Account of a botanical excursion to the Mull of Cantyre, and the island of Islay, in August, 1844 / by J.H. Balfour.

(16.)

ACCOUNT

OF A

BOTANICAL EXCURSION

TO THE

MULL OF CANTYRE,

AND

THE ISLAND OF ISLAY,

IN AUGUST, 1844.

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Among the plants met with, I may notice Epilobium angustifolium, which grew in great profusion and beauty, Hypericum Androsæmum, a common plant in all our western counties, Hieracium umbellatum, Convolvulus Soldanella and sepium, Atriplex laciniata, rosea, and angustifolia, Sinapis monensis, Helosciadium nodiflorum both in a large erect and in a small creeping form, Cotyledon Umbilicus, Vicia sylvatica, Lolium temulentum, and Epilobium virgatum, distinguished from E. tetragonum by its leaves being truly decurrent, the scions from the lower part of the stem being very slender and filiform. It is a species of Fries, but it does not appear to me to be well marked. In salt marshes we picked Scirpus maritimus, Blysmus rufus, Œnanthe Lachenalii, a common plant in the West of Scotland, and usually mistaken for Œ. pimpinelloides, from which it is distinguished by its elongated, slender, fusiform, or subcylindrical tubers, gradually enlarging from the base of the stem, and having no distinct pedicle, as well as by its fruit being broader than the calyx, and contracted at the base.* Dr. MacDonald mentioned his having found Linnæa borealis near Kildalloig.

At Southend the shore and the inland party met, and the latter were so satisfied with their day's sport, and with the comfort of Mrs. MacKay's inn, as well as with the prospect of a good dinner, that they declined proceeding further for the night. The movement party was thus reduced to three, who visited the sandy shores in the neighbourhood, and walked on to the lighthouse at the Mull. On the sands at Southend, Convolvulus Soldanella, Raphanus maritimus, Sinapis monensis, Sagina maritima, and Reseda Luteola were found in profusion. The old church at Keill, and the ruins of the Castle of Dunlavader, attracted attention. Near an old churchyard on the roadside, Hyosciamus niger was met with, and near Carskay, Geranium pratense was picked. The rocks in the vicinity have been hollowed out into caves, some of them of great size and depth. Similar caves had been noticed in the rocks along the shore from Campbelton to Southend, and one of them is designated the cave of St. Kiaran, from some legend connected with that saint.

On reaching the lighthouse we were most hospitably entertained by Mr. Noble and Mr. King, the superintendents, and every thing was done to promote our comfort. The country around the lighthouse is bare and rocky, and produces no plants of any interest. The Mull is well described by Macculloch as a rude hilly tract, without beauty even on its sea shores. The only interest is connected with the caves in the rocks to which I have alluded. In the interior of the district little is to be seen, and it is chiefly on the shores that a botanist or geologist finds materials for research. At the point of the Mull the

* For an account of the British species of Œnanthe, see paper by Mr. H. C. Watson, in The Phytologist, vol. ii. p. 11.

tides flow with rapidity and turbulence, and it is by no means pleasant for one who is unpractised in a sea voyage to beat round the headland in a boat.

On the morning of the 13th we examined the peculiarly rugged and precipitous rocks near the lighthouse, some of them rising to several hundred feet above the level of the sea. Sedum Rhodiola was seen in abundance, but no other plants deserving notice. After breakfast we walked along the upper part of the cliffs towards Largybean, where fine caves and stalactites occur. The rocks, composed principally of micaceous slate, were comparatively unproductive, and it was chiefly in those parts where limestone occurred that our researches were rewarded by plants in any way rare. One of the most interesting plants was Dryas octopetala,* associated with Saxifraga aizoides, oppositifolia, and hypnoides, Spergula subulata, and a hairy variety of Hieracium sylvaticum. The day was very wet and misty, and not favourable for botanical pursuits. Nevertheless, we examined the rocks carefully, and reached Lossit, after being joined by the Southend party, about 3 P.M., and were kindly received at Mr. M'Neill's. We visited his garden, and saw a species of Passion-flower in full bloom, which stands the winter well, also Hydrangeas, attaining an enormous size, and covered with profusion of flowers, besides Fuchsias, Pelargoniums, Salvia patens, &c. Passing through the fishing village near Lossit House, we made the best of our way to our old quarters at Campbelton, traversing a flat country in some parts furnishing coal, which is conveyed by means of a canal to the eastern shore of Cantyre. On either side of the flat strath, which extends from Machrihanish bay to Campbelton, there is a hilly moorish district which has not yet been brought into cultivation.

August 14th.—Having procured a cart for our baggage, the most bulky portion of which consisted of paper and boards, we crossed the peninsula of Kintyre or Cantyre, towards Machrihanish bay, passing the old church of Kilchinzie. The shores at the bay are composed of immense hills of sand raised by the waves of the ocean which roll on the beach at times with enormous fury, causing their roar to be heard for many miles. The sands are kept together and prevented from being blown inland by Ammophila arenaria, Carex arenaria, Triticum junceum, and other plants commonly known as bent or marram, the stems and roots of which extending in all directions, and interlacing together form a sort of basket work, and thus give a certain degree of firmness to the loose soil.† Plants thus contribute in some measure to the solidity of the land, and prevent the inroads of the

* This plant is often found on limestone rocks, not far from the sea level, as at Assynt in Sutherlandshire.

† Besides the plants mentioned, Elymus arenarius, Triticum repens, Festuca rubra and arenaria, Galium verum and Trifolium repens are commonly found assisting in fixing the sand.

ocean. In Norfolk there are low hills of blown sand fifty or sixty feet high, bound together by means of grasses or sedges in the way I have mentioned. The maritime part of Lincolnshire which lies below the sea level, is protected in a similar manner from the invasion of the sea; and the great embankment in Holland owes its stability in no small degree to the plants which grow on it. The drifting of sands often causes great devastation,—covering thousands of acres of land, and destroying vegetation. This is seen in many parts of this country, as well as in France, Holland, and Russia. About the commencement of last century the French government took up the subject, and directed attention to the shifting sands in that part of France which lies near the bay of Biscay. A species of fir, Pinus maritima, was planted, which now covers the sandy desert, and has effectually checked the progress of the sand drift. Some interesting facts on this subject were lately given in the Gardener's Chronicle, where it is also stated, that on the estate of Lord Palmerston on the west coast of Ireland, between the towns of Ballyshannon and Sligo, nearly 1000 acres of land were covered with sand, in some cases to the depth of 100 feet or more. About eighteen years ago, the Ammophila arenaria or Bent, was planted in these lands in large quantities, and the Pinus maritima major, from Bordeaux and other places, was also introduced, and by this means a most striking improvement has taken place. About 800 imperial acres have been reclaimed and converted into productive pasture land.

Lint (Linum usitatissimum) is commonly cultivated in this district of Scotland, and in all the fields we observed abundance of Cuscuta Epilinum twining round the stems and destroying the crop. The cuscutas or dodders, of which three species are natives of Britain, are most troublesome weeds, which are not easily extirpated. Their seeds germinate in the soil, and the plants immediately twine themselves round others in their neighbourhood, becoming attached to them parasitically by means of suckers, and ultimately losing their connection with the soil. They are very destructive to crops, and different species are connected with different plants. A species lately imported into Britain has done much harm to the crops of clover. In the lint fields Camelina sativa was also present, probably imported along with the seed.

The party walked along the shores of Machrihanish bay, passing Ballochantuy Kirk, Barr House (Mr. M'Alister), Glenacardoch point, Linanmore Kirk, and Killian, and reached Taynlone in the evening. The rocks were chiefly micaceous and calcareous. At some places, as near Barr House, the limestone is quarried, and there are caves which extend to a great depth; we entered one, which extended about 150 feet. The road from Machrihanish bay northward, runs along the shore, and enables the traveller to have a fine view of the channel of Gigha, as well as of the islands of Jura and Islay. The Paps of

Jura form very conspicuous objects in the distance. In some places near Ballochantuy and Killian, where the road winds among broken detached rocks, the scenery is romantic and interesting. At Killian there is a curious old church in ruins, apparently referable to the Norman times, with round arches, coupled circular headed windows, and peculiar doors made with two side stones converging upwards, and a flat stone on the top, resembling, in some degree, what is seen in Egyptian architecture. Part of the old church is used as a burying ground by the MacDonalds of Largy. In the churchyard are many old inscriptions, and some curious carvings on stone. The ruins are prettily situated on the banks of a stream. There is a vitrified fort in the neighbourhood. At a little distance from the shore in this quarter, and parallel to it there runs a ridge of old red sandstone rocks, and the streams coming from the higher grounds, when descending over these rocks, give rise to numerous picturesque waterfalls. The plants gathered this day were,—Thalictrum minus, Convolvulus Soldanella, Sinapis monensis, Ranunculus sceleratus and Scirpus Savii in moist places, Crambe maritima, Ligusticum scoticum, Hypericum Androsæmum, Epilobium angustifolium, Vicia sylvatica in great quantity on the dry stony beach, Pulicaria dysenterica, Vicia sativa on sandy shores near Taynlone, Eryngium maritimum, Steenhammera maritima, or as it is often called in this country, the oyster plant, from the taste of its leaves,* Apium graveolens near Taynlone, Conium maculatum especially in churchyards, as at Killian, Anagallis tenella in all moist places, Schœnus nigricans, Atriplex erecta in fields near Barr, Fumaria capreolata, Cerastium atro-virens, Pyrethrum maritimum, and Catabrosa aquatica assuming a remarkably stunted and creeping appearance on moist sandy shores near Killian; the fruit of this grass is very sweet, having the taste of liquorice. Hieracium boreale was also picked near Linanmore Kirk and Barr, Tanacetum vulgare near Killian, Carex vulpina near Barr, Equisetum Telmateia in many places between Campbelton and Taynlone.

We reached the latter place between 5 and 6 P.M., and took up our quarters in a small inn, where we had considerable difficulty in getting accommodation; some of the party sleeping, or attempting to sleep, on the floor, and others on the tops of tables. In the neighbourhood of the village we saw Potamogeton pusillus, Alisma Plantago, Samolus Valerandi, Catabrosa aquatica and the maritime variety already alluded to, Hippuris vulgaris, Bidens cernua, Œnanthe Lachenalii, and Lolium temulentum or the poisonous Darnel-grass. This grass seems to be common in many parts of Cantyre. All along the shore, especially near Taynlone, we met with profusion of Algæ

* In America, Tragopogon porrifolius, or salsafy, receives the same name. Its roots are used for soup, which is said to resemble oyster soup.

and after storms I have no doubt that many rare species might be gathered.

August 15*th.*—This day we intended to have crossed by a ferry-boat to the island of Gigha, but the weather was so stormy, and a north-west wind was blowing with such fury, that it was deemed advisable to proceed along the shore to the foot of Loch Tarbet, where the steamboat touches on its way to Islay. Accordingly, we proceeded to Clachan and Stewartfield, and thence to Porthullion. The shore is bare and unproductive. Helosciadium nodiflorum, Trollius europæus, Lycopus europæus, Bidens tripartita, and Papaver dubium, were the chief plants which we picked. Near Porthullion we were more successful, having gathered Radiola millegrana, Carum verticillatum, Pinguicula lusitanica, Salicornia herbacea (the procumbent variety), Schoberia maritima, Epilobium virgatum, Eleocharis pauciflora, Myrrhis odorata, Veronica scutellata, Habenaria viridis, and Sedum Telephium.

About 4 P.M., we joined the Maid of Islay steamboat, and, after encountering a heavy swell off the northern point of Gigha, to the no small discomfort of some of the party, we entered the sound of Islay, and reached Port Askaig about 9 P.M. Here, through the kindness of Mr. G. T. Chiene, factor for Mr. Campbell of Islay, we found a cart ready for our baggage, and a carriage and four to convey the party to Bridgend and Ealabus, our drive commencing in true Highland style with a bagpipe accompaniment. A comfortable inn at Bridgend received some of the party, and the remainder were kindly accommodated in Mr. Chiene's house at Ealabus.

Before considering the botany of Islay, I shall make a few remarks on the general features of Cantyre botany. The part of Cantyre examined by the party did not yield many rare plants. This may depend, in some measure, on the nature of the rocks, which are often of a hard non-disintegrating and dry micaceous nature. The most prevalent rock is mica slate. This, along with some chlorite slate, forms the greater part of Cantyre. The old red sandstone formation occurs on the shore between Campbelton and Ballyshear, and is also found on the island of Sanda. It likewise appears on the west coast, and can be traced from Campbelton by Kilchinzie to Machrihanish bay. I have already stated that it forms a range of cliffs at a short distance from the shore, near Killian. Primary limestone occurs to the north of Campbelton, and in several places near Killian and Tayn-lone, as well as in the Largybean district, not far from the point of the Mull. In the valley which extends from Campbelton to Lossit, we meet with the carboniferous series of rocks. The island of Gigha is composed of mica slate.

The crops, so far as we observed, were good, and the harvest was early. On the 13th of August, we saw some barley cut. Rye is cultivated in many places. We could not detect any ergot in it. Bere

or Big (Hordeum hexastichon,) is also cultivated for the use of the distilleries, which are numerous in this part of the country. Potatoes were excellent in the sandy and peaty soil.

Much might be done to improve the agriculture of the country by proper drainage, the use of the new manures, and the introduction of some good grasses. Arrhenatherum avenaceum, or oat grass, is a common weed in Cantyre, and might be advantageously sown on waste lands, as a grass of which horses and cows are fond. Timothy grass (Phleum pratense) thrives well, and might be sown with benefit as a late grass, while Alopecurus pratensis might serve as an early one. These two last-named grasses are not common in Cantyre. Holcus lanatus or Yorkshire fog, is very common. It is a poor grass, and might be replaced by others of a more nutritious quality. Festuca elatior would do well in boggy places. Avena flavescens was not met with, but it is well fitted for dry lands. Italian Rye grass might be sown with advantage, as it thrives in a mild climate. We did not see this grass during our walk. Catabrosa aquatica is a very nutritious saccharine grass, which does well in wet lands where draining cannot be carried on easily. In Belgium, Dr. Parnell informed us, it is much used for fodder, and the cows there are said to give excellent milk and butter. Near Taynlone this grass occupies a great extent of the sea shore, and the seeds might easily be collected in large quantity. The poisonous Darnel-grass was met with among the crops in several places, although it did not occur in such quantity as to give rise to injurious effects so far as we could ascertain. It ought, however, to be extirpated, as cases of poisoning have occurred from using it in the preparation of bread.

Besides the part of Cantyre to which I have alluded, on our return from Islay, we also examined part of the shore of Loch Tarbet, near its northern extremity, and the neck of land between West and East Tarbet, which is not much more than a mile broad. Boats are sometimes carried across from one sea to the other, and there is a curious fable mentioned by Pennant, that Donald Bane ceded the Western Isles to Magnus on the condition of his receiving the aid of Norway against the family of Malcolm. By the contract Magnus was to have all the islands—the definition of an island being whatever could be circumnavigated. The Norwegian, it is said, caused his boat to be drawn across the isthmus between the two Lochs Tarbet, and thus included Cantyre in the bargain. This story is considered a mere fable by Macculloch.

The shores of Loch Tarbet are beautiful and picturesque, and the sail up the Loch in a fine day is very interesting. The country around has an undulated surface, with here and there some fine woods coming down to the water's edge, and surrounding cultivated spots of various extent. We made a few additions to the Flora of Cantyre on

the shores of the loch, by picking Milium effusum, Circæa intermedia, and large specimens of Salix pentandra.

I now proceed to give an account of our excursion in the island of Islay, and in doing so I shall allude only to the more interesting Phanerogamous plants and ferns, inasmuch the mosses, lichens, and seaweeds observed by the party possessed no attraction as regards rarity.

Islay is one of the western islands of Scotland, and was at one time famous as the residence of MacDonald, one of the great Kings of the Isles. The holds or castles of the MacDonalds exist on islands in some of the fresh water lakes to which I shall afterwards allude, especially Loch Gurim and Loch Finlaggan. The extreme length of the island, from the Moile of Oe in the south, to Rumhail in the north, is about thirty miles; and its breadth, from the point of Ardmore on the east, to Sanig on the west, is upwards of twenty miles. The superficial extent is about 154,000 acres, and the extent of coast is nearly 200 miles. The form of the island is irregular, and it is deeply indented by an arm of the sea called Lochindal. It is chiefly composed of those hypogean rocks, termed by Lyell metamorphic, or altered rocks, in consequence of the supposed changes which have taken place in them since their deposition. These metamorphic rocks contain few or no organic remains, and are thus separated from the palæozoic stratified rocks. Clay-slate is looked upon as intermediate between the metamorphic and the fossiliferous strata. The transition, primary fossiliferous, and grauwacké of authors, are considered as belonging to the palæozoic series, being the strata which contain the fossil remains of the earliest formed animals. The principal part of the island of Islay consists of quartz rock, with beds of clay slate, grauwacké slate, and micaceous schist. Quartz forms the high grounds of the north, and the great mass of the Oe district. Gneiss occurs in some parts of the island, and limestone in others. Porphyritic and basaltic rocks and veins are met with in many places; the basalt being often of an amygdaloidal nature. Near Port Askaig a peculiar kind of conglomerate occurs. Lead and iron are found in the island, the former being mixed with copper and some silver. At Ballygrant the lead is worked, and the veins are tolerably productive. In the Rhins a vein of magnetic iron ore occurs, which, Mr. Campbell states, contains a small per centage of titanium. A rich ore of iron is found on Lossit hill, and a vein of iron glance at Ballyneal. At Stramishmore, in the Oe, there is a vein of impure graphite, 200 or 300 feet wide. Mr. Campbell has analysed this, and finds that the quantity of carbon varies from 9 to 64 per cent., and iron from 5 to 16 per cent. He also has detected manganese in small quantity. Dr. R. D. Thomson has examined two specimens of this impure graphite, and the following are the results he has obtained :—

Peroxide of Iron, with some Alumina, . .	20·79	20·00
Sesquioxide of Manganese, ...	7·33	2·44
Magnesia, and some Lime, ...	trace.	12·00
Plumbago, ...	13·67	3·60
Carbonate of Lime, ...	20·12	1·15
Insoluble matter, consisting of Silica and Alumina, &c.,	32·76	55·00
Water, ...	5·33	6·81
	100·00	101·00

Near Ealabus there is a chalybeate well.

Throughout the island monumental stones, forts, and other antiquities occur. The climate is similar to that of the other Western Islands, being mild and moist. Plants which will not stand the rigour of a continental climate succeed well. At Islay House many of the more delicate plants thrive in the open air. The garden contains several plants, which are interesting both in a floricultural and horticultural point of view. At Mr. Campbell's cottage, in the south-east of the island, many fine plants were observed. Rhododendrons there attained a very large size.

In Islay there is still a great extent of improveable land, which might easily be brought into cultivation. Much has already been done in the way of improvement by the spirited and enlightened proprietor, Mr. Campbell, and he has been ably seconded in his efforts by Mr. Chiene, his intelligent, indefatigable, and, I may justly add, hospitable factor. By draining, burning, paring, and the application of lime, much moorish land has been rendered productive. We saw excellent crops of oats on land recently reclaimed. Mr. Campbell seems to be anxious to introduce all the improvements which have been suggested of late by agricultural chemists, and I believe that his zealous and well directed efforts will soon make a great change in the aspect of the island. The zeal and energy of his factor, too, are seen in the mode in which various improvements have been carried out in the neighbourhood of Islay House, and perhaps in none more than in the formation of a road through a wet peat moss, which is now in the course of being drained and brought under the action of the plough.

We commenced our excursion in Islay, on Friday the 16th of August, by starting after breakfast for Kilchoman, which is situated in the south-west of the island. We reached this place by the aid of conveyances provided by Mr. Chiene, and at once proceeded to examine the sandy shores in the neighbourhood. The sands here, as in Cantyre, are kept together by Ammophila arenaria, Carex arenaria, Triticum junceum, and other creeping grasses and sedges. Near Kilchoman we found Sinapis alba, Listera ovata, Habenaria viridis, and Gentiana Amarella both blue and white. In the churchyard of Kilchoman there are some curious gravestones, and an old cross similar to one in the Main-Street of Campbelton. It is said, indeed,

that the latter was originally taken from Islay. At Kilchoman our party separated into two divisions, one proceeding along the shore, and the other going inland to examine the marshy ground in the vicinity of Loch Gurim or Gurm. The shore party was upon the whole most successful, having picked Mentha rubra of Smith, Gentiana Amarella, Convolvulus Soldanella, Malva sylvestris, Conium maculatum, Epilobium virgatum already noticed in the Cantyre trip, and Equisetum Telmateia of Ehrhart. The latter plant is the E. fluviatile of Smith, Hooker, and Babington. The name is derived from τελματειος, growing in mud, but we found the plant growing in moist sand. Both fertile and barren stems were gathered, the former being unbranched and having numerous large deeply toothed sheaths, while the latter had whorled branches, were nearly smooth, and presented about thirty striæ on the stalk. A remarkable trailing variety of Juncus lamprocarpus, with regular rootings at the joints, covered the shores in profusion along with Agrostis alba, var. maritima of Babington, with a procumbent rooting stem, a creeping form of Eleocharis palustris, and the sea shore variety of Catabrosa aquatica, already noticed in Cantyre. This latter variety is the minor of Babington, and littoralis of Parnell. It is abundant on the west coast of Scotland on sandy shores within the influence of the tide. In some places it covers patches of at least half an acre. It is found in Bute in considerable quantity. It differs from Catabrosa aquatica in its smaller growth, and in the glumes having mostly only one floret. I may here remark that the tendency to a trailing habit was seen in many of the plants on the shore, especially at the points where rivulets joined the sea; and some of the species on this account presented an aspect very different from that which they assume in their usual localities.

On sandy ground in the vicinity of the shore numerous other plants were seen, such as Arabis hirsuta, Gymnadenia conopsea, with its odoriferous purple blossoms, Eryngium maritimum forming spiny tufts of great extent, the beautiful Anagallis arvensis and tenella, Pyrethrum maritimum, Ligusticum scoticum, Viola lutea with all its shades of purple and yellow, Thalictrum minus in a very dwarf state, Spergula nodosa, Arenaria serpyllifolia and marina, Pimpinella Saxifraga, and Erythræa Centaurium and linarifolia. One of the plants noticed attracted our attention particularly, inasmuch as in Scotland it is usually seen only in alpine districts, while here it was flourishing luxuriantly at the sea level. I allude to the Draba incana or twisted-podded Whitlow-grass. No doubt, in many instances, in the north of Scotland, we see alpine plants coming down to the level of the shore, as at Cape Wrath in Sutherlandshire; but the northern nature of the locality accounts in a great measure for this apparent anomaly. But in the case of Islay, the occurrence of alpine species so low cannot be accounted for in the same way. Mr. H. C. Watson says that Draba incana belongs to the alpine and upland regions of Scotland and

England. It is often found on alpine limestone rocks. It is met with near the summits of the mountains in Wales, Westmoreland, and Scotland. I have specimens from Raven-scar Walden, and from Teesdale in Yorkshire. In marshy spots near the shore we observed Hypericum elodes, Sparganium ramosum, Œnanthe Lachenalii, a common plant in the west, and Samolus Valerandi; while in fields Papaver dubium and Lamium intermedium were abundant. The only other plants of interest remarked in this locality were Radiola millegrana, Ononis arvensis, Atriplex laciniata and rosea, Cerastium atrovirens, Cakile maritima, Trifolium arvense, and Eleocharis pauciflora.

After a thorough examination of the sandy shore, the party proceeded towards some slaty rocks, where Sedum Rhodiola and Asplenium marinum were found. Here the two divisions were to have joined, but by some mistake no union was effected, and in our search for each other a still farther separation took place. Moreover, the day which had been gloomy now exhibited a pluvious tendency, and ere long rain descended in torrents so as to damp in some measure the ardour of the party, and in the course of the afternoon there was seen a solitary botanist wending his way through the marshes and bogs with his habiliments thoroughly saturated with moisture, and his fingers so benumbed as scarcely to be fit for the effort of pulling a plant; while parties of two and three, ignorant of their exact position, and anxious to get to comfortable quarters as soon as possible, proceeded by various devious paths to the nearest huts for information. All fortunately reached their destination in the course of the evening, —their arrivals occurring at various intervals, and their adventures being very much diversified.

The peat-bogs which were visited in the course of the day lie between Kilchoman and Loch Gruinart. They are very wet, and in many places quite impassable in rainy weather, so that it required considerable dexterity on the part of the traveller to avoid being immersed up to the shoulders. This is particularly the case with the boggy ground near the western extremity of Loch Gurim. In these localities Scirpus lacustris, Sparganium simplex, Ranunculus aquatilis, Peplis Portula, Schœnus nigricans, Drosera rotundifolia, anglica and longifolia, Utricularia minor, with its elegant vesicles, Rhynchospora alba, Hippuris vulgaris, Scirpus Savii and setaceus, and the delicate Pinguicula lusitanica were observed. Triglochin maritimum was picked along with Scirpus lacustris about two miles from the shore. A Salix resembling rosmarinifolius was also gathered. In all there were 320 Phanerogamous species noticed in the course of the day's walk.

The roads in this part of the island were upon the whole good, but they pass in some places over hilly districts. Potatoes seemed to thrive well, and the fields gave excellent crops of oats. Near Islay House there was a good field of wheat. The flax in the district was not infested with Cuscuta.

August 17th.—The morning was very showery and unpromising, and, in place of visiting Portnahaven as had been proposed, we proceeded along the shore to Bowmore, and thence round Laggan point as far as the mouth of the river Laggan, along the banks of which we botanized as far as the bridge. The piscatorial members of the party considered the day peculiarly favourable for enjoying the luxury of a nibble; but their success was not so great as they anticipated, and, as usual, this was attributed to some fault on the part of the river and the fish. One of the party expatiated in glowing terms on the mode in which he hooked a salmon, described his excitement on the occasion, and all the emotions which arise in the bosom of one whose fly, for the first time in its existence, has been honoured by the grasp of so noble a visitor. But unfortunately this splendid animal preferred living in its native river, even with the appendage of a hook and a broken line, to the pleasure of contributing to the repast of a hungry botanical party. Some sea-trout, river-trout, and parr were taken, but even Parnell's prepared minnow, or *minnow-persuader*, as it was called, though wielded most dexterously by the Doctor himself, failed to procure a large supply, and we looked in vain for the salmon which he had promised for dinner.

On the shore near Bowmore we met with the usual maritime plants, as Aster Tripolium, Plantago maritima and Coronopus, Salicornia herbacea (the erect form), and Juncus compressus. Great quantities of Zostera marina had been thrown on shore by the waves, and were used as manure by the farmers, along with sea weeds. This plant has been employed for various purposes; among others, it has been recommended in a dry state as a stuffing for beds and cushions. At Laggan point fine cliffs occur, but they are not productive, being covered chiefly with Pyrethrum maritimum, Armeria maritima, Cochlearia officinalis, and some grasses. Beyond this point the shore becomes sandy, and is covered with bent. A little way inland, boggy ground occurs, in which the three species of Drosera, Rhynchospora alba, Utricularia minor, Menyanthes trifoliata, and other marshy plants are found. This boggy ground, like that near Kilchoman, was in many places very wet, and resembled, in that respect, the bogs which occur in Ireland, such as those of Cunnemara in Galway. The peat is of excellent quality, and is used extensively for fuel.

Much might be done to improve this peaty soil, by paring, burning, draining, and the admixture of sand, which is abundant in the neighbourhood. In cases where draining could not be easily accomplished at once from the nature of the level, the system of colmation, as pursued in Italy, might be practised, so as to deposit soil on the surface of the peat, and by thus raising its level enable draining to be afterwards undertaken with success. * The introduction of Dactylis cæspitosa

* Carte Idrauliche della Valle de Chiana, con un saggio sulla storia del suo bonifica-

or Tussack grass, might be successful in this situation, both from the nature of the climate and the proximity to the sea. Should this grass be introduced into the country, the peaty soil on the western islands of Scotland would probably be that best fitted for its growth. In this way the waste lands of these localities might be made, without preparation, to afford excellent pasture, as well as protection to cattle. This grass was noticed in the Falkland Islands during the recent antarctic expedition. A short account of it was published by Sir William Hooker, * and his son, Dr. Joseph D. Hooker, will give a full description of it in his admirable Antarctic Flora, part of which is already published under the patronage of Government. The plant is called Tussack or Tussac grass, from the lower part of its culms forming a tuft or *tussack*. The stems rise to the height of four to six feet, and the leaves hang down all around. It is perennial, and produces large leaves, and an enormous quantity of herbage, which is saccharine and nutritious. The cattle in the Falkland Islands are remarkably fond of it. The plant thrives best in a wet, peaty soil, in insular situations where the spray of the sea dashes over it. Judging from the soil and climate in which it grows, there is every reason to believe that it might be most advantageously sown in the western islands of Scotland. Seeds have been sent home to this country, but only a few of them have germinated. Those sent to the Glasgow garden have not sprouted. Besides the Tussac, Festuca Alopecurus of D'Urville or Arundo Alopecurus of Gaudichaud, also deserves to be noticed as an important Falkland Island grass found in peat-bogs.

The climate of Islay is well adapted for oats, and much of the peaty soil might be rendered highly productive. Wheat also thrives in some places, but this crop probably requires a warmer summer than occurs in the island in general.

On the sandy shores at Laggan we found Convolvulus Soldanella, and in the fields Lamium intermedium and Fumaria capreolata; while the banks of the river furnished luxuriant specimens of Hieracium umbellatum, sylvaticum and boreale. The last-mentioned species has been usually regarded as a form of H. sabaudum, and is figured as such in English botany. It is distinguished by its upper leaves being sessile, with a round base, not with a cordate-clasping base, as in sabaudum, involucral scales appressed in three regular rows, and uniform in colour.

In the woods near Ealabus and Islay House, which we examined

mento, et sul metodo con cui vi si eseguiscono le Colmate, di G. A. Manetti. Firenze, 1823.

The system of Colmation was fully explained by Professor Gordon at one of our late Conversational Meetings, and its application to such localities as Lochar moss, near Dumfries, was pointed out in an interesting manner by Mr. Smith of Deanston.

* Hooker's Notes of the Botany of the Antarctic Expedition. See also The Gardener's Chronicle for March 4th, 1844; and London Journal of Botany, Vol. II., p. 247.

at different times, we found a number of plants which deserve attention, such as Aquilegia vulgaris, Hesperis matronalis, Valeriana pyrenaica, Campanula latifolia, Epilobium angustifolium, Polygonum Bistorta, Prunus Padus, Lysimachia nemorum, Ruscus aculeatus, Carex remota, and Scolopendrium vulgare. Some of these species, however, have undoubtedly escaped from the garden. Betula alba and glutinosa were also seen. The latter is looked upon by most botanists as a mere variety of the former, but Mr. Babington thinks that he has found a marked character in the stipules, which in B. glutinosa are rolled back, while in B. alba they are circinnate. The form of the fruit, he also thinks, is different in the two cases. In a pond near Ealabus grow Lycopus europæus, Potamogeton natans, and Nymphæa alba. On making a transverse section of the petiole of the Nymphæa, it was observed that the large tubes had hairs in their interior, which generally came off in threes. Again, in making a similar section of the peduncle, or flower-stalk, we noticed generally four or five large tubes in the centre, and smaller ones around, but in none of them could any hairs be detected. These tubes in the stalks of the flower and leaf appear to contain air for the purpose of floating the various parts of the plant.* Carex vesicaria and Equisetum limosum both in an unbranched and branched state, were picked at Loch Skiros.

On examining some of the Carices and grasses, it was found that the rule in regard to the solid stem in the former, and the hollow stem in the latter, was not universal. Thus Carex remota and ovalis had distinctly hollow stems, while Ammophila arenaria had a solid stem. This grass is said by Dr. Parnell to be the only British one with a stem always completely solid.† It also differs from other grasses in not having a striated stem. It may also be remarked here, that in the Umbelliferæ, the character founded on the fistular stem does not invariably hold good, for on the same root solid and fistulose stems will occasionally be found.

Many of the grasses in Islay displayed much of the ergot, or that disease which is common in rye, and which is an altered state of the ovary caused by the attack of a fungus, Ergotætia abortifaciens of Quekett. This plant produces sporules, which communicate the disease to healthy grain, either by being directly applied, or by being taken up from the soil. Mr. Quekett has produced the disease artificially by watering healthy plants of rye with water containing the

* On examining the peduncle of Nymphæa alba lately in Bute, I detected hairs in its tubes as well as in those of the petiole. The same thing was seen in the peduncles and petioles of Nuphar lutea. In the latter plant the air-tubes in the petiole were larger than those in the peduncle, and displayed the hairs most distinctly.

† See Parnell's work on British Grasses. Bromus patulus, and some other foreign grasses, have also solid stems, and Mr. Gorrie has noticed the same occurrence in some varieties of wheat.

sporules. Proper draining will probably prevent the attack of ergot. Ergot injures the quality of the flour, and cases are detailed in which the use of diseased rye has caused dry gangrene. The disease is not, however, peculiar to rye. It occurs in many grasses. Professor Henslow has observed it in wheat in Suffolk; and in the district in which he saw it, it is stated that about a century ago several cases of poisoning occurred from diseased wheat. Our party observed ergot in considerable quantity on Anthoxanthum odoratum, and on Phalaris arundinacea. The former grass is very abundant in many parts of the island, and is well deserving of cultivation. Besides the ergot, we noticed the disease in oats, caused by a species of uredo, and commonly called smut. In many fields the disease was very prevalent. It is said to be prevented by steeping the grain in stale urine, and afterwards sifting lime on it. A solution of salt, and a weak solution of sulphate of copper, have also been employed.

August 19th.—The day was very unpromising, and thick mist and rain set in about seven o'clock A.M. Nevertheless, four of the party started in a conveyance for Portnahaven, while the rest went to Ballagrant Loch to fish. The south-western shores of the island, as far as Portnahaven or the Rhins, are low, gravelly, and occasionally rocky, and consist chiefly of clay-slate, with greywacke slate in alternate beds. Gneiss is met with in some parts of the shore, especially between Octafad and the point of the Rhins or Rinns. These shores produced few plants of interest. Geranium pratense was noticed near Port-Charlotte, and in a neglected garden at the same place we observed profusion of Papaver somniferum of a pink colour, with dark spots at the base of the petals, similar to what occurs in Papaver Argemone. The same variety was picked by Dr. Parnell at Ballagrant. At Portnahaven there is a lighthouse on an island close to the shore, and there are other islands in the neighbourhood. The tides in this quarter, more particularly at the point of the Rinns, are very violent and rapid, and it is interesting to notice the agitation which is caused even by a moderate degree of wind. On arriving at Portnahaven, the weather was so bad and the rain so heavy, that two of the party did not choose to quit the conveyance, and accordingly they proceeded directly to Kilchearan, and there enjoyed the hospitality of Mr. Ralston until the other two botanists met them.

Proceeding along the western shore of the Rinns from Portnahaven we encounter a very rugged and rocky coast, intersected by numerous indentations, and broken up by narrow ravines into which the sea enters with great violence. Fine caves and gigantic natural arches occur in many places. The prevailing rocks are clay-slate and greywacke, with occasional trap dykes of considerable extent. In some places, as at Losset Hill, we met with a peculiar kind of conglomerate. Near Losset, which is a fishing village, the cliffs are remarkably fine, attain-

ing a height of many hundred feet, and covered with innumerable sea-fowl. In this quarter there are the remains of a fort.

The most interesting plants seen on the cliffs were Sedum Rhodiola, Pyrethrum maritimum, in some cases with a singular flattened or fasciated stem, caused apparently by the union of several stalks, Ligusticum scoticum, Carex extensa, Spergula subulata, and Pulicaria dysenterica. The cliffs are now and then interrupted by sandy shores covered with bent, and there Convolvulus Soldanella, and Equisetum Telmateia were found, along with Galium verum curiously altered by the attacks of insects.

At Kilchearan, where a slate quarry is worked, we joined the rain-dreading botanists, whom we found comfortably accommodated in the house of Mr. Ralston, the tenant of the farm in this quarter, who kindly entertained the whole party. Mr. Ralston seems to be an intelligent farmer, and has contributed to the improvement of the agriculture of the district. He pointed out to us a field of from twenty to thirty acres bearing an excellent crop of wheat. He has introduced Cheviot sheep with profit, and in his dairy he has the Ayrshire breed of cows, to the excellence of the produce of which some of the party can bear testimony.

Returning by the shore to Ealabus we did not observe any plants of peculiar interest. On our return we had the pleasure of meeting Mr. Christison, who had been sent to this country by the Norwegian government for the purpose of getting information as to agriculture. Foreign governments, in the encouragement which they thus give to science, set an excellent example to Britain.

August 20th.—This day the botanical section proceeded first by the shore, and then across the island to Loch Gruinart, examining the southern shore of the loch, and going as far as Ardnave and the point of the Nave. The rest of the party indulged their fishing propensities by visiting the river Laggan. The day was showery, but upon the whole favourable.

In the salt marshes near Islay House, many common sea plants were found, as Salicornia herbacea, Glaux maritima, Aster Tripolium, and Poa maritima. In a ditch near Gruinart, Rumex Hydrolapathum or great water-dock, was picked, a species well distinguished by its lanceolate acute leaves tapering below into a petiole which is flat above, and by the enlarged ovato-triangular divisions of its perianth nearly all with tubercles. It was formerly described by botanists as Rumex aquaticus, a distinct species with broader leaves, not tapering, and non-tubercled fruit, hence called grainless-dock. R. Hydrolapathum is rare in Scotland, although it is found in many places in England. Mr. Stewart Murray observed the plant in ditches near Meikleour in Perthshire, and I have a specimen from the station, picked by Mr. Gorrie. Hopkirk mentions the plant as growing near Old Kilpatrick

on the Clyde, but I have not been able to see it in that locality. I have gathered the plant abundantly near Oxford and in other parts of England, but I never before picked it in Scotland.

The shore on the south side of Loch Gruinart is partly gravelly and partly sandy. The sand occurs near the Nave, and on the west shore exposed to the Atlantic. The dunes of sand in this quarter attain a great elevation, and are as usual kept together by grasses and sedges. In lint fields near Gruinart, Camelina sativa was observed, and on the sandy shores Draba incana, Gentiana campestris and Amarella, and Arabis hirsuta. Scutellaria galericulata grew profusely among the pebbles on the shore, Papaver Argemone and dubium, in sandy fields, and Juncus maritimus in salt marshes; in moist places near the loch, Callitriche verna and pedunculata, Potamogeton pusillus and crispus, Helosciadium inundatum, Myriophyllum spicatum, and Scirpus glaucus.

Loch Gruinart has a sandy bottom, and it is nearly emptied when the tide is low. Sand-banks exist in many places, and on these we saw numerous seals sporting in the sun. The tide flows here with great rapidity. A bar of sand extends across the mouth of the loch, and at its head there is an alluvial plain. The shores to the south-west of the point of the Nave are rocky and inhospitable, and exhibit reefs of various extent. The cliffs become more elevated as we proceed south, and caves occur in many places. The interior of the island in the neighbourhood of Loch Gruinart is composed of boggy and peaty soil, furnishing such plants as Droseras, Rhynchospora alba, and Utricularia minor. On Nave island Crambe maritima is said to grow.

In this part of the island there are the ruins of the old church of Kilnave. It is a building of considerable antiquity, and seems to have had only two windows, the arches of which are very peculiar. In the churchyard there is an old stone cross, which differs in the curvature of the cross portion from those which are seen at Campbelton and in Iona.

August 21*st.*—Early this morning I started for Ballytarson, and gathered Anthemis nobilis in abundance. This plant is by no means common in Scotland. In Islay it occurs in several places, and always associated with limestone rock. After breakfast we prepared for a visit to the south-eastern district of the island, but the stormy nature of the weather caused no small alarm to some of the party, and the number of zealous botanists willing to encounter a long and and wet walk was found to be very small. One of the party preferred botanizing near Ealabus, within sound of the dinner-bell. Undismayed by the desertion of friends, our little band proceeded in one of Mr. Chiene's conveyances as far as Kintra, at the southern extremity of Laggan sands, and thence walked towards the Oe. On the sands the chief plants were Convolvulus Soldanella, Poa pratensis var.

arenaria, and Koeleria cristata. On none of the sands in the island did we observe Sinapis monensis,—a plant which is common in many of the sandy shores on the west coast.

From Laggan sands we proceeded along the rocks to Slochd Mhaol Torrai,* where splendid precipices and caves are seen. The rocks in this district, and indeed all the way from Islay House to the Mull of the Oe, consist of alternations of a bluish quartz rock, clay-slate, and occasional trap dykes and veins. Some of the rocks are bent and contorted in a remarkable manner, and others are hollowed out into enormous caves, some of which extend a great way inland, and open at the distance of several hundred feet from the shore. Some of the rocks stand out prominently in the sea with rugged and peaked summits. One of these is called Saighdair Ruadh, or Red Soldier rock, from its colour. It is 150 or 200 feet high, and presents a very remarkable aspect. There are often very narrow chasms and rents in the rocks, into which the waves of the ocean are rolled with great force. Landslips have also occurred in some places. The rocks, although interesting in their appearance, are by no means productive. Beta maritima grows in considerable quantity on some of the cliffs, and Sedum Rhodiola and Pyrethrum maritimum abound. The other plants worthy of notice were Listera ovata, Luzula pilosa, Lastrea Oreopteris, Ligusticum scoticum, Lycopodium selaginoides, Hypericum humifusum and Androsæmum, Rubus saxatilis and Saxifraga aizoides. The last mentioned plant extends from nearly the sea level to a considerable elevation on the hills.

After examining the rocks in the Oe or Oa, a Parliamentary parish, we proceeded to the Moile or Mull of Islay, passing Lower Killian, where oddly twisted rocks are seen. The Moile is a fine cliff, or promontory, projecting into the sea, forming the south-eastern extremity of Islay, and surrounded by cliffs of a reddish colour, in which the alternations of quartz rock and clay-slate are well seen. On one of these rocks there are the remains of an old fort, called Dunad, or Dùn Athăd, which seems to have been a place of great strength in former times. The rock on which it is situated projects towards the sea, is bounded on three sides by perpendicular cliffs, and is connected with the land only by a narrow isthmus with precipices on each side. In some of the rocks near the fort, remarkable caves and arches are seen. After examining the fort, we proceeded through Upper Killian parish, towards Port Ellen. We passed Kinnabus and Assabus Loch, and at Cragabus we saw the remains of an old churchyard, marked by large stones placed so as to enclose graves, similar to some which occur near Lag, in the island of Arran. The party reached Port Ellen about half-past eight, P. M.,

* This means the Gulf of Mhaol Torrai, a person concerning whom there is some tradition. He is said to have been killed at the place in endeavouring to leap across one of the chasms on horseback.

after a long and fatiguing walk. At this port a lighthouse has been erected by Mr. Campbell.

August 22d.—Leaving Port Ellen at 7 A.M., we went along the shore to Ardinisteil, where we breakfasted with Mr. Stein. On our way we picked Galeopsis versicolor and Convolvulus sepium. After breakfast we directed our course towards Loch Knock and Knock Hill, where Mr. Campbell has a summer residence called Ardimersay Cottage. Here there is a considerable extent of thriving plantations, and we spent some hours in the examination of them. The chief plants which rewarded our exertions, were Circæa intermedia, Carex lævigata, Hymenophyllum Wilsoni, Polypodium Phegopteris, Cardamine sylvatica and Prunus Cerasus. On rocks in the neighbourhood were seen Milium effusum, Tanacetum vulgare, and Inula Helenium evidently an escape from an old garden. Near the cottage there is an old fort now in ruins, called Dun-naomh-aig, and pronounced Dunavaig, remarkable as being the last held by the MacDonalds. It was taken by the Campbells, who it is said resorted to the method of cutting the water pipes which were conveyed under the sea in the bay, and thus causing a surrender. The rock of the fort seems to be impregnable on all sides but that next the land. In the vicinity of the cottage a place is shown which is said to be the grave of the Princess Isla.

After partaking of refreshment, kindly supplied by the housekeeper at the cottage, we walked partly by the shore and partly inland, as far as Kildalton, where porphyritic rocks present themselves. Here a fine old church is seen in ruins. It had two windows on the east end, and two at each side, with two doors. Two stone crosses differing slightly in character are seen, one in the churchyard surrounding the chapel, and the other at a little distance from it. Some curious old gravestones occur. Nettles and Anthriscus sylvestris now grow in profusion within the precincts of the chapel, and the procumbent variety of the common juniper on its walls. The various species of nettle seem to follow the footsteps of man, and delight to grow in places where nitrate of lime is produced:

> "At the wall's base the fiery nettle springs,
> With fruit globose, and fierce with poisoned stings."

In boggy places, in the vicinity of the old chapel, we found Heloscia-dium nodiflorum, Hypericum elodes, Carex remota and filiformis. This part of the island is separated from the district near Islay House by a lofty range of hills, some of them attaining an elevation of 1500 or 2000 feet, and composed chiefly of quartz rock. We ascended one of them called Ben Vigors or Ben Bhiggars, and found it by no means productive. The principal plants collected were Gnaphalium dioicum, Lycopodium Selago, Arctostaphylos Uva-ursi, Carex rigida, Armeria maritima var. alpina, and Juniperus communis var. nana. The

occurrence of Arctostaphylos would probably indicate an elevation of at least 2000 feet, corresponding with the subalpine region of Mr. Watson. On reaching the summit of the hill we were involved in mist and rain, and the guide who had accompanied us lost his way, and after wandering for an hour or two landed us in the valley whence we had ascended. Fortunately he knew the direction which our place of destination bore to the valley, and accordingly we followed our compass and crossed the hills in a very thick mist, amidst the fears and doubts of our guide as to the correctness of our procedure. Our anxiety as to the result of our exploration made us forget all the discomfort of a thorough drenching, and one of the party who had been complaining sadly of fatigue now walked on most manfully. After reaching the summit of the range of hills, (probably the summit of Gloan Leor,) we descended, not without doubts as to the result. At this time a slight clearance took place in the mist, and we descried some green patches of verdure which seemed to indicate a limestone district. We knew that this was the geological nature of the district which we wished to reach, and our hopes of extrication from our difficulties brightened considerably. We now proceeded on our descent with increased vigour and alacrity, and reached Allaladh, when some oat cakes and milk from one of the cottagers were most thankfully received, and ere long we had the pleasure of finding ourselves at Cattadale, where a conveyance was waiting to convey us to Ealabus. This adventure shows, in a certain degree, the importance of knowing the geology of a district, and the kind of vegetation which is connected with particular rocks. The limestone district to which I have alluded is extensive. It crosses from Laggan to Ardmore point, and extends to the north-east of Islay House. In some places the water has hollowed out a passage for itself through the rocks, and in one instance we observed the rivulet disappear under ground for several hundred feet. Near Cattadale the ruins of a fort are seen, called Nose-bridge fort.

The party left at home had made some additions to the Flora of the island during our absence by gathering Ruppia maritima, Potamogeton rufescens, Polemonium cæruleum, Malva moschata, Carex acuta, Solanum Dulcamara, and Rubus affinis of Weihe and Nees, a species described in Mr. Babington's Manual, and the specimen named on his authority.

August 23*d*.—This day, like its predecessors, was gloomy and unpropitious, and acted in a most cooling manner on the enthusiasm of the party. One gave up botany for shooting, others remained at home, and a party of two only kept up the credit of the expedition. This party bent their steps towards Losset, passing Kilmeny and Ballygrant. At the latter place there is a beautifully wooded lake well stocked with trout, some of them presenting peculiar characters. On the way Ranunculus aquatilis var. fluitans, Potamogeton pusillus and

rufescens were picked. Near Losset, in a glen not far from the Sound of Islay, Ribes rubrum grows in profusion apparently wild, along with Rubus idæus and saxatilis. We got fresh specimens from Mr. Stuart. Near Losset there is a lead mine which is worked, and there is abundance of iron in the vicinity. From Losset we proceeded to the lake of Finlaggan, or the Loch of Portaneilan, as it is sometimes called, and collected a few common aquatic plants. On an island in the loch stand the ruins of the Castle of Finlaggan, famous as the place where the MacDonalds, Lords of the Isles, were crowned. There is no means of reaching the island except by wading, inasmuch as there is no boat on the loch. The water is about four feet deep at the place where the island can be reached; we accordingly had to wade up to the middle in order to get a view of the ruins. The buildings seem to have been extensive. There are the remains of an old chapel, with some antiquated gravestones, having swords carved on them. The grandeur of this castle of the Lords of the Isles is now gone, and nettles and Stachys sylvatica, along with other ignoble weeds, occupy the halls of the MacDonalds. On the walls of the chapel Asplenium Ruta-muraria and Adiantum-nigrum grow in profusion, filling up every chink and crevice with their fronds. The contemplation of these crumbling walls, and the vegetation covering them, recalled to my mind the words of the American poet, who, when speaking of flowers as stars in earth's firmament, and describing the various lessons which they furnish, goes on to say,—

> Not alone in her vast dome of glory,
> Not on graves of birds and beasts alone,
> But in old cathedrals high and hoary,
> On the tombs of heroes carved in stone.
>
> In the cottage of the modest peasant,
> In ancestral homes whose crumbling towers,
> Speaking of the past unto the present,
> Tell us of the ancient games of flowers.
>
> In all places then, and in all seasons,
> Flowers expand their light and soul-like wings,
> Teaching us by most persuasive reasons,
> How akin they are to human things.

On an island near that already mentioned, and separated from it only by a narrow strait, are the ruins of some buildings where the Lords of the Isles held their councils. The islands were formerly united by a drawbridge. On one side of the island on which Finlaggan Castle stands there are the remains of a pier, and a similar pier exists in the mainland. In the loch grew Phragmites communis, Nymphæa alba and Potamogeton natans.

From Finlaggan we walked to Duisker, where Agrimonia Eupatoria, Eupatorium cannabinum and Festuca gigantea were found. This being a limestone district the vegetation was luxuriant, and the rocks were undermined in many places by the streams. On our way

from this district to Ealabus we visited Loch Skiros, and gathered Potamogeton perfoliatus and pusillus, and Callitriche autumnalis.

In the evening the party were conveyed to Port Askaig, and went on board the steamboat which was to start early next morning for Tarbet.

Thus ended our Islay trip—one from which all of us derived the greatest gratification, and for which we were deeply indebted to the kindness and hospitality of Mr. Chiene. Without his kind offices we could not have examined the island in the manner we did. He spared no trouble in conveying us to different parts of the island, and in affording us every facility for the prosecution of our researches.

CATALOGUE

OF THE PHANEROGAMOUS PLANTS AND FERNS COLLECTED DURING THE TRIP IN THE MULL OF CANTYRE AND THE ISLAND OF ISLAY.

The letter C added to a species or variety indicates that it was found in Cantyre only, and the letter I that it was found in Islay only. The plants unmarked were found in both places. An asterisk (*) prefixed shows that the plant is doubtfully native.

DICOTYLEDONES.

I.—RANUNCULACEÆ.

Thalictrum minus.
Anemone nemorosa. C.
Ranunculus aquatilis. I.
——— hederaceus.
——— Flammula.
——— acris.
——— repens.
——— sceleratus.
Caltha palustris.
Trollius europæus. C.
*Aquilegia vulgaris. I.

II.—BERBERACEÆ.

Berberis vulgaris. C.

III.—NYMPHÆACEÆ.

Nymphæa alba. I.
Nuphar lutea. I.

IV.—PAPAVERACEÆ.

Papaver Argemone. I.
——— dubium.
*——— somniferum. I.

V.—FUMARIACEÆ.

Corydalis claviculata. C.
Fumaria capreolata.

VI.—CRUCIFERÆ.

Cakile maritima.
Crambe maritima.
Capsella Bursa-pastoris.
Cochlearia officinalis.
Draba incana. I.
*Camelina sativa.
Cardamine pratensis.
——— hirsuta.
——— β sylvatica.
Arabis hirsuta. I.
Nasturtium officinale.
Sisymbrium officinale.
*Hesperis matronalis. I.
*Brassica campestris. I.
*——— β. Rapa. C.
Sinapis arvensis.
——— alba.
——— monensis. C.
Raphanus Raphanistrum.
——— β. maritimus. C.

VII.—RESEDACEÆ.

Reseda Luteola. C.

VIII.—VIOLACEÆ.

Viola palustris.
——- canina.
—— tricolor.
——- β. arvensis.
——- lutea.

IX.—DROSERACEÆ.

Drosera rotundifolia.
———- longifolia. I.

Drosera anglica. I.

X.—Polygalaceæ.

Polygala vulgaris.

XI.—Caryophyllaceæ.

Silene inflata. I.

—— maritima.

Lychnis Flos-cuculi.

——- diurna.

——- Githago. I.

Sagina procumbens.

——- maritima. C.

Spergula subulata.

——-- nodosa.

——-- arvensis.

Arenaria peploides.

——— serpyllifolia.

——— marina.

Stellaria media.

——-- Holostea. C.

——-- graminea. C.

——-- uliginosa. I.

Cerastium glomeratum.

——-—— triviale.

——-—— atro-virens.

XII.—Malvaceæ.

Malva moschata. I.

——- sylvestris. I.

XIII.—Tiliaceæ.

*Tilia europæa.

XIV.—Hypericaceæ.

Hypericum Androsæmum.

——-—— quadrangulum.

——-—— humifusum.

——-—— pulchrum.

——-—— elodes. I.

XV.—Aceraceæ.

*Acer Pseudo-platanus.

XVI.—Geraniaceæ.

Erodium cicutarium.

Geranium pratense.

——— molle.

——-—— dissectum.

——— robertianum.

XVII.—Linaceæ.

*Linum usitatissimum.

—— catharticum.

Radiola millegrana.

XVIII.—Oxalidaceæ.

Oxalis Acetosella.

XIX.—Leguminosæ.

Ulex europæus.

Sarothamnus scoparius.

Ononis arvensis. I.

Anthyllis Vulneraria.

Medicago lupulina. I.

Trifolium repens.

——— pratense.

——— medium.

——— arvense. I.

——— procumbens.

——— minus.

Lotus corniculatus.

——- major.

Vicia sylvatica. C.

——- Cracca.

——- sativa. C.

——- sepium.

——- hirsuta.

Lathyrus pratensis.

Orobus tuberosus.

XX.—Rosaceæ.

Prunus spinosa.

——— Padus. I.

——— Cerasus. I.

Spiræa Ulmaria.

*——-- salicifolia. I.

Dryas octopetala. C.

Geum urbanum. C.

——- rivale. I.

Agrimonia Eupatoria. I.

Potentilla anserina.

——— reptans. C.

——— Tormentilla.

——— Comarum.

Fragaria vesca.

Rubus saxatilis.

——- fruticosus.

——- macrophyllus.

——- rhamnifolius.

——- affinis. I.

——- plicatus. C.

——- Idæus.

Rosa spinosissima.

—— villosa.

—— tomentosa. C.

—— rubiginosa. C.

—— canina. C.

Alchemilla vulgaris.

——— arvensis.

Cratægus Oxyacantha.

Pyrus malus. C.

—— Aucuparia.

XXI.—Onagraceæ.

Epilobium angustifolium.

——-—— parviflorum.

——-—— montanum.

——— palustre.

——-—— tetragonum.

——-—— virgatum.

Circæa lutetiana. C.

Circæa alpina, β. intermedia.
XXII.—HALORAGIACEÆ.
Hippuris vulgaris.
Myriophyllum spicatum. I.
Callitriche verna. I.
———- platycarpa.
——— pedunculata. I.
——— autumnalis. I.
XXIII.—LYTHRACEÆ.
Lythrum Salicaria.
Peplis Portula.
XXIV.—PORTULACACEÆ.
Montia fontana.
XXV.—PARONYCHIACEÆ.
Scleranthus annuus.
XXVI.—CRASSULACEÆ.
Sedum Rhodiola.
*——— Telephium.
——— anglicum.
——— acre.
Cotyledon Umbilicus. C.
XXVII.—GROSSULARIACEÆ.
Ribes rubrum. I.
XXVIII.—SAXIFRAGACEÆ.
Saxifraga aizoides.
——— oppositifolia. C.
——— hypnoides. C.
Chrysosplenium oppositifolium.
Parnassia palustris.
XXIX.—UMBELLIFERÆ.
Hydrocotyle vulgaris.
Eryngium maritimum.
Conium maculatum.
Apium graveolens. C.
Helosciadium nodiflorum.
——— inundatum.
Ægopodium Podagraria.
Carum verticillatum. C.
Bunium flexuosum. I.
Pimpinella Saxifraga.
Œnanthe crocata.
——— Lachenalii.
Ligusticum scoticum.
Angelica sylvestris.
Heracleum Sphondylium.
Daucus Carota.
Torilis Anthriscus.
Anthriscus sylvestris.
Myrrhis odorata. C.
XXX.—ARALIACEÆ.
Hedera Helix.
XXXI.—CORNACEÆ.
*Cornus sanguinea. I.
XXXII.—CAPRIFOLIACEÆ.
Sambucus nigra.
*Viburnum Opulus. I.
Lonicera Periclymenum.
XXXIII.—RUBIACEÆ.
Galium verum.
——— palustre.
——— saxatile.
——— Aparine.
Sherardia arvensis.
Asperula odorata.
XXXIV.—VALERIANACEÆ.
Valeriana officinalis.
*——— pyrenaica. I.
XXXV.—DIPSACEÆ.
Scabiosa succisa.
XXXVI.—COMPOSITÆ.
Oporinia autumnalis.
Hypochæris radicata.
Sonchus arvensis.
——— asper.
——— oleraceus.
Crepis virens.
——— paludosa. C.
Hieracium Pilosella.
——— murorum. C.
——— sylvaticum.
——— boreale.
——— umbellatum.
Taraxacum officinale.
Lapsana communis.
Arctium minus.
Carduus lanceolatus.
——— palustris.
——— arvensis.
Centaurea nigra.
Bidens cernua. C.
——— tripartita.
Eupatorium cannabinum. I.
Tanacetum vulgare.
Artemisia vulgaris.
Gnaphalium dioicum.
——— sylvaticum.
——— uliginosum.
——— minimum. C.
——— germanicum. C.
Petasites vulgaris.
Tussilago Farfara.
Aster Tripolium.
Solidago Virgaurea.
Senecio vulgaris.
——— sylvaticus.
——— Jacobæa.
——— aquaticus.
Pulicaria dysenterica.
Bellis perennis.
Chrysanthemum segetum.

Chrysanthemum Leucanthemum.
Pyrethrum inodorum.
——— maritimum.
Anthemis nobilis. I.
Achillea Ptarmica.
——— Millefolium.

XXXVII.—Campanulaceæ.

Campanula rotundifolia.
*——— latifolia. I.
Jasione montana.

XXXVIII.—Ericaceæ.

Erica Tetralix.
——— cinerea.
Calluna vulgaris.
Arctostaphylos Uva-ursi. I.
Vaccinium Myrtillus.

XXXIX.—Ilicaceæ.

*Ilex Aquifolium.

XL.—Jasminaceæ.

*Ligustrum vulgare.
*Fraxinus excelsior.

XLI.—Gentianaceæ.

Gentiana Amarella. I.
——— campestris.
Erythræa Centaurium.
——— linarifolia. I.
Menyanthes trifoliata.

XLII.—Polemoniaceæ.

*Polemonium cæruleum. I.

XLIII.—Convolvulaceæ.

Convolvulus sepium.
——— Soldanella.
*Cuscuta Epilinum.

XLIV.—Boraginaceæ.

Myosotis repens. C.
——— cæspitosa.
——— arvensis.
——— versicolor.
Steenhammera maritima. C.
Symphytum tuberosum. I.
Lycopsis arvensis.

XLV.—Solanaceæ.

Hyosciamus niger. C.
Solanum Dulcamara. I.

XLVI.—Scrophulariaceæ.

Veronica arvensis.
——— serpyllifolia.
——— scutellata. C.
——— Anagallis.
——— Beccabunga.
——— officinalis.
——— Chamædrys.
——— hederifolia. C.
——— agrestis.
——— polita. C.
Euphrasia officinalis.
——— Odontites.
Rhinanthus Crista-galli.
Melampyrum pratense.
Pedicularis palustris.
——— sylvatica.
Scrophularia nodosa.
Digitalis purpurea.

XLVII.—Labiatæ.

Lycopus europæus.
Mentha aquatica.
——— sativa.
——— β. rubra. I.
——— arvensis.
Thymus Serpyllum.
Origanum vulgare. I.
Teucrium Scorodonia.
Ajuga reptans. I.
Lamium amplexicaule. C.
——— intermedium.
——— purpureum.
Galeopsis Tetrahit.
——— versicolor.
Stachys palustris.
——— β. ambigua. C.
——— sylvatica.
——— arvensis.
Glechoma hederacea.
Prunella vulgaris.
Scutellaria galericulata.

XLVIII.—Lentibulariaceæ.

Pinguicula vulgaris.
——— lusitanica.
Utricularia minor. I.

XLIX.—Primulaceæ.

Primula vulgaris.
Lysimachia nemorum.
Anagallis arvensis.
——— tenella.
Samolus Valerandi.
Glaux maritima.

L.—Plumbaginaceæ.

Armeria maritima.
——— var. alpina. I.

LI.—Plantaginaceæ.

Plantago major.
——— lanceolata.
——— β. altissima. C.
——— maritima.
——— Coronopus.
Littorella lacustris. I.

LII.—Chenopodiaceæ.

Chenopodium album.
Atriplex laciniata.
——— rosea.

Atriplex patula.
——— angustifolia.
——— erecta.
Beta maritima. I.
Salsola Kali.
Schoberia maritima. C.
Salicornia herbacea. I.
———— β. procumbens.

LIII.—POLYGONACEÆ.

Polygonum Bistorta. I.
———— amphibium.
———— β. terrestre.
———— Persicaria.
———— lapathifolium.
———— Hydropiper.
———— aviculare.
———— Raii. C.
———— Convolvulus.
Rumex Hydrolapathum. I.
——— crispus.
——— obtusifolius.
——— sanguineus, β. viridis. C.
——— acetosa.
——— Acetosella.

LIV.—ELÆAGNACEÆ.

*Hippophae rhamnoides.

LV.—EMPETRACEÆ.

Empetrum nigrum.

LVI.—EUPHORBIACEÆ.

Euphorbia helioscopia.
Mercurialis perennis.

LVII.—URTICACEÆ.

Urtica urens.
—— dioica.
*Ulmus montana.

LVIII.—AMENTIFERÆ.

Quercus Robur.
*Castanea vulgaris.
*Fagus sylvatica.
Corylus Avellana.
Alnus glutinosa.
Betula alba.
——— var. glutinosa. I.
*Populus alba. C.
——— tremula. C.
*——— nigra. I.
Salix pentandra.
—— fragilis.
—— alba.
—— purpurea.
—— Helix.
—— viminalis.
—— stipularis. I.
—— Smithiana.
—— acuminata. I.
Salix cinerea.
—— aquatica. I.
—— aurita.
—— caprea. I.
—— nigricans. I.
—— fusca, β. repens.
—— rosmarinifolia? I.
Myrica Gale.

LIX.—CONIFERÆ.

Pinus sylvestris.
Juniperus communis, β. nana.

MONOCOTYLEDONES.

LX.—ORCHIDACEÆ.

Listera ovata. I.
Orchis latifolia.
——— maculata.
Gymnadenia Conopsea.
Habenaria viridis.

LXI.—IRIDACEÆ.

Iris Pseudacorus.

LXII.—LILIACEÆ.

Allium ursinum. I.
Scilla verna. C.
Agraphis nutans.

LXIII.—ASPARAGACEÆ.

*Ruscus aculeatus. I.

LXIV.—JUNCACEÆ.

Juncus conglomeratus.
——— effusus.
——— maritimus. I.
——— acutiflorus.
——— lamprocarpus.
——— supinus.
——— compressus.
——— β. coenosus. C.
——— bufonius.
——— squarrosus.
Luzula sylvatica.
——— pilosa.
——— campestris. C.
——— multiflora.
Narthecium ossifragum.

LXV.—ALISMACEÆ.

Alisma Plantago.
——— ranunculoides. I.
Triglochin maritimum.
———— palustre.

LXVI.—FLUVIALES.

Potamogeton pusillus.
———— crispus.
———— perfoliatus. I.
———— heterophyllus. I.
———— rufescens. I.
———— natans.

Potamogeton oblongus.
Zostera marina.
Ruppia maritima, β. rostellata. I.
Lemna minor.

LXVII.—Araceæ.

Sparganium simplex. I.
——— ramosum.

LXVIII.—Cyperaceæ.

Schœnus nigricans.
Rhynchospora alba. I.
Blysmus rufus.
Scirpus lacustris, β. glaucus. I.
——— setaceus.
——— Savii.
——— maritimus. C.
——— palustris.
——— multicaulis. C.
——— pauciflorus.
——— cæspitosus.
Eriophorum vaginatum.
——— polystachion.
Carex dioica. C.
——— pulicaris.
——— stellulata.
——— ovalis.
——— remota. I.
——— intermedia. I.
——— arenaria.
——— vulpina.
——— Goodenovii.
——— rigida.
——— acuta. I.
——— flava.
——— extensa.
——— fulva.
——— distans. I.
——— binervis.
——— lævigata. I.
——— panicea.
——— glauca.
——— filiformis. I.
——— hirta. C.
——— ampullacea.
——— vesicaria. I.

LXIX.—Gramineæ.

Phalaris arundinacea.
Anthoxanthum odoratum.
Phleum pratense.
——— var. nodosum. C.
Alopecurus pratensis. C.
——— geniculatus.
Milium effusum.
Agrostis canina.
——— vulgaris.
——— — β. pumila. I.
Agrostis alba.
——— β. stolonifera.
——— γ. maritima. I.
Ammophila arenaria.
Phragmites communis.
Aira cæspitosa.
——— flexuosa.
——— caryophyllea.
——— præcox.
*Avena strigosa.
——— pubescens.
Arrhenatherum avenaceum.
Holcus lanatus.
——— mollis.
Triodia decumbens. I.
Kœleria cristata.
Molinia cærulea.
Catabrosa aquatica.
——— — β. littoralis.
Glyceria fluitans.
Sclerochloa maritima.
Poa annua.
——— pratensis.
——— var. arenaria. I.
——— trivialis.
Cynosurus cristatus.
Dactylis glomerata.
Festuca bromoides.
——— ovina.
——— β. vivipara. C.
——— duriuscula.
——— elatior.
——— pratensis. C.
——— gigantea.
Bromus asper. C.
Serrafalcus secalinus.
——— commutatus. C.
——— mollis.
——— racemosus.
Brachypodium sylvaticum.
Triticum repens.
——— junceum
Lolium perenne.
——— var. ramosum. I.
*——— multiflorum. I.
——— temulentum.
Nardus stricta.

ACOTYLEDONES.

LXX.—Equisetaceæ.

Equisetum Telmateia.
——— arvense.
——— sylvaticum. I.
——— palustre.

———— limosum. I.
———— var. simplex. I.

LXXI.—LYCOPODIACEAE.

Lycopodium Selago.
———— selaginoides.

LXXII.—FILICES.

Polypodium vulgare.
———— Phegopteris.
Polystichum aculeatum, γ. lobatum.
Lastrea Oreopteris.
——— Filix-mas.
Lastrea dilatata.
Athyrium Filix-fœmina.
Asplenium Trichomanes.
———— marinum.
———— Adiantum-nigrum.
———— Ruta-muraria.
Scolopendrium vulgare.
Blechnum boreale.
Pteris aquilina.
Hymenophyllum Wilsoni. I.
Osmunda regalis. I.

On reviewing the catalogue, it will be found that the total number of species collected in Cantyre and Islay, is as follows:—

Phanerogamous species, . .	501	Cryptogamous species (Ferns), .	22
" varieties, .	26	" varieties, . .	2
	527		24

Making a total of 523 species and 28 varieties, in all 551.

Of the Phanerogamous species 81 are peculiar to Islay, and of the varieties 9; while 50 Phanerogamous species and 10 varieties are peculiar to Cantyre.

There are 4 Cryptogamous species and 1 variety found in Islay, and not in Cantyre.

It will thus be found that in Islay there were gathered of

Phanerogamous species, . .	451	Cryptogamous species (Ferns), .	22
" varieties, .	16	" varieties, . .	2
	467		24

While in Cantyre there were observed of

Phanerogamous species, . .	420	Cryptogamous species (Ferns), .	18
" varieties, .	17	" variety, . .	1
	437		19

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