

are those of Oulough, formed of enormous blocks of rock promiscuously wedged and resting upon each other, frequently forming caves and pits, the retreat of numerous foxes, and which are screened by the rather gigantic vegetation of *Osmunda regalis*, *Ulex europæus* and *Calluna vulgaris*. The broad surfaces of the rocks are beautifully pictured with a map-like coating of *Lecidea* and *Lecanora*, and on those rocks within a limited circuit and at the distance of about fifty yards from the water, the *Geomalaci*, on a misty or showery day, may be noticed quiescently stretched, their richly maculated character being strikingly conspicuous. On what they feed I know not; I never could detect them in an eating mood; but I found several amid *Oscillatoria Friesii* and *Hypnum proliferum*, which abound in masses at the shaded bases of those moist rocks. At the opposite and west side is the romantic little Glen of Limnavar, its huge cliffs shaded with a luxuriant indigenous growth of oak (*Quercus sessiliflora*), *Pyrus Aucuparia*, *Populus tremula*, *Betula alba* and *Ilex aquifolium*; and on similar rocks, at the same range from the water, I again met with the *Geomalaci*, particularly the white variety, but more sparingly than at Oulough. On no other rocks around the lake or the country are they to be observed."

---

XXXVIII.—*Notes on the Altitudinal Range of the Mosses in Aberdeenshire.* By G. DICKIE, M.D., Lecturer on Botany in the University and King's College of Aberdeen\*.

SOME time ago an excursion was made into the interior of Aberdeenshire, with the view chiefly of obtaining data for remarks on the altitudinal range of the flowering plants growing in that county. During this journey notes were taken of the range of such Mosses as happened at the time to attract notice. The more prominent results in connexion with flowering plants were published in the 'London Journal of Botany'; those having reference to the Mosses were retained, in the expectation of being able to repeat the observations and measurements made with the mountain sympiesometer, and of adding to the data ascertained at that time. Such an opportunity not having occurred, these remarks have been put together, incomplete although they be, principally with the view of directing attention to this very interesting subject. A few statements are added on the general distribution of the Mosses in Britain, founded chiefly on catalogues of species from several localities, which were sent me by Mr. Ralfs. These lists have reference to the following places:

\* Read before the Botanical Society of Edinburgh, 12th March, 1846.

Penzance; Truro, by Miss Warren; Bristol, by Mr. Thwaites; Sussex, by Mr. Jenner, and Hitchin: I also consulted a list of Mosses found in Devonshire by Dr. Greville, and published many years since in the 'Transactions of the Wernerian Society,' one on the Mosses of Teesdale by Mr. Spruce, and Dr. Greville's 'Edinburgh Flora'; Mr. Edmondstone also furnished notes on those found in Shetland. Those interested in this subject may consult a list of Mosses found in one of the Western Isles by Dr. Balfour, and published in the 'Transactions of the Edinburgh Botanical Society.' Several of the catalogues alluded to evidently do not comprehend all the species that might be expected to grow in the localities to which they refer, and the general remarks founded upon them must therefore be considered as mere approximations.

#### ANDRÆA.

All the British species of this genus are found in Aberdeenshire; two of them grow near the sea, and not 100 feet above its level, viz. *Andræa rupestris* and *A. Rothii*; they are also found inland and attain a considerable elevation; *A. alpina* begins to appear in the vicinity of Ballater, forty-two miles inland, at an elevation of about 1200 feet; *A. nivalis* is confined to the highest summits.

	Lowest.	Highest.
<i>Andræa alpina</i> .....	1200 feet.	3800 feet (highest?)
——— <i>rupestris</i> ...	80	3800
——— <i>Rothii</i> .....	80	3400
——— <i>nivalis</i> .....		4000 and upwards.

The first three of these are found within the limits of cultivation: *A. Rothii* has an extensive latitudinal range, since it is recorded in the list of Devonshire species already alluded to; *A. rupestris* is more limited; *A. alpina* first appears about the upper limit of cultivation.

*Cedipodium Griffithianum*. This fine species seems to be mostly confined to the subalpine region\*, occurring sparingly at 2000 feet and usually barren; I have seen it abundantly and with very fine fruit, near the summit of the highest table-land at the head of Glen Callater; the height of this locality was not actually measured, but was estimated as being about 3000 feet.

*Splachnum*. All the British species occur in Aberdeenshire, some of them having a considerable altitudinal range.

*S. ampullaceum* is the only one I have seen near the sea-level, where it grows in bogs upon droppings of cattle. Some years ago I found it near Aberdeen in great profusion and of large

\* The divisions into regions adopted here are those of Mr. H. C. Watson, and must be familiar to all who have studied the distribution of British plants.

size, associated with *Drosera anglica*, *D. rotundifolia*, *Schaenus nigricans*, *Lycopodium selaginoides* and others. I have also seen it of very small size in the vicinity of Ballater, forty-two miles inland, and about 900 feet above the sea-level, where it was discovered by Mrs. Mackay. *S. mnioides* and *S. sphaericum* are found upon the hill of Fare, thirteen miles west from Aberdeen; the former is the rarer of the two in that locality, but occurs lowest, viz. at 450 feet of elevation; the other is abundant near the top of the hill at 1000 feet, growing in moist places upon droppings of cattle. In the same locality, my friend Mr. James Barron found the carcase of a grouse completely incrustated with very large specimens. The most elevated point at which I have seen *S. sphaericum* in this county is on the highest table-land above Glen Callater. *S. mnioides* grows on the summit of Lochnagar at 3800 feet, where I have found it in tufts, each inclosing a fragment of bone. The same species occurs in great profusion in the different glens leading to the base of Ben-na-Muich-Dhu, the ground being literally sprinkled over with large tufts of it; the red-deer are numerous in these glens, and the species in question finds a suitable soil on their droppings. *S. tenue* appears to be rare in this county; I have seen it in Glen Callater in small quantity, and at an elevation of about 1600 feet. The range of *S. angustatum* has not been very accurately ascertained, being probably from 2000 to 3000 feet; nor that of *S. vasculosum*, which may however be about the same. I have searched in vain for *S. Frœlichianum*, mentioned in the 'British Flora' on the authority of Mr. Dickson as growing on Bennachie, or Ben-High as it is sometimes called. This hill is about twenty miles west from Aberdeen, rising rather abruptly from the surrounding country, and attaining 1700 feet of elevation.

	Lowest.	Highest.
<i>S. ampullaceum</i> .....	100 feet.	900 feet.
— <i>mnioides</i> .....	450	3800 (highest?)
— <i>sphaericum</i> .....	1000	3000
— <i>tenue</i> .....	1600	?
— <i>vasculosum</i> .....	2000	3000?
— <i>angustatum</i> .....	2000	3000?
— <i>Frœlichianum</i> .....	800?	1700?

The first three only of these (keeping out of view *S. Frœlichianum*) occur within the limits of cultivation; the second exceeds all the others in altitudinal range.

*Conostomum boreale*. I have never seen it under 2000 feet; it attains the summit of Lochnagar (3800), which however is probably not its upper limit. Mr. Edmondstone informed me that in Shetland it grows near the sea with *Grimmia maritima*.

*Weissia pusilla* is abundant on limestone in the bed of a stream at the head of Glen Gairden: the height (not having my sympie-

someter) was guessed as being not under 1400 feet, and upwards of fifty miles inland from Aberdeen.

*Grimmia spiralis*. Has not been seen in this county lower than 2200 feet; the upper limit is unknown to me.

*G. torta* appears on cliffs in the vicinity of Ballater at 1400 feet; I have observed it in Glen Callater at 2300 feet, but cannot state its absolute highest limit.

*G. ovata* appears on the hill of Fare at 600 feet; I have also seen it on the top of Noath at 1830 feet; it grows on the inside of the wall of the vitrified fort. In general outline this ruin is elliptical; the walls are vitrified on the inside, and inclose a smooth grassy surface at the very summit of the hill. The wall is deficient at the east side; the species in question is mostly confined to the inside of the wall at the west end, and consequently opposite the opening alluded to. Are we to conclude that the seeds of the plant had been conveyed by the wind from some distant locality? for I did not see it on any other part of the hill.

*Tortula tortuosa* occurs on serpentine, near Ballater, at 1800 feet of elevation.

#### POLYTRICHUM.

All the British species grow in this county.

In the immediate vicinity of Aberdeen the following species are found: *Polytrichum undulatum*, *hercynicum*, *piliferum*, *juniperinum*, *commune*, *urnigerum*, *aloides*, *nanum*; of these *P. hercynicum* is rarest; I have seen it sparingly four miles inland on very old walls along with *Bartramia ithyphylla*. Mr. Mackay found it more abundant seven miles west from Aberdeen, and it grows in considerable quantity about the base of the hill of Fare. In the same vicinity, but at an elevation of 900 feet, *Polytrichum alpinum* grows in considerable quantity. *P. septentrionale* is confined to our higher summits; it is abundant about the top of Ben-na-Muich-Dhu. Mr. Mackay informed me that he had found it very sparingly on the top of Lochnagar.

	Lowest.	Highest.	
Polytrichum hercynicum ...	50 feet.	3000 feet (highest?)	
———— piliferum .....	50	1800	„
———— juniperinum ...	50	1700	„
———— septentrionale...	3800	4000	and upwards.
———— alpinum .....	900	3800	

*Entosthodon Templetoni*. Has been found in small quantity by Mr. Mackay near Ballater, forty-two miles inland, at about 800 feet.

*Orthotrichum Hutchinsiae*. Is rare in Aberdeenshire; I have seen it very sparingly in Glen Callater, not lower than 2000 feet, but cannot state how much higher it attains.

*Bryum julaceum*. Grows in considerable quantity a few miles

west from Aberdeen, and not 100 feet above the sea-level; it is however always barren. I have seen it in the upper parts of the county at 2400 feet, which however may not be its highest limit.

*Bryum Ludwigii*. Glen Callater, at 2400 feet or upwards, and on Lochnagar at 3600.

*B. Zierii*. Chiefly at 2400 feet.

*B. turbinatum*. Sea-level to 2400 feet.

*B. elongatum*. Mostly at 2000 feet and upwards.

*B. alpinum*. Near Aberdeen at 280 feet, but always barren; upper limit unknown.

*B. punctatum*  $\beta$ . attains 3600 feet.

*B. hornum*. 1700 feet.

*Bartramia ithyphylla*. Grows near Aberdeen; it is abundant inland at 2000 feet and upwards; the highest point attained has not however been ascertained.

*Pterogonium gracile* and *P. filiforme* are chiefly confined to the inland parts of Aberdeenshire; I have seen them plentiful near Ballater at 800 feet to nearly 2000.

*Neckera crispa* is like the two last, an inland species; I have seen it attaining 1600 feet, but cannot state its absolute upper limit.

*Hookeria lucens*. From the sea-level to 2400 feet and upwards.

The altitudinal range of a few species of *Hypnum* have been ascertained. The following are abundant at 2500 feet: *H. denticulatum*, *curvatum*, *stramineum*, *pulchellum* (at this height also *H. rufescens* grows in great profusion); *Hypnum molluscum*, *aduncum*, *complanatum*, *cordifolium* and *filicinum* are all found at 1000 feet, and some of them attain a higher elevation. *H. purum*, *loreum*, *triquetrum* and *splendens* grow upon Morven at 3000 feet. *H. Crista Castrensis* is abundant in some woods near Aberdeen; but I have not been able to ascertain its absolute upper limit.

The following mosses were observed growing about the summit of Bennachie at 1700 feet, and twenty miles west from Aberdeen: *Polytrichum alpinum*, *Dicranum heteromallum*, *Bryum hornum*, *Dicranum scoparium*, *Hypnum denticulatum*, *purum*, *splendens*, *loreum*, *cupressiforme*, *Trichostomum lanuginosum*, *Didymodon purpureus*, *Polytrichum piliferum*, *Dicranum polycarpon*, *Bartramia ithyphylla*, *Andræa rupestris*, *Trichostomum fasciculare*, *Bryum nutans*, *Grimmia ovata*.

Adopting Mr. Watson's regions of vegetation, the following may be stated as an approximation to the species mostly characteristic of these regions:—

#### *Region of the Plains.*

*Southern*.—Most species of *Phascum*, *Schistostegia*, *Weissia Starkiana*, *Tortula cuneifolia*, *Bryum Tozeri*, *Pterogonium Smithii*, *Leucodon*, *Neckera pumila*, *Daltonia*.

*Northern*.—*Andræa Rothii*, *A. rupestris*, *Splachnum ampullaceum*, *Weissia nigrita*, *Didymodon inclinatus*, *Trichostomum canescens*, *T. heterostichum*, *Bartramia ithyphylla*, *B. arcuata*, *Buxbaumia*, *Hypnum catenulatum*, *H. Crista Castrensis*.

*Upland.*

*Splachnum mnioides*, *S. sphæricum*, *Bryum julaceum* (?), *B. crudum*, *B. alpinum*, *Pterogonium filiforme* (?), *Polytrichum hercynicum*, *Weissia acuta*, *Polytrichum alpinum*, *Orthotrichum Ludwigii*.

*Median.*

*Gymnostomum rupestre*, *Splachnum tenue*, *Grimmia torta*, *Trichostomum patens*, *Bartramia gracilis*.

*Subalpine.*

*Conostomum boreale*, *Gymnostomum lapponicum*, *Cyrtodon splachnoides*, *Ædipodium Griffithianum*, *Bryum Ludwigii*, *B. elongatum*, *Dicranum Starkii*, *Grimmia spiralis*, *Bartramia Halleriana*, *Splachnum angustatum*, *S. vasculosum*, *Didymodon capillaceus*, and probably the following rare species discovered by Dr. Greville: *Weissia elongata*, *W. latifolia*, *Grimmia atrata*, *Didymodon glaucescens*.

*Alpine.*

*Andræa nivalis*, *Gymnostomum cæspitium* and *Polytrichum septentrionale*.

The following species appear to have an extensive range both in latitude and altitude: *Andræa Rothii*, *Tetraphis pellucida*, *Didymodon purpureus*, *Trichostomum lanuginosum*, *Dicranum scoparium*, *Tortula tortuosa*, *Polytrichum piliferum*, *P. juniperinum*, *Bryum punctatum*, *B. hornum*, *Bartramia fontana*, *Neckera crispa*, *Hookeria lucens*, and the following species of *Hypnum*: *H. complanatum*, *denticulatum*, *curvatum*, *purum*, *splendens*, *proliferum*, *cordifolium*, *lo-reum*, *triquetrum*, *aduncum*, *cupressiforme*, and *molluscum*.

XXXIX.—*Notes, &c. on the genera of Insects Cneorhinus and Strophosomus, with descriptions of two new Species.* By JOHN WALTON, Esq., F.L.S.

Genus CNEORHINUS, *Schönh.*; PHILOPEDON, *Steph.*

1. *Cneorhinus geminatus*, Fab., Gyll., Steph., Schönh.  
— *albicans*, Schönh.  
*Curc. parapleurus* et *maritimus*, Marsh., Kirb. MSS.  
— *scrobiculatus*, Marsh., Steph., Kirb. MSS.  
— *squamulosus* ( $\alpha$ ,  $\beta$ .) et *lineatocollis* ( $\alpha$ ,  $\beta$ ,  $\gamma$ .), Kirb. MSS.

*C. scrobiculatus* of Marsh., according to a specimen in the collection of Kirby, which has a fovea on each side near the base of the thorax, and which agrees with Marsham's description, is be-