available only a selection has been made, particularly as regards excursions, some of the districts frequently visited being left untouched at present.

H. B. W.

March, 1893.



LANARKSHIRE RAMBLES.

BY ROBERT TURNER.

CLYDESDALE is a country of surprises for the naturalist. Along with its populousness there are ample solitudes of moorland and hill where wildness is all in all. Peesweep, snipe, and whaup haunt this land of heather and bog-moss, and yet we can often pleasantly sniff humanity afar in the peat-reek perfume borne over miles of moor. Even round its great city there are quiet retreats where nature unfolds itself, and here and there amid industrial unloveliness sudden byeways open into green seclusions. Its blackest country is full of possibilities to those who study its rock records, whose enthusiasm flames over marvellous past creatures, who delight in stone forests and the mysteries of an antiquity beyond the measures of our clocks and chronologies.

Much of Upper Clydesdale is moorland, trending down from "God's Treasure House in Scotland" at Leadhills in rounded undulations, heather and grass clad, of Silurian and Old Red Sandstone strata to the Falls. The flora of the uplands here is very similar to that of the high country fringing the valley further down; but as the excursions of the Society have so far been restricted in that direction by the Falls, it is proper that this paper should not intrude on what is to the Society an unknown land.

To refer first to the uplands along the valley, which are mostly moorland and marsh, the chief feature there in the vegetation is the ling-heather (*Calluna vulgaris*), with which miles of moor are aflush in autumn. With it is associated the fine-leaved heath (*Erica cinerea*) and the less frequent cross-leaved one (*Erica Tetralix*), popularly known as bell-heather. Other very characteristic plants are rushes of various kinds (*Juncus*, etc.) and sedges (*Carex*), and not the least conspicuous of this kind of vegetation are the two species of cotton-grass (*Eriophorum*) with white

fluffiness visible afar. Of grasses, the most abundant and noteworthy is the blue grass (*Molinia cærulea*). Common, too, are the milkwort (*Polygala vulgaris*), the bog-asphodel (*Narthecium ossifragum*), the cinquefoil (*Comarum palustre*), the bogbean (*Menyanthes trifoliata*), the cranberry (*Vaccinium Oxycoccus*), the grass of Parnassus (*Parnassia palustris*), and the two insectivorous plants, the butterwort (*Pinguicula vulgaris*) and the round-leaved sundew (*Drosera rotundifolia*). The English sundew (*Drosera anglica*) is also found, but is not common. By the burns in early spring grows the golden saxifrage with alternate leaves (*Chrysosplenium alternifolium*), while the commoner one (*C. oppositifolium*) flowers in similar places the summer through. The hairy stonecrop (*Sedum villosum*), a rare plant in most of Britain, is plentiful in damp places. On drier banks and knolls flourish the golden broom (*Sarothamnus scoparius*) and whin (*Ulex europæus*), while the needlegorse (*Genista anglica*) is not quite unknown. Here, too, the scented thyme (*Thymus Serpyllum*), the lovely mountain-pansy (*Viola lutea*), the blue gentian (*Gentiana campestris*), the fragrant orchis (*Gymnadenia conopsea*), the little tormentil (*Potentilla Tormentilla*), and other lowly herbs grow. Of ferns, the bracken (*Pteris aquilina*) is the chief, while the fragrant heath-fern (*Lastrea Oreopteris*) is perhaps the most delightful in its greenness and perfume. There is not wanting the waving beauty of others, as the broad shield-fern (*Lastrea dilatata*), the lady-fern (*Athyrium Filix-fœmina*), and the male-fern (*Lastrea Filix-mas*). The common polypody (*Polypodium vulgare*), the hard fern (*Blechnum boreale*), and the bladder-fern (*Cystopteris fragilis*) abound. The moonwort (*Botrychium Lunaria*) is not uncommon, and the adder's-tongue (*Ophioglossum vulgatum*) is found, though rare, while in shaded places grow the beautiful beech and oak ferns (*Polypodium Phegopteris* and *P. Dryopteris*).

The cultivated districts have only wayside and field weeds of an ordinary type. The prevalent stiff clayey soil is not favourable to weed profusion or variety. Farmers, besides, now leave hardly any ground waste, and there are no rich hedgerows to exhilarate the botanist as in some parts of England. In the cornfields the gaudy corn-rose (*Papaver Rhæas*) is wanting, but the less brilliant long-headed one (*Papaver dubium*) may be seen. The variegated

hemp-nettle (*Galeopsis versicolor*) is common in cultivated ground, and the viscid groundsel (*Senecio viscosus*) is abundant in the neighbourhood of Glasgow, though both plants are somewhat scarce in many other districts. A herb rare in Britain generally but common in the Clyde valley is the tuberous comfrey (*Symphytum tuberosum*), while a variety of the common comfrey with dingy purple flowers (*S. officinale*, var. *patens*) occurs frequently. Others that are noteworthy will be referred to in due course. Of marsh and water plants there is great variety in the lower valley. There are many little lochs about Glasgow, some of those of most note botanically being, however, outside Lanarkshire. In such places in the county we find some plants comparatively rare elsewhere, as the great spearwort (*Ranunculus Lingua*), the marsh stitchwort (*Stellaria glauca*), mare's-tail (*Hippuris vulgaris*), cowbane (*Cicuta virosa*), wild rosemary (*Andromeda polifolia*), tufted loosestrife (*Lysimachia thyrsoiflora*), two kinds of reed-mace (*Typha latifolia* and *T. angustifolia*), the four British species of duckweed (*Lemna*), two kinds of bladderwort (*Utricularia*), with curious traps for small creatures, and pillwort (*Pilularia globulifera*). There are also several introduced plants, as the flowering rush (*Butomus umbellatus*), and the ubiquitous Canadian pondweed (*Anacharis Alsinastrum*), a pest in canals and lochs alike.

To begin at the Falls of Clyde (*Excursions 8th September, 1888, 22nd June, 1889, and 25th June, 1892*). There is a magnificence of beauty in the rush and flow, in the walls of rock, the grand gorge, the overhanging greenery, that fills the artistic sense. But naturalists read small. It is no undervaluing of landscape attractiveness to listen to the mavis that sings on the tree, to catch the radiant flash of the kingfisher, to peer into the tiny flower that is lost in the general grandeur. The naturalist may be closely involved in some of the intimate fashions of his surroundings, and yet wide awake to the general vision of loveliness. The geologist sees in the Cyclopean walls of Old Red Sandstone that form the gorge, with strata that can often be traced from one side to the other, proof that the river has been running over falls for ages and steadily wearing back. The problems of force and time sharpen the zest of his interest. The botanist, who "speaks with the lowliest of the meadow flowers as readily as with the loftiest firs," peering about sees at his feet among the stones or above him

on the rocks and banks herbs of rarity and consequence. When in the best position for the view of the upper Fall—Bonnington Linn—if he look earthward he will observe the beautiful purple-tipped white blooms of the rare wood bitter-vetch (*Vicia Orobus*). Further down on the rocks of the left bank grows the wood vetch (*V. sylvatica*), lovely with large purple-veined white flowers. The shining crane's-bill (*Geranium lucidum*), the rock-rose (*Helianthemum vulgare*), the beautiful winter-green (*Pyrola minor*), cow-wheat (*Melampyrum pratense*), and twayblade (*Listera ovata*)—all somewhat uncommon in Clydesdale—may be culled hereabout. In the woods grows the scarce broad-leaved cotton-grass (*Eriophorum latifolium*). Of true grasses, the graceful wood-melic (*Melica uniflora*) is frequent in the district; but about Bonnington the rare mountain-melic (*Melica nutans*) and the quaking-grass (*Briza media*) nod and quiver in the shade. In the season of fruit we may moisten our lips with blaeberreries (*Vaccinium Myrtillus*) almost anywhere, and here and there vary our feast with red whortleberries (*Vaccinium Vitis-Idæa*), cloudberreries (*Rubus Chamæmorus*), and stone brambles (*Rubus saxatilis*). On moist rocks near Corra Linn may be seen the narrow-leaved bitter-cress (*Cardamine impatiens*), a plant of very local occurrence in Britain, and also tufts of the purple saxifrage (*Saxifraga oppositifolia*), which is usually a dweller on the higher hills. In shaded nooks grow the pale parasitic toothwort (*Lathræa squamaria*), and the whorled-leaved herb-paris (*Paris quadrifolia*). Of ferns one cannot be very confident where there are numerous visitors on the outlook for domestic vegetable pets, but the maidenhair spleenwort (*Asplenium Trichomanes*) and the rare green spleenwort (*Asplenium viride*) still survive in some stations though completely outrooted in others. About Corehouse grounds there are some fine specimens of trees, native and introduced, as walnut (*Juglans regia*), Norway maple (*Acer platanoides*), the small-leaved maple (*Acer campestre*), the giant redwood (*Sequoia gigantea*); among introduced shrubs, the fly-honeysuckle (*Lonicera Xylosteum*), the cornel (*Cornus sanguinea*), the ash barberry (*Mahonia Aquifolium*); and some noteworthy stranger herbs in ponds and waste places, as villarsia (*V. nymphæoides*), the sweet sedge (*Acorus Calamus*), the flowering rush (*Butomus umbellatus*), the columbine (*Aquilegia vulgaris*), the Star of Bethlehem (*Ornithogalum umbellatum*),

motherwort (*Leonurus Cardiaca*), the lily of the valley (*Convallaria majalis*), the perfoliate honeysuckle (*Lonicera Caprifolium*). Of plants which may be frequently observed as we ramble down by the river, and which, though not uncommon in Clydesdale, are of some scarcity over considerable areas of Britain, mention may be made of the luckengowan (*Trollius europæus*), the cross-leaved bedstraw (*Galium boreale*), the helleborine (*Epipactis latifolia*), the hairy St. John's-wort (*Hypericum hirsutum*), and the stately giant bellflower (*Campanula latifolia*), which, with its long pinkish white racemes, adds some grandeur to our summer woods. The tuberous comfrey already referred to may often be observed with corollas bee-bitten at base. There is, too, that beautiful May-flowering bush, the bird-cherry (*Prunus Padus*), with profusion of pendulous racemes of sweet white blooms.

We pass out of the gorge, and the banks widen into sunny slopes of green pastures, strawberry beds, gooseberry gardens, apple orchards; and a little past Lanark Old Bridge there is a Roman bridge over the romantic Mouse, which has just emerged from a picturesque gorge of its own making, known as Cartland Craggs (*Excursion 23rd August, 1890*). This gorge evidences wonderful intensity of steady erosion, all apparently since the end of the great Age of Ice. There is a profuse vegetation resembling that at the Falls, with many of the plants already mentioned, as the rock-rose, the narrow-leaved bitter-cress, the wood-vetch, etc. The willow-leaved spiræa (*S. salicifolia*) grows naturally, and the lily of the valley is quite wild here, more distinctly so than about the Falls. Landshells occur in some abundance and variety, and on the occasion of an excursion of the Society, *Vertigo pusillio* was found by Mr. James Steel—a new record for the district.

On the uplands to the east is the ancient town of Lanark, where the statue of Wallace over the kirk door is busked every Lanimer day—a worship right and becoming to the great patriot. On the town moor grows the moonwort.

Northward lies Lee Castle, the seat of the Lockharts, famous for the "Lee Penny"—Sir Walter Scott's Talisman—that in the times of over-belief was held when dipped in water to give it curative powers over plagues in man and beast. Just beside the castle is an oak (*Quercus Robur*) known as the "Pease Oak," with some tradition, probably baseless, connecting it with Cromwell. It is

hollow and very old, but still vigorous. It measures at the narrowest part of the stem, avoiding nodosities, 23 feet 7½ inches, and at a height of six or eight feet divides into great branches. There are some other grand trees in the grounds, as a great maple (*Acer Pseudo-platanus*) with fine bole and regular branches, 13 feet 10 inches in girth at 5 feet 3 inches from the ground; a beech (*Fagus sylvatica*) measuring 15 feet 4 inches at 5 feet 1 inch; a tall larch (*Larix europæa*), 11 feet 10 inches at 4½ feet; and a hemlock spruce (*Abies canadensis*) about 50 feet high.

Beyond lie some romantic ravines known as Gills—the Fiddler's Gill (*Excursions 30th May, 1891, and 28th May, 1892*), Jock's Gill, etc.—where in season grow goldilocks (*Ranunculus auricomus*), herb-paris, the rare and curious bird's-nest orchid (*Neottia Nidus-avis*), and abundance of the lesser winter-green, which indeed is quite a feature all over this part of the Clyde valley.

The Clyde flowing eastward has still another leap to make at Stonebyres Linn. The Falls here are very grand, though their beauty seems less recognized popularly than the others. The surrounding scenery is picturesque and charming with ravines and woodlands. The flora is generally similar to that already described.

The naturalist, who is nearly always a man who walks, will ramble on down the valley, and if his saunter is in the sweet May-time it will be through a region of orchards glorious with apple blossom, one of the compensations of beauty that help to atone for scientific hardness. At Crossford he will probably turn up the lovely glen of the Nethan and visit Craignethan Castle (*Excursion 30th May, 1891*), which is mostly spoken of now as Tillietudlem, so strong is the desire to fix here Sir Walter Scott's castle in the air. This was probably the situation of a fortress of some kind from remote times, and the present castle was erected early in the 16th century. It was then known as Draffan, and there Queen Mary tarried for a day or two before fatal Langside. After that the castle was besieged and taken, and finally it was dismantled in 1579. It was purchased in 1665 from the Duchess Anne of Hamilton, and the new owner erected a house in the courtyard and called it Craignethan. Sir Walter Scott visited it in 1799, and was offered it as a residence but did not accept. On the ruins wallflower (*Cheiranthus Cheiri*) now grows profusely. On





[James Mitchell.]

PLATE I.

WHITE CATTLE, CADZOW FOREST.

From Photo. by]

the east face of the castle hill and on the steep banks of the Nethan grow, besides many of the commoner plants of the district, the cuckoo-pint (*Arum maculatum*), alkanet (*Anchusa semper-virens*), the giant horse-tail (*Equisetum Telmateia*), and the pendulous carex (*Carex pendula*). There is a group of three yew trees (*Taxus baccata*) near the ruins. Though reputed very old, none of them is very large. There is an alleged tradition about them which is somewhat tangled and inconsequential. On the occasion of the Society's excursion upwards of a score of species of birds were seen, including the cole tit and the grey wagtail.

The Clyde now flows on peacefully through holm and lea, woodland and orchard, amid varied and picturesque scenery, by Milton Lockhart, Mauldslie Castle, Garrion Gill, and on. There is a beautiful park at Mauldslie with some fine trees, especially wych-elms (*Ulmus montana*) and great white poplars (*Populus alba*).

To the north-west is Cadzow Forest, with the deep ravine of the Aven hid in its heart (*Excursions* 21st August, 1886, and 12th September, 1891). This grand gorge is about three miles in length, and appears, like those at the Falls, Cartland, and elsewhere, to have been hollowed out by erosive action since the glacial period. The river views, the charming variety of prospect, the delightfulness of rock and woodland, the suggestions of the by-gone, lure us with their wondrous glamour. Here are remnants of the forest primeval, curious cattle of an ancient breed, ruins of a feudal fortress with a tale sad as the story of the deaths of kings. The old oaks and the "white kye"—Plate I.—are the most distinctive living antiquities of Clydesdale. I forbear to quote from Sir Walter Scott's powerful ballad of "Cadzow Castle," which refers both to the huge oaks and the mountain bulls, as it is familiar to all.

These oaks are not indeed, strictly speaking, remnants of the Caledonian Forest, for that was further north, but of the great primeval forest lands stretching through Lanark and Peebles into England. There are some alleged traditions that they were planted about 1140, by David, Earl of Huntingdon, afterwards David I. of Scotland; but I think we may dismiss these got-up stories, for their appearance and habit indicate natural sowing and wild-forest growth probably of a time remoter than that of

King David I. The tale savours of a land nearly denuded of trees, when planting was a creditable thing, only a century or two back ; not of a time when there were but a few clearances here and there in a wild forest, and men were esteemed as they wielded their axes vigorously against the great trees. Most of them show signs of decay, for even to an oak, type of robustness, a thousand years brings decrepitude. A century ago they seem, indeed, to have been very much as now, for Naismith of Drumloch, writing of them, says they were very much decayed. The forest is full of trees such as artists love—"stag-headed" trees in all stages, for oaks die from the top assuming this form, what Shakespeare calls "high top bald with dry antiquity." Shortness of trunk and great girth relatively are the especial characteristics of these trees, betokening stubbornness and endurance. In gnarled cantankerousness they have outlived tumultuous generations of fretful men, who have struggled and schemed around them and then passed away like the grass and herbs in their shade. In their decay they afford a home to multitudes of chattering jackdaws, and fungi such as the poor-man's beefsteak (*Fistulina hepatica*) prey on them. Yet as long as they live even their hollowness cannot hold them in trammels, and with every spring they awake to renewed greenness.

Mr. Robert Hutchison gives in the "Transactions of the Highland and Agricultural Society of Scotland" for 1881, particulars of the measurement of some of these trees. At 5 feet he found the girth of several as follows:— $22\frac{9}{12}$, 21, $21\frac{3}{12}$, 20, 18, $14\frac{3}{12}$ feet. Measurements of the trees have been frequently made by members of the Society with somewhat similar results, while measurements of trees nearer to the Barncluith entrance give $12\frac{11}{12}$ at 4, 14 at $3\frac{1}{2}$, 15 at $2\frac{4}{12}$, $11\frac{8}{12}$ at $3\frac{1}{2}$, $18\frac{2}{12}$ at between 3 and 4, $21\frac{6}{12}$ at $4\frac{1}{2}$, $12\frac{10}{12}$ at 2, $21\frac{1}{12}$ at between 3 and 4 feet. That these trees are much inferior in size generally to some English oaks is evident, but when we consider the more northern situation, the exposure, and the soil, we can readily admit that their antiquity may be even greater. Under any circumstances they are the most interesting remains in Scotland of the ancient forestlands.

In the park near Cadzow Castle the great maple becomes common and presents itself in many fine examples. One of

these measured $14\frac{6}{12}$ at $3\frac{1}{2}$, and another $16\frac{2}{12}$ at $4\frac{4}{12}$ feet, the circumference of the spread of branches of the former being 225 feet.

The cattle are singularly beautiful, with straight back and fair underline, their bodies white with black markings. The tips of their small, turned-up, white horns, the muzzles, eyes, ears, hoofs, and the forelegs up nearly to the knee are black. The roof of the mouth and the tip of the tongue are of the same colour. The most marked features that may be held as indicating wildness are the watchfulness of their quick black eyes and their restlessness and alertness in the presence of any intruder. The calves are also very shy, and when separated from the herd and put in enclosures in autumn they continue mistrustful of man, retreating as far as possible with their suspicious black eyes fixed on him. The bulls are usually considered to be exceedingly fierce. Among themselves they are savage enough. The law of battle prevails, and in spite of enclosures they frequently settle the question of herd supremacy. Several bulls as a rule perish yearly in these contests, for they fight to the death with unmitigated ferocity. So far as man is concerned there is no reason to treat them with special distrust; but prudent watchfulness is required as with all bulls. The herd is, indeed, not easily approached by man. They scamper off on the least occasion, till on being hard pressed they take panic and charge. There are tales of persons being hunted by them and taking to trees, such as a bird-catcher "treed" by a bull, when, as the Rev. William Patrick remarks, "he had occasion to observe the habits of the animal."

As to the early history of such cattle in Scotland little is known of a satisfactory kind. Hector Boece describes wild cattle in Scotland with a dash of the lion in them (1526-7), and other writers follow his lead. A herd of white forest-cattle at Cumbernauld is referred to in a State paper of 1570. Sir Robert Sibbald in his *Scotia Illustrata* (1684) quotes certain references as to the forest-cattle, but holds that they are not so savage as stated, and do not differ in form from domestic ones. He adds that he knows nothing of maned bisons.

Of the early history of the Cadzow herd nothing is known. When the forest was enclosed is even unknown. Cadzow was probably a seat of the ancient British kings, and was undoubtedly

from very remote times held by the crown. It passed as a feu from the crown (King Robert Bruce) to the Hamilton family. It has been alleged that the king stipulated that a certain number of white cows should be maintained and the oaks preserved ; but of this there does not seem to be any confirmation. The conditions in the charter were an annual payment of £80 sterling with 22 chalders of wheat and 6 chalders of barley.

After the battle of Langside, when Cadzow Castle was twice besieged and taken and finally dismantled, and the chiefs of the Hamilton family were executed or exiled and their power broken, we do not know how it fared with the herd amid the foraging of hungry armed men. It was at this time that the herd at Cumbernauld was nearly extirpated.

On the authority of Mr. Robert Brown, a former ducal chamberlain, Sir William Jardine in the *Naturalists' Library* says that during the troublous times of Charles I. and Cromwell "they were nearly extirpated, but a breed of them having been retained for the Hamilton family by Hamilton of Dalziel and by Lord Elphinstone of Cumbernauld, they were subsequently restored to their ancient purity."

In Wilson's *Clyde* (1764), a poem on which the author had been engaged for many years, he refers to the cattle, so that I think we may safely assume that about 1760 they occupied the same pastures as now.

Pennant in his *Tours in Scotland* (1769-1772) did not see the cattle at Cadzow ; he heard that there were still a few kept. In 1772 he saw them at Drumlanrig. In the 4th edition of his *British Zoology* (1786) he mentions having seen the cattle at Drumlanrig and Chillingham, but says nothing of Cadzow.

Bewick in his *General History of Quadrupeds* (1790) treats fully of the Chillingham cattle, but he does not mention Cadzow or Drumlanrig. He says that herds "were kept at several parks in England and Scotland ; but they have been destroyed by various means, and the only breeds now remaining in the kingdom are in the park at Chillingham" and other English places.

In the *Statistical Account of Scotland* (1791) the article on the Parish of Hamilton was written by Naismith of Drumloch, a local authority on agricultural subjects. He says:—"Among these venerable trees grazed the white cows mentioned by naturalists as

an untamed native breed. They seemed to differ in nothing from the domestic kind, excepting that they were all over white, with black or brown ears or muzzles; and from their manner of life very shy and even fierce when they had not room to fly. They were exterminated, from economical motives, about the year 1760." This careful note by a resident in the district is, I take it, of much weight.

The statement as to the extermination is supported by Heron, who made a tour in 1793, and by Denholm, who visited Hamilton about the year 1800. Prof. John Walker, of Edinburgh University, wrote his treatise on *Mammalia Scotica* towards the end of the 18th century, and under *Bos Scoticus* he says that they only now continue in the woods about Drumlanrig.

Sir Walter Scott spent the Christmas of 1801 at Hamilton Palace. A morning ramble to the ruined castle suggested the ballad, in a note to which he says the cattle were extirpated about forty years before.

In the face of all this I think it is clear that the herd as such did not exist at Cadzow for about forty years.

As the cattle are now in the park, the question arises, When were they re-introduced? It is highly probable that Sir Walter Scott's ballad awakened the interest of the ducal family, and that a successful attempt to form or collect a herd was made, either from a few survivors of the former one that had been kept somewhere else, or from a distinct one. Under any circumstances a small herd of white cattle, numbering about a score, were browsing in Cadzow by 1809, and the cows being horned and the bulls humble would seem to indicate a herd in process of formation from different sources. Later the whole herd became humble. For twenty-five years past, at least, they have been all horned.

In 1866 the herd came very near its end. Rinderpest broke out among them, and by law they became subject to slaughter. A few young animals were hidden away in the deep gorge of the Aven, and from the survivors—some eight in all and only one of them a bull—the present herd is descended. Of recent years, in order to infuse some new blood, a Highland bull and one from Chillingham were introduced to the herd.

In conclusion, I take it as established that white cattle have

been about Cadzow from very remote times, with an occasional break and re-introduction, and that they are a fancy breed that have been kept for their beauty in a half-wild state in this forest as elsewhere in the parks of the great nobles.

Among herbs, alkanet is not uncommon in some of the ravines, and may probably be a remnant of former cultivation. The hart's-tongue (*Scolopendrium vulgare*) occurs along with the commoner ferns of the district. On walls are found the wall-rue (*Asplenium Ruta-muraria*) and the black spleenwort (*Asplenium Adiantum-nigrum*). About Chatelherault the musk-mallow (*Malva moschata*) and dropwort (*Spiræa Filipendula*) are to be found, while the ivy-leaved toadflax (*Linaria Cymbalaria*) grows profusely on the walls. The hairy St. John's-wort is still as common here as further up the valley of the Clyde.

At the mouth of the gorge is Barncluith (*Excursions* 21st August, 1886, 15th September, 1888, and 12th September, 1891), where, high above the Aven on a bold bank, are houses and terraces built about the close of the 16th century. It is a charming old-world place with delightful outlooks over the wooded depths. The terraced gardens are picturesque on the steep and gracious in their antiquity. The yews and box-trees clipped into fantastic shapes, the fountain basin overgrown with moss and liverwort, are of the delights of the place; but for the naturalist the old-fashioned garden flowers growing with the wild plants of the district have most interest. The place is a botanical treasury. On the crannied walls is a profuse vegetation including, among ferns, hart's-tongue, maidenhair spleenwort, and bladder-fern. There and elsewhere about grow the great mullein (*Verbascum Thapsus*), the celandine (*Chelidonium majus*), yellow fumitory (*Corydalis lutea*), hop (*Humulus Lupulus*), teasel (*Dipsacus sylvestris*), heart-leaved valerian (*Valeriana pyrenaica*), astrantia (*Astrantia major*), lungwort (*Pulmonaria officinalis*), Jacob's ladder (*Polemonium cœruleum*), and a host of others of the same old garden type.

There are some fine trees in the grounds. On one of the lower terraces is a false acacia (*Robinia Pseud-Acacia*)—Plate II.—probably the finest in the West of Scotland, measuring $5\frac{7}{12}$ at $4\frac{1}{2}$ feet, a beautiful and interesting tree. This species is a native of North America, and was introduced into Europe in 1640, the name



From Photo. by]

PLATE II.

[J. Stewart, Largs.

FALSE ACACIA (*Robinia Pseud-Acacia*) AT BARNCLUTH.



Robinia being in honour of Robin, a French botanist. It was at first supposed to be a kind of Egyptian acacia, and was thus named in error the locust tree. A walnut tree in the gardens, tall and with a fine spread, measures $8\frac{1}{2}$ at $4\frac{1}{2}$ feet; but it is beginning to show signs of decay. The row of great maples at the back entrance attracts attention. The largest of these has a girth of $15\frac{1}{2}$ at $3\frac{1}{2}$ feet. There are some oaks on the bank below the gardens, and on them the dripping polypore (*Polyporus dryadeus*) has been found.

To the east on the other side of the Clyde at Dalziel there is a lovely glen and some bits of pleasant woodland, with an old oak, probably a remnant of the same forest as the Cadzow ones. The girth of this oak is given by Mr. R. Hutchison as $13\frac{0}{12}$ at 5 feet.

Hamilton Palace grounds, which are known as the Low Parks (*Excursion 15th September, 1888*), consist of fertile haughs by the Clyde, with richly wooded glades, and in them are some very large beeches, limes, horse-chestnuts, and birches. Along the opposite bank of the Clyde woods extend to the South Calder Water.

Near Bothwell Bridge helleborine (*Epipactis latifolia*) grows profusely, and a sandy bank by the river is quite over-run by the tall broad-leaved groundsel (*Senecio saracenicus*), which flowers very late in autumn. To the east on the way to the Roman bridge over the South Calder there were woods a few years ago and many wild flowers, with great abundance of sweet woodruff (*Asperula odorata*), and here-and-there the wild basil (*Calamintha Clinopodium*); but now a large colliery and rows of houses are there. In the glen at the Roman bridge the curious bird's-nest orchid may be seen. Beyond are Motherwell and malleable iron works.

The sweep made by the Clyde at Bothwell Castle is known as Bothwell Bank (*Excursion 17th August, 1889*), and long has its praise been sung, as in the very old ballad, "Bothwell Bank, thou bloomest fair," which we are told in a book published in 1605 had been heard by a traveller in Palestine sung by a woman—Scottish, of course—as she dandled her baby. The refrain was afterwards adopted for a wailing ballad over the defeat of the Covenanters at the "Brig." The ordinary flora of the district is well represented here, and about the grounds generally there are

some uncommon plants as well—often probably strangers that have succeeded in establishing themselves—as the sweet violet (*Viola odorata*), the cowslip (*Primula veris*), which is rare in the West of Scotland, the cuckoo-pint, the great yellow loosestrife (*Lysimachia vulgaris*), the green hellebore (*Helleborus viridis*), the Welsh poppy (*Meconopsis cambrica*), the yellow figwort (*Scrophularia vernalis*), spurge-laurel (*Daphne Laureola*), besides the usual crane's-bills the blood-red one and the knotted one (*Geranium sanguineum* and *nodosum*), the plantain leopard's-bane (*Doronicum plantagineum*), and the wild tulip (*Tulipa sylvestris*). Others might be mentioned, but there can be little doubt that even these are mostly introduced plants that have found a congenial home here.

Bothwell Castle is one of the most interesting ruins in Scotland, both from the style of the building and its historic associations. It was erected during the 13th century, though the exact date and the name of the founder are unknown. It was taken and re-taken several times during the War of Independence, and both Edward I. and Edward III. of England stayed there for a few days. About the end of the 17th century the Earl of Angus had the present mansion built, using the old castle as a quarry.

Extensive excavations have recently been made and the walls cemented, so that the climbing plants which have beautified the ruins so long have been somewhat disturbed. Having been carefully treated, however, they are now recovering their hold. Besides ivy and wallflower flourish old man's beard (*Clematis Vitalba*), wall pellitory (*Parietaria officinalis*), and above all the birthwort (*Aristolochia Siphon*), that magnificent climber which the Wordsworths admired so much on their visit to the castle in 1803, as "a broad-leaved, creeping plant without flowers, which scrambled up the castle wall along with the ivy, and spread its vine-like branches so lavishly that it seemed to be in its natural situation." Birthwort has flowers in its season, however, and very interesting they are. Dittander (*Lepidium latifolium*) also grows on the ruins, and this is probably the only station for it in the West of Scotland.

Not far from the ruins there are some very graceful birches (*Betula alba*); a great maple that divides near the ground into two trunks, the larger of which measures $14\frac{5}{12}$ feet; a variegated

variety of the great maple; an old wych-elm that about a foot from the ground sends out ten great upright branches; and a Spanish chestnut (*Castanea vulgaris*) towards the river that girths $14\frac{4}{12}$ feet. There are some good oaks, and in front of the modern mansion, one, round which a seat has been placed, measures $14\frac{9}{12}$ feet.

Perched on the steep bank on the other side of the river, right opposite to the old castle, are the ruins of Blantyre Priory. All about is delightful with fine woods diversified with rock, and altogether lovely. Here grow some plants that are probably not native, like those referred to on the Bothwell side. Perhaps the most interesting herb about the ruins is the dusky crane's-bill (*Geranium phœum*).

The river flows calmly on past this enchanting boskiness that sets so well the fragments of the priory and the ruddy ruins of the ancient fortress. After some curving and winding it reaches Kenmuir Bank (*Excursion 3rd April, 1886*), which has long been a favourite resort of Glasgow botanists, and, indeed, of the people generally. Here there was formerly a wood of natural growth, pleasant in many ways. There was no fine or valuable timber, and its money value must have been paltry. It was cut down a year or two ago. The bank looks bare, and the river seems to be making inroads more than formerly. Here, in spring, come the young botanists of the city to discover much new to them in the world, as the curious flowers of the moschatell (*Adoxa moschatellina*), the dioeciousness of the red-campion (*Lychnis diurna*), and the wonderfulness of even the commonest herbs. Here, too, are found the large loosestrife, Dutch rushes (*Equisetum hyemale*), the great leopard's-bane (*Doronicum pardalianches*), along with the characteristic plants of the district, as the luckengowan, goldilocks, wild hyacinth, giant bell-flower, etc. Further down, about Carmyle, the goat's-beard (*Tragopogon pratensis*) is common, and the toothwort has been found; while a little inland, about Tollcross, the bird's-foot (*Ornithopus perpusillus*) and the least filago (*F. minima*) are at home on the sandhills.

The bistort (*Polygonum Bistorta*) grows abundantly on the embankment on the south side of the river (*Excursions 11th July, 1888, and 14th May, 1890*), and the blunt-topped horse-tail (*Equisetum umbrosum*) is found on the banks of the river near

Newton. The common sand-martin and sandpiper frequent the river here in considerable numbers.

At Westburn, a little above Cambuslang, a good example of the great maple is to be seen—Plate III. In a paper read to the Society by Mr. John Paterson, he says of this tree that it is probably the most symmetrical example of the great maple in the West of Scotland, and that anything finer can hardly be imagined. The estate of Westburn was long held by scions of the Hamilton family, and till about a quarter of a century ago there was much fine timber in the park. The grandest trees are said to have been beeches, and these were studies for Horatio M'Culloch, the great artist, about half a century ago. The park is now used for pasture, and this is the only tree left. It measured in 1891 16½ feet girth.

In the glen at Cambuslang a few herbs may still be found, as fool's-parsley (*Aethusa Cynapium*), and abundance of tuberous comfrey. Beyond on the Cathkin Hills (*Excursion 7th May, 1892*) are good examples of the usual moorland vegetation, with a few rarer forms. About Stonelaw there are old quarries and waste ground, with many native plants and some that have become naturalized, as the periwinkle (*Vinca minor*), the alpine currant (*Ribes alpinum*), and clematis. On a burnside near the Clyde at Farme, the yellow meadow-rue (*Thalictrum flavum*) grows. This brings us to the confines of the City of Glasgow.

To the north of the city is Possil Marsh, by the Forth and Clyde canal, a favourite resort of botanists owing to its wealth of aquatic plants; and to the north-east Hogganfield and Frankfield Lochs, and further afield towards Coatbridge Bishop Loch and others, forming a group thereabouts. I have already referred to the more striking features in their flora, and frequent excursions have been made to them. Douglas Support (Rosehall), near Coatbridge (*Excursion 11th October, 1890*), is somewhat marred by industrial contamination of the stream that passes through it; but the estate itself is in admirable condition. Among its trees are some fine specimens of beech, horse-chestnut (*Æsculus hippocastanum*), thorn (*Cratægus Oxyacantha*), yew, wych-elm, oak, and hornbeam (*Carpinus Betulus*). The beeches are numerous and beautiful, some attaining a great height. Several were measured, the greatest girth found being 14 feet. On a mound between the stream and the mansion house there is a very fine wych-elm



From Photo. by]

PLATE III.

[S. Stewart.

GREAT MAPLE (*Acer Pseudo-platanus*), AT WESTBURN, CAMBUSLANG.



measuring $12\frac{3}{12}$ feet. In the kitchen garden is a most notable hornbeam, with long cord-like branches, hanging vertically from the older branches, forming in summer a leafy screen with large clear space round the trunk, which is $7\frac{1}{12}$ feet in girth.

Usually rambles are made at a time when fungi are not very prominent features in wood and field, and special excursions fall to be arranged in late autumn for their study and collection. I have referred to a few kinds in the course of this paper; but there was quite a display of them at Douglas Support on the visit there, forty species being collected, including representatives of *Amanita*, *Armillaria*, *Tricholoma*, *Clitocybe*, *Collybia*, *Mycena*, *Pholiota*, *Hebeloma*, *Psalliota*, *Hypholoma*, *Psilocybe*, *Coprinus*, *Hygrophorus*, *Lactarius*, *Russula*, *Marasmius*, *Boletus*, *Polyporus*, *Stereum*, *Clavaria*, *Lycoperdon*, and *Xylaria*. Surely this is a gathering sufficient in itself to excuse such a string of generic names.

I have tried to give a general sketch of the botany of the district, with some references to other features, geological and zoological, such as came under notice on the occasion of excursions; and I take it we have something still to be thankful for in the beautiful green retreats and ravines of Lanarkshire and the refreshment and enjoyment they hold for lovers of nature.

RECORDS OF EXCURSIONS IN
RENFREWSHIRE,
WITH ADDITIONAL MATTER.

BY JOHN PATERSON.

CATHCART PARISH.—On four occasions excursions have been made to localities in this parish. As to the first visit (15th June, 1887) there is, unfortunately, no record in the minutes of what proved a most agreeable excursion. The beautiful and romantic Linn was the rendezvous. Passing the old castle of Cathcart, with a few tufts of wallflower nodding from its walls, the small company representing the Society proceeded by a charming country lane to the Cart. Before leaving the lane, however, attention was called to the rather unusual circumstance that part of the hedgerow here is formed of the hornbeam. This use of the hornbeam, though comparatively unfamiliar to us, is no new thing, as Evelyn was loud in his praise of it as forming the “noblest and stateliest hedge for long walks in gardens or parks of any tree whatsoever whose leaves are deciduous.” The banks of the White Cart at the Linn are very steep, and clad to their tops with a variety of deciduous trees chiefly. The beauty and repose of the place formed a most striking contrast to the dreariness and din of the city so lately left behind, and as if to complete the transformation, there, revealed to the astonished gaze of those present, was the “hidden splendour of the stream,” the kingfisher darting on rapid wing. Among plants gathered, perhaps worthy of mention were the evening campion (*Lychnis vespertina*) and the giant bell-flower (*Campanula latifolia*).

An evening visit was paid to the Queen’s Park in July, 1887, for the purpose of viewing at a favourable season the rich collection

of shrubs and trees there. The result of the perambulation was an added interest in a direction often neglected by botanists. None but those who have taken the trouble to inquire can appreciate the extent of the interest that attaches to such a collection as that in the Queen's Park. The educational possibilities of this park seem to be scarcely dreamed of by our municipal rulers. A handbook containing some information as to the native country, economic uses, and morphology of the trees and shrubs would surely be a great public convenience. To give here a list of interesting trees in the park, or even of a selection of such, would demand greater space than the scope of this publication justifies.

On the afternoon of the 6th of April, 1889, a series of excursions was initiated to illustrate the notable trees of the County of Renfrew, and the attendance and interest on this, the first of the series, have been maintained in the subsequent excursions. Cathcart was the rendezvous, and the party, numbering about thirty, had the advantage of being accompanied by the late Mr. A. M. Scott, F.S.A. Scot., who has done yeoman service in the elucidation of the history and antiquities of the parish. The kirkyard was first visited, and here Mr. Scott—with the party congregated round the Covenanters' Memorial Stone, which had recently been raised from its former prone position—discussed the circumstances attending the death of the martyrs, the ancient foundation of the Kirk of Cathcart, and cognate matters. Attention was then directed to the four large ash trees in the old portion of the kirkyard. Macdonald, in his *Rambles*, makes a passing reference to these trees, but they are not mentioned in either of the statistical accounts of the parish. The present venerable minister of the parish, the Rev. Dr. James Smith, who wrote the last statistical account, informs the writer "that there is no notice of them in the ancient records either of the heritors or kirk session, nor any tradition on the subject." He further states that "but for the damage done to them by every severe storm for many years past, they seem to me much as they were when I first knew them sixty-eight years ago." Since the time of the Society's visit the tree nearest the road skirting the north side of the kirkyard has been completely shorn of its fair proportions, having suffered chiefly from the gale on the evening of 13th October, 1891.

None of the group can compare for symmetry with that at the south-west corner, which is a beautiful tree, spreading equally in all directions. The following measurements of these trees were taken on the 12th of March, 1892:—

Tree, south-west corner of kirkyard, at 3 ft. 6 in.,	-	girth, 10 ft. 9 in.
„ near tool-house, at 3 ft. 6 in.,	- - -	„ 11 „ 3 „
„ south-east of church, „	- - -	„ 10 „ 6½ „
„ due east „ „	- - -	„ 10 „ 2½ „

Aikenhead Estate was next visited, the following measurements of trees being taken at the time:—

Wych-elm in garden overlooking pond,	- - -	11 ft. 5 in.
„ „ south-west of pond,	- - -	15 „ 0 „
English elm in park (south tree of a pair),	- - -	10 „ 2 „
Oak near garden,	- - -	9 „ 10 „
Walnut in garden (much decayed),	- - -	9 „ 6 „

The above measurements are all taken at the narrowest part of the stem accessible. The wych-elms in the garden are particularly handsome and tall trees. The tree giving the greatest girth measurement was thickly overgrown with ivy, and had large excrescences, but a foot was allowed for this in taking the girth. Probably the greatest attraction for those present was in the park, where two fine examples of the English elm (*Ulmus campestris*) were seen in proximity to their more freely branching Scotch congener, the wych-elm (*U. montana*).

The grounds about Cathcart House or Cartside, near the old castle of Cathcart, were next visited. An opportunity was thus afforded of viewing the castle from the bed of the river, and the strength of its position was here more easily understood than from the lane on its eastern side. A splendid beech at the entrance to the grounds of Cartside was measured (girth, 11 feet 1 inch). On the Court Knowe—the position from which Queen Mary viewed the battle of Langside—a halt was called, and Mr. Scott contributed further topographical notes. On this knowe formerly grew a thorn, known locally as “Queen Mary’s Thorn,” but it decayed a century ago, and a granite monolith has recently been placed on the summit of the mound—taking the place of an earlier stone—to keep green the memory of the connection of the unfortunate Queen with this spot. Crossing the Cart by the old bridge—on which a large number of plants of the wall-rue (*Asplenium Ruta-*

muraria) still flourish—and mounting the opposite bank, the old yew which crowns the height was measured (girth, 8 feet 4 inches). After a peep into the garden of Mr. Sweet, the author of *Villa and Cottage Gardening*, the road was taken to Langside, and at the monument there Mr. Scott gave an account of the battle of Langside and the positions of the contending forces. A descent was then made upon “Long Peter,” the old Lombardy poplar in Camphill Grounds, which has for years been a familiar object in Langside, but is now decrepit; and at this point the party separated. The girth of the old poplar on 14th March, 1892, was 6 feet 2 inches at 3 feet 6 inches.

Those present had had a full feast of fine trees, all the more gratifying when it is remembered that the Rev. David Dow a century before, in the first statistical account of the parish, had declared that the “complaint of a late celebrated scholar and moralist” about the scarcity of trees in Scotland was “but too well founded.”

Austin & M'Aslan's nurseries for a long period have been one of the institutions of South Glasgow. Before the present century, however, their location was on the north side of the river, and as illustrating the expansion of the city it may be stated that in 1717 they were on ground between what we know as Glassford Street and Candleriggs. As feuing proceeded the nursery was removed on several occasions. The present nurseries on the Pollok Estate and extending to thirty-nine acres, were entered on at Candlemas, 1886. On the evening of 14th July, 1890, they were visited, under the leadership of Mr. John Cairns, Jun., by a goodly company of members of the Society, in spite of unpropitious weather. Much interest was taken in the many species of coniferæ, which, though they were not of large size, yet served well as illustrations of the highly interesting and ornamental trees belonging to this order. The various operations of budding, grafting, and layering were all carefully explained by one of the foremen, and examples were shown in apples, limes, and rhododendrons. Many fine young specimens of some of our less common ornamental trees were pointed out. The pretty Patagonian shrub (*Pernettya mucronata*) was in fruit, and the seeds were germinating inside ere the fruit had fallen from the bush. The party afterwards visited the extensive range of glass houses. The excursion was a novelty

to the Society, but it proved exceedingly interesting to the botanists who were present.

THE PARISH OF EASTWOOD, lying directly west of the parish of Cathcart, has been on three occasions the scene of excursions of the Society. The first of these visits took place early in the Society's history, Walkmill Glen being the centre of interest. The botany of this locality will be found particularly referred to in the paper in this volume from the pen of Mr. J. Wood, and is again touched on in the account of the excursion to Upper Pollok. On this occasion the picturesque Craig of Carnock was ascended, and here at this late date (26th September) a curious plant of *Primula vulgaris* was found in flower, with "four sepals, four petals, and four stamens, these last united in two pairs."

The Rouken Glen at Thornliebank was the second locality visited in this parish. Near the bottom of the glen, on the right bank of the stream, the starlings build in some numbers in a retaining wall. The dipper is abundant on the stream, and its nest, composed outwardly of moss and having inside a bottom lining of oak leaves, was taken near the waterfall at the head of the glen. The oak, beech, and hart's-tongue ferns were gathered, and a profusion of the alternate-leaved golden saxifrage (*Chryso-splenium alternifolium*) is one of the features of the glen, this form being generally less common in the district than the opposite-leaved one. A small collection of ornamental coniferæ received some attention. Above the picturesque cascade at the top of the glen is a rush-grown dam with a sloping meadow beyond. When the botanical section visited this spot in the spring of 1891, a picture of placid beauty was their reward. On the meadow-land were some young cattle grazing, while over the dam many swallows and sand-martins were hawking. Resting on the turf-capped wall here, one could have watched indefinitely the gyrations of the beautiful hirundines. The water-hen and coot were also noted here, and a nest of the former with eggs seen.

Auldhouse, near Pollokshaws, and Nether Pollok were visited in September, 1888. At the first-mentioned place exists a large rookery, the nests chiefly placed on a double row of limes; but the feature of commanding interest is in the garden, where are to be seen two remarkably fine old Spanish chestnuts (*Castanea*

vulgaris) which Sir John Maxwell, the grand-uncle of the present proprietor, used to show to his friends with excusable pride. The following measurements were taken on the 19th March, 1892, by a party representing the Society:—South tree, 14 feet 2 inches at 4 feet 10 inches. This tree lost a large branch in the storm of 13th October, 1891. North tree, 15 feet 6 $\frac{3}{4}$ inches at 5 feet on east side. This tree was measured on the angle as it dips to the north, and shows, as is so common in this species, torsion. At the ground the trunk of this tree measures 22 feet 6 inches.

Plants in the garden which chiefly attracted attention were the meadow-saffron (*Colchicum autumnale*), chicory (*Cichorium Intybus*), Virginian spiderwort (*Tradescantia virginica*), and borage (*Borago officinalis*). The petty-spurge (*Euphorbia Peplus*) occurred as a weed.

It was anticipated that, considering the season and the well-wooded nature of Pollok Estate, many interesting fungi would be seen there, but curious to state they were conspicuously absent, and attention was therefore largely directed to the fine trees in the neighbourhood of the mansion house. These include, as is well known, a group of wych-elms (*Ulmus montana*) which were figured in the Scotch section, *Sylva Scotica*, of the sumptuous work on trees, *Sylva Britannica*, published by Strutt in 1822. Measurements of this group will be found in Strutt's work, in Loudoun's *Arboretum et Fruticetum Britannicum*, and in the publications of the Highland and Agricultural Society. The following measurements were taken at the same time as those of the Spanish chestnuts given above:—

Tree at west end of group, at 5 ft. 5 $\frac{1}{2}$ in. (river side),	-	13 ft. 9 $\frac{1}{4}$ in.
„ next to above, at 4 ft. 2 $\frac{1}{2}$ in. (river side),	-	11 „ 10 $\frac{1}{2}$ „
„ „ 3 „ 11 $\frac{1}{2}$ „ „	-	12 „ 0 $\frac{1}{2}$ „
„ „ 4 „ 9 „ „	-	13 „ 1 $\frac{1}{2}$ „

The position on the trunk at which former measurements were taken cannot now be relied on, as the level has been raised. The arrangement of the twigs of the wych-elm, and the manner in which the branches are disposed, make it perhaps the most striking of our forest trees when bare of foliage, and the group at Pollok admirably illustrates this.

At the west end of the avenue which leads to the mansion house from Bankhead Lodge stands a noble horse-chestnut,

behind whose ample trunk beggars used to skulk, waiting the coming of the late proprietor from the principal entrance, which the position commanded, with the intention of waylaying him for an "awmos"—hence the tree is called "The Beggar's Tree." In August, 1892, this tree measured in girth at the narrowest part 12 feet 11 inches at 2 feet from the ground (aspect towards house), swelling above this at 5 feet up to 14 feet 7 inches, where it forks into three branches. Spread of branches, 86 feet. Opposite the mansion house, on the left bank of the Cart, is another fine wych-elm, with a very picturesque appearance, which has now, unfortunately, become knotted along all the larger branches, and which will no doubt shortly decay. At 5 feet 8 inches this tree measures 12 feet 4 inches. At no great distance from an old pigeon house on the same side of the Cart as the last, stand, at short intervals, four noble beeches, one of which, north-west of pigeon house, has a circumference of 13 feet 3 inches at 6 feet 2 inches, and carries its principal stem to a great height. The gardens east of the mansion house, with a southern exposure, contain two curiosities worth mentioning. The first is a yew tree in the kitchen garden, which is in perfect health, and measures 3 feet 6 $\frac{3}{4}$ inches at a foot from the ground. This was a slip taken from the historic Crookston Yew. As the latter was rooted out in 1817 (the remains are still in a loft in the offices at Pollok), and as Ramsay, in his *Views in Renfrewshire*, published in 1839, described the young Pollok tree as being then like the other descendant of the historic tree (planted near the entrance to the Glasgow Botanic Garden), which was raised from a slip taken in 1789, we may assume that the Pollok yew is now approximately a century old. The other curiosity in the gardens is the trunk of a huge oak dug out of the Cart in this vicinity, which is set up and used as a summer house. In connection with this relic of former sylvan glory it is interesting to notice that Pollok has long been one of the wooded parts of Renfrewshire. In one of the Maitland Club publications appears an "Account of the Sherifffdom of Renfrew," from the Sibbald MSS., written prior to 1653 and probably after 1647. In this account it is stated "the woods are Crookston, Hawkwood, Pollok, Howstoun, and Barruchane, besides other lesser woods." At the present time extensive planting is being carried on in the policies.

For the afternoon of 2nd May, 1891, an excursion had been arranged to Upper Pollok, in the PARISH OF MEARN'S, a neighbourhood famous as the scene of the exploits of that versatile "brither Scot," Christopher North. At Thornliebank station a small party turned up, and they proceeded to Pollok Castle, where they were kindly received by the proprietor, William Fergusson Pollok, Esq. Conducted to the top of the tower, a magnificent view was obtained, as was to be expected from the commanding situation of the castle. To the north-west, the Campsie Fells and Ben Lomond with snow-clad summits; to the west and south-west, Misty Law and the Argyleshire hills; to the south, the Eaglesham moors, with the long plateau of Ballygeich shutting out further view in that direction; to the east and north-east, the Clyde valley enveloped in thick haze. Pollok Castle itself is for the most part new, its predecessor, which was built in the seventeenth century, having been almost totally destroyed by fire in 1882. Largely owing, no doubt, to their exposed situation, the grounds contain no trees remarkable for size, although so long ago as the beginning of last century Crawford had declared that it was "well planted, and hath good orchards, and large and commodious parks."

The party proceeded through the grounds to the Glen Reservoir. This dam had some time previous been stocked with the famed Loch Leven trout, and it is interesting to learn that the experiment has resulted somewhat successfully, a number of fair-sized fish having been taken.

Walkmill Glen was visited on the homeward journey. Here on the rocks were large patches of the aerial orange-coloured alga (*Chroolepus aureus*, Ktze.), and in the burn were long waving masses of *Cladophora gracilis*, Ktze. The glen offers also many features of interest to the geologist, among others a fine section of the Cowglen series of limestones. From the shale overlying the limestone numerous fossil shells in excellent preservation were got.

In the course of the afternoon Mr. John Robertson, of Thornliebank, showed two curiosities which excited some interest. One was a robin's nest with three fledglings in an old rusty milk-can, and the other a hedgehog in its simple nest.

NEILSTON PARISH.—Loch Libo, the beauties of which have been often extolled, was visited in September, 1889, but the loch was very full and there was little opportunity of examining the flora of the locality. Particular reference to the botanical features of the loch will be found in Mr. Wood's paper in this volume. Neilston Pad and Hairlaw Dam were at a later date (26th April, 1890) the scene of an excursion. "The Craig of Neilston, . . . vulgarly called the Pad, from having in its appearance the form of a pillion" (as the writer of the first statistical account of the parish declares), is a favourite resort of Glasgow rambles. On the occasion of our Society visit, the weather being clear a magnificent prospect was obtained, embracing Loudoun Hill, the mountains of Arran, the Argyleshire mountains, Ben Lomond, Ben Venue, etc. Common spring flowering plants only were noted at this time, but at one of the meetings in the following summer the green habenaria or frog-orchis (*Habenaria viridis*) was exhibited from this neighbourhood, where it is abundant.

The chief feature of interest, however, was the breeding colony of the familiar black-headed gull (*Larus ridibundus*) on an islet in Hairlaw Dam—an extensive artificial collection of water south of the Pad. Glasgow people must always entertain some degree of affection for this species, as it does a great deal to enliven our polluted river at its busiest part, and the whole year round is to be seen in considerable numbers between the bridges and among the shipping in the harbour. The mature bird in summer plumage is strikingly beautiful, with its black head, red beak and legs, French-grey back, and pure white sides and under surface. In his *Birds of the West of Scotland*, Gray, writing in 1871, says, with reference to the Hairlaw colony:—"There are perhaps from 500 to 800 pairs to be found breeding there every year. . . . At the time when this colony is in the state of greatest activity the old birds are constantly flying about the neighbouring fields, especially those from which potatoes have been lifted, and picking up worms and beetles, the remains of these being found at almost every nest." Whenever the dam came within sight it was apparent that since Gray's time there is no diminution in the size of the colony. By means of a boat about twenty of those present got on the island, which was thickly strewn with nests, and care was necessary

to avoid stepping on them and destroying their contents—in most cases a single egg only being laid. Describing the great Norfolk “gullery” at Scoulton Mere, Mr. Stevenson says “by the 18th of April the first eggs are laid,” a date which seems to agree with our own district, judging from the experience of this visit. The nests are flat and of simple construction, and the eggs present great variety in shape and marking. Hopes were entertained that a photograph might be secured of the gulls rising from the island, but they were prematurely scared, and a golden opportunity was thus lost. However, the sight of the vast multitude of gulls as they rose in a mass in the sunlight was a memorable one.

THE ABBEY PARISH OF PAISLEY.—Many localities in this extensive parish have been visited by the Society, some of them, as the Gleniffer Braes and Crookston, on various occasions. Near the eastern boundary of the parish stands one of the best known of the remarkable trees of the county, the Darnley great maple, or “Queen Mary’s Tree.” Occupying solitarily a good position on the high road to Barrhead, adjacent to the site of Darnley Toll, and sharing with many natural objects in the west a mythical traditional connection with Mary Stuart, this tree attracts much attention. At a height of 4 feet 10 inches the trunk measured on 8th March, 1892, 10 feet 5 inches, but it is now showing signs of decay. A fairly spreading tree, it seems to be remarkable for the area its branches cover, but this appearance it owes to the fact of its being relatively a short tree for the species. This tree was one of the items in the programme of the second excursion illustrative of the trees of Renfrewshire. On the same occasion Househill was visited. In this little policy are some fine trees and one remarkable hornbeam. Hooker mentions in his *British Flora* 10 feet as indicating the girth of trunk attained by this species (*Carpinus Betulus*), and the example in question at $2\frac{1}{2}$ feet from the ground measures 9 feet (10th July, 1888), and this is the least girth that its trunk presents, as it is very much broader at the base, and again at 5 feet measures 15 feet 4 inches. At the last height the trunk branches freely in all directions, and the tree has a fine round head. The diameter of spread of branches north to south proved to be $63\frac{1}{2}$ feet. Other trees here which have attained to

some considerable size are saughs, great and common maples, and a horse-chestnut.

Near Crookston Castle stood the famous Crookston Yew, about which the curious will find many interesting particulars in Ramsay's *Views in Renfrewshire*. In 1710 Craufurd writes:— "Hard by the castle is to be seen that noble monument, the ew-tree, called 'The Tree of Crockstoun,' of so large a trunk and well spread in its branches that 'tis seen at several miles' distance from the ground where it stands." It fell into decay in the end of last century, and the remains were removed finally in 1817 by Sir John Maxwell, of Pollok. The measurement of its trunk in 1782 was, in girth, 10 feet at 7 feet from the ground, which is not a great size for the yew; and indeed there is at least one fine example of this species in the county (at Craighends) more than twice this size which is vigorous in every part. The latter has not, however, had the problematical advantages of having sheltered Darnley and his young spouse "during the brief period of sunshine which they enjoyed," nor of occupying a commanding position, but has been ingloriously vegetating in its quiet corner on the banks of the Gryfe. Two scions of the Crookston Yew exist, at Nether Pollok (*ante* p. 24) and at the entrance to the Glasgow Botanic Gardens respectively.

Under Crookston Castle, and between the Levern and Cart, lies Crookston Wood, apparently one of the old natural institutions of the county, as it appears in Blaeu's map, published in 1654. This wood takes the eye of travellers by the canal line to and from Paisley in the latter half of May, when its glades and alleys are covered by "a blue hyacinthine haze." On the occasion of the visit of the Society (12th June, 1889) this glory had just departed. In the wood the elegant spreading millet-grass (*Milium effusum*) was found. At the time of our visit the local mind was much occupied by newspaper reports that the nightingale had turned up here, so two of those present who are interested in ornithological matters haunted the vicinity till a late hour, but only the oft-repeated "chip-chow-cherry-churr" of the Scotch nightingale, bletherock, or sedge-warbler (*Acrocephalus schoenobaenus*) was to be heard. Rosshall, with its extensive green-houses, fine herbaceous collection, and rockery, with profusion of saxifrages, primroses, campanulas, etc., was also visited.

Here on the lawn are some fine beeches, one of which, north of the house, measures 10 feet $5\frac{1}{2}$ inches in girth. This tree separates at about 4 feet into a number of branches. Another beech in the grounds, south-east from house and near the Cart, measured an inch less. This tree has a great head and a tall straight bole.

The extensive policy of Hawkhead was visited as one of the "Trees of Renfrewshire" series of excursions. The estate boasts the possession of no historic tree to our knowledge, but Hawkwood, as before mentioned in these notes, was one of the ancient forests of the county, and in 1812 John Wilson, in his *General View of the Agriculture of Renfrewshire*, stated that "the greatest quantity of aged trees [in the county] is on the estate of Hawkhead," and this may still be true. Beech and elm are the chief timber trees, and of the former particularly there are many of great size. A wych-elm on the left of the avenue a short distance from Crookston Lodge measured 11 feet $10\frac{3}{4}$ inches, another forty yards or so further on 10 feet $8\frac{1}{2}$ inches, another at a similar distance from the last 10 feet 3 inches. Only one beech was measured, its girth being 12 feet $2\frac{1}{2}$ inches. This tree stands near a bend on the Cart on the approach from Crookston.

Extending our ramble a neighbouring property called Raiss was visited. Long the patrimony of a family of the name of Logan (one of whom is named in the chartulary of Paisley in 1488), and still locally called Logan's Raiss, it is chiefly interesting to us because on it stands the largest and not unlikely the oldest great maple near Glasgow. This colossal tree, which rises to a great height and measures at 3 feet 8 inches on south-east side 18 feet in circumference of trunk, has so far as can be learned no history attached to it. It is at present exceedingly vigorous, but there is, unfortunately, at the base of the trunk a hole, perhaps begun by an injury to the outside from the stones gathered from the adjoining fields having been piled round the base. In this hole in wet weather water lodges, and the tree from this cause alone will undoubtedly shortly decay if proper steps are not taken.

RENFREW PARISH.—The only excursion made by the Society in this parish was one of the "Trees of Renfrewshire" series in the spring of 1890. Elderslie and Blythswood were visited on the occasion. The first-named estate was bestowed by the Stuarts

on one of the Rosses of Hawkhead, and remained in the possession of that family till 1860, when it became the property by purchase of Spiers of Elderslie, in whose family it continues. Originally from its insular situation called Inch, the name which reflected the physical history of the locality, had to give place to that of Mr. Spiers's other property of Elderslie, near Johnstone. The rich alluvial soil of the district—consisting of the washings of the varied rocks of Clydesdale—presents conditions highly favourable for the growth of our ordinary deciduous trees, and it is therefore not surprising that the party which visited Elderslie should have been much struck on entering the park (at a lodge on the Govan Road) at the noble prospect that it presented. Many of the trees which stud the park are of large dimensions. An ash with a fine bole by the side of the approach measured 13 feet $4\frac{1}{2}$ inches in girth at the narrowest part. Of three large willows (probably *Salix fragilis*) in the park the one nearest the lodge measured 16 feet 6 inches, another north-west of above 18 feet, a third east of above 16 feet 1 inch; a fine birch near above 5 feet $10\frac{1}{2}$ inches; a beech south-east of house 11 feet $1\frac{1}{2}$ inches, another beech south of west corner of house 13 feet $2\frac{1}{2}$ inches; a willow north-west of house 16 feet. In the matter of height and spread these were all well-developed trees. Prof. King, who was present, recalling that the Wallace Oak, which stood near the west end of the village of Elderslie, and which, when it was blown down in 1856, Mr. Spiers caused to be removed to his estate of Elderslie, near Renfrew, inquiries were instituted, with the result that those present had the privilege of viewing all that now remains of that historic tree. This consists of its fast-decaying trunk, which, in spite of the protection afforded to it (it is lodged in the loft of an outhouse), will soon be only a memory. In Ramsay's *Views in Renfrewshire* (Edinburgh, 1839) there is an engraving of this tree as a tail-piece to the chapter of that work which is devoted to the Wallace Oak, and it is figured in Strutt's work.

Blythswood was next visited. This estate (which has been in the possession of the Campbell family since 1654) was, until the erection of the present mansion house in 1821, called Renfield. The park is pleasantly situated, and has as its western and northern boundaries the Cart and Clyde respectively. The gardens

are kept in good order, and though our visit was early in the year, at least one feature rewarded us, for a fine *Amelanchier* tree sheeted with white blossom excited much admiration. Directly in front of the elegant mansion house, on a mound, occupying thus a commanding position, stands a noble beech, measuring in circumference of trunk 14 feet 4 inches. Several birches were measured. The first, near crossing of avenues on approach from Renfrew station, 5 feet 2 inches; another in the park 4 feet 10 inches; and a third south-west of summer house in the park 5 feet 9½ inches. The Argyle Stone, which marks the place where, in 1685, the Earl of Argyle was wounded and taken prisoner, was visited. The stone may, however, claim even older historic association with the name of St. Connal (a seventh century teacher of Christianity), to whom the church at Inchinnan was dedicated, although the parish takes its name from Inan, who was a confessor at Irvine in the ninth century. In 1620 regulations were passed by the bailies and council of Paisley for the annual horse race for the silver bell, and the starting place was the "gray stane called St. Connal's Stane, . . . thence right eastward to the Causey-end of Renfrew, and so to the wall-neuk of Paisley."

INCHINNAN PARISH.—The church at Inchinnan was visited at the same time as the estates last described. The present church was built about 1828 on the site of the previous one, which dated from about 1100. The scenery in this vicinity lacks the colour and variety so characteristic of Scottish landscapes, but its softness and peacefulness commended it to Pennant, and others since his time have been not insensible to its claims on account of these qualities. Much of the parish consists of carse land, and the only moss in the parish, on the Southbarr Estate, which formerly supported grouse, is at the present time a free coup for Glasgow. The estate of Southbarr was visited on the 16th April, 1892, under unique conditions for a Society excursion. A snowstorm set in an hour before that arranged for departure from the city, and on arrival at Houston station there was an inch of snow on the ground. The storm was, happily, not of long continuance, and the novelty of the experience added a zest to the afternoon's enjoyment. The estate of Southbarr boasts no timber of great age, but it is well wooded throughout, and the blending of the

varied trees—deciduous and evergreen—has been carried out by a master hand, the effects being most pleasing from whatever points the woodland groups are viewed. Proceeding up the approach from the Houston Lodge, a rowan-tree was noted as having attained a good size for the species. It measured 5 feet 10 inches in girth at 3 feet on the east side. On the way to the keeper's lodge to see the pheasant-rearing enclosure, a beech of large size on the left of the approach was measured. At 3 feet 5 inches on the west-south-west side the girth of the trunk was 11 feet 8¼ inches. After a pleasant and leisurely perambulation of Southbarr, the road was taken to Northbarr House (now the property of Campbell of Blythswood), recently known as House of Hill, which occupies a commanding situation amid surroundings which have been enhanced by the art of the gardener and woodman. Close to the mansion house, in a bit of woodland, the cuckoo-pint (*Arum maculatum*) was found growing luxuriantly and in patches of considerable size, and a bed of the snake-weed (*Polygonum Bistorta*) was also noted. On the lawn opposite the house formerly stood a pair of large ash trees, one of which was blown down ten years since. The remaining tree is in fairly good condition, and measures 12 feet 4½ inches in girth at 3½ feet from the ground. Two walnut trees, neither of great size, stand in proximity. North of the house stands a spreading yew tree (female) which has a good bole of some height, measuring 7 feet at 3 feet.

ERSKINE PARISH.—On three occasions excursions have been made to localities in this parish. Langbank was visited on a beautiful autumn afternoon in 1886 by a small party, who had the advantage of being conducted by Mr. John Renfrew, an ardent young local entomologist, who also showed those present his extensive collection of Lepidoptera made in the district. The shepherd's needle or Venus's comb (*Scandix Pecten-Veneris*), an umbellifer, rare hereabouts, was gathered not far from the station, and the common flax (*Linum usitatissimum*) occurred in the same vicinity.

In the spring of 1889 the district round Bishopton was visited, the estate of Dargavel being the first point of interest. This estate became in the beginning of the sixteenth century the patrimony of a branch of the Maxwells of Newark, and remains in the

possession of that family still. There is near the house a widely-spreading yew tree of considerable age, which is still vigorous, although much broken away on one side. Ramsay claimed for it that it excelled "in size and beauty any other tree of the same kind in this quarter of the country," an opinion which we cannot from our knowledge of the yew trees of the county endorse. The spread of the Dargavel tree south-south-east to north-north-west is 60 feet 9 inches, and the trunk measures at the narrowest part 8 feet $7\frac{1}{2}$ inches. In a letter from the late Mr. J. M. M'Phedran, of Craigbet, to the writer, dated 29th March, 1890, that gentleman states that Bailie Caldwell, of Paisley, had informed him quite recently that he remembered first seeing the Dargavel Yew in 1828, and at that time the public road passed between the tree and the mansion. There is a very fine yew-hedge in the gardens at Dargavel. In a paper in the "Transactions of the Royal Scottish Arboricultural Society," Vol. XII., 1890, this hedge is described as being "37 years old, 10 feet high, 3 feet broad at base, and 1 foot broad at top." An elegant hornbeam on the lawn and a beech of great size outside south-west corner of garden (girth of trunk, 10 feet 9 inches) were much admired.

Bishopton House, which has passed through several hands in the past two centuries and is now the property of Lord Blantyre, was next visited. This old mansion house, which is beautifully situated on rising ground overlooking the Clyde, is approached by a long broad avenue of limes. The house has fallen on decadent days, and is now chiefly attractive from having near it on its western side, on a sloping bank, a remarkably fine example of the great maple, of which there is a beautiful figure in the Scotch section of Strutt's *Sylva Britannica* (folio edition). This tree is probably the best-known large tree of this species in the West of Scotland, but it is neither the largest nor most symmetrical. It is remarkable for its great top and the size and number of its branches. At present it seems in vigorous health. The measurement of the trunk, taken at the time of our visit, was 15 feet $5\frac{5}{8}$ inches, and it shows little variation in size from the ground to the first great branch. This tree is frequently referred to in English publications, apparently following Strutt, but his measurement of over 20 feet is incomprehensible.

The extensive pleasure grounds of Erskine (since 1703 the property of the Lords Blantyre) were visited in May, 1890, the party being accompanied by the forester on the estate. Entering by the East Lodge, Erskine big wood was traversed to its western extremity, and at this point, in a glade, a large spreading beech was noted and photographed (girth, 11 feet $4\frac{1}{2}$ inches; spread, east to west, 90 feet 1 inch). Just outside the wood mentioned, and near this beech, was a fine group of wych-elms, the tree nearest the wood branching at the ground into two trunks, measuring respectively 11 feet 11 inches and 7 feet 7 inches. A heron on the wing attracted attention, and it appears that there is a small heronry of one or two nests in the wood. A halt was made on the lawn south of the house, as there are many interesting trees there, though none of great size. Among these may be mentioned a pair of cedars of Lebanon (*Cedrus Libani*) and a fine deodar cedar (*Cedrus Deodara*). The larger of the former was photographed (girth, 9 feet 1 inch). The magnificent mansion house is in the "manorial style of Queen Elizabeth's time." At its north-east corner stands a group of great maples which may possibly be of greater age than they appear, as the forester informed those present that this group had some bearing on the site chosen for the present mansion house, built about seventy years since. These trees were photographed, also a large handsome example of the same species north of the site of the former mansion house (girth, 15 feet $3\frac{1}{2}$ inches). A large birch near the same spot, with beautiful drooping branches, was also photographed (girth, 7 feet 2 inches). In the same neighbourhood an Oriental plane (*Platanus orientalis*) and a Spanish chestnut (girth, 14 feet 5 inches) also received notice. There are both young timber and much that is well matured on this estate, and the park, especially from the river, presents a noble appearance.

KILBARCHAN PARISH.—In fine weather the pleasant policy of Milliken in this parish was visited on 25th April, 1891. At the East Lodge there is a large rookery. Immediately after passing this is a planting of young firs to be hereinafter mentioned in an ornithological connection. A pair of redstarts (*Ruticilla phoeniceus*) were noted on the occasion of the Society's visit. This

brilliant bird "appears suddenly in spring, like a flower that has bloomed before the bud was noticed," and is rather rare in the district, being most conspicuous on its arrival in April. In proximity to the house (which was built about 1830) are gardens which have been laid out in most princely fashion, involving enormous expense. Viewed from the public rooms they had a very striking appearance, and attention naturally fixed on a number of yew thickets in oblong squares, the top branches of which had a burned or blighted appearance. This was attributed to the roosting there of vast numbers of starlings during autumn and winter, and measures had had to be taken to put a stop to the evil. The starlings, taking the hint, had shifted their quarters to the planting before mentioned, and there were still some numbers of this species roosting at the time of our visit, where a month earlier there were to be seen nightly thousands congregating from all directions, and making night hideous with their screeching. Owing to the continued drought with low temperature few plants were noted, the list including the leopard's-bane (*Doronicum Pardalianches*), primrose, cowslip, purple willow (*Salix purpurea*), and goat-willow (*S. Caprea*). There are no trees remarkable for size in the estate, the largest seen being a great maple overlooking one of the artificial ponds. The ascent of Barrhill was made. On this, the highest point in the neighbourhood, are the remains of a Danish camp, and from a round tower on the same eminence a splendid view of the surrounding country was obtained. The common moth, *Diurna fagella*, was the only entomological capture.

The parish of Kilbarchan has the distinction of possessing in the estate of Craighends (John C. Cunninghame, Esq.) one of the most remarkable yew trees in Scotland. Fine photographs of this tree were exhibited at one of the meetings of the Society. It grows north of the mansion house and close to the Gryfe Water. Careful measurements taken on the 2nd of November, 1889, give the following results:—

Spread, eastern extremity of branches to tree, - -	41 ft. 6 in.
Diameter of trunk in same line, - - - -	8 ,, 4 ,,
Spread from tree to western extremity of branches, -	32 ,, 0 ,,
	<hr/>
	81 ft. 10 in.

This measurement was on a line nearly parallel to flow of the Gryfe there. Girth of trunk at narrowest part, 21 feet $2\frac{3}{4}$ inches; circumference of branches, 218 feet 6 inches, the area enclosed by these being filled to the ground with a mass of foliage, indicating vigorous health and abundant nutrition, possibly attributable to a sweet soil and proximity to the Gryfe Water. In spite of the yew being a slow-growing tree, the great vigour of the present example makes a considerable annual increment of wood in the principal stem not at all improbable.

LOCHWINNOCH PARISH.—Through the kindness of Mr. J. W. Shand-Harvey, the proprietor of Castle Semple, the fine policies there have twice been the scene of excursions of the Society. On both occasions the approach has been from Howwood. On the Black Cart, which has its origin in Castle Semple Loch, many yellow lilies (*Nuphar luteum*) may be seen, and on the banks of the same stream *Mimulus luteus* has established itself. The sides of the loch, which are not much frequented, have become a veritable preserve of wild flowers, many of them deserving of notice. In early autumn particularly, the beautiful racemes of the giant bell-flower (*Campanula latifolia*), the tall spires of the purple loosestrife (*Lythrum Salicaria*), with the golden-rod (*Solidago Virgaurea*), monk's-hood (*Aconitum Napellus*), and great patches of meadow-sweet, all in profusion, form a picture of the most exquisite beauty. One of the archæological features of interest within the policies is the Collegiate Church of Lochwinnoch, which has served for a long period as a burial place for the members of the Semple family. This rather dilapidated ruin is overshadowed by a number of tall hornbeams, and the walls both inside and outside are festooned with the ivy-leaved toad-flax (*Linaria Cymbalaria*). In and about some ponds adjacent to the Collegiate Church some rare plants were noted, including the great reed-mace (*Typha latifolia*), *Claytonia alsinoides*, and a large patch of the great yellow loosestrife (*Lysimachia vulgaris*). Other water plants occurring were the white water-lily (*Nymphaea alba*), *Ranunculus heterophyllus* and *R. hederaceus*. The maidenhair spleenwort (*Asplenium Trichomanes*) was found on the walls of the grotto and on the boundary wall near Lochwinnoch in fine condition. On the occasion of the second visit to Castle Semple (28th June, 1890)





From Photo. by

PLATE IV.

[J. Stewart, Larges.

CEDAR OF LEBANON (*Cedrus Libani*) AT CASTLE SEMPLE.

the following fungi were collected:—*Agaricus rubescens*, *A. semi-orbicularis*, *A. mutabilis*, *A. cervinus*, *A. appendiculatus*, *Marasmius peronatus*, *Russula cyanoxantha*, *R. heterophylla*, *Polyporus squamosus*, *P. annosus* (and the resupinate form of this species), *Stereum purpureum*, *Psalliota semi-globatus*, *Phallus impudicus*. On the same occasion the grass between the loch and the large cedar of Lebanon was swarming with the "sweep," as *Tanagra chærophyllata* is called, a moth too striking to be overlooked even by those uninterested in Lepidoptera. In the gardens and greenhouses the two plants which engaged most attention were a very old citron loaded with fruit, and a fine clump of *Gaultheria Shallon*, a beautiful North American shrub, the white flowers of which, flushed with delicate pink, are borne on secund racemes.

Castle Semple Loch is much frequented by waterfowl, and within the mansion house is a case containing birds shot on the estate, including the common bittern (*Botaurus stellaris*) and the Egyptian goose (*Anser egyptiacus*). There are many fine trees within the policies, beeches being probably the most conspicuous for number and size. Near the house may be seen large examples of the variegated form of the great maple, a large tree of the common maple (*Acer campestre*), and an ailantus or tree of heaven (*Ailantus glandulosa*). Not far from the loch and west of the house stands a cedar of Lebanon, of which a reproduction from a photograph, taken on the occasion of our second visit by Mr. John Stewart, of Largs, is given in this volume—Plate IV. This tree has the reputation of being one of the largest of its kind in Scotland, but though it dwarfs all others as yet visited by the Society in the West of Scotland, it is much less than the examples at Hopetoun. It measured on the day the photograph was taken 12 feet 8 inches at 3 feet. It is now, unfortunately, getting "thin" on the west side. Near it stands a large hornbeam. From the hermitage in the deer park a fine view of the valley with its chain of lochs and the surrounding heights is obtained.

Barr Castle, a fifteenth century stronghold, now uninhabited but in fair preservation, was visited in August, 1890, and the old parish church (of which only one gable now stands) and kirkyard of Lochwinnoch on the same occasion.

The valley of the Calder has been twice visited. Among plants noted on the first visit to this district were *Corydalis claviculata*,

Mimulus luteus, *Sedum anglicum*, *Ranunculus Lenormandi*, *Verbascum Thapsus*, and *Hypericum perforatum*.

Writing of the physical features of this locality, in describing the second visit which the Society paid to the district, Mr. John Smith, of Monkredding, Kilwinning, says:—"The Calder Water rises between the two Burat hills, 1481 and 1589 feet high respectively, and its source is about seven miles to the south of Greenock. For nine miles it runs over rocks of the trap series, which lie between the calciferous sandstones and the lower carboniferous limestones. After running for about another mile over alluvial deposits of its own making, it enters Castle Semple Loch, which, from the material carried into it from the hills by the Calder, is yearly getting 'smaller and beautifully less,' and will one day become a level meadow like its southern neighbour, the now-drained Barr Loch. The lower part of the glen is bounded to a considerable extent by high mural porphyritic cliffs of a dull purple colour, and showing in parts a rude columnar structure on a large scale. Further up the hills slope down pretty steeply, the slopes being suddenly broken by a sheer descent of ten, twenty, or perhaps thirty feet into the bed of the stream. This last feature shows the amount of work, in the way of excavating, done by the Calder since glacial times. There is very little boulder clay in the Calder Glen, but here and there we did see a small patch of dull purplish till which appears to have been entirely manufactured out of the hill porphyrites. With one exception all the boulders observed were of local origin, the odd one being a very small boulder or large pebble of vein quartz, in all likelihood brought from the Western Highlands. High on the north-east side of the glen the hill-slopes vanish from view without showing any very remarkable features except the numerous *roches moutonnées* which are everywhere very apparent. As well as this latter feature, high up on the south-west slope are to be seen long perpendicular 'crag falls,' indicating in a very distinct manner the way the 2000 to 3000 feet thick ice-sheet has acted on the rocks in this district."

Among plants enumerated in the report of the second excursion to this district are the alternate-leaved golden saxifrage (*Chrysosplenium alternifolium*), the heart-leaved valerian (*Valeriana pyrenaica*), the mossy saxifrage (*Saxifraga hypnoides*), *Alchemilla montana*, the common club-moss (*Lycopodium clavatum*), the

Scottish filmy fern (*Hymenophyllum unilaterale*), and attached to stones in the bed of the Calder the rare aquatic moss (*Fontinalis squamosa*).

Among birds the black-cock, grey wagtail, golden plover, and common heron were the most notable residents, and attention at this date (30th April) being naturally directed to new-comers, the swallow, wheatear, common sandpiper, and corncrake were noted.

KILMALCOLM PARISH.—This parish affords many interesting localities for naturalists, and it has on several occasions been the scene of Society excursions. Twice the approach has been from Bridge of Weir, in the adjoining parish of Kilbarchan. Proceeding towards Carruth from Bridge of Weir station, the heart-leaved valerian (*Valeriana pyrenaica*) and *Sedum villosum* were found, and near the entrance to Carruth the small-leaved maple (*Acer campestre*) occurs as a hedge plant, a common use for this species in some parts of England, rarely seen here however. In the glen at Carruth are many interesting plants, some of them undoubtedly introductions, but their rare beauty lends a charm to the bits in the ravine. Among the plants found there are the globe-flower (*Trollius europæus*), Welsh poppy (*Meconopsis cambrica*), *Saxifraga umbrosa*, *S. Geum*, Solomon's seal (*Polygonatum multiflorum*), and the oak and beech ferns. The rare barren-wort (*Epimedium alpinum*) has also been gathered here, but was not found on the occasion of the Society's visit. Many interesting trees were noted in the vicinity of Carruth House, but the collection was more remarkable for variety than for the size of individual specimens.

Craigbet, in close proximity to Carruth, has been twice visited. On each occasion those present had the advantage of being personally conducted about the gardens by the late proprietor, J. M. M'Phedran, Esq. The collection of herbaceous plants here is almost unique in the West of Scotland in its interest and variety, and the bee observatory, bee fountain, and the curios brought from the far East which adorn the garden make visits to the place memorable to most strangers. The approach is an avenue of limes intersected opposite the house by another, forming in the original design a cross, but some of the trees in one of the avenues having been felled, the intention of the designer is not

now apparent without explanation. Behind the house and situated one at each corner, stand a pair of vigorous yew trees, planted to commemorate a marriage in the Porterfield family (formerly proprietors of Duchall). The trees, appropriately enough, are male and female, and they show, to be contemporaries, an interesting discrepancy in the rate of growth, favouring the male tree, which at the narrowest part of the trunk accessible measured on 8th June, 1889, 7 feet 8 $\frac{3}{4}$ inches, its companion, the female, measuring 6 feet $\frac{3}{4}$ inch. Readers may recall that Gilbert White, in writing of the old yew in the churchyard at Selborne, declared that "as far as we have been able to observe, the males of this species become much larger than the females." By the roadsides here bald-money (*Meum athamanticum*) is a characteristic plant, and a clump of *Carex ovalis* and many fine patches of the English stonecrop (*Sedum anglicum*) were noted between Craigbet and Kilmalcolm. The estate of Duchall, which lies between Craigbet and the village of Kilmalcolm, has much fine timber, the trees in the avenues of beech and lime being of large proportions. Against one of the gables of the mansion is a yew tree, probably of great age. From measurements taken in 1888, its branches extend in one direction 53 feet, the girth of the trunk being 13 feet 10 inches; but as the principal stem is very short and many of the branches almost prone, measurement of girth becomes an unreliable test. In the grounds, bistort (*Polygonum Bistorta*) and *Doronicum plantagineum* were noted.

Kilmalcolm was the rendezvous of an excursion early in 1891. The parish church and a portion of its predecessor, which had been quite recently renovated and was to form a vestry, were inspected with much interest. The building stone is the hard trap of the district. The church is declared by competent authorities to be the best example of its style in the West of Scotland. In the ruinous *quier* (the burial place of the Porterfields) are some interesting tablets, one showing in its design the conjunction of the national emblems of the rose and thistle, which a gentleman present declared a not infrequent combination in stones of the period about the Union of the Parliaments. Mr. J. Thomson, a local botanist, who was acting as conductor, said that a quarter of a century since the walls of the *quier* were literally covered with the wall-rue (*Asplenium Ruta-muraria*), but since they had been

plastered with Portland cement no vestige of it has been seen. On the portion of the church recently renovated it has hitherto appeared, though in less quantity, and it was hoped that the work then being carried on would not entirely obliterate it.

One of the "Trees of Renfrewshire" series of excursions took the Society to the extensive grounds at Finlaystone, in this parish. On the approach from the old Greenock road is a fine avenue of limes, and on the lawn many well-grown ornamental trees, such as the flowering ash (*Ornus europæa*), copper beech, walnut, Spanish chestnut, cedar of Lebanon (girth, 8 feet 1 inch at 1 foot on west side), an aged yew somewhat decayed, and with its short main axis now covered by a mound, and a tulip tree (*Liriodendron tulipifera*) which was, unfortunately, uprooted by what is popularly known as the Tay Bridge storm, and is in its present condition only interesting as a relic. A large beech in this neighbourhood measures 12 feet $4\frac{3}{4}$ inches at 3 feet 6 inches on west side. In the rear of the house and to the south-west, upon a sloping bank, stands a wide-spreading vigorous example of the Turkey oak (*Quercus Cerris*), a species of more rapid growth than those native to this country, which produces timber so heavy as to gain for itself the name "iron oak." This tree measures 11 feet $8\frac{1}{2}$ inches in girth at 3 feet $3\frac{1}{2}$ inches on west side, and has a spread of branches, east and west, 98 feet 2 inches. Unfortunately, a large branch has been rent away in a storm, and the wound which resulted has been neglected, although the tree deserves every attention. The remains of a large yew west of the house are interesting from the tradition that under its branches and those of four others which have now disappeared, but which formed a line running westwards from the house, the Sacrament of the Lord's Supper was dispensed by John Knox, when he was at Finlaystone in 1556 as the guest of Alexander, the fifth or "good" Earl of Glencairn. The visit of Knox and his dispensing the sacrament are matters of history well authenticated, but whether it is correct to associate the ceremony with the group of yews, now only represented by a vigorous branch of one, may be doubted. Within recent years this, the last of the group of yew trees, has been much cut down, owing to its interfering with the house. In proximity to but without the gardens, stands an elegant wych-elm (girth, 12 feet $8\frac{1}{2}$ inches at 3 feet $10\frac{1}{2}$ inches

on west side), high up in which is hung the old parish church bell of Kilmalcolm, bearing thereon "Kilmalcolm, anno 1743." Near Finlaystone smithy, on the old Greenock road, stands in the policy a fine great maple (12 feet 6 inches at 4 feet 2 inches on west side), and in a wood east of the mansion house is a variegated example of large size (7 feet 8 inches at 2 feet 8½ inches on west side).

Much interest attaches to a group of yew trees, three in number, standing in a plot of ground east of the old avenue of limes, which is called Paradise. Two of the trees are males, the other a female. The most westerly (female) measures 8 feet 11¾ inches at 2 feet 7 inches on north-west side, the middle one (male) of the group to the south measures 7 feet 11¾ inches at 2 feet 6½ inches on west side, the remaining one (male) east of these being 8 feet 10½ inches at 2 feet 11 inches on north-west side. They are all fine trees, with long clean boles, and from their relative positions form a triangle. There is now no vestige of a house to be seen in the vicinity, and this fact, coupled with the unusual name the plot of ground bears, excites our curiosity as to the existence of the trees there and the designation Paradise. In an ecclesiastical connection the name Paradise is not unfamiliar, having been, indeed, in some form associated with the Christian Church from the earliest times. It has been not infrequently in England applied to the garth or central space in the monk's cloister, appearing in the corrupt form Preese at Gresford near Chester, the Paradise garth at Beverley, and Paradise at Winchester and Chichester. At Watcombe also is a group of yews called Paradise, where nothing else now remains to indicate the former existence of a monastic foundation. That the Paradise at Finlaystone may have had a similar origin seems quite probable. The position was well chosen with regard to water, and the suggestion is supported by the fact that in the immediate vicinity curious plants are to be found, some of them well known to have been cultivated for medicinal purposes by the monks, and these plants in our district are usually found near old castles or monastic dwellings. The plants referred to include the green hellebore (*Helleborus viridis*), cuckoo-pint (*Arum maculatum*), and *Scrophularia vernalis*. Immediately to the west of Paradise, on the other side of the old avenue, Finlaystone old

gardens were situated, and evidences remain in the walls there of fruit culture, which may have begun in monastic times when the monks were our only horticulturists. This plot of ground may well have been their orchard.

In Paradise are some fine yellow-berried hollies, and a wild rose is shown with a stem 7 inches in girth. *Petasites albus* and the Welsh poppy (*Meconopsis cambrica*) occur as garden escapes. On the approach from Langbank some aged thorns attract attention, and the gardens contain a collection of herbaceous plants of great extent and interest. The measurements above stated were made in June, 1892.

HOUSTON AND KILALLAN PARISH.—Barochan House, in this parish, was visited in the spring of 1891, without any particular feature of interest being noted except what attaches to the house itself, over which the party were shown by Mrs. Renshaw. On the same visit old Kilallan Church was also inspected. Little of the church now remains except the walls to the height of 8 to 10 feet, and they are largely obscured by a most luxuriant growth of the ivy-green. In the outer wall a curious stone called St. Fillan's Stone received a large share of attention, as did also a natural depression in the rock by the roadside in this vicinage, called St. Fillan's Chair, from which tradition declares the saint to have preached.

Barochan Cross, as illustrated in the frontispiece to this volume, arrested the party with conjectures as to the details of the design, which are slowly but surely giving way to atmospheric action. The cross in the time of Crawford, the historian of the county (as quoted by Motherwell), stood "a few score yards south from" Barochan Mill, and at a later date (about a century since) the writer of the old statistical account of the parish says that it was "lately removed . . . to a neighbouring hill, where the old mansion house of Barochan formerly stood." Both sides of the cross have been elaborately carved, and the workmanship must have been excellent and the material well chosen, to admit of the present comparative sharpness of outline of some of the figures. Nothing of its history is known. Locally it is called a Danish cross, and Motherwell the poet had no difficulty in convincing himself that it should be considered commemorative of the defeat

of Somerled, Lord of the Isles, when he made his descent upon Renfrew in 1164.

PORT-GLASGOW PARISH.—One of the most easily accessible of the glens in the West open to the public is Devol's Glen, in this parish. It was once visited by the Society early in its history, but there is no minute left. It is a locality which well repays a visit for its beds of volcanic ash with embedded bombs, its flows of trap with zeolitic minerals (stilbite prominently), its fine falls and rapid cascades, while the botany is also of considerable interest for both phanerogamic and cryptogamic forms.

INVERKIP PARISH.—This parish has been the scene of several excursions, notable among these being one of the "Trees of Renfrewshire" series, and a later one conjointly with the Natural History Society of Glasgow to Shielhill Glen. Gourrock was the rendezvous on the occasion of the first of these. The party proceeded by the Larkfield road, and in a field on the left of the road, near Cove Farm, they visited a great maple which stands solitary there (girth at 3 feet 10 inches on south side, 10 feet 10 inches). The next halt was at Cresswell Farm, on the Inverkip road, where in a field close to the farmhouse stands another fine great maple (girth, 9 feet 6½ inches at 2 feet 5 inches on south-west side). In proximity to this tree stands an ash which attracted attention (girth at 5 feet 3 inches on south-south-west side of trunk, 9 feet 6½ inches). Before entering the policies of Ardgowan, *Mimulus luteus* and the masterwort (*Peucedanum Ostruthium*) were found. Ardgowan, as we know it, is one of the most delightful estates in the county. It seems to owe much to the taste of Sir John Shaw Stewart, the fourth baronet, who early in this century erected the present mansion house. Robertson, who wrote the continuation of Crawford's history of the county, informs us that the improvements effected by him "were upon the most extensive scale," that he surrounded the new house "with an extensive park, and the gardens, pleasure grounds, and ample plantations which he planned, afford striking proof of the excellency of his taste." The beauties which owe their inception to this member of the Shaw Stewart family have matured in the intervening years, with the result (heightened, doubtless, by the

admirable order which at present obtains) that the surroundings of the house are almost unique for beauty and interest. On the main approach is a great maple of exceptional vigour, which, from its favourable situation, may yet attain a great size (girth, 13 feet at 4 feet 4 inches on north side), while a Spanish chestnut close to it, but nearer the house, measures 10 feet 2½ inches. On the lawn are many fine young ornamental trees, including a *Wellingtonia* (girth, 11 feet 8 inches at the ground), an evergreen oak (*Quercus Ilex*) 4 feet 6 inches in girth, and a strawberry tree (*Arbutus Unedo*) measuring 3 feet 7 inches in circumference. Near the old tower of Ardgowan the cowslip, leopard's-bane, and *Saxifraga Geum* occur. In this vicinity are also a large ash tree (13 feet 2 inches in girth) and a large great maple (14 feet 5½ inches in girth). Another large tree measured in the estate was a beech near the shore side of the woods (girth, 14 feet 5 inches). The measurements given above were taken at the excursion on 18th May, 1889.

At the excursion to Shielhill Glen, in this parish, many interesting plants were found, including *Ornithogalum umbellatum*, *Doronicum Pardalianches*, *Sedum villosum*, *Saxifraga hypnoides*, *Mimulus luteus*, *Listera ovata*, *L. cordata*, *Lepidium Smithii* (sub-sp.). The last named plant is abundant in the district visited. *Enanthe fistulosa* was also seen, but not in flower, while the moss *Neckera crispa* was got in fruit (a rare occurrence). The entomologists captured *Chortobius pamphilus*, *Fidonia atomaria*, *Coremia propugnata*, and *C. unidentaria*.

RARER FLOWERS OF EAST RENFREWSHIRE.

BY JOHN WOOD.

(Paper Read 3rd December, 1890.)

CAN anything rare or beautiful find a home in dirty, smoky, wet and muddy Renfrewshire? Come and see. Let me take you with me in imagination out from your mighty city's noise and dust and bustle, out into the pleasant fields and along the green burn-braes (for such things are) of my adopted county. Along with me there need be no fear of surly keepers with ugly dogs; with me you are out of the treacherous domain of the fickle clerk of the weather.

THORNLIEBANK TO DARNLEY TOLL.—Now then, let us be off, and presto! at Thornliebank we catch the Capelrig ("from" or "at the top of the ridge") Burn and ascend. We are here above the works, and the stream is unpolluted. As soon as we leave the road, on the burn's right bank, we come upon a mass of garden escapes—mallows, mulleins, horse radishes, etc.—the result of the place having been used as a "coup" at no distant date. Further up we enter the Rouken Glen, a very pretty little spot indeed, with flowers such as the *Omphalodes verna*, or creeping forget-me-not, of a cultivated character, and with many nice ornamental shrubs. In the glen we find the alternate-leaved golden saxifrage (*Chrysosplenium alternifolium*). I do not think this plant is such a rare one as is usually supposed. It is difficult to distinguish among the masses of its twin sister, and this I take to be the main reason why it is so seldom found.

Up till a few years ago the hart's-tongue fern (*Scolopendrium vulgare*) was to be found here, but the last one is now gone. The proprietor, Mr. Crum, kindly allows all sorts of picnic parties entrance, and hence this clearance. The hart's-tongue, from its characteristic shape, is easily recognised by non-botanists, and it stands small chance of survival in the neighbourhood of any large town.

Immediately above the glen we come upon a small loch or dam. On its outer edge there is a very pretty bed of Jacob's-ladder (*Polemonium caeruleum*), its pale blue flowers looking somewhat out of place among the coarse marsh plants that surround it. It scarcely ranks as a wild flower anywhere, but it is wild enough and secluded enough up here.

This Capelrig Burn comes down through Mearns Moor ("the moor of the Earn, or east-flowing, Burn"); and up there is the only station I know of in the district for the very pretty grass of Parnassus (*Parnassia palustris*). Strange that this plant (a moorland one) should be so plentiful in the West, and Renfrewshire with all its moors should have so little of it.

Take the road back towards our starting point, and in a barley field by the wayside, a couple of years ago, you would have seen a number of hemp plants growing (*Cannabis sativa*). One question to the farmer—"Hoo came this here withoot the leave o' ye?"—brings us tidings that here we are face to face with a real German invasion. The field had been sown with Baltic seed.

On the banks by the wayside we may find a specimen or two of the blue sherardia (*Sherardia arvensis*). It grows all over the lower portions of the county, but only in small patches, and it is anything but constant.

In the old lime quarry at Arden there used to be plenty of the wild tulip (*Tulipa sylvestris*). But its beautiful, conspicuous yellow flower-cups have proved its ruin. Beauty by the average human animal is intensely admired, eagerly sought after and then wantonly destroyed.

The teasel (*Dipsacus sylvestris*), a tall hardy-looking plant, is or used to be got here also. Indeed you may find it occasionally almost anywhere from Arden to Paisley. In Darnley Glen long ago there was a small wack-mill. Teasel heads were used in works of this sort to raise the nap on cloth. Hence these teasel plants. But they are gradually dying out.

On the roadside, nearly opposite Queen Mary's Tree at Darnley Toll, I got in the autumn of 1888 one small plant of the yellow melilot (*Melilotus officinalis*). It is a plant not likely to become fixed in our county. It grows plentifully in the South of England, as does also its white sister. I fell in with a white one, large and beautifully developed, up near Barrhead some five or six years ago.

BROCK BURN AND DARNLEY GLEN.—From Darnley Mill let us take the Brock (or Badgers') Burn for Darnley Glen, called on the survey map the Wack Mill Glen. The whole district from here for miles down by Thornliebank and Shaws was anciently called Arden, and this glen above Darnley must have originated the name, for it is the highest "den," indeed the only "den" in the locality. And Darnley looks like a corruption of Arden-ley. It cannot be derived from *Dar*, an oak, for various reasons, though this ancient forest of Arden was unquestionably an oak forest.

Darnley Glen, Wack Mill Glen, or Arden, whichever its name ought to be, was famous over the district some years ago for its fine ferns. But this glory has departed in great measure. Fern dealers from the city got scent of the place, and they have cleared out all the better varieties.

The plant for which the glen is now famous is the herb-paris (*Paris quadrifolia*), known locally as the "peasemeal plant," from the smell of its leaves when bruised. The bed is pretty much run on at present, this being the nearest station of the plant to Glasgow. But in spite of this severe taxing, paris is spreading vigorously. Like the Hebrews of old, like the Irish of the present day, the more it is oppressed the more it multiplies and grows. The plant is anomalous among plants—a sort of vegetable platypus. It has the characters partly of a monocotyledon and partly of a dicotyledon. It derives its specific name of quadrifolia (say the books) because it has four leaves. But the leaves may number three, four, five, or even six, thereby indicating that the plant is in an active state of transition. It seeds freely enough, but the seeds never germinate. I have gathered dozens of the berries, planted them myself and given them to all the gardeners about to plant, and I have not yet been rewarded with a single seedling. Nor have I ever found a plant in the bed, and I have rooted up many

of them growing apart from the usual long white rhizome. There is a small bed of this plant in Bardrain ("hill of the thorn") Glen; and another, the finest I have ever seen, on the Calder above Lochwinnoch.

Farther down the glen, growing with its feet in the burn, is a nice bed of woody nightshade (*Solanum Dulcamara*). It bears a strong family resemblance to the potato in the leaf, and especially in the flower; but it is more slender and delicate in appearance. Its poisonous berries soon disappear when ripe—the birds find them innocuous and much to their taste. What is poison to one is wholesome food to another.

In the glen everywhere there is plenty of bitter-cress (*Cardamine amara*). On its west edge are to be found a few plants of the little pinky-red Centaury (*Erythraea Centaurium*). It is common enough near the sea, on Irvine sands to wit, but this is its only station hereabout. One shrub of the wayfaring tree or mealy guelder-rose (*Viburnum Lantana*) grows in the hedge here. Close to this there is a rowan-tree which exhibits a curious and interesting phenomenon. The tree is a twin one, *i.e.*, two stems of about the same size rise from the one root. At ten or twelve feet from the ground two branches of the one stem clasp the other tightly round the waist and draw it in against its breast. The farmer has evidently looked upon the last stem as doomed to death by the tightness of this embrace, and he has cut it quite through a little above the ground to put it out of torture and to save the other. At this stage he has failed to disentangle the cut trunk and has left it standing held up by the embracing arms. Now comes in the strange thing—the cut trunk is growing, leafing, and bearing flowers as if nothing had happened to it—fed by the branches that clasp it. One tree acting as wet nurse to another, feeding it with its own heart's blood! What a subject for a poem; what a text for a sermon on brotherly love!

UP THE AURS BURN.—Close to Darnley House the Aurs Burn joins the Brock, and what a contrast this little stream presents above and below Barrhead. Below, it is foul, foetid, livid with dye, fermenting with filth and disgusting as the face and breath of a besotted drunkard; above, it is pure, clear, sparkling as ether as a stream ought to be, and like the smiling face and

sweet breath of "bashful fifteen." Above, the spirit of nature holds sway; below, the burn is deformed by the spirit of the age—commerce, money. May the stream of our lives never pass through a Barrhead!

The Aurs comes from Glanderston Dam at the foot of Craig of Carnock. In all the dams up here in Neilston parish (and their name is legion) you will find a few specimens of the fresh-water purslane plant (*Peplis Portula*). It grows about two inches high, with small ruddy flowers borne in the axils of the leaves. It is difficult to see and difficult to get at except when the dams are low. A little below Glanderston Dam the Aurs enters a marshy piece of ground intersected by narrow ditches full of water, and the whole marsh is, in the season, one golden mass of wild musk (*Mimulus luteus*). Linnæus's historic field of broom was nothing to this. The plant has been here for ten or twelve years at least. It cannot spread up the stream, and the polluted condition of the burn down by Barrhead checks its spread in that direction. The scented musk plant (*Mimulus moschatus*), a near relative of the yellow mimulus and a common pot plant in cottage windows, bids fair also soon to add itself to the list of our wild plants. The ponds at Loudon, Ayrshire, contain lots of it. There is a small syke up behind the hamlet of Pokeston, in Mearns parish, which will soon be overrun by it. The streamlet, a mere ditch, is completely hidden in summer by the long grass; but the strong musk odour betrays the presence of the plant at a considerable distance to anyone passing on the lee. The "rin" originates in a spring-well which supplies Pokeston with water, and this fact explains how the plant comes to be here.

Below the mimulus swamp the left bank of the Aurs is upright and rocky; and here are some beautiful patches of Ehrhart's water-figwort (*Scrophularia Ehrharti*). The plants root in the clear stream and grow close against the perpendicular bank, and as high—five or six feet. Descending the stream the plant occurs again near Darnley House in a ditch of clear water which communicates with the Aurs. Aurs and Brock join the Levern, and the Levern empties itself into the Cart, and the banks of the latter in Hawkhead Wood are literally covered with this beautiful and rare plant. Up all the burns which feed the Cart may be found beds of the pretty snake-weed (*Polygonum Bistorta*), with its beautifully twisted heads and strangely distorted roots.

Near Nitshill railway station there is one nice bed of the yellow toadflax (*Linaria vulgaris*) and a considerable quantity of its rarer and more lowly sister, the least toadflax (*L. minor*). The latter has a very decided partiality for railways.

At Hurlet we find adder's-tongue fern (*Ophioglossum vulgatum*); *Veronica Buxbaumii*—like *V. agrestis* in leaf and stem, and like *V. Chamædryis* in its large, beautiful, clear blue flowers. In various of the gardens about and on the railway banks one occasionally gathers good specimens of the treacle mustard (*Erysimum cheiranthoides*), but the plant, a South of England one, is not constant with us.

On the banks of the Levern near Househill House there grows a fair quantity of the hop plant (*Humulus Lupulus*). The flowers in the bed are all staminal ones, hence the plant may have been washed down stream after being thrown out as rubbish from some of the gardens higher up. On the Glasgow and Barrhead roadside near this there is plenty of hemlock (*Conium maculatum*)—enough, in fact, to poison half the people of the county. Beyond the road, and near Hawkhead policy wall, one whole field is covered in the season with the beautiful, rosy (rarely white) pea-blossoms of the rest-harrow (*Ononis arvensis*). The plants are of the prostrate variety. The upright variety is met with on the roadside half-way between Hurlet and Renfrew.

LEVERNHOLME WOOD.—In Levernholme Wood we find lords-and-ladies (*Arum maculatum*), asarabacca (*Asarum europæum*), woody spiræa (*Spiræa salicifolia*), lungwort (*Pulmonaria officinalis*), etc. The arum, unique among our flowering plants, develops its curious spathe freely in the wood where it is well shaded. At Crookston Castle, in the old moat there is plenty of it, healthy enough, but it never flowers, not being in the shade. The spathe of the arum is a sort of insect shebeen. Small beetles and flies enter it, and as it is to the interest of the flower for purposes of fertilization to detain them inside, they forthwith get intoxicated with the strong juices the plant provides, and as they cannot find their way out for a time, they stay within in one big drunken spree. "There's no drunkenness or debauchery among the lower animals," say the teetotalers. Is there not? Why, the very beetles and flies, of both sexes and of all ages, when they get the

chance outshine the Laird of Logan's pigs. The wood spiræa of Levernholme is not in good condition. It seldom flowers here; but there is a fine bed of it on the banks of a small stream which enters Lochwinnoch on the west side.

THE PAD.—Levern Burn is the offspring of a number of streams which come from the hills above Neilston. Take the most conspicuous of these heights, the Pad, named from the very old Saxon word "Paid," a hill. In the fields at its feet there is plenty of the little brownish-coloured frog-orchis (*Habenaria viridis*). It is not readily noticed, both size and colour favouring the plant in this respect. It grows plentifully also in fields on the Calder above Lochwinnoch. On the north forehead of the Pad grows the cow-wheat (*Melanthyrum pratense*), and this, I believe, is its only station in East Renfrewshire. This is one of the most obstinate plants in the whole British flora to dry satisfactorily. Nothing will do so and preserve the colour except the hot iron.

On the opposite side of the Pad we find abundance of the white climbing corydalis (*Corydalis claviculata*). Very delicate and fragile it looks, and very prettily it overspreads the roots—kissing the feet of the sturdy Scotch pine trees that give it shelter beneath their rugged, kindly, outspread arms. Beauty clinging to the feet of strength—an improvement on the poets and novelists—a return to the primitive law of nature. Here also, on this very spot, there used to be a fine large bed of the parsley-fern (*Cryptogramme crispa*). But, alas! for the "used-to-be!" Dealers from the city found it out, and they have not left so much as one little plant on the hill-side.

COMMORE DAM TO LOCH LIBO.—From the top of the Pad we can see Hairlaw Dam with its sea-gull island. The stream which issues therefrom we can follow with the eye till it enters Commore Dam ("the dam of the big hollow"). The Neilston side of this dam has a considerable number of bald-money plants (*Meum Athamanticum*), with their feathery dark-green leaves and, to me, most disagreeable smell. A burnie wimples down the brae-side and empties itself into the dam at the opposite corner. This tiny stream is so well hidden by the nature of the ground that you step into it almost before you see it. Ascend and you will find it one

series of puny cascades and yourself so secluded that you could easily imagine yourself nature's last man.

The cascades and linns of this fairy stream are filled with the narrow-leaved water-parsnip (*Sium angustifolium*), not a pretty plant by any means, but an exceedingly rare one here in the West. It is very late in flowering, and it only flowers in favourable seasons. It is an east country plant, not common even there, and how it has come here is a puzzle. But here it is, and thriving famously.

Descend the stream from Commore Dam till it crosses the road towards Loch Libo ("loch of the cows"). Half a mile or so up this road our eyes are feasted on a magnificent bed of masterwort (*Peucedanum Ostruthium*) containing dozens of plants flowering freely every season. There is a small bed of the same plant near what used to be the Peesweep Inn, and there are other three stations for it near Paisley.

LOCH LIBO.—Loch Libo gives us a fair number of good plants—the mace-reed (*Typha latifolia*), water-hemlock (*Cicuta virosa*), white and yellow water-lilies (*Nymphaea alba* and *Nuphar lutea*), and the mare's-tail (*Hippuris vulgaris*). The typha is an object of almost superstitious awe to the natives hereabout. Popular local belief attributes to it roots fearfully and wonderfully made—going down deep into the bowels of the solid earth or through them; and the flooding of the pit with workings underneath the loch is believed to have resulted from a rash collier's tearing down one of these colossal roots which interfered with his work. The flooding is a melancholy fact; but, as not a man escaped, it is somewhat difficult to understand how such definite information as to the immediate cause was obtained.

The water-hemlock is pretty common here. It is but an ordinary looking umbelliferous plant, very poisonous and very hollow in the stem; but there is one noteworthy point about it—its chambered rhizome or root—the only root of the kind in the whole British flora.

But the poet's flower, the lily, the white water-lily, the queen of our waters, prime favourite of Flora, and first of all our beautiful wildings for elegance of shape and rich purity of colour, may fairly claim the loch as her own domain. One derivation of Loch

Libo gives the meaning of the word as the "loch of the fairies;" and verily no more befitting spot could be conceived of as a favourite haunt of these little people than this same Loch Libo. Look at it for a moment and note some of its outstanding beauties. The situation, sweet, delightful, and refreshing in its calm seclusion; the banks rising high from the very lips of the loch, and richly clad in a mantle of varied wildwood; at the loch's head a tiny belt or bank of silvery sand washed down from a source hidden high up on the sylvan braes, and upon which mimic billows, with motion gentle as the measured heave of sleeping Zephyr's flexuous breast, lap with murmuring sound and low; the water itself glittering in sunlight and lying within its girdle of hills like the teeming lap of the benignant goddess of nature herself; the typha, proudest of the gentle offspring of a gentle mother, standing on guard, erect and tall, yet nodding its graceful head and dark chestnut locks with easy motion timed to the Æolian music of the low-voiced winds; the floral pleasure-boats of snowy white—the skiffs of golden yellow; the rounded leafy platforms moored beside the boats and skiffs inviting, by the glossy smoothness of their tiny circles, to trip it on the lightest and most fantastic of elfin toes under the cool silvery beams of the summer moon: these are a few, and only a few, of the allurements which Loch Libo had to offer to the good folks. No wonder that they chose as they did! No wonder that Loch Libo became the home of fairies!

CORKINDALE LAW.—The hill behind Loch Libo is Corkindale Law ("hill of the marshy valley"), famous for its fine view and its moonworts. Indeed, all the district we have been traversing from Corkindale Law here, over by the Pad, to Hairlaw Dam, abounds both in adder's-tongue and moonwort ferns.

And now we must stop—our excursion has been long enough. We have done on a more extensive scale what Burns did long ago when he pu'd the posy to his ain dear May—we have culled the blossoms of spring, summer, and autumn into one handful. But through it all I claim to have proved that so far as Renfrewshire is concerned every nook and corner of it is worth a more thorough search from botanists than it has yet received.

RECORDS OF EXCURSIONS TO
LOCH LOMONDSIDE,
WITH ADDITIONAL MATTER.

BY JOHN PATERSON.

LUSS DISTRICT.—The pleasantly situated village of Luss was the rendezvous of the first excursion made under the auspices of the Society to Loch Lomondside. The aim of the outing was to visit the island of yew trees, Inchlonaig. This island, which lies directly opposite Luss, cannot claim, in point of picturesqueness, to be favourably compared with such islands as Inchtavannach or Inchcalliach, but its remarkable collection of yew trees—stated to have been planted in the time of King Robert the Bruce and by his advice—will always attract those interested in old and remarkable trees.

About the middle of the seventeenth century Inchlonaig was “laid waste” for use as a deer forest, and as such it has continued to the present time. In the following century fifteen Highland goats were introduced, and the descendants of these remained in a wild state for a long period thereafter. These are now extinct, however, only fallow deer being found on the island at present. Readers of *The Moor and the Loch* will remember the chapter called after the chief resort of the goats, Crap na Gower, in which John Colquhoun relates his experience in stalking one of the patriarchs of the flock.

Naturally much attention was directed on the occasion of our visit to the old yew trees, of which there are a great many scattered throughout the island, solitarily or in small groups. Many of them in respect of girth of trunk are of large size. While the growth of this species is usually slow, it must, under the exposed

circumstances of the situation of Inchlonaig and the rocky nature of many of the spots where the trees have found a lodgment, be still further restricted, so that the trees may be relatively older than others of like size which have had the advantages of shelter and abundant nutrition. The largest trees noted, in the brief time at the disposal of the Society, were in the neighbourhood of the caretaker's house on the south side of the island, the trunks measuring from twelve to fifteen feet in girth. Some of them spread their roots over the rock surfaces and into the crevices, enclosing as in a vice angular blocks of rock of considerable size, recalling vividly the expression of Tennyson about the old yew "that graspest at the stones." The collection suffered from fire, but the western end of the island, which was bare of trees, was partially replanted by the late Sir James Colquhoun. Besides the yews there is much alder, and sometimes in summer may be seen the picturesquely situated encampment of a number of English clog-makers engaged in cutting and preparing the alder for manufacture into clogs, for which purpose the wood is much valued.

So far as was observed, the campions, stitchworts, and speedwells which contribute so much at midsummer to the beauty of our woods and waysides, were conspicuously absent from the flora of the island, which is essentially a heath one. The following plants were among the most frequently met with—*Erica cinerea*, *E. Tetralix*, *Calluna vulgaris*, *Vaccinium Myrtillus*, *V. Oxycoccus*, *Narthecium ossifragum*, *Myrica Gale*. Other plants noted were *Scutellaria galericulata*, *Ranunculus Flammula*, *Gymnadenia Conopsea*, and *Nephradium Oreopteris*.

At the time of the visit of the Wordsworths to Luss—in the beginning of the present century—the village consisted of houses of the most primitive construction, while the garden plots had "potatoes and cabbages, but never a honeysuckle." Now all this is altered, the houses being well built and having latticed windows and projecting roofs, while the walls in every instance are covered with honeysuckles, roses, tropæolums, escallonia, the purple clematis, and many other beautiful shrubs and plants. From most coigns of vantage in the vicinity, the village—owing to the noble growth of the great maples, limes, and wych-elms which abound within and around it and the church—is only partially visible. In the

churchyard is the resting-place of the Rev. Dr. John Stuart, who is well remembered for having "perfected the Gaelic translation of the Scriptures." The parish was fortunate in having him as its minister in the end of last century, and the first statistical account of the parish, which is from his pen, is full of interest for naturalists, as it contains a list of the avi-fauna, mammals, and reptiles of the district, with measurements of some remarkable trees and other cognate matter. Dr. Stuart was only less distinguished as a naturalist than as a *littérateur*, and to him Lightfoot, in the preface to his *Flora Scotica*, expresses obligation for "a great portion of the *Highland* botany, for *many* of the *medical* and *æconomical*, and *all* the *superstitious* uses of plants, . . . and . . . the supply of their *Erse* or *Gaelic* names."

The route followed by the Society on the Queen's birthday in 1890 may now be traced. After passing through the village a tulip tree (*Liriodendron tulipifera*) attracted attention, as did also a fine wych-elm which stands on the roadway opposite the inn. Proceeding southward by the road which leads to Dumbarton, the well-wooded nature of the country was conspicuous, and many fine trees were noted, including silver firs, oaks, walnuts, poplars, etc., all in fine health and some of them of great size. The hamlet of Aldochlay, which was soon reached, is in a romantic situation on the side of the loch, with Elan Aldochlay, or the swan island, a few boat-lengths from the shore, and the wood-clad island of Inchtavannach opposite running parallel with the side of the loch. At this point on the public road begins a short avenue of fine beeches, among the branches of which squirrels, which now abound in the locality, may often be seen pertly gazing at the passers-by. The squirrel does not appear in the list of the mammals of the district in the old statistical account of the parish, the first of these lively creatures observed near Loch Lomond being killed, according to Mr. Colquhoun, in 1830. At Aldochlay the party embarked for Inchtavannach, and on landing there followed the pathway which leads to Tom-na-clag, or the bell-height, the northern summit of the island, from which in earlier times the faithful of the surrounding parishes were called to their devotions. At this stage a paper was read by Mr. G. W. Walker, in which he urged the reasons for considering the loch a rock basin hollowed out by the action of ice during the glacial

period. Before leaving the island the entomologists present had captured *Melanippe tristata*, *Hypsipetes trifasciata*, and *Eupithecia nanata*. Returning after a brief interval to the landing-place, the boats were again manned, and after rounding the north end of Inchtavannach the flotilla proceeded through Luss Straits—the sound separating Inchtavannach and Inchconachan—and so on to Inchmoan, or the gull island. This island, the highest point of which is only thirty-three feet above sea level, formerly supplied peats to the people of the Luss district. It has been for a long period a place of much interest to ornithologists as the nesting place of large numbers of birds, chiefly gulls. The two species hitherto most largely represented were the black-headed gull (*Larus ridibundus*) and the lesser black-back (*Larus fuscus*). It was with great regret that those present learnt that the colony of black-headed gulls had not reappeared in the spring of the year of our visit, nor have they since done so, the locality having been apparently abandoned in 1889, but from what cause was unknown. The lesser black-back, however, continues in considerable numbers, and many of the simple nests of this species were seen, under a clump of ling, a bush of bog-myrtle, or the shade of the alders by the loch-side. The cloudberry (*Rubus Chamæmorus*), which is so naturally associated with our sub-alpine heights, was here found in flower, also the tufted loosestrife (*Lysimachia thyrsoiflora*). Crab-apple trees here and on Inchtavannach were much admired for their wealth of delicately tinted bloom. The marshy heaths on the island proved fruitful hunting ground for the entomologists, great numbers of the common heath moth (*Fidonia atomaria*) being on the wing, and among the captures were *Bupalus piniaria*, *Cabera pusaria*, a female of the emperor moth (*Saturnia pavonia*), also larvæ of the drinker moth (*Odonestis potatoria*).

Again embarking, the party proceeded to Rossdhu, passing on the way the islet Inchgalbraith, with its "ivy-mantled tower," on which, till early in this century, the osprey (*Pandion haliaëtus*) nested. The author of *The Moor and the Loch* shot the female and trapped the male of the pair which had long built there. In maturer years he bitterly regretted having been "the means of expelling from the loch of my ancestors the most romantic and time-honoured dependant on its bounty."

At one time the property of the Earls of Lennox, Rossdhu has been in the possession of the Colquhouns since it passed into their hands by marriage in the time of Bruce. The present handsome mansion house was built about 1774. In its neighbourhood are the remains of "Our Lady's Chapel" of Rossdhu (which is ascribed to the twelfth century) and of a castle. The park is of great extent, and has been embellished by successive proprietors with a great variety of trees. The authors of a *General View of the Agriculture of Dumbarton*, published in 1811, state that "previous to 1794 the late Sir James Colquhoun, Bart., had planted in the course of fifteen years not less than a thousand acres of land with trees of various kinds."

On the walls of the old castle the wall-pellitory (*Parietaria officinalis*) and the snapdragon (*Antirrhinum majus*) were found. The stone-bramble (*Rubus saxatilis*) and twayblade (*Listera ovata*) were also noted. Over the old chapel (which is used as a place of burial by the Colquhouns) spread the branches of a yew tree noticed in the first statistical account of Luss. This tree, which is a male, is getting rather thin in the foliage, and in this respect compares unfavourably with the example (a female) which stands in the roadway, opposite the middle lodge, which is an exceedingly handsome tree. Of the large great maple, or sycamore, mentioned in the first statistical account, only the shell of the trunk remains, but at no distance from it and behind the stables, a most worthy successor has grown up.

There are many fine individual trees in the noble park at Rossdhu. On the largest noted, a beech, an interesting fungus had established itself (*Polyporus igniarius*), one of the sources of German tinder. A pinetum adjoining the old castle received a share of attention, one strikingly distinct shrub, the Earl of Harrington's yew (*Taxus Harringtonia*), attracting special notice. The majority of those present returned by the boats to Luss, but a few proceeded by the North Lodge to the village on foot, thus completing an unusually varied and interesting excursion.

The following measurements (taken in August, 1889) of the notable trees near Luss, to which the attention of the Society has been directed at different times, should be valuable for future reference:—

- Wych-elm (*Ulmus montana*) opposite the inn, 13 feet in girth at 6 feet. Judging from measurements taken in successive years by Mr. Colquhoun, lately forester at Rossdhu, and from that recorded by the Highland and Agricultural Society in 1864, this well-known tree does not seem to have increased in size for the past quarter of a century.
- Great maple (*Acer Pseudo-platanus*) near hall in village, 11 feet at 3 feet (upper side). A similar tree stands in the ground about Dell Cottage, nearer Luss Water.
- Great maple between stables and loch at Rossdhu, 13 feet 11½ inches at 5 feet. One of the handsomest trees of the kind in the West of Scotland.
- Walnut (*Juglans regia*), Camstradden Park, south of house, 7 feet 3¾ inches at 5 feet; Camstradden Park, south-west of last, 7 feet 6¾ inches at 5 feet.
- Silver fir (*Picea pectinata*) opposite slate wharf, Camstradden Bay, east side of public road, 13 feet 6½ inches at 5 feet.
- Spanish chestnut (*Castanea vulgaris*) on the public road opposite Rossdhu Nursery gate, 12 feet 7½ inches at 5 feet.
- Yew tree (*Taxus baccata*) at the middle lodge, Rossdhu, 13 feet 4¾ inches at 1 foot from level of mound. A female tree. Before the lodge was made, a cottage stood under this tree's branches on the north side.
- Yew tree overhanging the old chapel at Rossdhu, 13 feet 0½ inches at 4½ feet. A male tree.
- Douglas fir (*Abies Douglasii*) near Rossdhu House, 10 feet 3½ inches at 4 feet.
- Beech (*Fagus sylvatica*) in park near Rossdhu House, 16 feet 9¾ inches at 4 feet. Now attacked by *Polyporus igniarius*.
- Beech in stable avenue, Rossdhu, 11 feet 6½ inches at 4 feet. This is a fine forester's tree.
- Poplar (*Populus nigra?*) in a field on right bank of Luss Water, at 5 feet (low side), 13 feet 0¾ inches.
- Scotch fir (*Pinus sylvestris*) in park at Rossdhu, 11 feet at 5 feet. Extreme height, about 65 feet. Measured November, 1892. This is a typical example of the species, and was successfully photographed. (Plate V.)

BUCHANAN CASTLE AND DISTRICT.—The 23rd of May, 1889, found the Society on the east side of Loch Lomond, Drymen being the starting point. At the entrance to Drymen kirkyard a halt was called to allow measurements and photographs to be taken of the old ash there. This tree is mentioned in the *Agricultural Account of Stirlingshire*, published in 1812; in the new statistical account of Drymen; also in the "Report on Old and Remarkable Trees" of the Highland and Agricultural Society (March, 1864)—in all of which measurements are given. It was locally called the Bell Tree, because it was in it, as I am



From Photo. by

PLATE V.

[S. Stewart.]

SCOTCH FIR (*Pinus sylvestris*) AT ROSSDHU.



informed by the present minister, Rev. John Roy, that for a long time in this century and before it the church bell was regularly hung. It appears that for a time it hung in a belfry on the top of the west gable, but anterior to its being placed there and subsequent to the breakdown of this erection, it did duty in the old ash. When visited by us the tree measured 17 feet $4\frac{1}{2}$ inches in girth at 5 feet, but it was much decayed, and in the interval it has succumbed, having been blown down during the night of the 23rd September, 1892. On a section of the trunk, taken near the root, 204 rings were counted.

The grounds of Buchanan Castle were next entered, under the leadership of the estate forester. The gardens were shortly reached, and among items of interest to which attention was particularly directed were the original plant of the variety of the lady-fern known as the Buchanan fern, and some large, handsome examples of *Araucaria imbricata*, one of the latter being photographed. The handsome Welsh poppy (*Meconopsis cambrica*) occurred here as an escape. Proceeding towards the castle, which is quite modern, its predecessor having been destroyed by fire in 1850, the forester drew attention to a Spanish chestnut, planted by Charles Kean in 1865, which measured 2 feet $7\frac{1}{2}$ inches at 2 feet 5 inches. The party then passed the castle, attention being drawn chiefly to the fine trees which abound, among introduced species which have attained considerable size being the hemlock-spruce (*Abies canadensis*) and Douglas fir.

In Henedy's *Clydesdale Flora* a very fine Spanish chestnut is mentioned as growing on the lawn here. The largest tree of this kind on the estate stands in the park, west of the castle, and may be the one referred to. It measured 15 feet 9 inches at 2 feet 6 inches. The noble and extensive park, which stretches westwards from the castle to the shores of Loch Lomond, is studded throughout with trees of large size, chiefly oaks. One of the large oaks (near a well) measured 16 feet $8\frac{1}{2}$ inches at 5 feet, while another, well known in the district as the "Five Sisters of Buchanan," from the five great branches which shoot up almost straight from the main trunk, measured 19 feet $3\frac{1}{2}$ inches at 2 feet 4 inches. It was with regret that those present saw that these sylvan giantesses must inevitably soon succumb to the insidious attacks of a most destructive fungus, *Polyporus sulfureus*, of which

large specimens were found on the main stem. A yew tree near some offices in the same vicinity measured 11 feet $7\frac{1}{2}$ inches at 2 feet 9 inches.

The church of Buchanan was shortly reached, and from thence to the Pass of Balmaha nothing noteworthy was observed except the bloody-dock (*Rumex sanguineus*). The ferry was taken at this point to the island of Inchcalliach, on which formerly stood the parish kirk, the island at that time giving its name to the parish now called Buchanan. The ancient burying ground on Inchcalliach is interesting as the place of sepulture of some members of the Clan Gregor, though the visitor will look in vain for any melancholy yews that could have suggested to Scott to find here the wood for the fiery cross—

“The shaft and limbs were rods of yew,
Whose parents in Inch-Calliach wave
Their shadows o’er Clan-Alpine’s grave.”

Choked with weeds and rank grass, the graveyard now presents a scene of desolation. The island itself, as is well known, is one of the most picturesque of the many romantic isles of Loch Lomond. Approached from Balmaha it has a striking appearance, cliffs of considerable height rising from the edge of the loch, partly clad and surmounted by sombre firs. A broad grass-grown path, which at the time of our visit was fringed with wood hyacinths, leads from the landing place to the opposite extremity of the island, where in place of the cliffs of the east is a delightful bay, a veritable silver strand, or white bay, as its Gaelic name signifies. Among the plants gathered on the island were the white corydalis (*Corydalis claviculata*), the globe-flower or lucken-gowan (*Trollius europæus*), the guelder-rose (*Viburnum Opulus*), and a rare moss, *Dicranum Scottianum*. One of the stone flies, *Capnia nigra*, was among the day’s entomological captures. Returning to the mainland, the Pass of Balmaha or gateway to the Highlands was entered and the craggy fort ascended, from which, under the favourable conditions of weather obtaining, a delightful panorama of the loch and its surroundings was obtained.

ALPINE EXCURSIONS.—Twice during recent years the Society has made excursions to Loch Lomond for the purpose of botanising on the Arrochar chain of mountains. On the first occasion

(31st August, 1889) Ben Voirlich was ascended. The flora of this hill was familiar to local botanists before our visit, nor was anything noted which had not been known as occurring there. On the second excursion, however (18th July, 1891), new ground was broken, Ben Ime (3318 feet), which lies north of the familiar Cobbler, being ascended. Following the course of the Allt Bhallachan, a typical mountain torrent, the watershed to the north of the Cobbler (2250 feet) was followed, thence up the long grassy slope to the cairn at the summit of Ben Ime. The descent was made down the course of the Allt Coiregrogan into Glen Loin, which opens into the head of Loch Long. This part of the route yielded by far the best results, most of the plants in the list which follows having been gathered there:—*Ranunculus Flammula*, *Thalictrum alpinum*, *Viola lutea*, *Cerastium viscosum*, *Silene acaulis*, *Polygala vulgaris*, *Geranium sylvaticum*, *Potentilla Tormentilla*, *Alchemilla vulgaris*, *A. alpina*, *Rubus saxatilis*, *Sedum Rhodiola*, *S. acre*, *S. anglicum*, *Saxifraga hypnoides*, *S. oppositifolia*, *S. stellaris*, *S. aizoides*, *Parnassia palustris*, *Galium saxatile*, *Crepis paludosa*, *C. virens*, *Hieracium alpinum*, *Gnaphalium supinum*, *Campanula rotundifolia*, *Vaccinium Myrtillus*, *V. Vitis-Idæa*, *Erica Tetralix*, *E. cinerea*, *Calluna vulgaris*, *Armeria vulgaris*, *Euphrasia officinalis*, *Pedicularis sylvatica*, *Thymus Serpyllum*, *Pinguicula vulgaris*, *Polygonum viviparum*, *Rumex acetosella*, *Oxyria reniformis*, *Empetrum nigrum*, *Myrica Gale*, *Orchis maculata*, *O. latifolia*, *Gymnadenia conopsea*, *Habenaria chlorantha*, *Juncus squarrosus*, *J. uliginosus*, *J. trifidus*, *Narthecium ossifragum*, *Potamogeton oblongus*, *Scirpus cæspitosus*, *Eriophorum vaginatum*, *Carex pulicaris*, *C. pallescens*, *C. binervis*, *C. ampullacea*, *C. vulgaris*, *C. stellulata*, *C. flava*, *Triodia decumbens*, *Festuca ovina* (and the viviparous variety), *Aira cæspitosa*, *A. flexuosa*, *Pteris aquilina*, *Nephrodium Oreopteris*, *Cryptogramme crispa*, *Lycopodium clavatum*, *L. Selago*, *L. alpinum*, *Selaginella selaginoides*.

In the village of Arrochar a magnificent ash tree attracted attention. The trunk measured 16 feet $5\frac{1}{2}$ inches in girth at 5 feet 9 inches.

At the Ben Voirlich excursion a handsome oak, half-way between Ardlui and Voirlich Burn, on the east side of the road, was measured (girth, 12 feet $6\frac{1}{4}$ inches at 4 feet).

BALLOCH CASTLE.—The pleasure grounds around Balloch Castle were visited on 9th July, 1892, fine weather prevailing. Of the ancient castle of Belach, or Balloch, which was a seat of the Lennox family anterior to the period of their residence on Inchmurrin, there are now no remains. The modern castle occupies a commanding situation on a steep hill facing Loch Lomond, of which fine views are obtained from the tower. Near the castle is one of the most compact and delightful old flower-gardens which it has ever been our privilege to visit. Here are floral beauties in abundance without any suggestion of crowding, while the pond in the centre, covered with water plants (the white water-lily being conspicuous) gives a restful air to the place, and the admirable order everywhere apparent contributes not a little to the favourable impression which the whole produces on the mind of the visitor. Surrounding the garden is a varied collection of trees, none of them yet remarkable for size. These include a fine pair of the Chilian *Araucaria imbricata*, measuring respectively 5 feet 2 inches at 2 feet 11 inches, and 4 feet 4 inches at 2 feet 7 inches; a tulip tree (*Liriodendron tulipifera*) measuring 6 feet 9½ inches at 2 feet 3 inches; an *Abies nobilis*, twenty-seven years planted, girthing 6 feet 4 inches at 3 feet 1½ inches; and a mammoth pine of California (*Wellingtonia gigantea*) girthing 6 feet 5½ inches at 3 feet 2 inches. The kitchen garden, which is at some distance from the castle, contains a fine collection of herbaceous plants, and on the walls here were seen the ivy-leaved toadflax (*Linaria Cymbalaria*), the house-leek (*Sempervivum tectorum*), the rare and striking orange hawk-weed, or Grim-the-Collier (*Hieracium aurantiacum*), together with several handsome species of climbers such as the double-flowered deutzia (*Deutzia crenata*), with prominent stellate hairs on the pedicels, and the rose-acacia (*Robinia hispida*). A cool greenhouse was much admired for its wealth of bloom, one of the most striking objects being the large pendulous crimson flowers of *Tacsonia van Volxemi*, one of the passion flowers. On the approach to the kitchen garden a large beech was measured (girth, 12 feet 10 inches at 1 foot 7 inches). Just outside the gardens stands a hazel (*Corylus Avellana*) of quite unusual size for the species. It has a fairly long bole and a fine round top like an ordinary forest tree, standing about 40 feet high and measuring 4 feet 9 inches in





From Photo. by

PLATE VI.

LARCH (*Larix europaea*) AT BALLOCH CASTLE.

James Mitchell.

girth at 3 feet 1 inch. In the park are some fine trees, photographs and measurements of several being taken. The largest was a picturesque old larch—Plate VI.—measuring 12 feet $3\frac{1}{2}$ inches at 3 feet $3\frac{1}{2}$ inches on south side. Other trees measured here were a lime (11 feet 7 inches at 2 feet 10 inches), a great maple (8 feet 5 inches at 3 feet 3 inches), and two oaks (respectively 9 feet 1 inch at 2 feet 10 inches, and 9 feet 11 inches at 3 feet 4 inches). On the lawn in front of the castle the following trees were measured:—Silver fir (*Picea pectinata*), 10 feet 3 inches at 3 feet; a Turkey oak (*Quercus Cerris*), 6 feet $10\frac{1}{2}$ inches at 2 feet 6 inches; a *Wellingtonia gigantea*, 5 feet 5 inches at 3 feet; and a Douglas fir, 6 feet 10 inches at 2 feet 8 inches. Among the native plants noted were the water-crowfoot (*Ranunculus heterophyllus*) on the Leven, the great yellow loosestrife (*Lysimachia vulgaris*) at the same place and by the side of the loch, the lesser winter-green (*Pyrola minor*), the whorled-caraway (*Carum verticillatum*), and three species of cyperaceæ, *Heleocharis multicaulis*, *Carex remota*, and *C. flava*.

After leaving the policy a large, wide-spreading, vigorous ash was visited on Laderish Farm at Over Balloch (girth of trunk, 14 feet 8 inches at 2 feet 8 inches on north side). This was the last item of interest in a pleasant afternoon's work.

THE FLORA OF STIRLING AND ITS NEIGHBOURHOOD.

BY JOHNSTON SHEARER.

(Read 5th September, 1889.)

STIRLING, with the surrounding district, is enshrined in every Scottish heart as a scene of the heroism and patriotism of their forefathers. It was crowded for centuries with incidents of the greatest historical interest; but it is as a rich treasury for lovers of nature that I am now to direct your attention to it, and particularly to its unique flora.

The scenery is varied and grand—the panorama seen from the castle being perhaps unequalled in the British Islands. The geological features are remarkable, especially as examples of alterations in sea level and of glacial phenomena. The castle rock is trap-dolerite, and its contact with the strata of the carboniferous limestone is seen in the Back Walk, a little to the east of Ballangeich Pass. The Abbey Craig, to the east, is also dolerite. Craigforth, about a mile to the north-west, is a porphyrite of the same age and character as the lava-formed rocks of the Tough hills on the west. It contains a considerable amount of ironstone. The quarries at the foot of the castle rock on the north side, at Raploch, and the old quarries at Ballangeich and at the Abbey Craig will amply repay examination. These varied geological features account in some measure for the richness of the flora. I have been over a good part of Scotland and England, but I know of no place of equally circumscribed limits to compare with it for the number and variety of its wild flowers. Moreover, its central position in the country on the border line between the highlands and lowlands, and midway between the east and west coasts and the Firths of Forth and Clyde; its intersection by the tidal waters

of the Forth; and its shelter by the Ochil and Perth hills on the north and north-east, and the Tough hills on the south-west—which secure for it an equable climate and freedom from the great rainfall of the west coast—all contribute to foster plant life.

There is reason for believing that this district bordered on the ancient Caledonian forest, the remains of gigantic timber having been frequently found in the moss and clay lands of Blair-drummond.

The part of the district which is richest in botanical specimens could be explored in one of our summer excursions, and with the view of inducing the Society to visit it I shall enumerate the principal plants I have gathered there—particularly those which are rare or unknown in the Clydesdale district—and shall indicate the places where they should be looked for.

The route should be by the west side of the town, round the castle rock, along the Gowlin hills, and out to the Abbey Craig; returning, if time permitted, by the banks of the Forth and Cambuskenneth Abbey. On leaving the railway station we cross the town by the Arcade and Corn Exchange on to the Back Walk, where our botanising begins. Turning northward, we find on the rocks and nooks by the side of the path *Smyrniium Olusatrum* (Alexanders), not common in either England or Scotland. It is oftenest found about old castles and mansions, probably from its having been cultivated in former times as a pot herb. *Peucedanum Ostruthium* (masterwort) grows in the wooded slope here, but it is scarce. *Lamium album* (white dead-nettle) abounds along the Back Walk. *Ornithogalum umbellatum* (star of Bethlehem) may be found in the wood above the Smith Institute, but there are only a very few plants of it, and it is more plentiful near an old mill on the banks of the Forth about a mile and a half up from Stirling.

Here the Smith Institute might be visited. It contains a capital picture gallery and museum of antiquities and natural history specimens. In the garden there the late Mr. Croll, curator, who was an accomplished botanist, had a rare collection of wild plants, which it is hoped may still be preserved.

Conium maculatum (hemlock), *Caucalis Anthriscus* (hedge parsley), *Cherophyllum temulum* (rough chervil), and *Myrrhis odorata* (sweet cicely), are all plentiful by the side of the walk.

At the highest point of the path we come to the cemetery, in the middle of which is the celebrated Ladies' Rock, from which the dames of the castle were wont to view the sports and tournaments in the valley below. Passing through the stile on to the castle rock, and ascending by the side of the wall, *Sedum reflexum* (crooked yellow stoncrop) and *S. album* (white stoncrop) are found in considerable quantity. *S. rupestre* is reported to grow about the castle, but I have never found it. *Cheiranthus Cheiri* (wall-flower) and *Asplenium Ruta-muraria* (wall-rue) are plentiful hereabout. At this side of the hill, amongst the blackthorn bushes, a few specimens of the rare *Hyoscyamus niger* (henbane) may be gathered. This plant yields a valuable narcotic medicine. *Atropa Belladonna*, another rare medicinal plant of the same natural order, grows in one or two places on the face of the hill further on. Its large black berries are extremely poisonous. *Chrysanthemum Parthenium* (feverfew) is common in this part, and a variety with double flowers is frequently met with. Further on, at the foot of the perpendicular rocks and on the cliffs, *Carum Petroselinum* (wild parsley) and *Brassica oleracea* (wild cabbage) are found. Both are very rare in Scotland, and the latter is an exceedingly interesting plant, as being the parent of all the cultivated varieties of cabbage, kail, savoys, brussels sprouts, cauliflower, and broccoli. At this place I found *Carduus Marianus* (milk thistle), the most beautiful of the thistle tribe. Its veins are pure white, and it has white blotches on the glossy leaves, these marks having been caused by the Blessed Virgin's milk falling on the plant! *Parietaria officinalis* (pellitory of the wall) is plentiful on these rocks. On the face of the hill the following plants may be found, all of which are more or less rare, some of them very rare, viz.—*Lactuca virosa* (strong-scented lettuce), the juice of which is narcotic, and is used as an opiate; *Verbascum Thapsus* (shepherd's club), *V. Lychnitis* (white mullein), *Malva sylvestris* (mallow), *M. rotundifolia* (round-leaved mallow), *M. moschata* (musk mallow), *Tanacetum vulgare* (tansy), *Convolvulus arvensis* (small bindweed), and *Valerianella olitoria* (lamb's-lettuce), an excellent salad. The two last are spread all over the hill. *Viola odorata* (sweet violet) and *Geranium pusillum* (small-flowered crane's-bill) are reported as growing there, but I have never met with them. A good many plants of *Antirrhinum*

majus (snapdragon) grow in the crevices of the castle rock, but generally out of reach, as any plant that may find a lodgment within climbing distance is speedily captured. Amongst the boulders at the foot of the hill *Myosotis collina* (early field-scorpion-grass) is plentiful. There is no record of its having been found in the Clydesdale district. *Trifolium strictum* (soft-knotted trefoil), *T. medium* (zig-zag trefoil), and *T. arvense* (hare's-foot trefoil), may also be found, but they are rather scarce. *Ranunculus bulbosus* (bulbous crowfoot) is abundant. In the wooded bank of the King's Park, at some distance to the west, two very rare plants grow, viz., *Gagea lutea* (yellow star of Bethlehem) and *Astragalus glycyphyllos* (sweet milk-vetch)—the former in the damp ground at the back of the rifle butts, and the latter nearer the town. In the park above, up towards the flagstaff, *Viola lutea* (mountain pansy) is very abundant in all variety of colours, from brightest yellow to deepest violet.

Advancing along the Back Walk by the north side of the castle the Pass of Ballangeich is reached. By it James V.—the "Guidman o' Ballangeich"—went out and in to the castle on his nocturnal exploits. The outline of the door, long since built up, which he made use of on these occasions, is still to be seen in the east wall. The pass was then a footpath, but is now a good broad road. We now come to the Gowlin hills (so called from the wailing of criminals who were executed there), where *Aquilegia vulgaris* (columbine) is said to grow. *Brassica oleracea* is pretty plentiful on this side of the castle walls. On these hills *Rosa rubiginosa* (sweetbriar) and other members of the rose tribe are rather plentiful.

We must now find our way to the Abbey Craig, and crossing the Forth by the old bridge, may gather *Geranium pratense* (meadow crane's-bill)—the queen of the crane's-bills—in plenty on the Forth banks. Having arrived at Causeyhead, the best way to botanise the Craig is to ascend from the Alloa road a short distance before coming to the school. On the hill many of the plants already enumerated will be found, which I need not recapitulate. Some others may be mentioned: *Echium vulgare* (viper's-bugloss), plentiful; *Anthyllis Vulneraria* (lady's-fingers), *Filago germanica* (the impious weed), *F. minima* (least filago), *Silene inflata* (bladder-campion), *Lychnis vespertina* (white

campion), *Sedum anglicum* (English stonecrop), *S. villosum* (hairy stonecrop), *Clinopodium vulgare* (wild-basil), *Chenopodium Bonus-Henricus* (Good King Henry). *Atropa Belladonna* is abundant at the foot of the rocks above the school. On the face of the rocks *Lychnis Viscaria* (red German catchfly) and *Geranium sanguineum* (bloody crane's-bill) grow, but not plentifully.

Having explored the hill, the top of the Craig may be gained through a crevice in the rocks known as Wallace's Pass. On the top, along the edge of the precipice, *Helianthemum vulgare* (yellow rock-rose) and *Ornithopus perpusillus* (bird's-foot) have found a lodgment.

The Wallace Monument can now be visited. Here a collection is being formed of objects of national interest, and from the top of the tower one of the finest views in Europe is got.

This would probably be the most distant point of the excursion, and, if time allowed, the return might be made by the banks of the Forth (where there are many aquatic plants) and Cambuskenneth Abbey, which is about a mile south from the Craig in one of the loops of the winding river; thence by the ferryboat back to the railway station. Along the foot of an old wall of what had been the Abbey garden there is a considerable quantity of *Viola odorata*.

Before concluding, I may mention that there is an uncommon plant, *Saponaria officinalis* (soapwort), growing pretty plentifully on the banks of the Allan where the railway crosses, about a mile from Stirling. Another extremely rare wild plant, *Ledum palustre* (Labrador tea) grows in Lecropt Moss, about a mile further away, the only station recorded for it in Britain. The Ochils and the Tough hills are rich in alpine plants and cryptogams.

ALPINE EXCURSIONS TO CAM CHREAG AND BEINN DOIREANN.

BY E. RAYMOND BURDEN.

DURING the Fair holidays of 1890 the Natural History Society of Glasgow agreed to join our own in a series of alpine excursions, which were accordingly undertaken under the conductorship of Mr. P. Ewing.

The centre of operations chosen was Tyndrum, which is, on account of the many advantages of its position, one of the most desirable and convenient possible for such work. A very small village indeed, it has still several quite important features, and has been noticed favourably or unfavourably by every traveller who has made the tour of North Britain since touring became a fashionable pastime. It stands on the western military way, which is joined at Crianlarich, a little to the east, by the road which traverses Glen Falloch northward from the waterhead of Loch Lomond. A few miles further west this road divides into two branches, one arm stretching northward to Kingshouse and Glencoe, the other south-westward through Glenorchy to Inveraray. Due west the railway line leads to Oban, eastward to Callander, so that the little village is really a gateway to most of the finest scenery in Scotland, though of itself it has been said that it is remarkable only for the "surpassing irksomeness of its position," and that "no one would willingly go to Tyndrum a second time, nor remain there an hour." Happily our party did not share this opinion. Doubtless it is, as Dorothy Wordsworth says, "a cold spot," lying 700 feet above sea level, but it is in keeping with the wild scenery of the district. There are no estates about it, no shaven lawns nor conventional pleasure grounds to "fritter away the majesty of nature," and the surpassing irksomeness of its

position was of surpassing value in our eyes since it brought us right into the sacred places of nature, whose treasures we had come to seek. Thus, with thoughts unclouded by the solitude of our surroundings, we set out on our first day's adventure among the Bens.

Starting from the hotel, we followed the highway which runs parallel with the course of the river Fillan for about a mile, passing on our way the picturesque little church on the southern side of the river, and the field of Dail Righ, where King Robert the Bruce met in deadly fight, and was defeated by, his feudal enemies, the Macdougalls of Lorn, on that famous occasion when, to save his life, the Bruce left part of his plaid and his brooch in the hands of his foes. Sir Walter Scott has preserved the incident in *The Lord of the Isles*. At Auchtertyre Burn we left the highway, crossed the track of the new Highland railway, and followed the course of the burn up towards Beinn Chaorach, skirting the hilly ramparts that shelter Tyndrum on the north-west, culminating in the heights of Beinn Odhar. Where the burns join at the base of Beinn Chaorach we crossed, keeping to the north side at first, but near the burn-head made our way across to Beinn Chalium, ascending one of its spurs in order to reach a mass of black-looking rocks on the hill-side beyond, where we hoped to reap our flowery harvest.

A long, upward-winding way it was, with many a marsh to wade and burn to cross withal: but there was no lack of interest even in these, for to the lover of nature everything is new under the sun. With every upward movement the aspect of the hills alters, with every passing cloud their expression changes, and wherever the tiniest streamlet trickles down the mountain's face, or the spongiest bog makes the hill-side green—and walking, wading—there is the chance of something new turning up. As we wound round the lower slopes, scanning every thread of water narrowly, following one occasionally for some distance in search of rarer if not fairer treasure, the golden clusters of *Saxifraga aizoides* were starring the green hill-sides, the orange spires of *Nartheicum ossifragum* lifted themselves daintily from the midst of their tufts of green ribbons, and over every marsh *Eriophorum*—the “down of Cana” of Ossianic legend—waved like an arrested fall of snow.

Now, however, we began to climb in earnest, and as we went added to our lists many of the commoner forms of sub-alpine growth. Here on every rock *Saxifraga stellaris* set its cluster of stars, and *Alchemilla alpina* touched with silver sheen every knob and promontory on the hill-face; *Polygonum viviparum* made iridescent lines here and there among the green, and the level of every mountain marsh was curiously striped and chequered with the long fiery arrows the leaves of *Eriophorum angustifolium* had transformed themselves into.

Corrie Mohr, the corrie for which we had been making, was about 2300 feet above sea level, and having reached this height we began our search for the less frequent forms of vegetation likely to be found in such situations. About the lower shelves of the corrie *Sedum Rhodiola* stood out effectively against the dark rocks, and *Oxyria reniformis* spread out on long delicate foot-stalks its reniform leaves of every degree of richness of texture and brilliance of tint. Higher, among the less accessible clefts, we were fortunate in finding several of the rarer forms, though sometimes it was no easy matter getting into the fastnesses many of these wildings love to make their home. *Cherleria sedoides*, *Sibbaldia procumbens*, *Dryas octopetala*, *Bartsia alpina*, *Salix Lapponum* were among our captures, with many rare carices and rushes. One particular moss, *Orthothecium rufescens*, attracted our attention by the curious effect its iridescent hues made contrasted with the dark grey of the rocks.

Many of these "oreades," as Mr. Ruskin calls them, are not, on first acquaintance at least, either very striking or very beautiful, but seen amid their natural surroundings these shy flowers have an indescribable wild grace of their own—an affinity with the red deer and the eagle—such as no lowland flower, however fair, can borrow. After thoroughly inspecting the corrie, we considered ourselves at liberty to give our undivided attention to the other features of the landscape. The shadows were deepening in the wild, bare straths below, but the sides and summits of the hills lay calm and tranquil in the warm sunlight; they would be looking their best when we should reach the top, so after a brief rest we resumed our pilgrim staves and made short work of the 600 feet rising between us and the goal of our desires. We found the top a long bent arm (which characteristic gives the hill its name,

Cam Chreag) and having various knobs of almost similar height, of which we were able, only after traversing both sides of the angle, to determine that the farthest away point was the true summit. But, were we not gloriously repaid for our toil? A waste of towering peaks,

“Spread like a sea that heaves without a sound,”

the billows of which changed and varied as infinitely as ever did those of ocean! How the light played about them, bringing out patches of intensest green here and there! And the shadows hid in their hollows, creeping out now and then like ghosts risen too soon! And as the sun sank lower, how the soft purple haze fell round them like a web of gossamer, till, in the “golden lightning” of his last glances, they stood as if with veiled faces—a throng of Titan vestals!

It seemed as if all the mountains in Scotland must be gathered within reach of our vision. Away southward, Ben Lomond and Ben Arthur, attended by the picturesque train of the alpine peaks of Arrochar, seemed strangely familiar among the host of new acquaintances; nearer, the twin peaks of Beinn Mohr and Stobinnain flung a rugged chain westward to meet Beinn Laoigh, and the cairned summit of Ben Cruachan lifted itself full in the face of the setting sun. The Shepherd of Etive kept watch over his flocks further north, with Ben Nevis almost peering over his shoulder, while Ben Macdhui, the Cairngorms, Schiehallion, and Lawers seemed almost within reach of our voices. In all our wanderings, since we lost sight of the shepherd and his dogs just beyond Tyndrum, we had not met a single human being, and in all the range of our vision there was no sign of human habitation; the birds even seemed to observe the sacredness of those mountain silences, and the night-hued moths that flitted duskily about our path were part of them.

Our descent was made by long, pleasant, grassy slopes that sweep the southern side of the hill, and our sense of vision was almost overpowered by the glorious panorama of many-pinnacled hills and many-fountained valleys from which the gold and crimson tide of sunset had not yet ebbed, when, after a ten hours' tramp, we again reached level ground.

BEINN DOIREANN.—Our second expedition was to Beinn Doireann, a mountain of considerable dignity and presence, lying to the north-west of the scene of our former adventures. Our way on this occasion lay in the opposite direction, the road which winds north-westward among the mountains to Kingshouse and Glencoe leading us directly to the base of the Ben, which we could see before us all the way—a kingly figure, standing among his comrades of less pronounced characteristics, his dark robes ermined with mists and a cloudy crown upon his lonely brows.

Beinn Doireann has other claims on the interest of the visitor which even the enthusiasm of the botanist could not overshadow. He is as kingly a figure in the poetry of the Highlands as in the surrounding landscape, and is particularly associated with the name of the most celebrated of the modern Gaelic bards, Duncan Ban Macintyre—fair Duncan of the songs, as he is called in his own poetical language—an utterly untaught, unlettered genius whose songs are full of the wild spirit of Highland minstrelsy, caught by the poet from the wonder of natural sounds among these lonely hills and misty corries, the broken echoes of which alone our lowland ears can catch. Born in the Breadalbane forest of the Black Mount, he was familiar from childhood with the characteristics and legendary lore of the region, and his poem on Beinn Doireann, where he lived for some time as forester to the Earl of Breadalbane, is considered one of the finest efforts in modern Gaelic poetry. His descriptions of natural beauty are strikingly direct and simple, and Jefferies himself could not vie with this untutored son of the mists in his descriptions of the looks, haunts, and habits of the wild red deer, sung not only to the pibroch, but actually in a measure imitating with subtle skill its various movements.

The mountain gets its Gaelic name, it is said, “from the singular fact that it prognosticates coming storms by sounds caused by the winds moaning among the rocks”—a legend still held sacred by some natives of the district; whether this be the case or not, certain it is in our opinion that it richly deserves its name, which means the “mountain of storms,” if it offers to all travellers the inhospitable treatment it was our misfortune to experience. Curiously enough, during our stay we did not once

see its summit entirely clear of mist—a scarf of vapour seemed constantly to hover about it.

Our ascent was for the greater part a scramble over rough stones—it seemed as if the whole hill-side were traversed by a river of great boulders—and this demanded careful and attentive footing. Between the stones the parsley-fern pushed out its delicately-hued, feathery fronds in rich abundance, filling every hollow with its gossamer of tenderest green; this, with *Alchemilla alpina*, *Salix herbacea*, and *Oxyria reniformis*, was, as far as we could discover, all that grew on the mountain having any claim to be called mountain plants. At a height of 3300 feet above sea level we found a corrie which, after a minute search, yielded no further spoils, and we were forced to content ourselves with these meagre results.

This must not be taken, however, as an ultimate finding, as our progress was much impeded by the nature of the ground we had to traverse, and sometimes entirely arrested by the great walls of mist that came dashing round the shoulders of the Ben, and rolling down his face with ever-increasing density. These circumstances, however untoward for our initial purpose, were not entirely regrettable, giving us, as they did, a very definite idea of what may be looked for on such an excursion, and an insight into certain conditions prevailing at these altitudes valuable as travelling experiences and invaluable in other ways. How changed was the aspect of the hills from that of yesterday! Those that were visible we were only able to recognise from their position, and then but uncertainly in many cases. Eastward, Loch Lyon gleamed fitfully between the hills, a broad shield of silver thrown down among soft folds of velvety green; southward, Beinn Mohr and Beinn Laoigh, with their chain of hills between, loomed large and dim, swathed in whirling mists, while down the beautiful stretch of Glenorchy we looked seaward to Ben Cruachan standing in ermined majesty with Loch Awe at his feet.

Two hundred feet or so would have brought us to the summit, but the grey of the clouds, hardly broken all day, was gradually lowering, and the mists, though constantly shifting, were tending downward rapidly, and our descent promised to be a somewhat formidable one, so that we were glad to get safely to the end of the first thousand feet, which was a series of sandy slides and

stony scrambles, and with as much haste as might be, reached level ground again.

So we bade farewell to Beinn Doireann—"mountain long and sweeping," as its poet sings—slowly drawing about him his grey robes, and seeming to nod a misty response to our last backward look.

List of plants recorded on these alpine excursions:—*Thalictrum alpinum*, *Draba incana*, *Cochlearia officinalis* (sub.-sp. *alpina*), *Silene acaulis*, *Cerastium alpinum*, *Empetrum nigrum*, *Arenaria* (*Cherleria*) *sedoides*, *Dryas octopetala*, *Potentilla maculata*, *Sibbaldia procumbens*, *Alchemilla alpina*, *Saxifraga oppositifolia*, *S. nivalis*, *S. stellaris*, *S. aizoides*, *S. hypnoides*, *Sedum Rhodiola*, *Saussurea alpina*, *Solidago Virgaurea* (var. *cambrica*), *Gnaphalium supinum*, *Antennaria dioica*, *Leontodon hispidus*, *Pyrola rotundifolia*, *Gentiana nivalis*, *Bartsia alpina*, *Polygonum viviparum*, *Oxyria reniformis*, *Salix herbacea*, *S. reticulata*, *S. Lapponum*, *Habenaria viridis*, *Tofieldia palustris*, *Juncus triglumis*, *J. trifidus*, *Luzula spicata*, *Triglochin palustre*, *Rhynchospora alba*, *Carex pulicaris*, *C. rigida*, *C. dioica*, *C. capillaris*, *C. vaginata*, *C. flava* (var. *Æderi*), *C. fulva*, *C. saxatilis*, *Aira montana*, *A. alpina*, *Triodia decumbens*, *Selaginella selaginoides*, *Lycopodium alpinum*, *Cryptogramme crispa*, *Aspidium Lonchitis*, *Botrychium Lunaria*.

ON THE FERTILISATION OF THE LARCH.

BY REV. A. S. WILSON, M.A., B.Sc.

(Read 9th May, 1889.)

THERE is ample evidence that the bright colours of flowers are useful in attracting insects which carry pollen from flower to flower and effect cross-fertilisation, thereby conferring great benefit on plants. Lubbock proved that insects are guided by colour in their search for honey; Darwin found on removing the petals of *Lobelia* that no bees came near the flowers, and Hermann Müller's observations show that when other things are equal the number of insect visits which any flower receives increases in proportion to its conspicuousness.

On the other hand, flowers which depend on the wind for the transport of their pollen are, as a rule, of small size, inconspicuous in appearance and devoid of bright colours, as, for example, grasses, rushes, sedges, docks, nettles, oak, elm, hazel, poplar, ash, and pine, which all belong to the anemophilous or wind-fertilised class.

To this last rule the larch (*Larix europæa*) presents a remarkable exception. From March to May the young female cones of this tree are among the most conspicuous and attractive objects to be seen in our plantations. If the brilliant crimson tassels of the larch have not hitherto sufficiently impressed the botanical mind, at least they have not escaped the observant eye of the poet, as may be seen from the 91st canto of Tennyson's *In Memoriam*—

“When rosy plumelets tuft the larch,
And rarely pipes the mounted thrush;
Or underneath the barren bush
Flits by the sea-blue bird of March.”

The bright coloration is so marked that if one had no other evidence before them they would be forced to conclude that the larch was adapted for insect-fertilisation. But according to Hermann Müller and other authorities, the coniferæ, and, indeed, all gymnospermous phanerogams, are wind-fertilised. The gymnosperms, or naked-seeded plants, appear earlier in the geological strata, and are believed to represent a more primitive type than ordinary angiosperms. They stand midway as regards organisation between ferns and flowering plants, and although wind-fertilisation is less effectual and much less economical than insect-fertilisation, still it is just what we should expect on the supposition that these naked-seeded plants represent an early type of vegetation. It is deserving of notice, however, that some of the gymnosperms, yew and juniper for example, have coloured fruits adapted for dispersion through the agency of birds; it is quite conceivable, therefore, that some members of the group may also have attained to insect-fertilisation. With a view to determine whether or not this was the case with the larch, last season I examined many specimens of the male and female cones; this year, possibly owing to the lateness of the spring, I have not been able to obtain any as yet. Although not indigenous, the larch is now a common tree in this country. It flowers earlier in the season than the Scotch fir (*Pinus sylvestris*), from which it is also distinguished by its deciduous foliage. The flowers are declinuous, and the same tree bears both male and female flowers (monœcious).

The female cone, about an inch in length, is cylindrical in form, consisting of loosely imbricated bracts. These bracts are narrow strap-shaped or spatulate, with an acuminate apex, and of a colour varying from bright pink to deep crimson. In the axil of each bract is a semi-circular scale which at the period of fertilisation is very small. After a time this scale enlarges, becomes woody, and ultimately outgrows the bract, which persists in a withered condition under the woody scale of the mature cone. In the axil of each scale are two inverted ovules. The apex of each ovule expands into what resembles a capitate stigma bristling with somewhat elongated papillae. At the flowering period, before the scales have begun to enlarge, these stigma-like expansions protrude beyond the sides of the scale, and here and there are just visible between the narrow bracts. The female cones

mostly occur towards the outer extremity of a branch, and the pedicel is twisted so that the cone stands erect.

The male cones are much shorter than the female, more like a capitulum. The outside is surrounded by brown, chaffy scales, and the flat-topped central part is made up of shortened stamens. These male cones cannot be said to be conspicuously coloured, although when the pollen is ripe they have a yellow colour and can be seen some considerable distance away. They are generally sessile on the branch, and when they occur in the vicinity of a female cone are turned away from it—generally looking earthwards. The anthers appear to discharge their pollen suddenly, as is so commonly the case in anemophilous flowers. The larch produces immense quantities of pollen—light, dry, and dusty in character—but the pollen grains are not provided with wings as is the case in *Pinus sylvestris*.

In favour of wind-fertilisation, then, the following considerations might be adduced:—

1. The early season of flowering—while as yet insects are scarce.
2. The appearance of the flowers before the leaves.
3. The unisexual, monœcious condition more common among anemophilous than insect-fertilised flowers.
4. The relative inconspicuousness of the male cones.
5. The abundant pollen.
6. Its dry, incoherent character and sudden discharge.
7. Absence of honey and odour from both kinds of flower.
8. No observation as to visits of insects.

In favour of insect-fertilisation we have the following characters:—

1. The bright colour of bracts, which apparently disappears after fertilisation.
2. The interference of the closely imbricated bracts with the access of wind to the ovules sheltering their stigmas.
3. The large size of the pollen grains.
4. The absence of wings on the pollen. (This, however, is inconclusive, as the pollen of the elm is also wingless.)
5. The shortened axis of the male cone—the capitulum form of which might serve as a convenient alighting stage for insects.

On the whole the evidence in favour of wind-fertilisation preponderates, but the bright colour of the bracts and the sheltered position of the ovulary stigmas are hardly capable of reconciliation with this being the exclusive mode. Possibly the larch may be self-fertilised as a rule, and only an occasional crossing effected either by wind or by insect agency.

It may be worth mentioning in this connection that a good many wind-fertilised flowers do exhibit more or less of a dull reddish tinge, such as the elm and some of the cypresses. Some authors state, probably on the authority of Strasburger or Hofmeister, that in coniferæ the ovule at the period of fertilisation exudes a drop of liquid at the micropyle, and that the falling pollen is caught by this. Afterwards, by the evaporation of this drop, the pollen grains are stranded on the nucleus of the ovule. So far as I have been able to observe there is no such provision in the larch, where indeed it would be quite superfluous, for the pollen adheres very easily to the papillose expansion of the ovules, whether brought by wind or any other agency.

The fertilisation of the larch has been studied by Delpino, but his papers are not accessible to English readers. (*Altri apparecchi dicogamici recentemente osservati*.—Nuovo Giorn. Bot. Ital. II., pp. 51-64, 1870.) As Müller appears to be familiar with this writer's investigations, he would most certainly have referred to the circumstance had Delpino found an insect-fertilised conifer, but instead of that, Müller, as we have seen, asserts that all the gymnosperms belong to the anemophilous class. In view of what has just been said, however, we cannot accept this statement without reservation. If further observation should bring to light insect-fertilisation occurring among the gymnosperms, it would go to prove that they form a group more nearly co-ordinate with the angiosperms than has been supposed. Should any of the coniferæ turn out to be adapted to crossing by insect agency, this would favour the view that they had an independent origin, and are not to be viewed as representing a phase in the evolution of angiospermous plants. If, however, the evidence be accepted as conclusively proving *larix* to be anemophilous, then, assuming the bracts to be protective in function, it might be possible to explain their coloration on the theory that their brilliancy serves to warn away birds and other enemies which might devour the young

delicate cones—the principle that determines the bright coloration of wasps and other unpalatable insects. But whether we have in the female cones of larch an instance of vegetable mimicry or not, it would on this view appear that conspicuous colours may occur in association with wind-fertilisation, and that we must not, therefore, in every case ascribe the colour of flowers to the selective agency of insects. The coloured bracts of the larch cone, even if they have no relation to animals at all, at least suggest a possible origin of the colours of flowers, colours which in all probability owe their modification to natural variation and the selection exercised by insects in past time.

THE RETURN OF THE SWALLOW:

A NARRATION AND AN ENQUIRY.

BY HUGH BOYD WATT.

(Read 11th April, 1889.)

NONE of our birds of passage is better known than the swallow (*Hirundo rustica*), and yet accurate knowledge of its migratory movements does not seem to exist. We may now affirm that it is a bird of passage, and the instances of its appearance here in winter may be taken to be exceptions which only prove the rule. It certainly does not remain here in a state of hibernation either under water or otherwise. The under-water theory died hard. Both Linnæus and Cuvier accepted it; Berger, a pupil of the former, in his *Calendar of Flora* (published at Upsala), has under the date of 17th September, 1755, the matter-of-fact entry, "swallow goes under water;" Gilbert White, in a letter towards the end of last century, says that though swallows "may not retire into that element, yet they may conceal themselves in the banks of pools and rivers during the uncomfortable months of winter." Referring to the statement of Olaus Magnus, who, in his *History of Northern Nations* (19th book), says, "in northern waters fishermen oftentimes by chance draw up in their nets an abundance of swallows hanging together like a conglomerated mass," Swan, in his *Speculum Mundi*, expresses some incredulity as to this, but qualifies his doubt by saying, "Why may it not be as well as barnacle or bean geese? of which it is certain that they grow on trees." The two beliefs are certainly equally worthy of credence, and may well be made to stand or fall together. I apprehend that the myth developed from two facts. The swallow undoubtedly shows a partiality for water—no land bird does so in a like

degree—and consequently it attracts attention by its movements over water-surfaces. Why does it make these movements? Because it finds there an abundance of the winged insects on which it feeds. The swallow skimming over the water and the trout leaping from it have the same end in view—to make a living. The second fact is that in autumn, at sundown, swallows have been frequently observed to gather and settle in large numbers in the vicinity of water. They are preparing for their descent into the water, it has been said. The fact is that on the branches of the willows and osiers which flourish near water swallows find most convenient perches. On these branches they can crowd together and so secure on a chilly autumn night a measure of warmth which they could not obtain on separate branches or in trees or shrubs of a different growth.

These birds undoubtedly leave this country with the advance of winter, because their means of subsistence fails and the temperature becomes killing to them; and the few authentic instances of the appearance of the swallow in winter here can easily be explained. They return in spring; and it is to the when, the how, and the why of this return that I shall devote the remainder of this paper. Gilbert White gives the earliest date of their first appearance at Selborne as 26th March; latest, 20th April; usual date he gives as about 15th April. Markwick's earliest is 7th April; latest, 27th. Forster communicated a rather elaborate table of the movements of the *hirundinida* to the Linnæan Society, and the swallow is reported in it thus:—Naples, 27th February; Rome, 3rd March; Pisa, 5th March; Vienna, 25th March; Bruges, 5th April; and London, 15th April. Mr. Grant Allen says that the average date of their return to the south-western counties of England is the second week of April. A return compiled at the instance of Mr. J. E. Harting appeared in the *Field* in 1872, and gives the first appearance as 2nd March, four miles south of Glasgow. Mr. R. Gray stated that this was the earliest record of an arrival in Scotland, and as six weeks elapsed between the first and second appearance, I take it that this bird was a restless and adventurous spirit, a very far advanced pioneer of the army of migrants, which either perished miserably or retreated southwards until a more convenient season. The next record in this return is at Cromer, 31st March, and Great Cotes,

1st April. In Ireland the first reported is at Ballina, 13th April. The committee appointed by the British Association to report on the migration of birds have now issued nine reports full of valuable observations largely gathered from lighthouse and lightship keepers on our coasts, but much requiring the redaction and epitomising of the whole promised by Mr. W. Eagle Clarke, of Edinburgh. I shall only refer to the two last reports. In 1886 the earliest swallows are two reported at Bull Point (Bristol Channel), 23rd March. From the Nash Light, Cardiff, on 26th March, it is reported that "a swallow rested on lantern from 6.30 till 7 a.m., and then flew north-east"—an undoubted arrival. On the east coast of England the first reports are from Whitby and Hunstanton on 13th April, but no great numbers anywhere until end of month. This coincides with the report from the River Dee (North Wales) of 23rd April—"flocks whole day flying east." From Scotland the first reports are Corsewall, 24th April; Rhinns of Islay, 27th; North Ronaldshay, 2nd May; and Bell Rock, 3rd. In Ireland they appeared simultaneously at the Fastnet and Coningbeg (off south coast) on 12th April. One remarkable return should be noted. It is from the Swin Middle (mouth of Thames), dated July 11th, 12th, 14th, 15th, and 16th; and reports numbers from east to west—on the 14th five flocks of about twenty each between 3 and 4 a.m. These were arrivals nearly three months after the usual time and in the very height of the breeding season, and I should like to have this accounted for. In 1887 the first reported anywhere are from Coningbeg lightship on 30th March, and at Killybegs, Donegal, 3rd April. In England there are simultaneous reports on 11th April from the Galloper (off Kent), Hanois (Guernsey), and Langness (Isle of Man). In Scotland the first are from Corsewall, 17th April, and Pentland Skerries, 11th May. This spring, correspondents in our newspapers have reported swallows at Caticol, Arran, on 16th March, and large numbers at Lenzie from 23rd March onwards—both of which reports I take the liberty of doubting.

Swallows seem to begin their northward movement from their trans-Mediterranean retreats very early in spring. They are seen at Gibraltar early in February; at Malta and in Greece early in March; in Palestine in the middle of March; and in Italy about the 20th. Folk-lore has much to say of them and of their move-

ments. The Russian peasant in his springtime calendar has it that on 25th March the swallow comes flying from Paradise and brings with it warmth to the earth. On the same day the festival of the Annunciation is noted in South Germany by the saying, "Our Lady's Annunciation brings back the swallow." There is a French saying to the same effect—"A l'Annonciation les hirondelles viennent annoncer la belle saison." At Bergamo they say that on the 12th March, the festival of St. Gregory the Pope, the swallow crosses the water, *i.e.*, arrives. There is a saying in almost every European language that one swallow does not make a summer or spring. It is a bird curiously familiar with man, and, let me say, with civilised man. It builds its nest and rears its brood within and upon the walls of his house; the homely name tells us so—chimney-swallow. Just as robin redbreast appears as the familiar bird-spirit of English winter scenes, so does the swallow appear in summer pictures.

As to the route which the swallow follows in its migrations, a good deal of ingenuity is expended in speculating on this point. A writer in the *Glasgow Herald* recently, founding on the reports of swallows at Coningbeg, Wexford, and in Donegal Bay in 1887 (which, as I have mentioned, are the very first reports for that year to the committee of the British Association), asks us to believe that the early appearance of these birds in Ireland is accounted for by the clearly proved fact that "once on a time" continuous land, far overlapping Ireland to the west, extended to Spain and Africa. Along that immemorial coast line (as he calls it) he cannot doubt but that swallows flew, and that when the coast foundered beneath the Atlantic the hereditary principle maintained them in their traditional course. This writer further points out that the meridian of 10° west runs through the mountains of Kerry, and, skirting Portugal, touches Africa at Morocco, giving a mathematical crow-line for migrants from Africa to Ireland. Are we expected to believe that swallows launch off from the coast of Morocco direct for Ireland, following the meridian of 10° west, and thus are seen in Ireland before other parts of the United Kingdom? First of all, the latter point has to be proved, and this is a considerable initial difficulty. A passage in the Migration Report for 1886 seems to indicate that the route of migrants bound for Ireland is probably along the line of the Avon and the

Severn, down the Bristol Channel, and across the Irish Sea. Further, it seems unreasonable to suppose that, granting the ability, a swallow will move in one flight from such a climate as that of Morocco to such an one as Ireland. And to put another question: In the days of the immemorial coast line were temperature and climatic circumstances just as they are at present, and did the swallow require to migrate—if it was there at all to do so? Mr. Grant Allen also enunciates a theory of what he calls “a sort of unconscious hereditary teaching by which the memory of the lost land-connections has been handed down from one generation of swallows to another since pre-glacial times.” In these times continuous land stretched from England to Africa, and, as Mr. Allen says, the temperature of England was apparently as warm as that of North Africa. Gradually both temperature and earth-surface changed, and the swallow found it necessary to seek a suitable climate, moving southwards in autumn and northwards in spring, until the movement reached its present dimensions. The English Channel and Mediterranean also came into existence, but the migratory practice engrained in the system of the bird had become a habit, and by this instinct these obstacles are overcome. If it is true that a large body of swallows cross the Mediterranean annually from Algeria to Marseilles, it is a most noteworthy fact; but there is no great difficulty in seeing how the passage can be accomplished by Malta and Italy, or Sardinia and Corsica, or the Straits of Gibraltar. Gilbert White pointed out the latter route, showing how little exposure there was incurred by it and by the Straits of Dover. He says that his brother, who lived in Andalusia, always found that some birds, and particularly the swallow kind, are very sparing of their pains in crossing the Mediterranean, taking the Tangiers and Gibraltar route quietly and without any hurry. It is well known, too, that swallows arriving on the Sussex coast take no rest, but go on their journey northwards, as if quite fresh. My last question is: Why do swallows migrate northwards, leaving the clear sunny atmosphere of the shores of the Mediterranean and seeking the grey skies of Northern Europe? As far north as Lapland, Siberia, Nova Zembla, and Iceland, they go. They must perish in thousands upon thousands as they move; and it may well be asked what advantage is it to them to spend the summer in northern latitudes?

SCOTCH NAMES OF NATIVE WILD FLOWERS.

BY JOHN WOOD.

(Read 4th March, 1891.)

OF all the weak parts of Jamieson's Scottish Dictionary the weakest is the list of native plants bearing Scotch names. Various reasons may be given for this. Up till the reign of Dutch William our country was one constant scene of national or civil, public or private strife. Again, in later, more peaceful, and better educated times the ordinary inhabitants of any country take notice only of such flowers as daisies and dandelions, wild roses and brambles, because no one, not even a child, can fail to be struck by them. In the Dictionary the only plants which have attracted a fair share of notice are the grasses, the plants which occur as troublesome weeds in cultivated ground, those which are sought after for their real or supposed medicinal virtues, and those which produce edible fruits. There is no attempt made at classification, for botanical knowledge was in its initial empiric stage. The same name is often applied to plants of totally different classes, or the name of one plant is applied to the whole family. The names are for the most part of Anglo-Saxon origin, but, as might have been expected, we have many names derived from Gaelic and French sources. To proceed then, let us take first the grasses.

THE GRASSES—NATURAL AND CULTIVATED.

Aits or oats (*Avena sativa*)—Anglo-Saxon *ata*—has from very ancient times formed the staple of the nation's food, giving us savoury "parritch" and toothsome cake, and with these our firmly knit bones, hardy frames, and robust health. Corbie aits is the black variety—the name needs no explanation. Wild oats is *Avena fatua*.

Bere or barley—a pure Saxon word—(*Hordeum vulgare*) was formerly used as an article of food—“bannocks of bere meal and bannocks of barley”—but is now chiefly used to manufacture the national drink, “barley bree.”

Tall oat-grass (*Avena elatior*) has tuberous roots, and from this peculiarity it takes its Scotch name of arnut or earthnut. *Bunium flexuosum* takes the same name. The former is distinguished by the name swines’ arnuts, while the latter was called (and is still called) lousy or lizzie arnuts, from a belief that it tended to breed tick or sheep lice on the flocks that fed on the pastures where it grew.

The name and locality of bent-grass (*Agrostis*)—“the bent so brown”—are derived from the Saxon *biendse*, meaning a rush. For good or evil a man is known by the company he keeps. So also it would seem are grasses. Bent-grass is the grass that keeps such low company as carices and rushes.

Field brome-grass (*Bromus arvensis*) has two names—first, sleepies, from its supposed soporific qualities, constituting it an ancient Scotch chloroform, a feeble foreshadow of Simpson’s famous discovery; and second, goose-corn, *i.e.*, feeding for the goose, a fowl much commoner with us in ancient times than at present. Scott refers to this former prevalence of the goose in the last canto of *Marmion*. The word corn was originally used to designate anything small, round, and hard. A corn on the foot is the same word, and in an old Scandinavian poem hail is called “cold corn.”

Couch-grass (*Triticum repens*) has also a double name—first, pirl-grass, from *pryl*, a needle, so named from its short, stiff, prickly awns (when it has any); and second, quicken grass, from *quick*, living, the opposite of dead. It is indeed a quick or lively grass. Let it once be settled in a corner of cultivated ground, and it is so tenacious of life that it will defy every effort even of the spade to uproot it.

The poas or meadow-grasses go by the general name of pounce, from *puntr*, the name used in Iceland still for these grasses.

All the Avenas or wild-oats are called *oncorn* or *uncorn*. The prefix *on* or *un* was formerly much used in Scotch, and our ancestors employed it in a very cannie, characteristic fashion. A Scotsman of the old school would never dream of saying a man or woman

was ugly; he used instead the term *onbraw*. *Oncorns*, then, are grasses which are not corn, *i.e.*, oats, but which look like it.

Grass in Scotch is *gers*, and both words are allied to the obsolete German word *gerasen*, meaning to grow or to be green. Their root meaning, therefore, is anything that is green, anything that grows, anything of a vegetable nature. The word green is from the same root. Many of our plant names still retain the primitive meaning of the word.

Cotton-grass (*Eriophorum*) is not a grass as we understand the word now. Its Scotch name is *cannach down*, a reduplicative name. *Cannach* is Gaelic and *down* is Saxon, and both words mean the same thing—anything soft, woolly, or feathery. It is also called wild-cotton—a name like the former, descriptive of its appearance—and moss-crops, from its locality. The word crop, as applied to plants—a crop of corn—is the same word crop—the crop of a bird. It means a gathering or a collection, and it is still properly applied in naming such plants as our stone-crops (*Sedum*), insomuch as these bear their leaves in a radicle crop, or bundle, or rosette.

Ecclegrass is not a grass; it is the butterwort (*Pinguicula vulgaris*). *Eccle*, in such words as *Ecclefechan*, means church. But ecclegrass has no ecclesiastical connection whatever. *Ic*, *ig*, *eig*, or *iccle* means first an island and then a wet meadow: ecclegrass, then, is the plant of the wet meadow—a very good descriptive name. The same plant was also called sheep-rot, from its being supposed to cause this disease among sheep. Marsh-pennywort (*Hydrocotyle vulgaris*) also gets this name and for the same reason. Ecclegrass has still another name, steep-grass—the plant steeped or soaked in water—a name synonymous with ecclegrass.

Potentilla anserina, or silver-weed, was moor-grass or moss-grass from its locality. It has extended its quarters considerably since it was named, for we find it in many places not moorland now. But perhaps these habitats were once moorland, and the presence of the plant may point to this fact.

Scrubie-grass is scurvy-grass (*Cochlearia*). The English and Scotch names are identical—the letters “u” and “r” being transposed. It takes its name from its supposed efficacy in cases of skin disease, disorders said to have been particularly prevalent in our country in the good old times. Either its virtue has gone out

of it, or the skin of the Scot has developed a corresponding degree of obstinacy with the rest of the man, for we find the plant cure discarded ages ago for the more drastic treacle and brimstone.

Besides these grasses already named which are not grasses in the modern sense of the word, we have the common English names of many plants retaining the original root meaning, e.g., cotton-grass (already given), arrow-grass (*Triglochin*), goose-grass (*Galium Aparine*), grass of Parnassus (*Parnassia palustris*), knot-grass (*Polygonum aviculare*), scorpion-grass (*Myosotis*), whitlow-grass (*Draba verna*), etc.

CORN-WEEDS.

Of the corn-weeds the two which seem to have caused most trouble are the corn-marigold (*Chrysanthemum segetum*) and charlock (*Sinapis arvensis* and *Raphanus Raphanistrum*). Together they went by the name of guilde or gool, from *gol* or *gul*, the colour of gold—yellow. That they were bad pests is proved by the ancient custom of “riding the guilde” in each barony once a year. This ceremony consisted in the baron with his bailiffs riding over his territory to inspect the growing crops and to see that the farmers were doing their duty in clearing out the obnoxious weeds. Where this was not satisfactorily done a fine was imposed in proportion to the offence. Marigold, in addition, was named manelet, either from the above-mentioned custom—its presence causing the farmer to main, or moan, or lament over the payment of the guilde fine—or from the old Scotch word *mane*, meaning vigour, on account of its spreading power and of the difficulty in getting the fields cleaned of it. The plant is now pretty well subdued in our locality; but in some parts of the country it continues to be a source of great trouble to the farmer. It was again christened for us by our French allies soucy, from the old French name of the plant, *souci* or *soulsie*; and the latter again from the Latin, *sol-sequens*, following the sun—a habit common to many other plants.

The wild-mustard plant (*Sinapis arvensis*) and the wild-radish (*Raphanus Raphanistrum*), for no distinction is made between the two, got, in addition to guilde, the French name runches, from an obsolete French verb, *ronger*, to eat. The Scotch verb *runch*, not given in Jamieson, is from the same root. This plant

is not edible in its wild state. I should suppose that the French introduced the cultivated variety, and that their name for this came to be applied to the more common wild plants. It was also called sanapé, from the Danish word *senep*, a name very near the scientific term *sinapis*. But its most common name is scaldricks, skelloch, or skellie, from an Erse word *sgéallagach*. Still another name—it rejoiced in the appellation of shirt, from the verb share or sheer, to cut, to separate, to root up—each farmer being bound to eradicate the weed or pay the guilde fine.

Corn-cockle (*Agrostemma Githago*) was called popple, or papple, a Celtic word possibly meaning the same as cockle, chockle, or choke, from its being so plentiful sometimes as to choke the corn or wheat.

Ononis arvensis has for its common English name rest-harrow, from the nature of its roots, so long and tough as to be too much for the primitive harrows of long ago and the oxen that drew them. The modern instrument has banished it completely from cultivated land. The Scotch name of the plant—sitfasts—is merely a paraphrase of the English name—once seated in a field, it holds fast to its seat.

ORDINARY HERBS.

Catch-rogue is the Scotch name for cleavers, or *Galium Aparine*, and both English and Scotch names mean the same thing. The plant is a rogue for catching and cleaving or sticking to the dress of anyone who brushes against it.

Chickenweed is the English chickweed (*Stellaria media*)—good food for chicks and little birds in general. It was a plant of some importance in olden times; long believed to be a cure for consumption. Some old-fashioned people still use it for chest diseases in the form of poultices.

Day-nettles are dead-nettles (*Lamium*)—day being a corruption of dead. The term included the hemp-nettles (*Galeopsis*) as well. Dead-nettles are dead as regards the sting.

Docken is the plural form of dock (*Rumex*), a pure Saxon word.

The word gowan is peculiarly Scotch. It is a pretty name, and it represents a very pretty little plant, the daisy (*Bellis perennis*), a Marguerite—a very gem or pearl among flowers. The commonly given derivation of the name is the obsolete

Gaelic word *gugan*, meaning first a bud, or blossom, and then a daisy. But to this I demur. There is a very old Scotch word *gow*, meaning a halo, and this I hold to be the true derivation. In tracing the origin of a word like this, it is a safe plan always to take into consideration the derivation of correlative words such as daisy. Daisy is the day's eye, *i.e.*, the sun. Note the old pictures of the sun—see the yellow, golden eye, with the surrounding pencils of silvery white rays branching out in all directions. The picture is the daisy to a T. The very same idea is as picturesquely conveyed by the word *gowan* or halo. What more natural than that the two portions of the Anglo-Saxon race—the one north, the other south of the Tweed—should have been struck with the same idea of the plant's appearance, and should have translated it into their most poetic figure of speech. The meaning of the word is alike poetic in either case, but *gowan* has the softer sound—it wants the sibilant "s." *Gowan*, therefore, is the superior word, and the English dictionary makers have acknowledged as much by adopting it. *Ewe-gowan* is the common daisy, so called from its being found abundantly in sheep pastures. *Horse-gowan* is, first, the ox-eye daisy (*Chrysanthemum Leucanthemum*), from its size; and second, the larger flowers of the hawk-weed tribe, such as *Crepis* and *Hypochaeris*. *Yellow-gowan* is not a composite at all. The term is applied to the more conspicuous of the buttercups, such as the lesser celandine (*Ranunculus Ficaria*) and the marsh-marigold (*Caltha palustris*). In addition the marsh-marigold has the name *jonette*, from its French name *jaulnette*.

Hemlock (*Conium maculatum*) by our ancestors was called *humloik*, the same word practically as the English name. The derivation of *hemlock* is said to be from *hem*, the edge or border, and *leac*, Saxon word for a leek, but applied, *e.g.* house leek, very generally like crop, grass, and corn. *Hemlock*, then, would mean the plant that grows on the border of cultivated ground in hedges and such like places. The plant certainly answers this description, but so would three out of every four plants of the flora. Besides, to accept this derivation is to own that our forefathers did not know its poisonous properties, and this could scarcely be the case. If they knew the deadly qualities of the *hemlock*, which I hold they must have done, the

plant would be named from this outstanding fact. Haulm is applied usually to a stalk of corn, but is also used to designate other stems, as of such plants as potatoes and hops. Lock or loik (Celtic) is from the root of the word *lic* or *lyke*, which we find still in the words lykewake, a wake or watch over a dead body; Lichfield, the field of slaughter; Lackford and Leckford, the sites of bloody battles; and Bolleit, the house of blood. If I am correct, then hemlock means the "plant of death," and I maintain that the derivation I have given is the only tenable one if the plant was known to our ancestors deeper than the skin. Further, our old Scotch words are many degrees nearer the original Anglo-Saxon fountain-head than modern English words are. Humloik, then, is a much older form than hemlock. The change brought about by the wear and tear of words is always from complex to simple. Hum could never come from hem, but it would quite naturally result from haulm. Put leek or leac on the grindstone of time and loik would never be the result; whereas loik and lyke are almost identical.

Jacintyne is the hyacinth, from *jacinthe*, the French name.

Lucken-gowan I ought to have given under gowan. It is the globe-flower (*Trollius europæus*), one of the yellow buttercups to which the Scots applied the term gowan. Tannahill speaks of the eventide as the time when "the daisy turns a pea, and the bonnie lucken-gowan has falded up her e'e." *Lucken* is the Saxon verb to lock, to shut up, and this plant, like the daisy and many others, is sensitive to light, and locks or closes its flower when the sun sets. The Scotch word luckie means a widow who is landlady of a hotel or public-house; and Jamieson (who must have been a teetotaler) says the word is derived from *hlok*, a witch. With all due deference to such a high authority, I hold that the word luckie is derived, like lucken-gowan, from *lucken*, to lock. Luckie is so named because she carries the keys and locks up. Lucken-handed was niggardly or close-fisted, and lucken-footed was web-footed. But this is away from our plants.

Maskwort is the Scotch name for the woundwort or all-heal (*Stachys*), and the three words point to the same notion. Woundwort is good for healing wounds. All-heal is better—it cures all the ills that flesh or spirit is heir to; and maskwort is the plant that grows for the special purpose of being "masked" or infused for

diseases of all kinds. No wonder that M.D.'s were a scant crop "langsyne" with such potent all-healing "yerbs" in abundance.

Meduart—the meadow plant—is not such a good descriptive name as meadow-sweet (*Spiraea Ulmaria*).

Milkorts or milkworts are, according to Jamieson, Scotch blue bells (*Campanula rotundifolia*). Eating the plant was believed to improve the milk of cattle, hence the name. Whether the improvement is in quality or colour I know not. If in colour, then this plant may be responsible for the beautiful blue tint observable in much of the milk supplied here. It (plant) was also called witch bells. Though no beauties themselves, these ancient ladies, the witches, knew what was good and beautiful in flowers, and could appreciate the same. Their taste in this respect was far superior to their master's, as we shall see by-and-by.

Segg is the fleur-de-luce or yellow iris (*Iris Pseud-acorus*). The word is the same as the modern word sedge.

Sourock (the *Rumex Acetosus*) takes its name from the acid flavour of the leaves, and reminds one of boyhood, when we were still in the omnivorous stage of stomach development.

Souks or soukies—another boy's-name—is the red clover (*Trifolium pratense*). These clover heads produced large quantities of honey which only boys and bumble bees suck, by different processes, of course, and with different results. The bee benefits the plant and so pays honestly for his refresher; the boy, the father of the man, quaffs his sweet, and by so doing destroys the spring that supplies him. It is not often that the names given by children are permanent, but these last two are.

Wabran is the Scotch form of the English name way-bread (*Plantago major*). Wabran (way-bran) means bran, or coarse grain, growing by the way-side. The heads are a favourite food for birds, hence its common modern name of bird seed.

Michen is bald-money, or *Meum Athamanticum*, from the Gaelic *moiken*. Sinkel is another name for the same plant, from the Latin name *finkel*.

Centaurea Cyanus is the blaewort, or blue bonnets, from its colour; and witch bells, or witch thimbles, from some supposed connection between it and those unholy sweethearts of the evil one. The colour blue seems to have been as great a favourite with our ancient witches as it is with the bewitching witches of

the present day, for different reasons of course: in the one case, because it is the colour of sulphur flames—their proper element; and in the other, because it is the hue of the heavens—an external indication of the angelic nature within.

Carmele, carmylie, or carameil, is the tuberous-rooted bitter-vetchling (*Lathyrus macrorrhizus*), from the Gaelic *cairmeal*. Heather-pease is another name of it telling of its locality.

But of all the plants of the field the one which has been most abused and libelled by nicknames is the ragwort (*Senecio Jacobæa*). First, it is ragweed, the same as the English name; second, bunwede, from *bun* or *bon*, begging—bunwede, then, means beggar's-weed; third, stinking-weed—an unjust libel. But the worst insult is yet to come. Fourth, wee bo. Bo is the “bo man” of the nursery, conjured up by foolish nurses to frighten naughty children, and means the devil. Wee bo is little devil. Such vile name mud-throwing is enough to discourage any plant and arrest its development.

NAMES FROM ANIMALS.

The connection between plants and animals is a very close one; and this fact has been recognised and extended by imagination in the common plant names of all languages. Our own old language is not behind the others in this respect, for we find many of our plants named from their fancied or real resemblance to animals; and from the fancied or real influence for “bein” or bane, for weal or “wae,” of plant and animal upon each other.

Boar's-ears is the *Auricula*, called in English bear's ears. Boar and bear are slightly modified forms of the same word, and anciently they were interchangeable.

Brawlins, or brylies, are bear-berries (*Arctostaphylos Uva-ursi*). Braw is bear with the “r” transposed.

Bull segg is the reed-mace (*Typha latifolia*), on account of its size.

Bunnerts is the cow-parship (*Heracleum Sphondylium*), from *biorn*, a bear. Biornwort is the name still used in Scandinavia.

Balderry is the Scotch generic name for the orchid (*Orchis*). Bawd or bald is from the Gaelic *boide*, a hare; and *der* or *derry* is bane or injury. Balderry means harebane. Instead of injuring the hare as it must have done in days of old, the hare has completely

turned the tables on it now. The varieties of orchids growing in woods suffer greatly from hares and rabbits. Bald (or bawd) money is derived from the same word, and means hare's money. Bawd bree is still the common name for hare soup in certain country districts of Aberdeenshire.

Catscluke, or catluke, is the bird's-foot lotus (*Lotus corniculatus* and *major*). Cluke is cleek or claw. Catscluke is cat's claw, from the shape of the tiny pea, and it means much the same as bird's foot.

Dog's camovyne is the scentless May-weed (*Matricaria inodora*). Camovyne appears to be a Scotch attempt at pronouncing chamomile. It is also called feverfoulie, an attempt at feverfew, and, wildest of all possible attempts at the same, featherwheelie. Dog's gowan is another of its names.

Dog's tansy is the silver-weed (*Potentilla anserina*), also called moor-grass, moss-grass, and moss-crops.

Dog's siller is the yellow rattle (*Rhinanthus Crista-galli*).

Ern-fern (the eagle's fern) is our bladder-fern (*Cystopteris*), named from its position beside the eagle's eyrie.

Gouk's meat, or cuckoo's food, is wood-sorrel (*Oxalis Acetosella*).

Horse-knot is the common knapweed or hard-head (*Centaurea nigra*).

Lamb's-tongue is corn mint (*Mentha arvensis*), from the shape of the leaf.

NAMES FROM MEN OR WOMEN.

Many of our plants, again, are named from men and women.

Pteris aquilina is the bracken, which means the lady-fern. Brake or brack is the fern in general, and *in* is the feminine termination of Saxon nouns. The *in* has been changed here into *en*. Royal-bracken is the royal-fern (*Osmunda regalis*).

Carl boddie is the ribwort plantain (*Plantago lanceolata*). Carl is the Scotch word for a man, and boddie (Jamieson says) means bald, or destitute of hair. Carl boddie, then, would mean the bald man. But this name is not a true description of the flower's head. It is at different stages quite covered with exerted anthers and feathery pistils, giving it plenty of wool in the place where the wool ought to grow. Boddie is not the word for bald. It is a corruption of baldy, or bold, and the name means brave men, or

warriors. The boys of the present generation fight mimic duels with these carl boddies, and they name the heads from this circumstance "sodgers." Soldier is comparatively a modern word, but the game of "sodgers" is a very old one. Carl boddies, *i.e.*, men of war, means the same as "sodgers," and it was the term applied to these vegetable champions long before Tommy Atkins was born.

Carlin heather, or lady's-heather, is bell-heather (*Erica*). Carlin is the feminine of carl, and means originally a woman. But carlin in later times came to mean an old woman, and carlin spurs, or the spurs of an old woman, is *Genista anglica*, the needle-gorse, which has small sharp prickles. The spur of a woman must be the tongue—the sharpest part of the fair sex, I am told.

Dead-men's bells are fox-gloves (*Digitalis purpurea*), and the name refers to its poisonous properties.

Deil's snuff-box—but stop, should the deil be classed among men or among beasts? I have searched in vain for reliable information to guide me on this point; but I have been able to find next to nothing of any real value. Our kirk-session refuses to regard him from a natural history point of view. Deil's snuff-box is the puff-ball (*Lycoperdon*)—fit "sneeshin" for such an antiquated, wizened, "reek-reisted" snout. But what delicacy can you expect to find in olfactory nerves so long sulphurated as his have been.

Deil's spoons is the water-plantain (*Alisma Plantago*). The old proverb says, "He needs a lang spoon wha sups kail wi' the deil," and the east-country people extend it to include the men of the kingdom of Fife—they being considered veritable sons of Belial, and like to their father in so far as valour in the art of subduing the contents of a kail-pot is concerned. The large leaves of the *Alisma* are spoon-shaped and particularly long in the stalk, and the plant has got its Scotch name from the above proverb.

NAMES FROM SHAPE, POSITION, AND USE.

Bobbins is the water-lily (*Nymphaea alba*). Bobbin means a bundle, and the name is given from the appearance of the ripe seed-vessels. The ordinary name of the water-lily, however, is cambie leaf. *Cam* or *cambus*, so common an element in place-

names, means a bend or a curve, and the name is given the plant from the rounded shape of the floating leaves.

Chasbol, chesbol, or chesbowe. *Chas* or *ches* is a cheese, and *bol* or *bowe* is round. The plant so named is the poppy (*Papaver*), and the round cheese is really the seed-vessel.

Cockrose is the red poppy (*Papaver Rhæas*). It might puzzle one to find out the connection of the plant with the cock, but the Northumbrian name coprose solves the difficulty. Coprose is cuprose—rose because it is red (the original meaning of rose being red), and cop or cup from its shape. Cockrose is the Scotch corruption of the North of England word.

Dandelion (*Leontodon Taraxacum*) is the French *dent-de-lion*, the tooth of the lion, from some imaginary resemblance between the two.

Mekilwort is the deadly-nightshade (*Atropa Belladonna*). The word mekil or muckle means, first, great in size; and next, great in influence and power. This was the flower much in favour with witches, sorcerers, and the powers of darkness in general, and it was used by them in all their important enchantments. No deil's broth was properly brewed and seasoned without a spice of the deadly mekilwort.

Bolgan leaves is the nipplewort (*Lapsana communis*). Bolga means a swelling, and is from the same root as the word bulge. The plant was considered a remedy for swellings.

Dishilago is the colt's-foot (*Tussilago Farfara*). The Scotch name is remarkably near the Latin and Greek name *tussilago*, and means a driver away of coughs.

Fews, or fouets, is the house-leek (*Sempervivum tectorum*). The North of England name is feys, and both names are derived from the Saxon verb *fegan*, to clean. The verb "to fey" is still used in provincial English, but only in connection with the word ditch—to fey a ditch means to clean a ditch. The leaves of this plant, as well as those of other *Sedums*, orpine or orpie (*Sedum Telephium*) to wit, were and still are much used for cleaning wounds.

Kerses, or wall-kerses, is the water-cress (*Nasturtium officinale*). The Anglo-Saxon word is *caerse*.

Water-purpie is *Veronica Beccabunga*. *Pur* is pure, and *pie*, or *bie*, is a contraction for beck, a brook. Purpie means the purifier

of the brook. The common belief concerning all water plants still is that they clean the water. Purslane—the name of another water plant—means exactly the same thing. Pur is pure, and lane means a stream. Lane is from the Anglo-Saxon word *hlinna*, the same word radically as the Gaelic word *lyn*. Lyn means, first, the pool below a waterfall, and then both pool and waterfall. *Hlinna*, or lane, means, first, a stream with one or more falls, and then any stream whatever. It is the common name to-day for a burn in all the Scotch counties drained into the Solway Firth.

Ramp is garlic (*Allium ursinum*). The Swedish name is rams, and both forms are from *rampa*, a paw, and the name describes the bulb, or what is vulgarly called the root.

TREES, SHRUBS, AND FRUITS.

Aik is the oak (*Quercus Robur*). Its seed, acorn, is the oak-corn. Aikraw (*Stictina scrobiculata*) is a lichen found on the trunk of the oak. *Raw* means hair.

Allar is the alder tree (*Alnus glutinosa*).

Averin is the cloudberry, or wild raspberry (*Rubus Chamæmoros*), from *aver*, wild, and *en*, the juniper-berry.

Berber is the barberry (*Berberis vulgaris*).

Bindwood is the ivy (*Hedera Helix*), from its habit of growth.

Birk is the birch (*Betula alba*)—pure Saxon.

Blackboyds are bramble-berries (*Rubus*). Boyd is another form of the word bud, meaning originally a gem, or button. Black-boyds means black buttons. The long, stringy, young shoots of the plant give it a second name, garter-berries. The North of England name of this fruit is bumble-kytes—a most expressive term. Bumble is a bumming or rumbling noise, and kyte is the stomach or belly. The fruit is plentiful. It is late in ripening. Boys are impatient and do not always wait for full fruition. They gorge themselves with the unripe fruit, as English boys can do, and the result is a loud bumble in the kite and general outcry of the juvenile inwards against this breach of nature's law.

Blaeberry (*Vaccinium Myrtillus*) is named from the blue colour of the ripe berry.

Boretree, or bourtrees, is the elderberry tree (*Sambucus nigra*). The name is said to be derived from the verb to bore. The wood encloses a large, soft pith, and is therefore easily hollowed or

bored into pipes or tubes. This may be correct, but I prefer the following. About all the old farmhouses I know that have any pretensions to a garden, there is in some snug corner of the same a summer-house, or bower, and this bower is usually formed of bourtree shrubs, hence the name of bourtree, or bowertree.

Bush is the box tree (*Buxus sempervivum*), from French *buis*, or *bouis*.

Esh is the ash tree (*Fraxinus excelsior*).

Gean is the wild cherry (*Prunus Avium*), from French *guigne*.

Hadder is an ancient form of the word heather (*Calluna* and *Erica*).

Groset is the gooseberry (*Ribes Grossularia*), from French *groseille*, or Gaelic *grosaid*. All four words are the same, and are derived from the root of the word gorse, and they all mean the berry-bush with prickles like the gorse, or whin.

Hagberry is the bird-cherry (*Prunus Padus*). *Hag* is Saxon for a hedge.

Hepthorn is the wild rose (*Rosa canina*). *Hep*, or *hip*, the same word as heap, is the fruit from the heap of seeds enclosed in one husk, and thorn meaning, first, a prickle, and then any plant with prickles.

The roden, or rowan-tree (*Pyrus Aucuparia*), derives its name from *rone*, *ron*, or *runn*, meaning a bush in general. It must have been exceedingly common to get the name of the bush.

Roebuck-berry is the stone-bramble (*Rubus saxatilis*).

Sivven is Gaelic for the raspberry (*Rubus Idæus*).

Wineberry is the black currant (*Ribes nigrum*). The wine is medicinal—good for sore throats.

In looking through a Scottish dictionary one naturally expects to find a fair number of names—pet names, perhaps—bestowed upon the national emblem. But no. Bur-thistle is all, and perhaps quite enough too, for it is a fitting emblem in itself of the proud, poor, hardy, independent, and not easily sat-upon people who figuratively saw themselves in the rough, prickly head of the bur-thistle (*Carduus*).

CONCLUSION.

In reviewing the foregoing list one cannot help being impressed with the notion, or at least with the hope, that it comprehends

only a part—a very small part—of the whole of the names of our Scottish wild flowers. Among those given there are no names of alpine plants; and more remarkable still, not one single representative of our numerous and beautiful and characteristic sea-side flowers. This may arise from the fact that there was no such thing as a Scottish dictionary in existence till after the Scottish language had gone pretty much into disuse, and that it had to be manufactured of words collected from books, charters, old leases, and Acts of Parliament. And if our floras of the present day were lost as the genuine living old Scottish language now is, and it were required to reproduce a new list from the works of the poets, writings of fiction, charters, and Acts of Parliament, you can easily understand how small the list would be, even with the enormously increased literary means of accomplishing such a task lying open to our hands.

Such has been very much the nature of the make-up of our present list, and such is the main reason, I believe, of its paucity. I have taken it from the 1818 edition of Jamieson's Scottish Dictionary.

NOTES ON THE ROMAN WALL.

BY W. JOHNSTONE, B.L.

(*Read at the Excursion to Cadder, 25th June, 1890.*)

THE hollow and mound and remains of stations which are met with at intervals across the isthmus of Central Scotland, and which are somewhat loosely termed the Roman Wall, are insignificant enough in themselves, and yet they at once mark the beginning of history in what is now Scotland and form a monument to the bravery and love of independence of its early inhabitants. Many strange and interesting things have come down to us from people who lived in a more remote antiquity, but no record tells us who set up the circles of great stones on lonely moors, built the hill forts, or hollowed out canoes from oak trunks. All is prehistoric till the Romans came. From that time onwards history sheds a faint light on the course of events that led to the making of the England and Scotland of to-day.

It was in the year 81 of our era that Agricola led the legions who had subdued Southern Britain into the north. The inducement was not so much the worth of the country to them as the desire to have the arms of Rome everywhere, in order that, to use his own language, freedom should be out of sight of the conquered people. He defeated the Caledonians, but could not then subdue them; and constructing a chain of forts across the country between the Forth and the Clyde, withdrew behind its shelter. This, as we shall see, was the beginning of the Roman Wall.

The turbulent tribes beyond made it, however, an insecure defence, and when Hadrian visited the island to settle what should be conserved by the empire, he abandoned Agricola's forts and constructed an elaborate line of fortifications seventy-three miles in length, stretching between the Solway and the Tyne. This consisted of—

1. A trench, on an average 36 feet wide and 15 feet deep.
2. A wall built of stone, 8 feet broad and 18 feet high.
3. Buildings for the troops, viz., large camps every four miles; smaller ones, called mile-castles, every mile; and intervening watch-towers 300 paces apart.
4. A rampart consisting of a deep trench and three earthen walls.
5. Two roads—first, a military way between the wall and the ramparts; and second, a road some distance to the south of both wall and rampart.

The works constituted a camp seventy-three miles long, defended both on the north and on the south. These enormous works show their makers' great respect for their northern neighbours, but strong as they were they did not prevent the Caledonians from troubling the province; and twenty years later (140 A.D.) Antoninus Pius sent Lollius Urbicus to subdue the northern tribes. He led a successful expedition as far north as the Moray Firth, but for safety restored the boundary only to the line of Agricola's forts. A stone was found at Bemulie, two miles east of Cadder, bearing this inscription:—

P. LEG. II. A.
Q. LOLLIO VR.
LEG. AVG. PR. PR.

[Placed by the Second Legion the August to (the honour of)
Quintus Lollius Urbicus, Legate and Proprator of the Emperor]

(Stuart, p. 313), which confirms the statement of the historian that he was the builder of the wall. This wall was a smaller work than Hadrian's, and such was the celerity of the Roman soldiers that it is supposed they would complete it from sea to sea in a few months. The fortification consisted of—

1. A trench 40 feet wide and 20 feet deep, which would for a considerable portion of its course be filled with water.
2. A sod rampart or wall twenty-five feet from the southern edge of the ditch, 14 feet wide at the base, and probably having a parapet with platform behind along its top for the use of the defenders. The height is conjectured to have been from 12 to 20 feet.
3. A military way along the south side of the rampart connecting

the stations, which were placed at two-mile intervals, or only half the distance of those on Hadrian's wall.

In the western district, starting from Clydeside, there were forts at—

1. Chapelhill, Old Kilpatrick (about 70 feet above sea level).
2. Duntocher (200 feet).
3. Castlehill (408 feet).
4. New Kilpatrick (184 feet), where the military way crosses from the Drymen to the Milngavie road.
5. At Balmuildy (158 feet), on the Balmore road just east of the Kelvin, the crossing of which it guarded. These two stations were among the most important on the wall.
6. At Cadder (200 feet), on the site of the manse garden.
7. At the peel of Kirkintilloch.
8. Auchindavy.
9. Barhill.
10. Westerwood.
11. Castlecary.

Altogether there were on the wall nineteen forts distant 3554 yards from each other, and the whole length of the wall was thirty-six and a half miles.

Numerous sculptured stones, chiefly altars, have been found at these stations, and they are described at length in Stuart's *Caledonia Romana*. They show that the wall was constructed by the II., VI., and XX. Legions.

The wall for nearly its entire length is situated on the gentle declivities, about 200 feet above ordnance datum, towards the southern side of what was in all probability in late geological times an arm of the sea, and now forms the valleys of the Kelvin and the Carron. It was then a much stronger line of defence than it is now. For at that time the haughlands along the rivers, which now constitute the best of the land, were to a large extent impassable morasses. The least defensible portion was probably that from the Clyde to New Kilpatrick, where the line was overlooked by the Kilpatrick hills; and both on this account and from the necessity of their having a harbour in the deep water at Dumbarton, several authorities place a line of forts flanking the wall down to the Leven. When the wall ascended from the strong station at Bearsden on to Ferguston Muir (where

the remains of the ditch are specially distinct) it had the protection of the loch or swamp formed by the Allander. Going east for many miles the Kelvin valley afforded a similar protection to the north. Let the hand of man be removed, let the drains get choked, the river embankments be destroyed, and the spoil of a virgin forest be brought down by every flood to block the river, and in a very few years the Kelvin would forsake its present channel and the haughs of Balmore would be a swamp. In the six miles from Killermont to Kirkintilloch the country is almost level, having a fall of only five or six feet.

There can be little doubt that this was the state of the district in Roman times, and it explains the curious break in the wall where it is lost at Temple of Boclair till it is found again at Balmuildy, fully a mile straight south from the former point. The object was to keep, as far as possible, on the higher grounds overlooking the Allander and Kelvin morasses, and to cross the latter at its narrowest point.

Strong as the wall was, it did not fulfil the purpose for which it was constructed. We read of irruptions of the natives in 162 and 182, when they broke through the defence and overran the district between the walls. In 208 so serious was the state of matters that the Emperor Severus led a large army in person right to the extremity of the islands. The natives did not meet him on the open field, but kept up a harassing attack among the woods and hills. Although he did not fight a single battle he is said to have lost 50,000 men by these attacks and by the hardships of the march. He reconstructed the wall between the firths, which from this fact is sometimes called Severus' wall. The Caledonians sued for treaties of peace, but within a year they broke them while Severus was still at York on his way to Rome. He swore he would exterminate the rebels, but death prevented him carrying out his threats.

Little is known of the next hundred years, but the Picts and Caledonians from the north, joined with the Scots from Ireland, continued to prey upon the provincials during the third and fourth centuries. An able general at the head of a legion or two would drive them beyond the wall, but when he withdrew they quickly returned to the attack. In the end Rome, about 407, wearied and weakened by these incessant irruptions which she

could no longer find means to resist, abandoned Britain, one of the richest provinces of the empire, and the wall ceased to be a Roman fortification. Indeed the wall was known for centuries as Graham's dyke—not, however, from the exploits on it of a hero of that name, but probably, as Celtic scholars claim, as a corruption of the Celtic words *greim diog*—the strong entrenchment.

As regards the remains of the wall at Cadder little can be said. George Chalmers thinks that the name—anciently Cader—is the Celtic *cader*, a fortress, derived either from the wall itself or from a fort a short distance from the church. Stuart, in his *Caledonia Romana* (p. 315), says:—"The course of the wall issued, according to Roy, from the plantations of Cadder, near a curious artificial tumulus supposed to have been the site of a Roman castellum or watch-tower. This tumulus stands at a short distance from the parish church, and is still uninjured. It seems to have been of a rectangular shape, flat on the top and surrounded by a ditch. The spot it occupies is 3600 yards distant from Bemulie; and it is by no means improbable that one of the *prætenturæ* had been situated here, with which the above tumulus was perhaps connected as an exploratory mount. Horsley suggests that a regular station may have stood near the site of the present church; or, as Roy supposes, its position was probably a little further to the north, on a gentle acclivity now occupied by a few cottages and gardens. . . . When Gordon visited this neighbourhood the remains of the causeway were very distinct—proceeding from Bemulie fort to the church of Cadder at the distance of twenty-seven paces from the wall. From Cadder the line was continued along the gentle acclivities which overlook the plain of the Kelvin, making several turns to reach the highest ground until it reached Kirkintilloch, 4450 yards distant." Dr. John Buchanan, in a paper to the Society of Antiquaries, describes discoveries made a few years prior to 1853 in rebuilding Cadder manse. The workmen there came upon a Roman causeway running right across the garden from east to west. He says:—"I observed it was composed of water-worn stones evidently gathered from the surface of the ground or from a neighbouring streamlet. Two or three parallel rows of larger stones ran along the edges, and the heart of the causeway was filled with a smaller class most completely rammed home, and requiring some force for their

dislocation by the workmen's crowbars." A quantity of pottery was found there and in a field to the east of the garden. In that field, he says, there existed till lately a well, known as the Roman well. The well had been filled up, but the stone work was then existing.

Built into the front of Cadder House, twelve or fourteen feet from the ground, is a stone having carved on it a laurel wreath, supported on either side by what is supposed to be a winged Victory, each standing upon a cornucopia which terminates in an eagle's head, and within the wreath are the words—

LEG.

II.

AVG.

FEC.

(Legio Secunda Augusta fecit)

meaning "the Second Legion made it" (Stuart, p. 313). The stone was probably inserted in the wall of some building or the gateway of the fort.

As a closing remark allow me to say that much of what is most instructive and interesting about the wall—the sculptured stones which tell of the nationality and religion of its makers and defenders—is to be found in museums.

CURIOUS PROTECTIVE FEATURES IN THE YOUNG OF VERTEBRATES.

BY EDWARD E. PRINCE, B.A., F.L.S., &c.,
Professor of Zoology in St. Mungo's College, Glasgow.

(*Read 6th April, 1892.*)

THE great Karl Ernst von Baer was wont to gather around him successive bands of Königsberg students at the commencement of their professional course, and, holding in his hand a fowl's egg about the fifth day of incubation, he skilfully removed a lid-like portion of the shell in order to expose to their wondering eyes its strange contents. They beheld, as though modelled in miniature, the living chick upon its bed of yellow yolk, with the head disproportionately large and rounded, with fleshy stumps for wings, and with developing legs curled up beneath the naked trunk. Von Baer pointed out to them, as the embryonic heart, the pulsating bag beneath the throat, through the transparent walls of which the red blood was seen passing by in quick convulsive motions; he bade them note the curious clefts in the gullet, the "visceral slits," and, above all, drew attention to the sheets of thin membrane, full of fluid, like transparent water-cushions surrounding the immature bird. With the entrance of cold air into the warm chamber of the egg the body of the chick was seen to move very obviously, for the movements, as well as the whole general structure, of the embryo, could be seen in the midst of its strange envelopes of membrane and clear fluid.

The curious enveloping structures present in the young stages of all the higher animals have been variously interpreted. Some regard them as having arisen when the yolk-matter of the ovum was much more bulky than it is now; but, whatever

their origin, their present purpose and meaning have been involved in much obscurity. It is known that slight mechanical pressure upon the immature young and alterations in the surrounding temperature produce apparently disproportionate effects. Professor Cleland's well-known experiments have furnished ample evidence of these results, usually inimical. To shield the developing organism from hurtful influences, reptiles, birds, and the higher animals are wrapped up in embryonic membranes and bathed in abundant fluid. That such structures now serve protective purposes can hardly be questioned. In the chick they are no less than seven in number:—the liquor amnii (1) contained in the true amnion (2), outside which is a serous fluid (3) retained within the false amnion (4). External to the amniotic envelopes are the inner shell-membrane (5), the air-chamber (6), and the outer shell-membrane (7), with its calcareous deposit constituting the dense outside shell. None of these really form an essential part of the bird, and by the time of hatching most have served their purpose and have degenerated. In the mammalian embryo the amniotic envelopes and fluids are discharged at the close of foetal development. In the lower vertebrates, the fishes and amphibians, no amnion exists; but there are other embryonic structures which serve the same purpose. The frog's egg, for instance, is a small sphere, of which the upper half is tinted black, while the lower half is whitish. Before deposition in water the egg measures barely $\frac{1}{16}$ th of an inch in diameter, with a thin outer coat of albumen, like a film of gelatine. The latter on contact with the water swells to more than five times its original size. Massed together these jelly-clothed eggs form the floating spawn so familiar in every wayside pond in spring. A distinguished naturalist has very happily compared the deposited eggs, each a ball of jelly with a black centre, to a number of hen's eggs removed from their shells and placed together. Each yellow yolk corresponds to the small black egg of the frog, the white represents the jelly of the spawn. The entire chick is formed from a part of the vitellus, whereas the frog is built up out of the entire tinted vitelline ball. The eggs too, as Professor Miall has pointed out, are kept apart, due aeration is facilitated, and parasitic vegetable growths prevented. The authority named says that the broad-billed duck is one of the few animals which can devour frog-spawn, other

creatures being prevented by the slippery nature of the enveloping jelly. Toad-spawn does not form irregular masses, which rise from the bottom of the water soon after deposition as in the case of the frog, but appears as gelatinous ropes, very tenacious and many yards long. The newt's eggs are similarly surrounded by a clear fluid contained in a skin or oval capsule, the central vitellus being spherical and buff-coloured. Such coverings of membrane and jelly-like fluid protect the delicate embryo during its early development in various ways, and are cast aside, like the amniotic envelopes, when free life is entered on. A gelatinous coat surrounds the lamprey's ovum, and similar mucous matter forms the huge floating egg-ribbons of the angler fish (*Lophius*). The glassy eggs of the angler are scattered through the glairy mucus, and thus shielded from the shocks of the waves.

The jelly in fish and amphibian is an oviducal secretion not an essential part of the egg and not a product of the ovary. It is absent from the eggs of many fishes, a great number being simply provided with a thin capsule or vitelline membrane, so called because it arises as a skin or pellicle upon the surface of the yolk, and when hardened forms a resistant shell provided with pores, and in numerous species with knobs, filaments, and other projections. The capsule in the eggs of the hag-fish (*Myxine*) and other forms is regarded by many authorities as a chorion secreted by the oviduct and not a true vitelline membrane. The germ and yolk do not usually fill the chamber of the egg-capsule completely, and the perivitelline space (Ransom's breathing chamber) is filled with a dilute organic fluid, which forms a protective layer within the capsule. Upon emerging from the egg the larvæ of fishes and many other vertebrates are delicate and comparatively defenceless. A larval herring, haddock, or cod is a minute worm-like creature, rarely more than $\frac{1}{8}$ th of an inch long, with a translucent body, a tapering dagger-shaped tail, blunt head, and with mere rudiments of paired limbs. The skin fits as loosely as Falstaff's tunic upon a lanky starveling, and the space separating the skin from the muscle-masses of the trunk is occupied by a clear serous fluid. In the larval frog and other amphibians this lymphatic layer is present, and in some bony fishes its quantity increases to such a degree that the head and trunk are swollen enormously as with some dropsical affection. In the

angler even the tail, in most of our common fishes as slender as the blade of a knife, is rendered thick and club-like. Delicate strands appear to pass across this fluid-filled sub-epidermal space, as in the lamprey, the angler, and other fishes. It is not difficult to surmise that this gelatinous layer around the delicate trunk serves a purpose identical with that of the amnion and other cushion-like coverings in the reptilian, avian, and higher vertebrate embryos. Buffeted about in the surface waters of the sea, or carried hither and thither by strong currents in lakes and rivers, minute larval fishes might suffer severely were it not for these surrounding coats of membrane and abundant fluid. Like the fatty blanket or blubber of the cetacean's skin, these layers preserve the larvæ from hurtful alterations of temperature. Most of our marine food-fishes, such as the cod, haddock, mackerel, sole, plaice, etc., exhibit "sub-epidermal" enlargements of this character, and over the head-region, where the sensitive brain, the delicate ears, eyes, and other important organs are located, they serve to shield these parts from the shocks of the surrounding water. The larval sole exhibits curious enlargements in the anterior region, and in the small Irish sole, recently described by an able scientific observer, Mr. E. W. Holt, they have the form of a huge bladder protruding from the forehead. But in the angler (*Lophius*) these enlargements, as already stated, reach a most extraordinary stage of development. Thus the cavity over the spinal cord and brain, enclosed by the arachnoid sac, probably the "subdural space" of higher forms, is extremely large. It is roofed over by the coloured serous membrane, external to which is a "peri-neural" space limited externally by a delicate membrane, the last forming the floor of a third or "sub-epidermal space" proper, common to all young fishes and outwardly limited by the integument. The delicately organised central nervous system is thus shielded from pressure and external agitations by this triple envelope of fluid-filled chambers and protective membranes. No doubt these have some interesting phylogenetic meaning, if we could only discover it; but they may without hesitation be regarded as amongst the most interesting and important protective provisions for securing the welfare of the frail organisms possessing them during larval life. Their minuteness

and glassy translucency, as in all pelagic animals, protects them, moreover, from sharp-eyed predaceous foes.

Hosts of the lower animals—starfishes, annelids, molluscs, etc.—are likewise pelagic, and when young possess this translucent character. “Pelagic animals,” said the late Professor Moseley, “generally seem to be colourless or specially coloured with a view to protection from enemies both above and below the surface of the water. Probably the blue colour of *Ianthina* and *Velella* is protective as resembling that of the ocean water. . . . There are numerous other pelagic animals thus coloured blue for protection, such as the mollusc *Glaucus*, *Porpita* (allied to *Velella*), and some *Salpæ* in which the nucleus is blue. There are also blue *Medusæ*.” While animals, young and adult, vertebrate and invertebrate, may be thus protected by their extraordinary transparency, which renders them practically invisible in the surface waters, they are frequently armed also with deterrent spines and defensive thorny projections. Many larval fishes are now known to possess parallel structures. The young angler, the gurnard, and other familiar fishes in our own seas have a formidable array of transient spikes and protuberances upon the body. A larval angler, five days after hatching, shows a finger-shaped knob in the middle of the dorsum. It is the rudiment of a larval spine. Two oar-like organs are also rapidly pushed out below and behind the small pectoral fin-pads. They are hardly recognisable as ventral fins, though they really are such. On the fifteenth day no fewer than three formidable spines appear on the back—two of enormous length, just behind the head, curving backward like lengthy tapering whips, while a third erects itself as a blunt protuberance half-way along the dorsum. The head becomes flattened and exhibits angular projections, the gape widens, and the ventral fins now resemble lengthy tentacles hanging below the trunk, and subsequently they become bifurcate and deeply tinted with black. All these spiny projections are supported by strong central rods of cartilage connected with the axial skeleton and limb-girdles. Thus they are somewhat rigid, and impart to the young fish a most formidable and grotesque appearance. Many other curious examples of such structures might be instanced: the ling and rocklings with their enormously long ventral fins, the gurnard and pogge with their huge expanded pectoral fins and

complex array of larval spines along the trunk, are typical illustrations. The young sharks, dogfishes, and rays are too familiar to demand more than a passing notice. Those not born alive—and many selachians are viviparous—are safely packed in a dense horny case secreted by a special gland in the oviduct, and comparable to the calcareous shell of the fowl's egg. This squarish egg-case is lined by a silky membrane enclosing abundant fluid, in which the young fish, attached to a large ball of yolk, floats securely. There is no amnion, such as reptiles, birds, and mammals possess, nor do large epidermal spaces develop beneath the larval skin, as in many bony fishes and cyclostomes, for these cartilaginous fishes remain during a long period within the egg-case, and are robust and even predaceous immediately on hatching out. Like young partridges they are well able to look after themselves at the moment of leaving the egg and entering upon their independent life in the outer world.

To speak of the invertebrates is beyond the scope of this paper, but reference must be made to one group of creatures, long classed as near relatives of the mollusca, viz., the tunicates, popularly known as the ascidians or sea-squirts, but now grouped by the more exact zoology of to-day in close intimacy with the *Vertebrata*. Amongst the solitary ascidians, *Appendicularia* (also called *Oikopleura*) is interesting, not only from the fact that certain vertebrate features are especially well-marked in it, but from a transient larval structure which it possesses, and which recalls the layers of membrane and fluid briefly described in the foregoing remarks. From the eggs of *Appendicularia* a strange little tailed creature like a wriggling gnat emerges. It is of glassy transparency, and undulates actively through the surface waters of the sea by the vigorous movements of its long blade-like tail. It possesses, as close examination reveals, an oval body with mouth, gill-slits, eye, ear, heart, and rod-like backbone—features which entitle it to rank high in the scale of animal life. An animal so perfectly organised would be in constant peril in the open sea, and the larva secretes, probably from the integument, a loose mass of clear jelly, which completely envelopes the body and leaves merely the muscular tail free. In this translucent blanket, usually called the "house" of the ascidian larva, it is protected from many dangers, though it pays

apparently one penalty for its safety, for it is much incommoded in its progress through the water. Violently lashing its tail it rushes hither and thither, up and down, through the surface water, with its head in its "house" much as a terrified cat with its head in a bag. The jelly so loosely clings to the ascidian that it frequently drops off.

But the curious protective features in larval vertebrates form a subject so varied and so new that more cannot be attempted in these notes than to point out some of the more salient features which recent researches have made known to us. Amongst the vertebrates we find embryonic structures often resembling in detail the analogous organs in larval invertebrates; nay, even in the vegetable world, in the embryonic stages of plants, and in the young growing parts of adults, corresponding provisions occur. The stipules, the bases of leaves, the more or less broadened proximal part of the petiole, the pedestal of the petiole, scales, spines, hairs, and gummy matter, all subserve the same important protective purposes. Sir John Lubbock, referring to the presence of stipules, declares that the most general reason for their existence seems to be the protection of the young and tender bud, though they may take at times the function of leaves, while they may be spiny for the protection of the whole plant, sometimes glandular, and so on; but their protective function explains their frequent transiency. It is precisely so in the animal kingdom. We see in the highest groups, in quadrupeds, birds, reptiles, amphibians, fishes, and ascidians, examples of the curious care which is exercised in nature to ensure the safety of the tender and otherwise defenceless young. Doubtless the absence of colour in the case of typical pelagic larvæ is one of the most remarkable provisions; but hardly less so is the presence of peculiar colours in other larval as well as adult forms. The late Professor Moseley looked with little less than amazement at the strange colours exhibited by the inhabitants of the gulf-weed in the Sargasso Sea. "The shrimps and crabs which swarm in the weed are," he wrote, "exactly the same shade of yellow as the weed, and have white markings upon their bodies to represent the patches of *Membrani-pora*. The largest shrimp occurring has a dark-brown colour with sharply defined areas of brilliant white upon its surface, thus closely resembling the older darker-coloured pieces of weed,

which are also most thickly covered with *Membranipora*. The small fish *Antennarius* is in the same way coloured weed-colour with white spots. Even a planarian worm is similarly yellow-coloured, and also a mollusc (*Scyllaea pelagica*). The white patches in some of the crabs, no doubt, represent also, to some extent, the white shells of barnacles, though these are not very abundant in the weed." Professor Moseley instanced a tunicate, a glassy *Salpa* of which the nucleus was of a dark red-brown colour in imitation of the tint of the floating sea-weed.

But many of the vertebrates, especially our common marine fishes, furnish striking instances of protective coloration. The sole in an advanced larval condition is patched in the most grotesque and erratic manner with warm ochreous blotches, and resembles a minute shred of floating weed, for the transparent parts of the fish are invisible. The definite transverse bands of the newly hatched cod and the longitudinal stripes of the late post-larval ling may be persistent traces of ancestral coloration not now of much protective significance; but the post-larval lump-sucker (*Cyclopterus*), the father-lasher (*Cottus*), and other common shore fishes are grotesquely blotched with the most diverse shades of black, brown, green, and yellow, while irregular patches of gleaming white may occur on the head or trunk and perfectly mimic fragments of corallines and encrusting polyzoan colonies. The protective coloration of immature and mature animals is, however, a familiar subject, and the object of this short paper is to point out protective structures less familiar and less obvious, and in many instances not hitherto observed or fully described. It is interesting to find that in the highest and lowest vertebrates alike there occur these curious embryonic and larval wrappings, differing so much in structure and origin, but subservient to the same protective purposes.

WASTE GROUND AND SUBURBAN BIRD-LIFE :

A GLASGOW STUDY.

BY JOHN PATERSON.

(Read 7th October, 1891, and 11th January, 1893.)

WHEN the first part of this paper was read to the Society the entire area was without the city of Glasgow, but before the reading of the second portion it was wholly included by the extension of the city's boundaries. Nowhere, it may be safely said, do changes in the avi-fauna of a district proceed more rapidly than within the boundaries of a great commercial city such as Glasgow, where one locality after another which may have been the home of rural peace for centuries is swallowed up by the much-abused speculative builder to satisfy the demands of a population which is constantly growing in numbers. Notwithstanding the tenacity with which some birds cling to localities the physical features of which may have been altered or obliterated, there comes a time when their continuance becomes an absolute impossibility by the substitution of the tenement house with its unadorned backyard for the cottage with its orchard. The picture is not a fanciful one, as it reflects the history, within quite recent years, of many spots in the area to be described.

The observations which follow refer to the years 1888-92, and the area included is scarcely more than a mile across any way that may be taken. Not only is it within the new city boundaries, but it reaches the boundary line on its eastern side alone. Its limits may be defined as bounded on the north by Butterbiggins Road; on the south by the road which leads from the Mall's Mire Burn through Hangingshaw, and eastwards by Mount Florida to

the monument commemorating the battle of Langside; on the west by the western boundary of the Queen's Park and Victoria Road; and on the east by Polmadie and the Mall's Mire Burn, which at this point has some topographical distinction, being the city boundary and also the dividing line of the counties of Lanark and Renfrew. In proximity to the Mall's Mire Burn and within our limits are some brick-fields, and the disused workings, now filled with water and forming ponds of small size, are frequented in winter especially by a variety of wandering birds, while in summer they provide abundant food for all our hirundines, among whom the swift and swallow are usually to be seen throughout their stay with us in considerable numbers.

Most of the ground within our area has been in time past the scene of brick-making, and the portions not yet built on are either presently free coups or ripening for the builder. In the Queen's Park alone can we hope for some little continuity in its bird-life, the rest of the district being the scene of rapid change, except in some places already congested where the sparrow, starling, jackdaw, martin, and swift have entered into possession and may be expected to remain until the present order of things has passed away.

FALCONIDÆ.—As might be expected, birds of prey are poorly represented within our restricted limits. The sparrow-hawk (*Accipiter nisus*) is the only member of its class that I have seen, and that only in winter. The first time it came under my observation, I saw it most favourably as it flew from the city southwards over the waste ground between Butterbiggins Road and Govanhill. It made a resultless stoop on some small birds among the docks and thistles there, and became immediately thereafter the recipient of unwelcome attention from a small flock of starlings.

TURDIDÆ.—Most part of the year mistletoe-thrushes (*Turdus viscivorus*) are a well-marked feature of the bird-life of the Park, especially at the pairing season, when they arrest attention by their lively actions and harsh call notes.

The redwing and fieldfare (*Turdus iliacus* and *T. pilaris*) are usually seen each winter in the district. The former is much more easily approached, and in hard weather on a Sunday morning I have seen it on the terrace in the Park within a couple of

yards of the granite steps, which were then thronged with people going to morning service. The fieldfare is more conspicuous in point of numbers, though of wilder habit. I have seen it on a foggy morning near the old city boundary heading northwards, but apparently confused by its surroundings.

The blackbird (*Turdus merula*) remains a plentiful species with us, despite the fact of its nest falling an easy prey to the hordes of boys who regularly patrol the outskirts of the city in spring and early summer. His clarion call note is familiar at all seasons, and the flute-like notes of his song may be heard in perfection by the middle of February.

The song-thrush (*Turdus musicus*) is not so abundant as the last-named, but occasionally appears in large numbers as the result of local migration.

SYLVIIDÆ.—The hedge-sparrow (*Accentor modularis*) is very common, and I have no doubt still breeds within the late boundaries of the city, where for several years past I have frequently in early spring heard his cheerful song delivered from a billposter's hoarding or the roof of a joiner's shop, his choice of a perch in such localities being limited. I have heard him in full song as early (or as late?) as the 28th of December.

The redbreast (*Erithacus rubecula*) is a familiar species, and extends his outposts well within the city's bounds in winter. His song is not infrequently the one bright element to redeem the sullenness of a winter day. Almost our only winter songster, his is also the dominant note of autumn, and at this season the chorus of robins in the hedges about our clay-holes is such as to surprise some who are not neglectful of "natural knowledge."

The whinchat (*Saxicola rubetra*) is occasionally to be seen on the waste ground south of Polmadie, and a few wheatears (*S. ænanthe*) usually appear on their return early in spring in the same locality, remaining in the neighbourhood for a few weeks. On the 27th of March, 1892, I saw my first wheatear of the year at the clay pits at Polmadie. There was snow on the ground, the result of a blizzard of great severity which had set in on the afternoon of the previous day, and in which a number of persons perished throughout Scotland. I was much interested at seeing one of our summer migrants appearing under such untoward circumstances.

The sedge-warbler (*Acrocephalus schoenobaenus*) appears in the same locality as the two species last referred to, and might remain to breed, but its vociferousness betrays it and it shortly disappears to less-frequented quarters. Though open to the charge of monotony, the song of this warbler contains a cadence of great beauty, which is, however, but too seldom uttered.

The greater whitethroat (*Sylvia rufa*) I have only seen in the district on hedges at the southern boundary near Hangingshaw.

Generally distributed in all sylvan localities round Glasgow, the willow-wren (*Phylloscopus trochilus*) is conspicuous in the Queen's Park early in May, where it shares the honours of the vocal choir with the blackbird.

TROGLODYTIDÆ.—The wren (*Troglodytes parvulus*) is always to be found in the winter months skulking under the banks and hedges at the Mall's Mire Burn.

PARIDÆ.—The great titmouse (*Parus major*) is well known in the Queen's Park.

The blue titmouse (*Parus cæruleus*) is familiar in the locality last-mentioned, and may be seen occasionally throughout our limits wherever hedges occur. His presence is announced by his cheerful *birr-r-r-r*, uttered while performing the most wonderful acrobatic evolutions on the slenderest of supports. I have seen him in winter in a suburban locality alighting at the bottom of the gable wall of a three-storey tenement and gradually working his way up to the top, diligently searching the interstices for such insectivorous tit-bits as offered.

The coal-titmouse (*Parus ater*) I have several times seen on the western boundary of the Queen's Park near the mound.

MOTACILLIDÆ.—One of the most characteristic birds on waste ground is the pied wagtail (*Motacilla lugubris*). He even ranks as a city bird, being frequently seen from the bridges over the Clyde, especially in winter. Though common everywhere, it is a rare pleasure to hear the song of the cock, which is of a bright and cheerful character. Familiar with this species as far back as I remember, I have only on one occasion heard his song, uttered in the pauses of short flights after insects on a bright day, the last of January, 1892. I was surprised to read in Yarrell's *British Birds* (last edition) that "the pied wagtail but seldom perches on a tree or bush." This is entirely contrary to my knowledge of the

bird's habits, as, though frequently seen *away* from trees or bushes, it never hesitates when opportunity offers or occasion requires to avail of such for perching. When caught at his morning bath, as I have seen him standing on a stone in a horse-pond, with his long tail feathers—with shafts of pure white and jet black—arranged like a half-opened fan, the striking picture he presents is not readily forgotten.

The grey wagtail (*Motacilla sulphurea*) may sometimes be seen in summer near our eastern limits, where in winter he is of constant occurrence.

The yellow wagtail (*Motacilla raii*) always appears at the time of its arrival in this country in the same locality as the last species.

On the morning of the 23rd of March, 1892, I was surprised to note a tree-pipit (*Anthus trivialis*) among the hedges and scattered stag-headed willows at the Polmadie clay pits. This is an early date so far as I can learn for the arrival of this summer visitor. It remained in this neighbourhood for about three weeks, during which time I saw it frequently.

In autumn and winter the meadow-pipit (*Anthus pratensis*) occurs in considerable numbers about the Mall's Mire Burn and adjoining ditches and clay holes.

ALAUDIDÆ.—The free coups which follow the disused clay workings are sometimes in winter frequented by numbers of skylarks (*Alauda arvensis*) in the company of finches, starlings, wagtails, rooks, and other birds, and in the present winter, with snow on the ground, I have seen one near the late southern boundary of the city.

EMBERIZIDÆ.—The reed-bunting (*Emberiza schoeniculus*) occurs irregularly near our eastern limits. The yellow bunting (*Emberiza citrinella*) is better known, and may be seen and (in the season) heard in the Queen's Park.

FRINGILLIDÆ.—The finches, who are so largely gregarious in autumn and winter, seem to take as kindly to the rubbish heap and free coup as they do to the stubble field. Mixed flocks of chaffinches, house-sparrows, and greenfinches are among the common objects of our suburban and waste ground bird-life. The chaffinch (*Fringilla coelebs*) is familiar and abundant, and comes close to the streets in winter. I have heard his hurrying notes (which one naturally associates with the time of apple-

blossom) at Hangingshaw in foggy mornings in February when everything was covered thick with rime. Of the house-sparrow (*Passer domesticus*) it is only necessary to say that "other birds come back again, *he* never goes away." The greenfinch (*Coccothraustes chloris*) is common in the Queen's Park. On the second Sunday of April, 1892, I was much pleased while seated on the terrace in the park to see a greenfinch which, while *en route* from one perch to another, suddenly came to a halt, and moving about for some time with great apparent uncertainty, but singing all the while, at length moved on to a tree near at hand where the song was continued. This "graceful flight" seems to be chiefly indulged in early in the year. The goldfinch (*Carduelis elegans*) is probably the greatest rarity that I am able to record from the district and from my own observation. Early in January, 1891, I was surprised one morning, in hard weather, to see a pair of goldfinches at Polmadie in a brick-field in company with some greenfinches and sparrows, one of the goldfinches being characteristically perched on an old thistle-head. I watched them for some time, and having my field-glass with me made no mistake about them. Recently, in conversation with a bird-catcher in this locality, I asked if he had ever seen the goldfinch hereabouts, and was interested in the reply which he made, as it was not prompted by any narrative on my part of my own experience. He indicated a time which closely synchronised with the date just given, and stated that he had seen five together on a free coup between Rutherglen Road and Polmadie, and that one of the birds had been "limed." The linnnet (*Linota cannabina*) I am unable to include in my list, although it doubtless strays within our limits in winter at least. A few days before reading the second series of notes on this subject to the Society I saw one just snared half a mile south of our boundary.

STURNIDÆ.—When going out in the morning one of the first sounds to greet the ears in suburban localities is that of the "castanets" of the starling (*Sturnus vulgaris*). Usually gregarious and often breeding in colonies, he is essentially a bird of social habits and finds community of interest with the sparrow and rook in frequenting the vicinity of human dwellings. In the second week in September, 1891, which was remarkable for the lovely Indian summer weather prevailing, I was much interested in watching the

starlings hawking high-flying insects which seemed to abound in that halcyon weather, and the gyrations of the birds from the greater weight of their bodies presented a curious contrast to the more agile movements of the then fast-departing hirundines.

CORVIDÆ.—The rook (*Corvus frugilegus*) and jackdaw (*C. monedula*) are well known, the former being very common. The rook, indeed, comes in great force with the first light, and his hoarse note is its usual accompaniment. In early morning they abound in the streets, from which, as the flow of traffic increases, they are gradually banished. Suburban localities with streets built of houses without any attempt at ornamentation have their dreariness emphasised at such early hours by the presence in all streets and open places of the shambling rook in great numbers. In our district we have a small rookery of some half-dozen nests (occupied in 1892) in a group of trees west of Crosshill station on the Cathcart line. A rook, conspicuous by the possession of some white feathers on his wings, has been seen several times of late in the Queen's Park. There are only two or three pairs of jackdaws about Govanhill. This species is altogether outnumbered by the last-mentioned.

HIRUNDINIDÆ.—The large quantity of stagnant water in the vicinity of the clay holes at Polmadie and the black mud which is associated with it, together seem to give rise to a vast amount of those forms of insect life on which the hirundines prey. At any rate these clay holes attract all the members of the swallow family, and mixed groups are usually to be seen there throughout the period of their stay with us. The swallow (*Hirundo rustica*) is the most abundant among its congeners, and in the Queen's Park also it appears regularly. The martin (*Chelidon urbica*) breeds sparingly about Govanhill and Crosshill. The sand-martin (*Cotile riparia*), as above stated, appears at the clay holes regularly every year.

CYPSELIDÆ.—The swift (*Cypselus apus*) is well known in the district. During the autumn of 1891 attention was generally drawn throughout the country to the departure of this species being unusually delayed. My own experience that year confirmed, with regard to our neighbourhood, this general experience. On the 6th of September I saw some eight swifts in company with swallows and sand-martins at Polmadie. The main body of swifts

usually leaves the country by the middle of August. White of Selborne, who paid much attention to this, declares that they "retire . . . by the 10th August, . . . and every straggler invariably withdraws by the 20th." He further writes, "but what is more extraordinary, they begin to retire still earlier in the most southerly parts of Andalusia, where they can be in no ways influenced by any defect of heat; or, as one might suppose, failure of food." Happening to arrive in a Tuscan city on the 18th of July, 1890, I was struck with the great numbers of swifts which were flying restlessly about one of the squares there, but it was only in the course of a day or two after my arrival that I realised that they had been congregating for departure, for in that brief space they had entirely disappeared. After the experience of 1890-91 I watched curiously what would transpire in the autumn of 1892. The result was that in that year they continued in large numbers till 19th and 20th August in Polmadie and Langside respectively, and at the former locality I saw a pair on the 26th of August. There only remains to be further recorded the notable circumstance that the departure of the swift, though delayed in 1891, was immediately followed by a week of remarkably fine weather, referred to in this paper in the notes on the starling.

CAPRIMULGIDÆ.—In the article on birds contributed by Robert Gray to the *Fauna and Flora of the West of Scotland*, published by the Glasgow Society of Field Naturalists, he states that the nightjar (*Caprimulgus europæus*) has on various occasions been seen in the evening flying above the grass in the Queen's Park. This was published in 1876.

CUCULIDÆ.—In the meteorological notes from the public parks contributed by Mr. M'Lellan, late parks superintendent, to the proceedings of the Natural History Society of Glasgow, he records for a number of seasons what he terms the "rare" and "somewhat rare" occurrence of the cuckoo (*Cuculus canorus*) in the Queen's Park especially. One morning, early in the summer of 1890, I saw a cuckoo flying from one of the belts of shrubbery in the Park in the direction of Camphill.

ALCEDINIDÆ.—When my first series of notes on the present subject was read to the Society, I mentioned having once seen on the Mall's Mire Burn a kingfisher (*Alcedo ispida*) in hard weather,

which I was disposed to regard as an exceptional occurrence. Between that time and the date of the second series of notes, however, I had again seen the kingfisher about the Mall's Mire Burn and the ditches and clay holes in that vicinity five times. The occurrences were all between October and December: once in the first-mentioned, twice in November, and thrice in December, and not invariably in severe weather.

COLUMBIDÆ.—The ringdove (*Columba palumbus*), which comes to the fields under green crops near the city boundary, may sometimes be seen passing overhead within our limits.

PHASIANIDÆ.—In an October morning I have seen a cock-pheasant (*Phasianus colchicus*) at the Polmadie clay holes. This bird is common just beyond our south-eastern limits.

RALLIDÆ.—The land rail (*Crex pratensis*) is well known in the fields skirting the boundary of the city in the locality just mentioned.

CHARADRIIDÆ.—The golden plover (*Charadrius pluvialis*) comes within our limits about Polmadie, where the lapwing (*Vanellus vulgaris*) is better known. Continued severe weather, as in the present winter (1892-93), drives these birds from our neighbourhood, but after a few days of open weather they quickly reappear.

SCOLOPACIDÆ.—For about six months of the year (October till March) I can rely on flushing the common snipe (*Gallinago caelestis*) in the ditches about Polmadie. As a recent writer in *Black and White* has remarked, it is surprising how close this bird comes to populous neighbourhoods. Its appearance in our district is neither irregular nor uncertain.

In the same vicinity as the last the common sandpiper (*Totanus hypoleucus*) always appears on its arrival in spring. The ground hereabouts is quite congenial to their tastes and they usually show a disposition to remain, but the patrol to which the locality is subjected in the bird-nesting season undeceives them and they soon seek other quarters. The common redshank (*Totanus calidris*) occurs here also as a winter visitor, but sparingly.

LARIDÆ.—The black-headed gull (*Larus ridibundus*) is a well-known species around Glasgow, and about Polmadie it abounds at the clay holes, where, even after prolonged frost, a few are constantly to be seen. One interesting feature about this gull is the

rapidity with which the black head is assumed in early spring. An instance is cited in Yarrell's *British Birds* in which the change from white to dark-brown was completed in five days. This, I think, cannot be exceptional. In our district the change in the great numbers of gulls which are to be seen everywhere seems to be completed within a fortnight—from the 15th of February till the end of that month. By the latter date black heads are the rule, and as the change is to be seen in all degrees of advancement during that period the likelihood seems to be that five or six days must suffice in most cases for its completion.

The foregoing list embraces forty-nine species, of which forty-five have come under my observation within the past five years in a small area within the present boundaries of the city. When I look back a quarter of a century on the appearance which the locality described presented then, and consider the vast change which has gone on in that period, I cannot resist the conclusion that another such period of expansion will make it impossible to compile such a list again. In that fact lies any interest that may attach to the paper. It may be something to reflect that in the last decade of the present century we had not in this populous neighbourhood lost sight of that "bright finch," the goldie; that the cuckoo's call and the land rail's "crake" were not then unknown; and that even by our turbid watercourses and clay pits the kingfisher darting like "a blue arrow" was not an unfamiliar sight to such as then took delight in the pursuit of natural history.

THE MOSS-LIKE TILLANDSIA.

(*Tillandsia usneoides*, Linn.)

By ROBERT TURNER.

(*Specimens of the Plant and Photographs of Trees showing its mode of growth exhibited 13th March, 1890.*)

THIS plant is found abundantly in the Southern United States from Virginia to Florida, also in the West Indies and Brazil. It hangs in dark and tangled masses from oak and pine branches, and is known popularly in the States as long moss, black moss, or old man's beard.

It is an epiphytic plant, growing on trees but not deriving any of its sustenance from them. Most of these epiphytes are showy plants, but this one is not. They chiefly belong to the orders *Orchidaceæ* and *Bromeliaceæ*, and *Tillandsia* is included in the latter.

Tillandsia usneoides is externally very unlike the others of the same genus. Its stem is diffuse, filiform, pendulous, and branching. Now *Tillandsia utriculata*—the wild pineapple of Jamaica—has a stem three or four feet high and leaves a yard long, and these leaves are placed within each other in such a way that the water which runs down them is retained in their expanded bases, which swell out and form a reservoir or bottle, often holding nearly a quart of water, and as this is contracted at the neck evaporation is prevented. In the dry season they are the resort of animals and even a resource of travellers when other supplies fail. Some thirty species have been enumerated, all natives of the New World, though some have been introduced to West Africa and the East Indies. Most of them have leaves that serve as reservoirs for water, and they can all exist in a hot dry air without contact with the earth.

This *Tillandsia usneoides* would not be readily taken to be a near ally of the pineapple (*Ananassa*), and yet so it is, the pineapple belonging to the same order, *Bromeliaceæ*. Though externally so different from other Bromeliads, it agrees with many of them in its epiphytic habits, and of course with all in generic characters. The scurfy epidermis, like that of the pineapple leaves, displays a very interesting microscopic structure.

This little plant is of some use—perhaps rather insignificant—in the world. It is employed in the preparation of an ointment against hæmorrhoids. The filamentous stems, when deprived of their bark by steeping in water for a fortnight or so, are used in some out-of-the-way parts of America in place of horse-hair for stuffing and other purposes, and also for making cordage. When taken out of the water after steeping they are dried, and the epidermis then separates readily from the fibre.

The name *Tillandsia* was given to the genus by Linnæus in honour of Elias Tillands, Professor of Physic at Abo in Finland. Linnæus gives a curious account of his reason for choosing this name:—"Tillandsiæ cannot bear water, and therefore I have given this name to a genus from a professor at Abo, who in his youth having an unpropitious passage from Stockholm to that place, no sooner set his foot on shore than he vowed never again to venture himself upon the sea. He changed his original name to Tillands, which means on or by land; and when he had subsequently occasion to return to Sweden, he preferred a circuitous journey of 200 Swedish miles through Lapland to avoid going eight miles by sea." The most precious passage in the Scriptures for that professor must, I take it, have been the one in the Apocalypse, "And there shall be no more sea."

I daresay most of us have read that delightful book, Ruskin's *Proserpina*, in which his genius lights up with freshness a whole field of beauty. But looking up at the sparkling stars of fancy we are apt to stumble sadly over the hard stones of fact. Asa Gray says of it:—"In many a book the want of sufficient knowledge is pleaded as an excuse; in this, it is paraded as a recommendation. Ignorance, no doubt, has its uses; but it is questionable whether teaching is altogether the best use to put it to." And this little *Tillandsia* has caught Ruskin up in a way that botanists will readily recognise and poets forgive.

Ruskin goes out to his garden and brings in a bit of old brick, "emerald green on its rugged surface," and a thick piece of mossy turf.

"First for the old brick," he says. "To think of the quantity of pleasure one has had in one's life from that emerald green velvet,—and yet that for the first time to-day I am verily going to look at it! Doing so, through a pocket lens of no great power, I find the velvet to be composed of small star-like groups of smooth, strong, oval leaves,—intensely green, and much like the young leaves of any other plant, except in this;—they all have a long brown spike, like a sting, at their ends.

"Fastening on that, I take the *Flora Danica*, and look through its plates of mosses, for their leaves only; and I find, first, that this spike, or strong central rib, is characteristic;—secondly, that the said leaves are apt to be not only spiked, but serrated, and otherwise angry-looking at the points;—thirdly, that they have a tendency to fold together in the centre;—and at last, after an hour's work at them, it strikes me suddenly that they are more like pineapple leaves than anything else." Here we have Ruskin beginning to trip. The resemblance of moss leaves to those of pineapple is most fanciful, simply because serrated and pointed and gathered into a rosette.

"And it occurs to me, very unpleasantly, at the same time, that I don't know what a pineapple is!

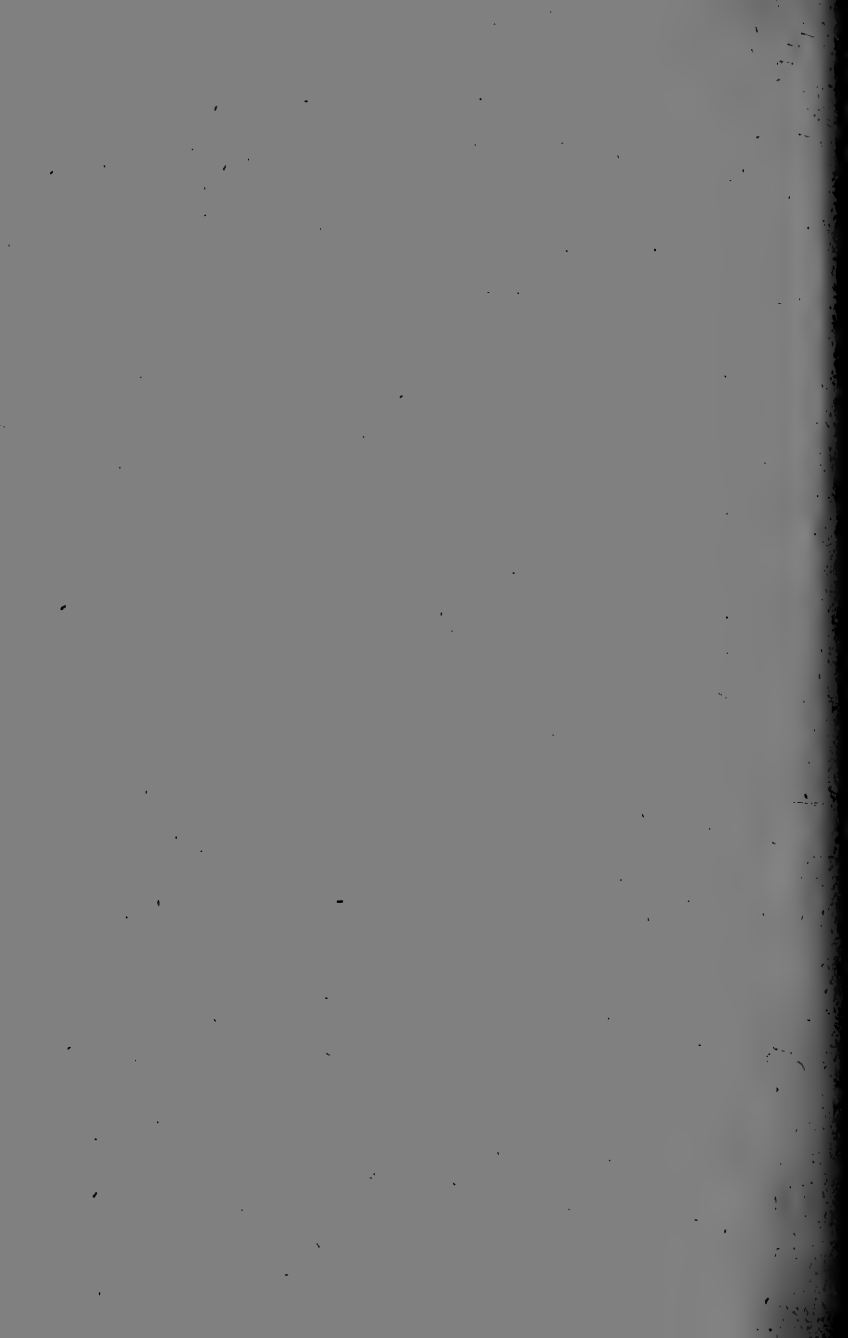
"Stopping to ascertain that, I am told that a pineapple belongs to the 'Bromeliaceæ'—(can't stop to find out what that means)—nay, that of these plants 'the pineapple is the representative' (Loudon); 'their habit is acid, their leaves rigid, and toothed with spines, their bracteas often coloured with scarlet, and their flowers either white or blue'—(what are their flowers like?) But the two sentences that most interest me, are, that in the damp forests of Carolina, the *Tillandsia*, which is an 'epiphyte' (*i.e.*, a plant growing on other plants), 'forms dense festoons among the branches of the trees, vegetating among the black mould that collects upon the bark of trees in hot damp countries; other species are inhabitants of deep and gloomy forests, and others form, with their spiny leaves, an impenetrable herbage in the Pampas of Brazil.' So they really seem to be a kind of moss on a vast scale." How Ruskin

draws this inference I am at a loss to determine, except that both *Tillandsiæ* and mosses sometimes grow on trees.

Now comes Ruskin's supreme discovery in this connection. "Next, I find in Gray, Bromeliaceæ, and—the very thing I want—'Tillandsia, the black moss, or long moss, which, like most *Bromelias*, grows on the branches of trees.' So the pineapple is really a moss; only it is a moss that flowers but 'imperfectly.' 'The fine fruit is caused by the consolidation of the imperfect flowers.' (I wish we could consolidate some imperfect English moss-flowers into little pineapples then—though they were only as big as filberts.) But we cannot follow that further now; nor consider when a flower is perfect, and when it is not, or we should get into morals, and I don't know where else; we will go back to the moss I have gathered, for I begin to see my way, a little, to understanding it."

Ruskin is a master of words, and he slides most gracefully from one misunderstanding of facts to another till he persuades himself fully that the pineapple is a moss; and the turning point of it all is that the popular name for this flowering plant, the little *Tillandsia*, is black moss or long moss, just as the lichen *Cladonia* is known as reindeer moss, and a seaweed as Irish moss, and so on.

I trust you will not misunderstand me with regard to Ruskin. He is recognised by all of us as one of the men of genius of the century. His prose is a pleasure to read, a delight lies in it like music, a charm like the singing of birds. He touches many dull things and they gleam like jewels under the light of his genius. In this very book *Proserpina* there are some most happy expressions, delicious conceptions, stimulating suggestions. But here I think we have Ruskin at his worst, overpowered by fancy, led astray by words, grasping at this and then at the other suggestion, having no time to get even at the most rudimentary knowledge of the wide difference between flowering plants and mosses.



LIST OF EXCURSIONS AND PHOTOGRAPHS.

1885-92.

COMPILED BY HUGH BOYD WATT AND JAMES MITCHELL.

THE following is a complete chronological record of the places visited by the Society since the inception of its excursion-programme, with the dates of the visits prefixed. A topographical classification has been made into eight districts, and, for convenience of reference, these areas are mostly defined by political or territorial divisions, no attempt having been made to lay down more natural lines of demarcation. Under the same headings will be found the titles of photographs, the earliest of which were taken in 1888, and for these illustrations of its rambles the Society is indebted to MESSRS. JAMES MITCHELL, JOHNSTON SHEARER, WILLIAM SINCLAIR, JOHN STEWART, and SAMUEL STEWART.

H. B. W.

I.—LANARKSHIRE (*vide* pp. 1-17).

1885. Sept. 12. Stonelaw Wood, Rutherglen.
Oct. 24. Garnkirk Moor and Gartferry House.
1886. April 3. Carmyle and Kenmuir Bank.
May 15. Blantyre and the Rotten Calder.
June 16. Cadder Wilderness.
June 30. Cathkin Braes.
July 14. Tollcross.
Aug. 21. Barncluith, Cadzow, and Chatelherault.
Oct. 2. Bishop Loch, Bedlay, Gartferry Glen, and Chryston.
1887. Oct. 1. Carmyle.
1888. June 27. Tollcross.

1888. July 11. Cambuslang to Uddingston by Clyde-side.
 Sept. 8. Falls of Clyde.
 Sept. 15. Barncluith and Hamilton Low Parks.
 Oct. 13. Cadder Wilderness.
1889. June 22. Falls of Clyde.
 June 25. Calderwood Glen, Blantyre.
 July 9. Possil Marsh.
 Aug. 17. Bothwell Castle and the Clyde.
1890. Jan. 1. Hunterian Museum, University of Glasgow.
 Feb. 1. Kelvingrove Museum, Glasgow.
 May 14. Cambuslang to the Rotten Calder by Clyde-side.
 May 24. Bishop Loch, Gartcosh.
 June 25. Cadder, the Roman Wall, and the Kelvin (*vide* pp. 104-9).
 July 1. Stonelaw Wood and Cathkin Braes.
 July 9. Possil Marsh.
 Aug. 23. Cleghorn, the Mouse, Cartland Crags, and Lanark.
 Oct. 11. Douglas Support, Rosehall.
 Nov. 1. Messrs. J. & R. Thyne's Nurseries, Kelvinside.
1891. May 13. Hogganfield Loch.
 May 30. Craignethan Castle (Tillietudlem) and Crossford.
 July 15. Bishop Loch and Gartloch.
 Sept. 12. Barncluith, Cadzow, and Chatelherault.
 Oct. 10. Cadder Wilderness.
1892. May 28. Braidwood, Fiddler Gill, Crossford, and Craignethan.

PHOTOGRAPHS.

Great Maple at Westburn, Cambuslang (<i>vide</i> Plate III.).	Craignethan Castle, Entrance and Tower. View on the Nethan.
Birch at Westburn, Cambuslang.	Ravine of the Nethan.
The Clyde near Carmyle.	Clyde from Crossford Bridge, looking up.
Pathway in Cadder Wilderness.	Do. do., looking down.
Beech Avenue, do.	Carfin House and Park.
Beech Trees below Kenmuir Bank.	Group of Great Maples at Barncluith, Hamilton.
The Clyde above Bonnington Fall.	False Acacia, Barncluith Gardens (<i>vide</i> Plate II.).
Gorge of the Clyde between Bonnington and Corra Linn.	Terraces, Barncluith Gardens.
Bonnington Falls.	Oaks in Cadzow Forest.
Corra Linn.	Gnarled Oak, do.
Roman Bridge near Bothwell.	Great Maple, do.
Bothwell Bridge.	White Cattle, do. (<i>vide</i> Plate I.).
Bothwell Castle (exterior).	Cadzow Castle.
Do. (interior).	Wych Elm, Douglas Support.
Do. (distant view).	Pair of Beeches, do.
Rustic Cottage in Bothwell Castle Grounds.	Beech, do.
The Clyde near Bothwell.	Hornbeam with pendent branches, Douglas Support.
View on the Mouse Water.	
Craignethan Castle.	

II.—RENFREWSHIRE (*vide* pp. 18-54).

1885. Sept. 26. Waulkmill Glen, Barrhead.
1886. May 1. Gleniffer.
 June 12. Eaglesham, Ballagioch, and the Earn.
 June 20. Inverkip, Ashton, and Gourrock.
 Sept. 4. Langbank.
1887. May 14. Shielhill Glen, Greenock.
 May 28. Devol's Glen, Port-Glasgow.
 June 15. The Linn, Cathcart.
 June 25. Inverkip.
 June 29. The Rouken, Thornliebank.
 July 6. Queen's Park, Glasgow.
 Aug. 20. Gleniffer.
 Sept. 17. Crookston Castle.
1888. Aug. 4. Castle Semple, Howwood.
 Sept. 29. Auldhouse and Nether Pollok.
1889. April 6. Cathcart, Aikenhead House, and Langside.
 April 13. Househill, Crookston Castle, Hawkhead, and Logan's Raiss.
 April 29. Dargavel and Bishopton House.
 May 4. Finlaystone House, Langbank.
 May 18. Gourrock and Ardgowan.
 June 8. Carruth Glen, Duchal, and Craigbet.
 June 12. Rosshall, Crookston.
 Sept. 28. Caldwell and Loch Libo.
1890. March 8. Paisley Museum.
 April 12. Renfrew, Elderslie House, Blythswood, and Inchinnan.
 April 26. Neilston Pad and Hairlaw Dam.
 May 3. Bishopton and Erskine House.
 June 28. Castle Semple, Howwood.
 July 5. Craigbet, Bridge of Weir.
 July 14. Messrs. Austin & M'Aslan's Nurseries, Cathcart.
 Aug. 2. Lochwinnoch, Barr Castle, and the Calder.
1891. April 4. Kilmalcolm, Kilallan, and Barochan House.
 April 25. Milliken House and Kilbarchan.
 May 2. Pollok Castle and Darnley Glen.
 June 20. Shielhill Glen, Greenock.
1892. April 16. Southbar, Northbar House, and Inchinnan.
 April 30. Lochwinnoch and the Calder.
 Aug. 27. Kelly, Wemyss Bay.
 Sept. 24. Caldwell House and Loch Libo.

PHOTOGRAPHS.

Great Maple at Darnley—"Queen Mary's Tree."	Hairlaw Dam.
Spanish Chestnuts at Auldhouse.	Castle Semple Loch.
Group of Wych Elms at Nether Pollok—figured in Strutt's <i>Sylva Scotica</i> (1822).	Castle Semple House.
Oak in Flower Garden at Nether Pollok.	Ailantus Tree, Castle Semple.
Hornbeam at Househill.	Cedar of Lebanon, do. (from south) (<i>vide</i> Plate IV.).
Crookston Castle.	Cedar of Lebanon, Castle Semple (from east).
Ardgowan Home Farm.	Old Collegiate Church, Castle Semple.
Great Maple at Cresswell Farm, Gourrock.	Do. (Tombstone), do.
Do. Cove Farm, do.	Craigbet House.
Dargavel House.	Lime Tree Avenue, Craigbet.
Great Maple at Bishopton House—figured in Strutt's <i>Sylva Scotica</i> (1822).	Barr Castle, Lochwinnoch.
Lime Tree Avenue, Bishopton House.	Remains of "Quier" of Old Parish Church, Kilmalcolm.
Great Maple at Logan's Raiss, Nitshill.	Remains of Kilallan (St. Fillans) Church.
Craigends House.	Kilallan (St. Fillans) Church and Church-yard.
Yew at Craigends.	Barochan House.
Do. (from south-west).	Barochan Cross, front (<i>vide</i> Frontispiece).
Horse Chestnut at Craigends.	Do., reverse.
In Devol's Glen, Port-Glasgow.	Milliken House.
Old Crack Willow, Elderslie House.	Great Maple, Milliken.
Beech Tree at Blythswood.	View in Shielhill Glen, Greenock.
Inchinnan Bridge.	Kelly House.
Erskine House.	Waterfall and Bridge on Kelly Burn.
Beech Tree, Erskine.	Millpond, Kelly Burn.
Cedar of Lebanon, do.	Model of Livingstone's Hut, Kelly.
Group of Great Maples, do.	Caldwell House.
Great Maple, do.	
Birch, do.	

III.—AYRSHIRE.

1886. July 10. West Kilbride, Portincross, and Fairlie.
1887. May 19. Dailly, Craighead, Bargany, Penwhapple Glen, and Killochan.
- June 11. Fairlie Glen.
1889. Sept. 14. Eglinton Castle, Kilwinning.
- Oct. 3. Mauchline, Barskimming, Auchinleck House, and Ballochmyle.
1890. June 7. Fairlie, Kelburne Castle, and Largs.
- Oct. 2. Galston, Loudoun, Lanfine, Newmilns, and Darvel.
1891. May 21. Dalmellington, Ness Glen, the Doon, and Loch Doon.
- July 11. Troon.
1892. April 4. Fairlie, Portincross, and West Kilbride.
- May 14. Dalry, Blair, and the Garnock.
- May 19. Maybole, Culzean Castle, Kirkoswald, and Crossraguel Abbey.

PHOTOGRAPHS.

Eglington Castle (front view).	Spanish Chestnut (Lanfine House in back-ground).
Do. (distant view).	Rocks at north end of Loch Doon showing glaciation.
Entrance to Coach Coves, Barskimming.	Entrance to Ness Glen on the Doon.
Bridge at Barskimming.	View in do. do.
Norway Maple, Barskimming.	Gorge of do. do.
Auchinleck House.	Ardneil Bank, Portincross.
Meeting of the Lugar Water and Water of Ayr.	Portincross Castle.
Fairlie Castle.	Do. (view from top).
Silver Fir at Kelburne.	Cannon from Spanish Armada, Portincross.
Monument, do.	Law Castle, West Kilbride.
Waterfall, do.	Blair House, Dalry.
Silver Fir (candelabra-like), Kelburne.	Ash Tree, Blair.
Kelburne Castle (from lawn).	Cleaves Cove on the Dusk Water.
Do. South Tower.	Culzean Castle (from the bay).
Do. (front view).	Do. and Rock Terraces.
Kelburne Castle Garden.	Do. and Fountain in Garden.
Sundial, do.	Gateway of the Cove, Culzean.
<i>Pinus insignis</i> at Kelburne.	Lake with Waterfowl, do.
<i>Cryptomeria japonica</i> , do.	The Lawn, do.
Yew Tree, do.	Culzean Bay.
Lime Tree Avenue, do.	Large Rhododendron in Gardens, Culzean.
Montgomery Aisle, Largs.	<i>Crataegus</i> (sp. ?), do.
Do., Armorial Bearings over Doorway.	Fig Tree, do.
Ash Tree in Largs Churchyard.	Japanese Summer House, do.
Old Wych Elm, Galston—"Wallace Tree."	Crossraguel Abbey (from the south-west).
Barr Castle, Galston.	Do., New Abbot's Tower.
Loudoun "Quier" and Kirkyard.	Do., Dovecot.
Loudoun Castle.	Do., Chapter House.
Historic Yew at Loudoun Castle.	Do., Nave and Choir.
Silver Fir (candelabra-like), Lanfine.	

IV.—DUMBARTONSHIRE.

1886. Sept. 18. Darleith Glen, Cardross.
 Oct. 16. Auchentorlie Glen, Bowling.
 1888. June 16. Auchentorlie, Bowling.
 1890. Sept. 27. Rosneath.
 1891. Aug. 8. Dumbarton Rock to Dalmuir by Clyde-side.
 1892. June 11. Dalmuir and the Kilpatrick Hills.
 Sept. 10. Murroch Glen, Kilpatrick Hills.

PHOTOGRAPH.

The Clachan Avenue of Yews, Rosneath.

V.—STIRLINGSHIRE.

1886. May 29. Ballagan Glen, Strathblane.
 Aug. 7. Finnich Glen, Killearn.
 1887. April 9. Bardowie Loch.
 July 9. Finnich Glen, Killearn.

1887. Aug. 6. The Whangie, Kilpatrick Hills.
 Sept. 3. Garrel Glen, Kilsyth.
1888. Aug. 18. Mugdock, Craiggallon Loch, and the Whangie.
1889. May 23. Drymen for Loch Lomond, *q.v.*
 June 29. Denny and the Carron.
 Oct. 12. Craigton Woods, Milngavie.
1890. June 21. Denny and the Carron.
 Aug. 16. Bridge of Allan, Lecropt, and Keir.
1891. June 13. Bonnybridge, Bonnymuir, Forth and Clyde Canal, and
 Castlecary.
 July 2. Bardowie Loch.
 Aug. 22. Castle Rankine Glen, Castlecary.
1892. Aug. 6. Garrel Glen and Kilsyth Moor.
 Oct. 15. Mugdock Castle, Milngavie.

PHOTOGRAPHS.

Spout of Ballagan,	Strathblane.	Lecropt Kirkyard.
Ballagan Beds,	do.	Keir House.
Blairquosh Oak,	do.	Spanish Chestnut at Keir.
Oak at Blairquosh Farm,	do.	Pathway to Bowling Green at Keir.
Beech Tree on Duntreath Estate, do.		

VI.—LOCHLOMONDSIDE AND THE HIGHLANDS

(*vide* pp. 55-65 and 71-77).

1886. May 20. Finlarig and Creag-na-Caillich, Killin.
1888. June 23. Luss and Inchlonaig.
 Oct. 4. Callander, Lochs Vennachar and Achray, and the Trossachs.
1889. May 23. Drymen, Buchanan Castle, Balmaha, and Inchcalliach.
 Aug. 31. Ardlui and Ben Voirlich.
1890. May 22. Luss, Inchtavannach, Inchmoan, and Rosdhu.
 July 18-21. Tyndrum, Cam Chreag, and Beinn Doireann.
1891. July 18. Tarbet, Arrochar, and Ben Ime.
1892. July 9. Balloch Castle.
 July 16-18. Killin, Ben Lawers, and the Western Breadalbane Mountains, Glen Lochay, Loch Tay, Fortingall, and Kenmore.

PHOTOGRAPHS.

Loch Vennachar.	Silver Fir at Camstradden.
Brig o' Turk.	Scotch Fir at Rosdhu (<i>vide</i> Plate V.).
Loch Achray.	Rosdhu Castle.
Duncraggan.	Rosdhu House.
Old Ash Tree in Drymen Kirkyard— "The Bell Tree."	Swan Island, Loch Lomond.
<i>Araucaria imbricata</i> , Buchanan Castle Gardens.	Larch on Lawn, Balloch Castle (<i>vide</i> Plate VI.).
Boat House, Balmaha Bay.	Tulip Tree in Garden, Balloch Castle.
Pier at Balmaha.	<i>Araucaria</i> , Balloch Castle.
Torrinch from Inchcalliach.	Great Maple, do.
Ban Bay, do.	Spanish Chestnut at Finlarig, Killin.
Waterfall at Ardlui.	Starting for Ben Lawers.
View near head of Loch Lomond.	Cairn on top of Ben Lawers.

VII.--ARGYLL AND BUTE.

1888. July 7. Millport.
 1889. Aug. 3. Kilmun, Puck's Glen, and Benmore House.
 1890. April 7. Rothesay and Mountstuart.
 Sept. 13. Ardnadam and Glen Massan.
 1891. April 13. The Great Cumbrae.

PHOTOGRAPHS.

Kerrycroy, Bute.	Beaver Dams at Mountstuart.
Mountstuart House.	Keppel Pier, Great Cumbrae.
Lime Tree Avenue, Mountstuart.	Lion Rock—a trap dyke, Great Cumbrae.
Wallabies at Mountstuart.	The Monument, Tomont, do.



VIII.—EAST COUNTRY.

1889. July 6-22. Elie, Kilconquhar, St. Monance, Largo, North Queensferry, Inverkeithing, St. David's, St. Margaret's, Rosythe Castle, Dunfermline, Aberdour, Charleston, Linlithgow, and Manuel.
 1890. Aug. 30. Dollar, Castle Campbell, Rumbling Bridge, and the Devon.
 1891. Oct. 1. South Queensferry, Hopetoun, Abercorn, and Linlithgow.
 1892. Oct. 6. Portobello, Easter Duddingston Lodge, Craigmillar Castle, and Duddingston.

PHOTOGRAPHS.

The Long Bridge, Dollar Glen.	"Wyville Thomson" Memorial Window, St. Michael's Church, Linlithgow.
Craiginnen Waterfall, do.	Craigmillar Castle (from south-east).
Sochie Falls, do.	Do. (from east).
Castle Campbell.	Do., Outer Court.
Rumbling Bridge.	Great Maple at Little France, known as the Craigmillar Sycamore—"Queen Mary's Tree."
Upper Cauldron Linn on the Devon.	Duddingston Loch and Church (from south-west).
Lower do. do.	Duddingston Loch and Church (from south).
The Forth Bridge from South Queensferry.	Duddingston Church (from the Manse Garden).
Hopetoun House.	Loupin'-on Stane and Jougs at Dudding- ston Church Gate.
East Entrance to Hopetoun Policies.	Sir Walter Scott's Tree in Duddingston Manse Garden.
Cedar of Lebanon at Hopetoun.	
Abercorn Church.	
Gateway of Linlithgow Palace.	
Chapel Windows, do.	
Parliament Hall, do.	
The Quadrangle, do.	
The Screen, St. Michael's Church, Lin- lithgow.	



LIST OF MEMBERS.

YEAR.

- 1891 Adam, William, 31 Commerce Street, Glasgow.
1889 Allan, Alexander, Barloch Cottage, Milngavie.
- 1891 Baird, Hugh, 75 Buchanan Street, Glasgow.
1891 Baird, Thomas, 34 Queen Street, Glasgow.
1889 Barrett, Franklin T., Mitchell Library, Glasgow.
1888 Begg, A. Hood, 291 Hope Street, Glasgow.
1892 Bell, Miss Ina, 108 Renfield Street, Glasgow.
1891 Bonnar, William, 8 Lauriston Park, Edinburgh.
1892 Boyd, John, Jun., 120 Wellpark Terrace, Dennistoun.
1890 Brooks, W., 32 Langside Road, Glasgow.
*1885 Brown, Hugh A., 3 Nithsdale Street, Strathbungo.
1885 Brown, Walter, 30 Glassford Street, Glasgow.
1890 Brownlie, Archibald, 145 St. Vincent Street, Glasgow.
1888 Burden, Miss E. Raymond, 153 Greendyke Street, Glasgow.
- 1889 Cairns, John, Jun., 151 Renfrew Street, Glasgow.
1891 Campbell, Miss Madge, Maryland, Uddingston.
1890 Campbell, William, 5 Seafeld Cottages, Claythorne, Partick.
1891 Christie, Andrew, East Park Public School, Maryhill.
1892 Christie, John Knox, General Post Office, Glasgow.
1891 Clark, Allan, 113 Victoria Road, Glasgow.
1893 Cleland, George, 30 Woodburn Terrace, Edinburgh.
1885 Combe, Alexander, 126 Renfield Street, Glasgow. *Hon. Treasurer.*
1892 Cross, Adam L., 22 Sandyhill Street, Shettleston.
1891 Cross, James, 445 Eglinton Street, Glasgow.
1889 Cullen, William, 4 Catherine Street North, Glasgow.
*1885 Cumming, William, 34 Sandyhills, Shettleston.
1892 Currie, Duncan, Gleniffer View, Thorn, Johnstone.
- 1891 Davidson, Alexander M. Auldfield, Cogan Street, Pollokshaws.
1892 Dean, Miss, 80 South Portland Street, Glasgow.
1886 Dewar, Donald, Royal Bank, 11 Hope Street, Glasgow.
1893 Dixon, Walter, 21 Sandyford Place, Glasgow.
*1885 Donochy, John, 57 Hope Street, Glasgow. *Vice-President.*
1892 Duff, Miss Annie, 25 Clyde Place, Glasgow.

- 1892 Edgar, Robert, M.A., 4 Kelvingrove Street, Glasgow.
- 1889 Ferguson, John, 27 Jamaica Street, Glasgow.
 1887 French, James, Millcroft, Rutherglen Road, Glasgow.
 1892 Fleming, William, General Post Office, Glasgow.
- 1889 Galt, William, 60 Abbotsford Place, Glasgow.
 1890 Giffen, Thomas B., 104 Dixon Avenue, Govanhill.
 1890 Gilmour, James, 74 Glassford Street, Glasgow.
 1888 Gilzean, Miss A., 104 Hanover Street, Glasgow.
 1885 Gilzean, A., 104 Hanover Street, Glasgow.
 1890 Glen, Duncan, 125 Aitkenhead Road, Glasgow.
 1891 Glen, Thomas F., 14 Annfield Place, Dennistoun.
 1892 Gow, William, 28 Scott Street, Bridgeton, Glasgow.
 1892 Grant, Frank L., M.A., 298 St. Vincent Street, Glasgow.
 1889 Grieve, Henry, 34 Howard Street, Glasgow.
 1892 Grönbech, Miss Isie A. D., 189 Slatefield Street, Dennistoun.
- 1890 Hamilton, Hugh, 2 Royal Crescent, Crosshill, Glasgow.
 1890 Hart, Gavin S., National Bank, St. Rollox, Glasgow.
 1890 Hay, John, 20 Queen Street, Glasgow.
 *1885 Henderson, John, 11 Hope Street, Anderston, Glasgow.
 1889 Henderson, Robert, 16 Cowcaddens Street, Glasgow.
 1889 Herriot, George, Fernlea, Crofthill Avenue, Uddingston.
 1886 Herriot, J. R., Fernlea, Crofthill Avenue, Uddingston.
 1891 Hodge, William, Craignevan, 67 Nithsdale Drive, Pollokshields.
 1888 Houston, Robert S., Brisbane House, Bellahouston.
 1889 Hunter, Henry, 7 Rupert Street, Glasgow.
- 1892 Johnston, Allan, 184 Slatefield Street, Glasgow.
 1889 Johnstone, William, B.L., City Chambers, Glasgow.
- 1890 Kay, William, National Bank, St. Rollox, Glasgow.
 1888 Kidston, Walter, 43 Gibson Street, Hillhead.
 1890 King, James J. F. X., F.E.S., 207 Sauchiehall Street, Glasgow.
- 1892 Lamb, Miss, Maryland, Uddingston.
 1885 Lamont, D., 103 Paisley Road West, Glasgow.
 *1885 Lee, John R., 139 Finlay Drive, Dennistoun.
- 1892 M'Adam, Peter, 50 Albert Road, Crosshill, Glasgow.
 1891 MacAdam, William, 180 Comely Park Street, Glasgow.
 1890 Macbeth, Hugh, 26 North Portland Street, Glasgow.

- 1889 M'Corkle, Archibald, 688 New City Road, Glasgow.
 1886 M'Crea, William, 47 Waterloo Street, Glasgow.
 1889 M'Dougall, John, 540 St. Vincent Street, Glasgow.
 1889 M'Farlane, Alexander, 27 Jamaica Street, Glasgow.
 1891 M'Gregor, Alexander, Post Office Buildings, Old Kilpatrick.
 *1885 M'Gregor, Daniel, 116 North Frederick Street, Glasgow.
 1890 M'Innes, William A., 20 Dixon Avenue, Govanhill.
 1888 M'Laren, D., 27 Jamaica Street, Glasgow.
 1892 M'Niven, Malcolm, 135 Mains Street, Sauchiehall Street, Glasgow.
- 1892 Maltman, John, 13 Kelvinside Terrace South, Glasgow.
 1885 Marr, William, 29 West Princes Street, Glasgow.
 1892 Matthews, H., Jun., 10 Annfield Terrace, Partickhill.
 1889 Mayer, Miss, 2 Royal Crescent, Crosshill, Glasgow.
 1890 Meiklejohn, A., 3 Windsor Street, Glasgow.
 1892 Melville, Mrs., 20 Bank Street, Hillhead.
 1888 Melville, Miss, 20 Bank Street, Hillhead.
 1892 Miller, K. M., 1 Buckingham Road, Govan.
 1890 Miller, William, 1 Montrose Street, Glasgow.
 1889 Mitchell, James, 240 Darnley Street, Pollokshields.
 *1885 Moir, William, 8 Young Terrace, Springburn.
 1891 Moodie, Charles E., Springhill House, Crossmyloof.
 1892 Moore, Miss Ellen J. C., 285 Crown Street, Glasgow.
 1890 Munro, John, 69 Bank Street, Hillhead.
- 1891 Nelson, George T., 115 Rottenrow, Glasgow.
- 1890 Ord, George W., Kelvingrove Museum, Glasgow.
- 1890 Paterson, Archibald, 12 Pollok Street, Glasgow.
 1886 Paterson, John, 14 Bankhall Street, Govanhill. *Vice-President.*
 1892 Prince, Edward E., B.A., F.L.S., &c., Professor of Zoology,
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 1892 Pringle, Miss H. C., 205 Watt Street, Glasgow.
- 1888 Robbie, Miss, 46 Bank Street, Hillhead.
 1889 Robertson, James, 126 Renfield Street, Glasgow.
 1891 Robertson, John, Eastwood, Thornliebank.
 1891 Robertson, J., The Central Agency, Glasgow.
 1892 Robertson, J. J., 32 Daisy Street, Govanhill.
 1891 Robertson, T. Whitelaw, 32 Daisy Street, Govanhill.
 1890 Russell, Alexander, 32 Granville Street West, Glasgow.
 1890 Russell, W., 28 Norfolk Street, Glasgow.

- 1890 Salmon, James, 91 Aitkenhead Street, Glasgow.
 1891 Scott, John, 3 M^cAslin Street, Glasgow.
 1890 Scott, Robert, 5 Hanover Street, Glasgow.
 1888 Shearer, Miss, 29 Dixon Avenue, Crosshill, Glasgow.
 1888 Shearer, Johnston, 29 Dixon Avenue, Crosshill, Glasgow.
 1890 Sinclair, William, 61 Oswald Street, Glasgow.
 1886 Smellie, James, Wynd, Cumbernauld.
 1892 Smith, Miss Agnes, 42 Leslie Street, Pollokshields.
 1892 Smith, Miss C. G., 42 Leslie Street, Pollokshields.
 1892 Smith, John, Monkredding, Kilwinning. *Honorary.*
 1890 Steel, James, 14 Shamrock Street, Glasgow.
 *1885 Stevenson, W. A., 35 Carnarvon Street, Glasgow.
 1892 Stewart, Miss Jessie D., 15 Govan Road, Glasgow.
 1890 Stewart, George, 8 Cowan Street, Hillhead.
 1892 Stewart, Henry, 171 Waddel Street, Glasgow.
 1889 Stewart, John, 32 Boyd Street, Largs.
 1888 Stewart, Samuel, Berazategui, Buenos Ayres.
 1889 Stirling, George D., 17 Royal Crescent, Crosshill, Glasgow.
 1891 Stobo, Thomas, 9 Whitehill Street, Dennistoun.

 1892 Taylor, David, 49 Virginia Street, Glasgow.
 *1885 Torrance, John, Chapelton Place, Cambuslang.
 1886 Turner, Robert, 18 Westbank Terrace, Hillhead.

 1891 Watson, Joseph, 60 King Street, Pollokshaws.
 *1885 Watt, Hugh Boyd, 4 North Court, Royal Exchange, Glasgow.
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 1892 Wilkie, Miss Nettie, 302 Langside Road, Glasgow.
 1890 Wilkie, Thomas B., 302 Langside Road, Glasgow. *Joint Honorary Secretary.*
 1890 Wilkie, Robert D., 302 Langside Road, Glasgow.
 1892 Wilkinson, David, 130 Great Hamilton Street, Glasgow.
 1892 Wilson, Miss, 17 Kelvinhaugh Street, Glasgow.
 *1885 Wilson, Rev. Alexander S., M.A., B.Sc., Hope View, North Queensferry. *Honorary.*
 1890 Wilson, C. Ingram, 197 Crown Street, Glasgow.
 1889 Wood, John, Lavern School House, Hurlet.
 1891 Woodrow, John, Neilson Institution, Paisley.

* Original Member.

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