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### The May Island; its Archæology; its Algoid Flora; its Phanerogams and Higher Cryptogams

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was made by the most of the party. Capt. Norman and myself, being rather stiff, botanised Morrone Wood, getting splendid specimens of *Hypnum crista-castrensis*, *Melica nutans*, *Pyrola media*, but failed to find *Linnaea borealis*, which grows there, as we could not venture high enough, owing to the deer-forest restrictions.

I am indebted to Mr Arthur Evans, M.A., Cambridge, one of our members, for the complete list of Carices obtained on Lochnagar and Corry Ceann-mohr.

<i>Carex pauciflora</i> , Lochnagar.	<i>Carex atrata</i> , Corry Ceann-mohr.
<i>alpicola</i> , do.	<i>rigida</i> , do.
<i>aquatilis</i> , do.	<i>glauca</i> , do.
<i>vulgaris</i> , do.	<i>capillaris</i> , do.
<i>distans</i> , do.	<i>vaginata</i> , do.
<i>fulva</i> , do.	<i>pallescens</i> , do.
<i>binervis</i> , do.	<i>panicæa</i> , do.
<i>dioica</i> , Corry Ceann-mohr.	<i>pilulifera</i> , do.
<i>pulicaris</i> , do.	<i>filiformis</i> , do.
<i>rupestris</i> , do.	<i>flava</i> , do.
<i>ovalis</i> , do.	<i>frigida</i> (new), discovered
<i>stellulata</i> , do.	by the late Mr Sadler.
<i>curta</i> , do.	

Mr Evans picked another *Salix* in Corry Ceann-mohr, differing in some respects from one which I mentioned, as probably a hybrid between *S. Sadleri* and *S. Lapponum*, and which as yet has not been critically examined.

*The May Island; its Archaeology; its Algid Flora; its Phanerogams and Higher Cryptogams.* By JOHN RATTRAY, M.A., B.Sc., Marine Station, Granton, Edinburgh.

(Read 10th July 1884.)

The island of May, according to Government survey, has an area of about 143 square acres, and, although its breadth nowhere exceeds one-third of a mile, it is upwards of a mile in length.

The word "May" is probably to be referred to a Gothic root signifying "verdure," although others have attributed it to a Celtic root found in the name of an ancient tribe of Midlanders called the Mæotæ, said to have occupied this and the southern part of Scotland between the walls of Hadrian on

the south and Antonine on the north; others say the Danish invaders called the isle Mö ("The Maid"), which is pronounced like "May." In the reign of King Constantine (864-882) various missionaries arrived in Scotland for the purpose of introducing Christianity into its pagan domains; St Adrian—who was popularly believed to have come from Hungary, but who may not improbably have been of Irish extraction—was one of their chiefs, and selected the island of May as a place for retirement and private devotion. During the Danish invasion he was cruelly slaughtered in the year 872, and was buried on the island, where his stone coffin is still to be seen.

About the middle of the twelfth century, David I., influenced, it would seem, chiefly by the memory and sufferings of St Adrian, founded a monastery on this island, and handed it over to the care of the Abbey of Reading. Besides local power of taxing, the monks received grants of lands in Fife-shire, Clackmannan, Perthshire, and Berwick from several successive Scottish monarchs and from many nobles. It may be asked, Did the necessary interchange of visitors influence the introduction of plants then and afterwards? In the year 1269 this Priory was sold by Robert de Burghgate, who was then Abbot of Reading, to William Wishart, Bishop of St Andrews, for a sum of 1100 merks. After several years of international disquietude, from 1292 onwards, the monastery was fully transferred, in the year 1318, to the Canons of St Andrews. Subsequent to this, no historical reference of importance is made to the May until the summer of 1449, when a vessel conveying Mary of Gueldres, who was about to become queen of James II., anchored near the island, on which Mary is reported to have landed, and to have paid her devotions before proceeding to Leith. During the years 1503, 1505, 1506, 1507, and 1508, repeated visits were made by James to the same spot, not only for purposes of devotion, but also, as old records have it, "to schut fowlis with the culvryn."

During the first half of the sixteenth century many of the lands that had been presented to the monks by the Scottish kings and nobles became alienated, and in 1549 the island of May itself was feued to Patrick Learmonth of Dairsay, Provost of St Andrews, on account of its insular situation, its liability to seizure by an enemy in times of hostilities, and the devastated condition in which it had been recently left by English in-

vaders. Soon afterwards the monks took up their principal residence at Pittenweem, on the adjoining coast of Fife, and in deeds belonging to the period the Priory of May is styled the "Priory of Pittenweem, otherwise Isle of May," or the "Priory of May and Pittenweem."

On December 21, 1551, the May was acquired by Andrew Balfour of Mountquhanie; and on May 12, 1558, by John Forret. It subsequently passed into the possession of Allan Lamont, and afterwards of Alexander Cunningham of Barns. This proprietor will long be remembered as being the first to erect, by permission of King Charles I., a lighthouse on the island in the year 1635. This lighthouse was the first to be built on the east coast of Scotland, and it consisted of a square tower about 40 feet high, provided with a flat roof, on which, about the beginning of the present century, upwards of 380 tons of coal were annually consumed. This primitive lighthouse still exists, and stands to the east of the modern building. The May next fell into the possession of the Balcomie family, from whom it was purchased in 1816 by the Commissioners of the Northern Lights, who erected a beacon at a height of 240 feet above sea-level. At first a system of oil-lamps and reflectors was used in this modern lighthouse, but in 1843 these were exchanged for the argand lamp and dioptric system of Sir David Brewster. During 1843-1844 a second and smaller lighthouse was erected, for the purpose of affording mariners a convenient landmark to enable them to avoid the Carr Rock.

The ruins of an old chapel, the only other stone erection on the island, may be seen to the south of the larger lighthouse. This chapel has been dedicated to St Adrian; it is rectangular in shape, being about 32 feet in length by 16 feet wide, and its windows are indicative of thirteenth century architecture. Its walls have been recently pointed under the careful supervision of the authorities of Her Majesty's Office of Works.

The island is composed of dolerite, which on its western side rises vertically from the sea to a height of 150 feet. Its eastern margin, though in a few places capable of accommodating boats, is in several localities rugged and uneven, presenting in its many indentions rich crops of various species of Algæ. Although the development of a columnar structure in this dolerite is less marked than in some parts of the main-

land on the shores of the Forth, yet an incipient structure of this type is to be found in the south-west corner of the island.

The water in the vicinity is of a clear green shade of colour and contrasts very markedly with its muddy character further up the Firth, the river having purified itself during its subsequent seaward course, partly by the deposition of heavier sedimentary matter, and partly, too, by the oxygenation of many complex decomposable organic compounds into simpler chemical unions. As evidence of the purity of the water, it may be mentioned that on one occasion a white disc, having a diameter of 2 feet, was lowered by a sounding-lead from the bow of the steam-yacht "Medusa," and was gradually sunk to a depth of  $9\frac{1}{2}$  fathoms before it became invisible. The depth of the water in the immediate vicinity of the island varies from 9 to 20 fathoms.

The waters round the May have long been regarded as good fishing ground, and although at present the only inhabitants on the island are people connected with the lighthouse, historians record that formerly fifteen fishermen's families lived there, and that "the want of these families is a considerable loss to the general interests of the fishery in the Firth, for, placed as sentinels at its entrance, they were enabled to descry and follow every shoal of herrings or other fish that came in from the ocean." Again, the wool and fur of the sheep and the rabbits are said formerly to have been of superfine quality—"the fleeces of the coarsest wooled sheep from the worst pastures in Scotland, when put on the island of May, becoming in course of one season as fine as satin;" but this is no longer so—on the contrary, the wool and fur of these animals are just like other wool and fur. Ants, too, were in former years very abundant. Some years ago, however, the Commissioners of the Northern Lights tried in vain to exterminate them, and at present they are very abundant, although no ant-hills are to be seen. Sea-birds, such as skarts, dunters, gulls, and kittie-wakes, are very common, the egg of the skart, which is green, and dotted over with black spots, being much prized by collectors.

Fresh water for the lighthouse employées is now brought from the village of Crail, on the Fifeshire coast, about  $6\frac{1}{2}$  miles distant, no permanent supply being found on the island.

*Meteorological.*—Mr Alexander Buchan, of the Scottish

Meteorological Office, has kindly furnished the following statistics bearing on the climatology of the May :—

1. *Rainfall*.—This has been computed from the averages of two places, whose mean annual rainfall is equal to that of the May, and the computations, which extend over a considerable number of years, are as follows :—

January, 2·33 inches approx.	July, 2·63 inches approx.
February, 1·70 "	August, 3·03 "
March, 1·50 "	September, 2·68 "
April, 1·68 "	October, 2·80 "
May, 1·72 "	November, 2·46 "
June, 1·80 "	December, 2·31 "

2. *Mean Atmospheric Pressure*.—This table represents the average of a period of thirteen years :—

January, 29·788 inches approx.	August, 29·866 inches approx.
February, 29·830 "	September, 29·848 "
March, 29·810 "	October, 29·802 "
April, 29·895 "	November, 29·838 "
May, 29·946 "	December, 29·806 "
June, 29·924 "	Average for { 29·853 "
July, 29·886 "	the year, }

3. *Temperature*.—An average, again taken for a period of thirteen years, gives the following figures :—

January, 39°·1 approx.	August, 57°·3 approx.
February, 39°·4 "	September, 54°·4 "
March, 40°·0 "	October, 48°·7 "
April, 43°·7 "	November, 42°·6 "
May, 48°·4 "	December, 40°·7 "
June, 54°·4 "	Average for { 47°·1 "
July, 57°·1 "	the year, }

It will thus be seen that in this area August is remarkable as being the month of maximum rainfall and maximum temperature ; (2) that the minimum of pressure and temperature occur in January, the maximum pressure being in May, and minimum rainfall in March ; and (3) that while the average range of pressure for the year is only 0·158 inches, the range of temperature amounts to 18°·2 Fahr.—figures far below what we find in continental regions, the climate being insular, and consequently far more equable than in the former areas.

As regards the flora, the only account which we possess of it is one by Mr Sadler, late Curator of the Botanic Garden,

Edinburgh, and published in the *Transactions of the Botanical Society* for 1873, vol. xi. p. 390. In addition to the plants enumerated in Mr Sadler's list, we record the following:—

ROSACEÆ.	Anthoxanthum odoratum.
Potentilla tormentilla.	Poa cæsia.
COMPOSITÆ.	CYPERACEÆ.
Anthemis arvensis.	Carex vulgaris.
Arctium Lappa.	„ distans.
CARYOPHYLLACEÆ.	„ fulva.
Cerastium triviale.	Eleocharis palustris.
PLANTAGINACEÆ.	FILICES.
Plantago media.	Lastrea Filix-femina.
JUNCACEÆ.	MARCHANTIEÆ.
Juncus bufonius.	Fegatella conica.
Luzula campestris.	MUSCI.
POLYGONACEÆ.	Schistidium maritimum.
Rumex crispus.	Hypnum chrysophyllum.
„ Acetosa.	„ confertum.
CHENOPODIACEÆ.	„ prælongum.
Atriplex patula.	Orthotrichum (sp.?)
PORTULACEÆ.	LICHENES.
Montia fontana.	Ramalina scopulorum.
GRAMINEÆ.	Parmelia aquila.
Festuca arenaria.	„ sinuosa.
Glyceria loliacea.	Lichina pygmæa.

One Jungermanniaceous plant was found, but the species remained undetermined.

ALGÆ.	Delesseria alata.
Enteromorpha compressa.	Cystoclonium purpurascens
„ intestinalis.	Rhodymenia palmata.
Ulva linza.	„ laciniata.
„ latissima.	Cladophora arcta.
Porphyra amethystea.	„ rupestris.
„ vulgaris.	„ laetevirens.
„ laciniata.	„ uncialis.
Ceramium acanthonotum.	Conferva melagonium.
„ rubrum.	Ptilota elegans.
„ diaphanum.	Elachistea fucicola.
Chylocladia articulata.	Punctaria plantaginea.
Polysiphonia Brodiaei.	Corallina officinalis.
„ urceolata.	Plocamium coccineum.
„ fastigiata.	Chorda lomentaria.
„ nigrescens.	Alaria esculenta.
Dumontia filiformis.	Laminaria saccharina.
Delesseria sinuosa.	„ digitata.



Laurencia pinnatifida.	Halidrys siliquosus.
„ hybrida.	Himanthalia lorea (two varieties).
Leathesia tuberiformis.	Desmarestia aculeata.
Callithamnion polyspermum.	Gigartina mammosa.
„ arbuscula.	Chondrus crispus.
Ectocarpus tomentosus.	Furcellaria fastigiata.
„ littoralis.	Polyides rotundus.
„ siliculosus.	Odonthalia dentata.
„ sphærophorus.	Ralfsia deusta.
Fucus vesiculosus.	Petrocelis cruenta.
„ serratus.	Melobesia pustulata.
„ nodosus.	„ calcarea.
„ platycarpus.	Hildenbrandtia rubra.
„ canaliculatus.	

The more noteworthy points connected with the flora appear to be the following:—

1. The entire absence of trees, whose roots play so important a part in aiding in the disruption of rocks and the formation of soils, and whose leafy branches prevent at once rapid radiation and excessive warmth while they harbour many insects, and modify the conditions of exposure as regards wind currents.

2. The occurrence of *Porphyra* and young *Ectocarpus* parasitically on *Desmarestia aculeata*—the former being attached to the aculei of that plant.

3. The occurrence of a large growth of *Enteromorpha intestinalis* in a pool above the limit of high spring tides, and so furnished with saline matter exclusively by the agency of spray—a fact which is to be correlated with the usual mode of occurrence of this species in places where fresh water streams enter the sea.

4. The localisation of *Punctaria plantaginea*, which was found only at the level of high tide on the south-east, seaward, side of the island.

5. The very large vegetative development of *Cladophora arcta* and *C. uncialis*.

6. The abundance of *Plocamium coccineum*, of which, however, no specimen was found growing, and which must have come as drift from deep water.

The inaccessible character of the rocks on the west side of the island rendered the collection of Algæ impossible over a considerable area of this margin.