

ART. XXIII.—*Some Recent Additions to the Flora of New Zealand.*

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[Read before the Auckland Institute, 22nd November, 1909.]

1. *Olearia pachyphylla*, Cheesem., n. sp.

O. furfuracea affinis sed foliis majoribus et multo coriaceis, capitulis longissimis, involucri bracteis multo numerosioribus.

Frutex 1.5–3 m. altus, rami robusti, angulati, sulcati. Folia 12.5 cm. longa, ovata vel ovato-oblonga, obtusa vel subacuta, valde coriacea, supra glaberrima, subtus densissime sed appresse sericeo-tomentosa; venis reticulatis. Capitula longissima, 1.5 cm.–1.8 cm. longa; involucri bracteæ numerosæ, 35–40, multiseriatæ, sericeo-tomentosæ, inferiores minutæ. Flores 7–10.

Hab.—North Island: Bay of Plenty, hills at Opape, on the road from Opotiki to Torere and Te Kaha; *Bishop Williams*! Flowers in March.

A much and closely branched shrub 4–8 ft. high; branches very stout, grooved and angled, the younger ones clothed with appressed brownish tomentum. Leaves alternate; blade 3–5 in. long by 2–2½ in. broad, ovate or oblong-ovate, obtuse or subacute, rounded and more or less unequal at the base, excessively thick and coriaceous, glabrous above, beneath clothed with densely appressed silvery or silvery-brown tomentum; margins entire but more or less undulate; veins finely reticulated beneath, less evident above; petiole stout, grooved, 1–1½ in. long. Corymbs much branched, 3–5 in. diameter; peduncles 4–6 in. long. Heads very numerous, ½–¾ in. long, narrow at the base but gradually widening upwards; scales of the involucre in very many series, densely imbricated, the lowest minute, the upper gradually larger, the whole more or less clothed with yellowish-brown woolly tomentum. Florets 7–10; ray-florets 3–5, disc-florets 4–6. Pappus hairs unequal in size, rigid, thickened and fimbriate at the tips. Achenes striate, silky-pubescent.

A very remarkable plant. In habit and foliage it much resembles *O. furfuracea*, and when out of flower might easily be taken for a robust large-leaved form of that species. But the flower-heads are altogether unlike those of *O. furfuracea*, or of any other species, being remarkable for their great length (quite ¾ in.) and the number of the involucreal scales (35–45), which are imbricated in 6–8 series, thus giving the involucre an altogether different appearance from that of *O. furfuracea*. In that species the heads do not exceed ½ in., and the scales number 12–15.

For the discovery of the plant we are indebted to the Right Rev. W. L. Williams, late Bishop of Waiapu, who has done so much to elucidate the botany of the East Cape district, and who observed it at Opape several years ago. After several visits to the locality he succeeded in obtaining flowering specimens, from which the above description has been drawn up.

2. *Raoulia Gibbsii*, Cheesem., n. sp.

R. bryoidei proxima, sed differt ramis non densissime compactis, capitulis majoribus, floribus numerosioribus.

Planta formans cæspite 15–25 cm. diam. Rami numerosi, validi, laxè cæspitosi, suberecti vel decumbentes, dense imbricato-foliati, 4–10 cm.

longi, 5–10 mm. diam. Folia ut in *R. bryoides*, sed multo majora, 5 mm. longa. Capitula terminales, sessilia, solitaria, 6–8 mm. diam.; involucri bracteæ 3–4-seriatæ, exteriores scariosæ, interiores apice albidæ. Flores numerosi, 12–20 feminei, 12–20 hermaphroditi. Achenia ut in *R. bryoides*.

Hab.—South Island: Dun Mountain Range, Nelson, on Mount Starveall and Slaty Peak; altitude, 4,000–5,000 ft.; *F. G. Gibbs!*

Forms small patches 6–9 in. diameter, much more laxly branched than is usual in the genus. Branches stout, erect or suberect, 2–5 in. long, with the leaves on $\frac{1}{4}$ – $\frac{1}{3}$ in. diameter, not forming a hard compact mass as in *R. bryoides*. Leaves very closely imbricated, erecto-patent, $\frac{1}{5}$ – $\frac{1}{4}$ in. long, obovate-spathulate or rhomboid-spathulate, obtuse or subacute, upper half triangular, coriaceous, clothed on both surfaces with densely felted woolly hairs, which, as in *R. bryoides*, do not conceal the shape of the leaf; basal half membranous, upper surface glabrate or nearly so, lower surface slightly silky; margins furnished right to the base with long cottony hairs. Heads $\frac{3}{8}$ in. diameter, solitary, terminal, sunk amongst the uppermost leaves; involucre bracts in 3–4 series, linear-oblong, scariosus, acute, much smaller in proportion to the size of the head than in *R. bryoides*, and the inner ones with much less conspicuous white tips. Florets 20–40, the hermaphrodite about equal in number to the females. Achenes with long silky hairs and a conspicuous thickened areole. Pappus-hairs few, fragile, thickened at the tips.

Although this is technically closely allied to *R. bryoides*, in appearance it differs widely from that plant. *R. bryoides* forms hard and compact knobby masses in which the numerous branches are so closely packed that it is impossible to thrust the finger in between. *R. Gibbsii* is comparatively laxly branched, with longer, stouter, and more erect branches, and the leaves are much larger. The heads are also larger, with double the number of florets, and the scales of the involucre are proportionately smaller and less numerous.

Mr. Gibbs, who is the first to gather this interesting species, informs me that at a little distance it can be easily mistaken for a barren specimen of *Helichrysum grandiceps*.

3. *Myosotis* (*Exarrhena*) *Astoni*, Cheesem., n. sp.

Species *M. saxosæ* valde affinis a quo differt ramis et foliis multo longioribus, pilis laxioribus, floribus numerosis.

Perennis, undique pilis mollibus parce vestitus. Rami floriferi graciles, ascendentes vel basi decumbentes, 15–30 cm. alti. Folia radicalia numerosa, 5–10 cm. longa, supra et infra pilis brevibus parce obsita; folia caulina minora, sessilia. Racemi terminales, pedunculati, simplices vel furcati. Flores numerosi, breviter pedicellati. Corolla hypocrateriformis, 4–5 mm. diam.; tubus cylindraceus, fauce gibbis emarginatis instructa. Stamina 5, sub faucibus affixa; filamentis elongatis.

Hab.—North Island: Mount Holdsworth, Tararua Range; altitude, 4,000–4,500 ft.; *W. Townson! B. C. Aston!*

Perennial, sparingly clothed with short soft hairs. Flowering-stems several from the root, slender, decumbent below, erect or ascending above, 6–12 in. long. Radical leaves few or many, 2–4 in. long; blade about half the length, $\frac{1}{2}$ – $\frac{3}{4}$ in. broad, linear-obovate to oblong-obovate or oblong-spathulate, obtuse or subacute, thin and membranous, both surfaces sparsely clothed with soft white hairs; cauline much smaller, oblong or linear-oblong, sessile, or the lower alone shortly petiolate. Racemes pedun-

culate, simple or forked, many-flowered. Calyx hispid with soft white hairs; lobes erect, linear-oblong, subacute. Corolla funnel-shaped; tube equalling the calyx, throat with 5 scales; limb rather small. Stamens inserted just below the corolla-scales; filaments long, more than twice the length of the anthers, which reach more than half-way up the corolla-lobes. Nutlets ovoid, smooth and shining, dark brown.

I describe this species with considerable hesitation, on account of its evident close relationship to *M. saxosa*, a plant which has not been seen since its first discovery by Mr. Colenso, nearly sixty-five years ago. Judging from Hooker's description, however, it differs from that plant in the much larger size, more slender habit, fewer softer hairs, more numerous and larger flowers, and in the anthers not being exserted. I have much pleasure in dedicating it to Mr. Aston, who is doing so much towards increasing our knowledge of the botany of the Tararua Range.

ART. XXIV.—*The Absorption of Moisture from the Atmosphere by Wools.*

By A. M. WRIGHT, F.C.S.

[Read before the Philosophical Institute of Canterbury, 1st December, 1909.]

WOOL is very hygroscopic, and may contain from 8 up to 50 per cent. of moisture, according to the conditions of the atmosphere to which it is exposed. This is an important item in the sale of wool, and hence in Great Britain and on the Continent the percentage of moisture contained in wool to be sold must be officially determined in wool-conditioning laboratories.

The legal amount of moisture allowed in most European countries is 18.25 per cent.

The purposes of this investigation were—(1) To determine under what conditions wool absorbs moisture from the atmosphere; (2) to determine what constituents present in wool enable it to absorb such relatively large amounts of moisture.

The chemical composition of wool-fibre is nitrogenous, but we must distinguish between the true wool-fibre and the incrustating and mechanically adhering matters.

Pure wool-fibre consists for the most part of keratine, the characteristic constituent of horn, feathers, &c., and is not of constant chemical composition, but varying in different qualities and kinds of wool.

The incrustating and adhering matters consist of—(a) Wool-fat or yolk (soluble in hot alcohol); (b) other fatty matter (soluble in ether); (c) suint, which exudes from the body of the animal with the perspiration, and is sometimes known as "wool-perspiration" (soluble in water); (d) adhering impurities or dirt mechanically mixed with the above or entangled among the fibres (mechanically removed after extracting the fats).

The following are the analyses of the greasy and slipe wools of various kinds used in this investigation. The methods of analyses used are those