

ART. XLVI.—*On the Botany of the Snares.*

By T. KIRK, F.L.S.

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THE group of rocky islands known as the Snares consists of two large and several small islets, situated on the 48th parallel of south latitude and about sixty-five miles from the South Cape of Stewart Island. As they lie outside the usual track of vessels, they are but rarely visited, so that hitherto nothing has been known of their natural history.

The two large islands of the group are separated by a narrow channel, the larger of the two being not more than a mile and a half across. As it is the only member of the group on which I was able to land, the following notes cannot be considered exhaustive.

The island is the abode of numberless crested penguins (*Eudypetes chrysocomus*), with several species of petrels and other oceanic birds: the penguins and petrels especially exercise an injurious influence on the vegetation: the former by crushing the smaller herbaceous plants under their broad feet during the breeding-season, and by killing the trees on which their "rookeries" are established; the latter by burrowing among the roots of the trees in all directions. Several interesting land-birds were observed, the most remarkable being the Auckland Island snipe (*Gallinago aucklandica*), and the grass-bird (*Sphenoeacus fulvus*) which has become rare on the mainland, but is decidedly frequent amongst trees on this little island; to which must be added a small robin, originally discovered on Chatham Island, and described by Sir Walter Buller as *Miro traversii*. The occurrence of birds with such weak power of flight on these small islands is very suggestive.

Formerly these islands were visited by sealers, who have nearly succeeded in extirpating the fur-seal, only a pair being known to inhabit them at the present time. I was fortunate in seeing one of these, which allowed itself to be stroked on the neck with a long rod by Captain Fairchild, and seemed to enjoy the process rather than otherwise. The visits of sealers account for the presence of a few introduced plants.

The island is of irregular shape, and about a mile and a half in its greatest diameter. In many places the cliffs are steep and lofty, but a good boat-harbour exists on the north-east side, and the landing is easy. The rocks are granitic, and the greatest altitude does not exceed 480ft. The greater portion of the island is covered with light and occasionally open bush, never exceeding 30ft. in height: in a few places a dense scrubby

growth of *Veronica elliptica* from 4ft. to 8ft. high requires some exertion to force a way through, the difficulty being aggravated by the penguins, which make vicious snaps at the legs, while the explorer is held fast by entangled branches above. Usually a belt of open land covered with tussock occurs between the bush and the edge of the cliff, and a few small patches are found in the central parts of the island. In places where bush has been felled by sealers the ground is covered with a dense growth of *Veronica elliptica*, intermixed with tussock.

There is but little fresh water on the island: two small rills issuing from swampy ground unite before reaching the cliff, but the water is undrinkable, owing to its being polluted by the penguins; and the two or three swamp-plants maintain their existence under difficulties, being constantly flattened under the broad feet of these birds, which abound everywhere; their numbers being but little reduced by the predaceous sea-hawks which swoop down upon unguarded eggs or young birds, and appear almost ready to attack man himself.

Approaching the island on a fine January morning, the attention is at once arrested by the peculiar grey or whitish tint of the foliage, flecked here and there with patches of green. On landing, this is found to arise from the abundance of *Olearia lyallii*, which is the principal tree on the island, and forms the greater portion of the bush: when growing in level situations it is erect, with rather open spreading branches, but when situate on a sloping surface exposed to the wind it is often inclined, or with a prostrate trunk, the roots being partly torn out of the soil; the upper branches, rooting at the tips, give rise to new trunks, which in their turn are brought to the ground and repeat the process. The short trunks in some specimens are fully 3ft. in diameter, but the majority are from 1ft. to 2ft. The extreme height of the tree rarely exceeds 28ft.

In the original description of this plant in the "Flora Antarctica"* it was united with *O. colensoi*; but in the "Flora Novæ-Zelandiæ"† it is treated as a distinct species, although from insufficient material the description is necessarily imperfect. Botanically the two species are closely allied, *O. lyallii* differing from *O. colensoi* chiefly in the more open habit, more robust branches, broadly-ovate or orbicular-ovate leaves which are abruptly acuminate, and especially in the involucreal leaves being arranged in from five to eight series. The whole plant is more densely tomentose, fully-formed leaves being white above and below; the tomentum on the upper surface is floccose, and falls away during the first winter. The mature

* "Flora Antarctica," ii., p. 543.

† "Flora Novæ-Zelandiæ," i., p. 116.

leaves on old plants are excessively thick and coriaceous, doubly crenate with a very short almost sheathing petiole, but on young plants growing in the shade they were almost membranous in texture, and very large, some examples measuring over 7in. in length by 5in. in breadth. The flower-heads are arranged in crowded terminal racemes, 4in. to 7in. long, the rhachis, bracts, peduncles, and outer involucreal leaves being alike clothed with dense snow-white tomentum. The remarkable difference in habit and foliage causes the plant to present an appearance which contrasts strongly with *O. colensoi*, although the technical distinctions are almost trivial. *O. lyallii* will be a valuable addition to the New Zealand plants available for the purposes of the cultivator. It appears to be restricted to the Snares and the Auckland Islands, but is rare and local in the latter habitat.

The patches of green foliage amongst the white masses of *Olearia* were caused by another grand plant, *Senecio muelleri*, T. Kirk, a noble species, originally described* from specimens collected on Herekopere Island, January, 1883; but the specimens in the original habitat are not nearly so large as those found on the Snares, which attain the extreme height of 26ft. with a short trunk fully 2ft. in diameter. The branches are somewhat naked, so that the tree presents a straggling appearance, but the handsome foliage and large terminal panicles of yellow flowers place it amongst the finest members of a large genus abounding in grand species, while its extreme rarity invests it with special interest.

Veronica elliptica, to which reference has already been made, completes the short list of three species comprising the ligneous plants of the island. The plant found on the Snares is, however, of a more robust form than the plant found at Stewart Island and the Bluff; the flowers also are larger, with pure-white corollas, which are never pencilled or streaked.

The open land is covered with tussocks of the remarkable grass *Poa foliacea*, the lowland form of which produces a vast amount of nutritious herbage. Large tussocks of *Carex trifida*, the largest of the New Zealand species, occur amongst the *Poa*, and one or two small plants of no great importance find shelter at their base.

One of the most interesting plants is *Colobanthus muscoides*, which was supposed to be restricted to the Auckland and Campbell Islands, where it is abundant on sea-cliffs; it appears to be confined to a single locality on the Snares, where it occurs in a small swamp. Its northern range is thus extended fully a hundred and fifty miles. It forms rather large dense masses, the inner portion consisting of the

* Trans. N.Z. Inst., vol. xv., p. 359.

partially-decomposed leaves and stems of old plants and the roots of young plants. The seeds often germinate in the capsule; and it was no uncommon thing to find capsules still attached to the stems and containing apparently perfect seeds imbedded some three or four inches below the surface of the mass; the old surface having become clothed with a growth of young plants too quickly to allow of the germination of the buried seeds.

Another interesting plant was an undescribed *Ligusticum*, to which I have given the name of *L. acutifolium*. It was observed in one place only, at an altitude of about three hundred and fifty feet above sea-level; its stems below the leaves were nearly as thick as a man's wrist, and the entire plant was about 4ft. high. Its nearest allies are *L. intermedium*, Hook. f., and *L. lyallii*, Hook. f., but it is destitute of the viscid milky juice which is so characteristic of those species in the recent state. The leaves are membranous, thrice-pinnate, with large acute segments, and the fruits approach those of *L. lyallii*. Unfortunately, the specimens seen were past flowering.

The most striking herbaceous plant on the island is undoubtedly the punui (*Aralia lyallii*, var. *robusta*), which is sometimes 3ft. high or more, with noble orbicular reniform leaves over 2ft. in diameter. It differs from the typical form in wanting the remarkable stolons of that plant, in the petioles being very stout, flat on the upper surface and concave beneath, giving a plano-convex section, and in their being nearly solid instead of terete, thin-walled, and fistulose. The flowers also, although forming equally large masses with the type, are individually smaller, and invariably of a dull pale-yellow hue, never lurid; but there is no structural difference, although it must be admitted that at first sight the plant appears to depart widely from the type.

Lepidium oleraceum was found in one or two places in the cliffs associated with *Myosotis capitata*, var. *albida*, a form frequent on Stewart Island. *Lomaria dura* was plentiful everywhere close to the sea.

A few naturalized European plants have been introduced by the sealers, and the following common New Zealand plants, which appear to be recent immigrants on the Snares, have doubtless been introduced by the same agency:—

Sonchus oleraceus, L.

Juncus bufonius, L.

Hierochloa redolens, R. Br.

Deyeuxia forsteri, Kunth.

Mosses are exceptionally rare, *Hypnum serpens* was the only species identified; another species was observed on the

trunks of *Olearia*. A few Lichens were seen, but Hepaticæ and Fungi were not observed, and no opportunity of collecting marine Algæ was afforded.

The following catalogue of the flowering plants and ferns collected shows a meagre flora even for so small an area. A closer examination of the cliffs than I was able to give might add a few species to the list, and a few others might possibly be collected on the smaller islands, but it is unlikely that any material additions will be made:—

CRUCIFERÆ.

Lepidium oleraceum, *Forst.*
Cardamine depressa, *Hook. f.*

CARYOPHYLLÆ.

Colobanthus muscoides, *Hook. f.*

CRASSULACEÆ.

Tillæa moschata, *DC.*

HALORAGÆÆ.

Callitriche verna, *L.*

UMBELLIFERÆ.

Ligusticum acutifolium, *n. s.*

ARALIACEÆ.

Aralia lyallii, *T. Kirk, var. robusta.*

COMPOSITÆ.

Olearia lyallii, *Hook. f.*
Senecio muelleri, *T. Kirk.*
Sonchus oleraceus, *L.*

BORAGINÆÆ.

Myosotis capitata, *Hook. f, var. albida.*

SCROPHULARINÆÆ.

Veronica elliptica, *Forster.*

JUNCEÆ.

Juncus bufonius, *L.*

CYPERACEÆ.

Scirpus antarcticus, *L.*
" *cernuus*, *Vahl.*
Carex trifida, *Car.*

GRAMINEÆ.

Hierochloe redolens, *R. Br.*
Deyeuxia forsteri, *Kunth.*
Poa foliosa, *Hook. f., var. a.*
Festuca scoparia, *Hook. f.*

FILICES.

Lomaria dura, Moore.*Asplenium obtusatum*, Forster.*Aspidium aculeatum*, Swartz, var. *vestitum*.

NATURALIZED.

GRAMINEÆ.

Dactylis glomerata, L.*Holcus lanatus*, L.*Poa annua*, L.*Lolium perenne*, L.

Apart from the striking plants specially mentioned in the body of this paper, the chief conclusions to be drawn from the list are of a negative character, but some of them are of considerable importance. For instance, it shows that arborescent ferns do not extend beyond the southern extremity of Stewart Island, thus determining their extreme limit in the South Hemisphere to be in $47^{\circ} 20'$ south latitude. The same remark applies to *Coniferæ*; also to *Drimys*, *Melicytus*, *Pittosporum*, *Aristotelia*, *Rubus*, *Carpodetus*, *Weinmannia*, *Leptospermum*, *Myrtus*, *Fuchsia*, *Tetragonia*, *Pseudopanax*, *Schefflera*, *Gaultheria*, *Cyathodes*, *Leucopogon*, *Rhipogonum*, and other genera characteristic of the New Zealand flora.

ART. XLVII.—On *Pleurophyllum*, Hook. f.

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Plates XXXIX. and XL.

THIS fine genus is endemic in the Antarctic islands, and comprises three species, two of which were discovered during the visit of the Antarctic Expedition under Sir James Ross in 1840, and were described by Sir Joseph Hooker, the botanist to the expedition, in the first volume of his grand work on the flora of the Antarctic islands, published in 1845. The occurrence of such striking and beautiful plants on those small islands could not have been anticipated, and their discovery excited considerable interest in the botanical world; but it was scarcely to be expected that half a century would elapse before further information respecting them would be available.