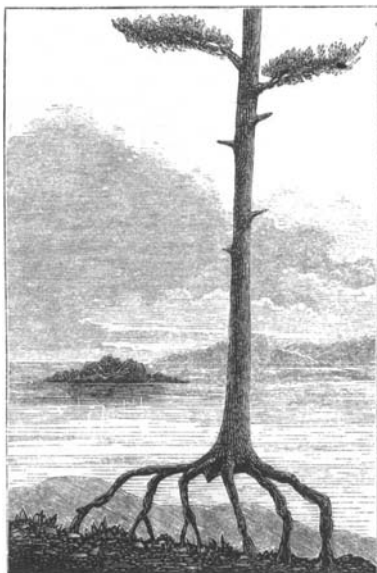


6 *Certain Peculiarities in the Growth of Pine Trees.*

posed of about one-third common earth and two-thirds of a fine loose sand, which forms the beach of the lake, and is easily moved about by the action of running water. It is probable that, at an early stage in the growth of these trees, they occupied a position close to the waters of the lake, but, from the gradual subsidence of the latter, they now occupy a somewhat elevated bank at a little distance from the beach.

Were the singular appearance of many of them the only circumstance to draw attention, it were perhaps superfluous to make them the subject of particular remark; but there is something, in the gradual adaptation to circumstances which is traceable upon a close inspection of the specimens of vegetable life, not a little curious and interesting, as proving what the observer might be disposed to term a form of vegetable instinct, according to which the growth and stability of the tree are provided for in relation to those influences which are found in different ways to act against both. This the writer has been much struck with, after a careful examination of the present appearance of some of these trees. In the case of one speci-



men he has found that the height of the aerial roots from the present soil to the commencement of the trunk is upwards of five feet, and, whilst presenting thus a mangrove-like appearance not a little curious, as shown in the figure, he has found that the development of the supporting and nourishing roots seems, from period to period, to have been in close relation to the *altering exigencies* of the case. It is thus seen that, where the mechanical support came from the gradual washing away of the soil to be most needed, there the development of the means of support, and that upon plain mechanical principles, took place most prominently; and also as the tree proper came to be farther and farther elevated and removed from the soil, so the lower parts of the roots expanded and thickened, and, as it were, grasped the nourishing soil with still increasing vigour and tenacity.

2. *Remarks on Bryum Duvalii (Voit), and on the Localities in which it has been found.* By Mr JOHN SADLER.

Bryum Duvalii is a rare and a very interesting moss. It is only about two years ago that it was recorded, for the first time, as belonging to the British flora. Wilson, in a note at page 229 of his "*Bryologia Britannica*," refers to this species in the following terms: "*Bryum Duvalii* may be expected to occur on the Scottish mountains, but as yet we have seen no indisputable specimens." This was in 1855. In the spring of 1858, the late Dr Nichol discovered the plant on the Moffat Hills in considerable abundance, and recorded it in the sixth volume of the Society's "*Transactions*" as new to Britain. In September last, the plant was

again gathered in Scotland by Mr William Bell, whilst accompanying Professor Balfour on a botanical excursion to the Breadalbane mountains. He met with it growing in large patches amongst the boggy springs above Loch-na-cat on Ben Lawers.

A few weeks ago, while turning over a parcel of dried specimens of flowering plants and ferns, collected by the late Colonel Madden, near Waterford, in Ireland, and which had been transmitted to the University Herbarium about a year since by his widow, Mrs Terrot, I came upon four small tufts of a moss which, on examination, proved to be *Bryum Duvalii*. According to the date on the cover, the plant seems to have been collected in 1852, six years previous to Dr Nichol's discovery. Hence Colonel Madden was the person who first found the plant in Britain, while Dr Nichol has the merit of describing it as a Scottish species. I have no doubt that it is a moss of frequent occurrence throughout Scotland; but owing to its great resemblance to a barren state of some of our commoner species, it is very apt to be overlooked. It is remarkable, that such acute observers as Greville, Hooker, Wilson, Nichol, and others, who have carefully explored Ben Lawers, should have failed to detect this plant.

The stems of the plant vary from one and a half to three inches in length, generally forming large, loosely aggregated tufts of a more or less pellucid aspect, and of a reddish-purple colour. The leaves are broadly ovate, acute, largely reticulate, and at their base strongly decurrent; their margins are entire, plane, and not thickened. It grows in wet spots, generally associated with *Bartramia fontana*, *Bryum pseudo-quetrum*, and other species. All the British specimens yet found have been barren. The capsule is somewhat pyriform and pendulous, as shown in Bruch and Schimper's figure. Mr Bell, the discoverer of the Ben Lawers specimen, has devoted much time to the examination of Scotch mosses, and, in a note to me, with reference to *Bryum Duvalii*, he remarks, "How *Bryum Duvalii* has so long escaped the notice of our British muscologists I am at a loss to understand, unless it has been mistaken for a form of *Bryum ventricosum* (*B. pseudo-quetrum*), which in some respects it resembles." Dr Asa Gray, in his "Manual of Botany," says that it resembles *Bryum turbinatum*. So far as we are aware, *Bryum Duvalii* is never found associated with *Bryum turbinatum* in Britain, but we have seen specimens of it and *B. ventricosum* growing side by side. The habitats and habits of both are alike; both have strongly decurrent leaves; the leaves of the one are broadly ovate, those of the other are oblong ovate; the capsule of the one is ventricosely pyriform, that of the other is oblong obovate. We have little hesitation in saying that we have seen specimens of *Bryum ventricosum* that differ no more from specimens of *Bryum Duvalii* than do the specimens of the latter species, collected at Waterford, Moffat, and Ben Lawers differ amongst themselves. The Waterford specimens are more robust than either the Moffat or Ben Lawers ones; the leaves are nearly erect, ovate, and slightly acuminate. The Moffat specimens have the leaves patent, broadly ovate, with the areolation very loose. The Ben Lawers ones have the leaves recurvo-patent, broadly ovate, and the areolation close. Had the plant in question been a flowering, instead of a flowerless one, it might have been pronounced a hybrid between *Bryum turbinatum* and *Bryum ventricosum*, the latter being the female plant.