

## *Phyllachne Colensoi* (Berggren), an Addition to the List of Sub-Antarctic Plants in the Tasmanian Flora

By

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Certain Tasmanian plants of the Austral-Montane formation are characterised by a peculiar life-form and are described as 'cushion' or 'bolster' plants. These plants grow in dense tufts and make hard convex patches on the ground. Each may be several feet across, forming a compact mass that is firm underfoot.

*Phyllachne Colensoi* (Berggren), belonging to the family Styliidiaceae, is a cushion plant similar in habit to four plants that are common on Tasmanian mountains. These four species included by Rodway (1903) in 'The Tasmanian Flora' belong to three different families, namely:—

Compositae .....	<i>Abrotanella forsteriodes</i> Hk.
	<i>Pterygopappus laurencii</i> Hk.
Styliidiaceae .....	<i>Donatia novae-zealandicae</i> Hk.
Epacridaceae .....	<i>Dracophyllum minimum</i> F.v.M.

Specimens of *Phyllachne Colensoi* were collected in the Lake St. Clair Reserve, from the summit of Mt. Rufus (approx. 4000 ft.) by Mr. C. G. Elliott, B.Sc., in February, 1947. Material of this species in the Tasmanian Museum Herbarium (Rodway Collection) had been taken from the same locality in December, 1917, but had not been separated from the closely allied *Donatia novae-zealandicae*.

By the courtesy of Miss L. Moore, M.Sc., of the Plant Research Bureau, Wellington, I have been able to examine specimens of *Phyllachne* from the North and South Islands of New Zealand and from Auckland Island. The Tasmanian plant proves to be the *P. Colensoi* of New Zealand.

*Phyllachne Colensoi* (fig. 1) may be distinguished from other Tasmanian cushion plants by both floral and vegetative characters. The small flowers are solitary and terminal, scarcely raised above the general surface level of the plant. The calyx consists of 5-6 sepals, yellowish-green, rather thick, adnate to the ovary, the free portions being approximately 2 mm. in length. The corolla is white, gamopetalous, 5-6 lobed, the tube being as long as the sepals, and the lobes spreading. These may be rounded or irregularly lobed. Stamens and filaments are united with the style to form a column which is conspicuously exerted. This character serves to distinguish *Phyllachne* from *Donatia* in which the two stamens, though arising close to the base of the style, are separate from it. (For this reason *Donatia* is more usually regarded as a member of the Saxifragaceae, although the species shows affinities with the Styliidiaceae.) In *Phyllachne* the two reniform stamens are sessile at the top of the column, they dehisce transversely. Two stigma lobes protrude between the anthers. The inferior ovary is incompletely 2-celled: above it are two conspicuous fleshy glands. Both unisexual and hermaphrodite flowers occur. In the female flowers the stigmas are large and papillose but the anthers remain small, they shrivel before the bud is fully open. In the hermaphrodite and male flowers the stigmas are small and smooth.

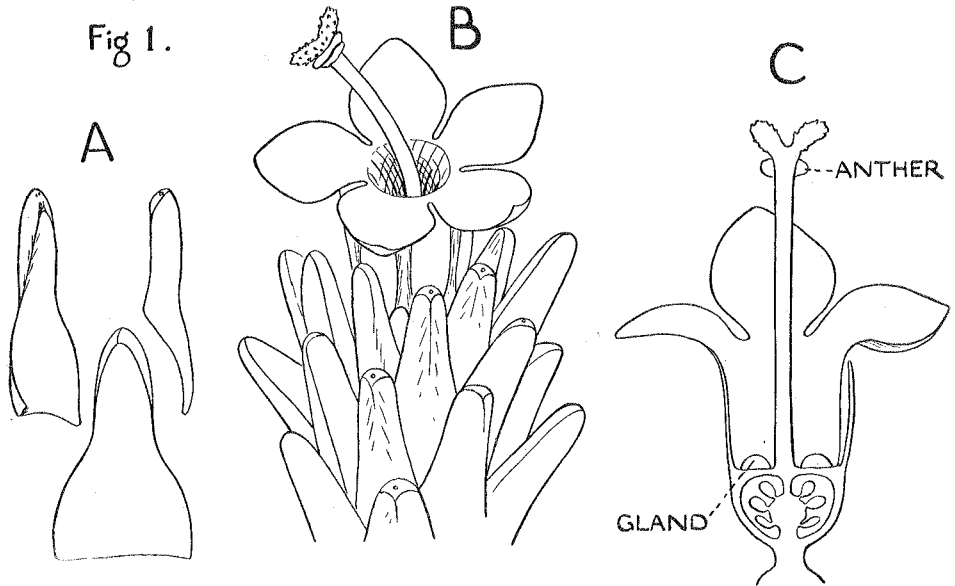


FIG. 1.—*Phyllachne Colensoi* (Berggren),  $\times 10$ . A, leaves; B, flowering axis; C, flower in longitudinal section.

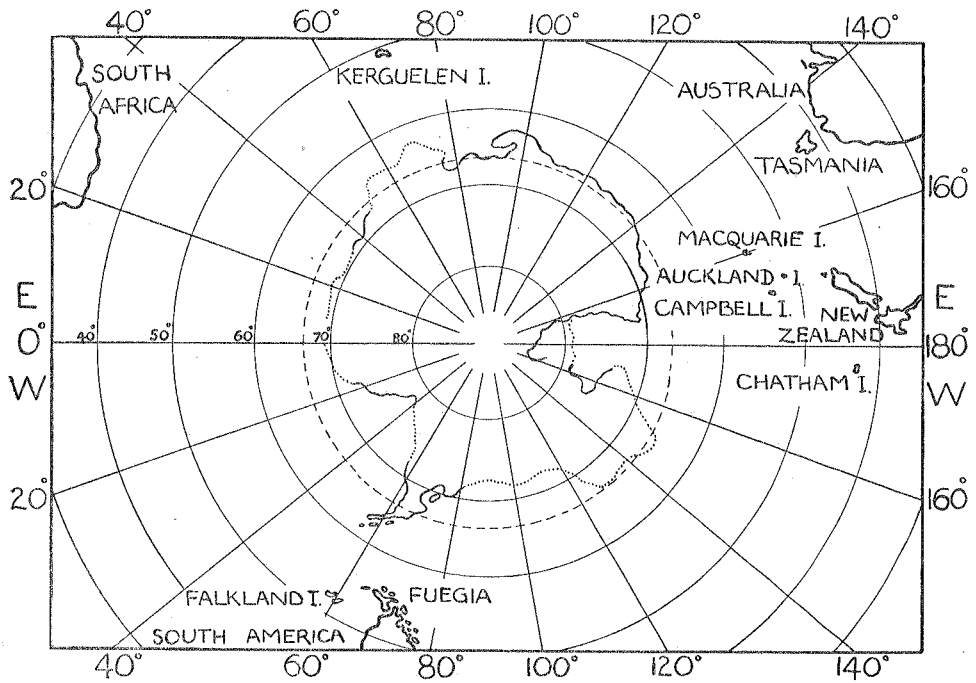


FIG. 2.—The South Polar Regions.

Allan and Wall (1946) record that the name *Phyllachne* (Gk. *phullon*, leaf: *akhne*, chaff) was given in reference to the subulate and glumaceous leaves and perianths. The leaves of *P. Colensoi* are closely imbricated: each is glabrous, linear and thick but widened and flattened at the base. The apex, which is often brownish-yellow in colour, is slightly spatulate. A glandular pore is present just below the apex on the abaxial side.

The family Stylidiaceae is a small one restricted to the Southern hemisphere and having its maximum development in Australia. The largest genus *Stylidium* reaches the West coast of the Bay of Bengal, other genera are found in New Zealand and in South America. The genus *Phyllachne* is known in New Zealand, in the Auckland and Campbell Islands and in Fuegia. The record of the occurrence of *P. Colensoi* in Tasmania is of interest in showing the distribution of this genus, belonging to a characteristic Australian family, to be circumpolar. Of some 100 genera and 56 species of plants listed by Hooker (1860) as common to the three great South-temperate land-masses, very few are representative of orders regarded as typically Australian.

Knowledge of the geological history of the families of Angiosperms is very incomplete. Modern flowering plants may be recognised in fossil remains of the Cretaceous and many of the families now restricted in area of distribution then had a far wider range. The existing isolation of Australia is geologically old and the characteristic flora would appear to have evolved in conditions of increasing aridity. This flora shows a relationship with that of Africa, a number of families, though few genera, being common to the two continents. A different type of flora is found on the mountains of Tasmania and S.E. Australia. This "Southern" flora contains few plants of the typical Australian orders, but the majority of the genera are peculiar to the South temperate zone and many are circumpolar in distribution. The dispersal of such plants across barriers such as the oceans as they exist to-day, is very difficult to visualise. Hooker (1853) examined the seeds and methods of seed dispersal of one characteristic plant of the Southern flora (*Oxalis Magellanica* Forst.) and concluded that its seeds could not be dispersed across the existing oceans. Some problems concerning the dispersal of certain plants having a circumpolar distribution in the sub-Antarctic are discussed by Rodway (1914). He supports Hooker's view that the botanical affinity between the floras of the South temperate continents and the islands South of them, can best be explained on the assumption that a large and more continuous tract of land existed in the Antarctic and was a habitat for plants, at the time when the chief families of Angiosperms were evolved. The present Southern flora would then be a relic of a flora once widespread, that has survived only at high altitudes. Among the few typical Australian plants in this flora the family Stylidiaceae is most strongly represented. The genus *Forstera* is represented by one species in Tasmania and three in New Zealand; *Phyllachne* is now known to be circumpolar in its distribution.

*Donatia* like *Phyllachne* is recorded from Tasmania, New Zealand and Fuegia, but the distribution of this genus, because of its affinity with the Saxifragaceae, raises other problems concerning the North and South migration routes of plants.

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