

ART. XXXV.—On *Lycopodium varium*, R. Br., and *L. billardieri*, Spring., with Description of a new Form. By T. KIRK, F.L.S.

[Read before the Wellington Philosophical Society, 26th September, 1883.]

Plate XXIX.

It has long been recognized by New Zealand botanists that the plants known as *Lycopodium varium* and *L. billardieri* are not separated by any absolute characters, the differences relied upon to distinguish the two depending chiefly upon the mode of growth and degree of luxuriance exhibited, but up to the present time no attempt has been made either to define the two so-called species by precise and constant characters or to enumerate the chief distinctive peculiarities of the varieties comprised under each. And in truth this is no easy matter, for a complete series may be traced from the short leafy stems, and drooping tetragonous spikes of *L. varium* to the elongated pendulous stems of *L. billardieri*, and from this form again to the slender drooping stems and foliaceous spikes of an elegant variety not hitherto described, so that although the extreme forms may be readily distinguished at sight, they are so closely connected by transitional forms that it is impossible to lay down characters of sufficient value to be available for specific distinction. I am therefore compelled to consider *L. billardieri* as merely one of the varieties of *L. varium*, and propose the following arrangement of the principal forms.

Lycopodium varium, R. Br.

Rhizome short, stems short or elongated, sparingly or excessively branched, erect, drooping or pendulous. Leaves $\frac{1}{4}$ "– $\frac{3}{4}$ " long, decurrent, linear, lanceolate, obtuse or rarely acute, patent or closely appressed, gradually passing into the abbreviated bracts of the spike. Spikes simple or branched, sessile, tetragonous or foliaceous.

a. *varium*.

L. varium, R. Br. in Fl. Prod. Aust.; Hook. f. F. Nov. Zel., Handbk. N.Z. Fl.

Stems 6"–15" high, erect, sparingly branched, rigid, leaves $\frac{3}{4}$ " long, spreading; spikes short, drooping, compact, tetragonous.

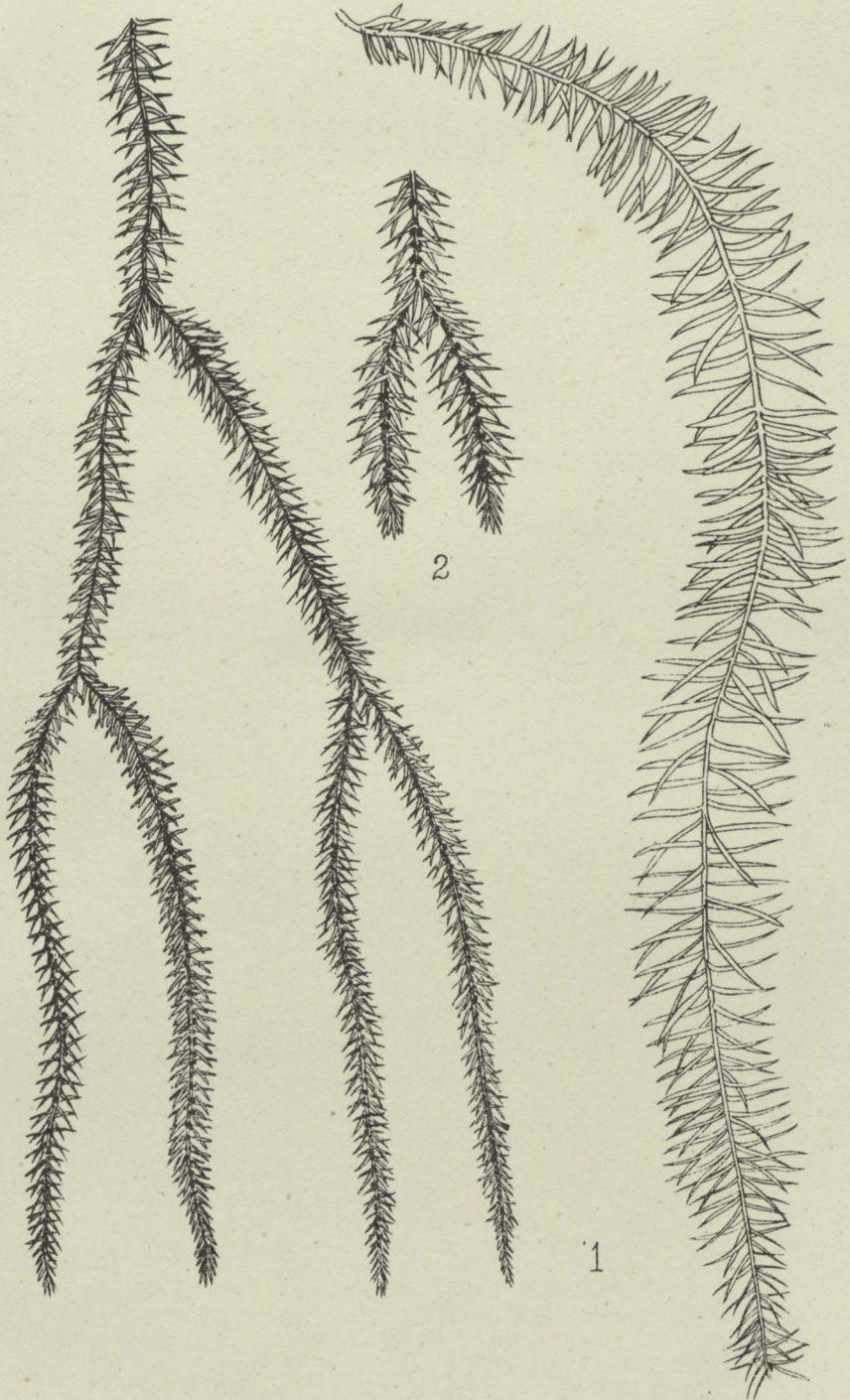
Rupestrial, rarely epiphytal. In mountain districts: Great Barrier Island; Cape Colville; South Island; Chatham Island.

The most robust of all the varieties, and usually exhibiting the broadest leaves. The spikes are stouter than in other varieties and rarely become branched; they show no tendency to become foliaceous.

The most characteristic specimens that I have seen were collected by Mr. H. H. Travers on the Chatham Islands and by myself on Mount Young.

β. *polaris*.

Stems erect, $1\frac{1}{2}$ '–2' high, branched from the base, lower leaves spreading, upper appressed and imbricating; spikes drooping, simple or branched.



LYCOPODIUM VARIUM R.Br. var. *gracile*.

L.M.Kirk, del.



Sub-variety 1. Leaves obtuse, imbricate, keeled.

„ 2. Leaves acute, slender, flat, spreading; spikes slightly foliaceous. *L. umbrosum*, R. Br.

Terrestrial, usually inhabiting mountain woods in the North and South Islands; descends to sea-level in Stewart Island, the Auckland Islands and Campbell Islands.

γ. *billardieri*.

L. billardieri, Spring. Hook. f. Fl. N.Z., Handbook N.Z. Flora.

Stems loosely tufted, suberect or pendulous, 2–5 feet long, excessively dichotomously branched, midrib indistinct; spikes much branched, tetragynous, slender, compact, flaccid, scales keeled, broad.

In lowland woods. Epiphytal or rupestral. North Cape to Southland, but of rare occurrence on the east coast of the South Island.

The most striking form assumed by this variable plant and in its most highly developed condition not to be mistaken for any other: pendent masses of this plant 5 feet long are often seen in the forests of the North Island, and at a short distance present the appearance of green network.

Under *L. varium*, in “Flora Tasmaniae,” vol. ii., p. 156, Sir Joseph Hooker states—“When it (*L. varium*) inhabits warmer latitudes it grows dependent from trees, is much branched, more slender and flaccid, and becomes *L. billardieri*.”

δ. *gracile*.

Stems sparingly tufted, sub-erect, 6”–12” high, very slender, crowded, spreading, linear, acute or obtuse. Spikes lax, simple or sparingly branched, scales foliaceous, linear, three or four times longer than the capsules.

On the stems of tree-ferns. North Island—Wairarapa Valley: *J. Stewart Tanager*. South Island—Maitai Valley: *Dr. Boor* and *T. Kirk*. Westport, etc.

A very graceful flaccid plant of a pale green hue and differing widely in appearance from other forms.

It is worthy of remark that New Zealand specimens of *L. varium* do not exhibit any close approach to *L. selago*, as appears to be the case with the Australian plant.

EXPLANATION OF PLATE XXIX.

1. *Lycopodium varium* var. *gracile*.

2. „ „ spikes in a more advanced condition, natural size.