

object, for, as just stated, it is nearly, if not quite, extinct in its original habitat. But I am too ignorant to give an opinion on this interesting point, and must leave it to others to decide. My part consists merely in calling attention to a curious fact in connection with *Pisonia brunoniana* which, so far as I am aware, has not been noticed in the Transactions of the New Zealand Institute.

ART. XXIX.—Notes on *Botrychium lunaria*. By T. KIRK, F.L.S.

[Read before the Philosophical Institute of Canterbury, 6th September, 1883.]

IN November last I had the pleasure of examining a specimen of the Moonwort (*Botrychium lunaria*, Sw.), which had been recently discovered by my friend, Mr. J. D. Enys, and a few days later received several specimens collected by him. In New Zealand, however, the species is of a remarkably fugacious character, as on visiting the habitat on 3rd January not a trace of the plant could be found; all had disappeared.

The habitat is a gently undulating turfy depression on the south-western flank of Mount Torlesse, at an elevation of 2,800 feet. The Moonwort was growing in somewhat boggy situations, but not where it would be constantly moist. The situation is not one of the most favourable character, and it is not surprising that the specimens are of small size, closely resembling examples from the highest known habitats in the Highlands of Scotland.

The Mount Torlesse specimens do not exceed 3 inches in height, the roots are of a wiry character and the base of the stem is furnished with a membranous sheath; the sterile portion of the frond is pinnate and consists of from two to four pairs of flabellate sessile pinnules and a deeply cleft terminal pinnule; the fertile frond is sparingly branched and does not exceed one inch in length; the sporangia are bright yellow in colour. In the British Islands the plant varies from 3–7 inches in height.

The brief period of duration above ground may have prevented the detection of this plant in other parts of New Zealand, but in any case it can scarcely be expected to be of frequent occurrence. It may be searched for in cool grassy places from sea-level to 3,000 feet. In Europe it exhibits a predilection for limestone pastures at a low elevation, but is by no means restricted to calcareous soils.

In Australia it is somewhat rare, having only been observed in Victoria and Tasmania, where it ascends to 4,000 feet. It occurs also in Terra del Fuego. In the northern hemisphere it is generally distributed through

the cool temperate regions; Labrador, Canada, the Rocky Mountains, Colorado, etc., in America; nearly all European countries, and in the cooler parts of Asia. It is generally distributed through the British Islands, where it ascends to 2,700 feet.

A remarkable fact in the life-history of this species is the great length of time which is required for the development of the frond before it rises above the surface of the soil. On making a longitudinal section of a mature stem the embryo frond for the ensuing year is seen to be sufficiently advanced to allow of the sterile and fertile portions being easily distinguished, the former being already coloured green at the tip, even the pinnules can be recognized notwithstanding their rudimentary condition.

Enclosed in the basal portion of this embryonic frond we find the embryo for the second following year, and this again encloses the embryo for the third year following. The embryo for the second year is differentiated into sterile and fertile parts; but the component parts of the frond for the third year can scarcely be made out. It is only in the fourth year that the fronds appear above ground.

It should be added that the embryo fronds are arranged in an alternating position so that if the frond destined to rise above ground next year has the fertile portion directed to the right, the frond for the second following year will have the panicle directed to the left.

Attention was first directed to the lengthened period required for the development of the fronds rather more than fifty years ago by the late W. Wilson of Warrington, the well-known bryologist.

ART. XXX.—*Botanical Notes.** By T. KIRK, F.L.S

[Read before the Wellington Philosophical Society, 16th November, 1883.]

The Parapara.

Pisonia umbellifera, Seeman.

(*Ceodes umbellifera*, Forst.)

(*P. sinclairii*, Hook. f.)

THIS plant is found in several localities north of Whangarei, both on the east and west coasts; also on the Taranga Islands, Arid Island, Little Barrier Island, and on the East Cape: in the last-named locality, possibly planted by the Maoris.

It attains its greatest luxuriance on the west coast, north of Hokianga, where it forms a tree; in other localities it forms a shrub, rarely more than 10 feet high,—usually from 4–7 feet. When growing entirely in the

* These notes accompanied specimens in illustration of art. xxviii.