repens, *Apium prostratum*, *Poa Astoni*, very large plants of *Myosotis albida*, *Selliera radicans* (as a turf), stunted *Veronica elliptica*, *Chenopodium glaucum*, *Gentiana saxosa*, *Mesembrianthemum australe*, a little *Aciphylla intermedia*, and, although not in my notes, I feel almost certain a plant or two of *Plantago trianda* var. *Hamiltonii* were present.

There are frequently open spaces amongst the "*Senecio-Olearia* scrub" at the north end of Mason Bay. On such is a combination of *Aciphylla intermedia*, *Apium prostratum*, *Scirpus aucklandicus*, *Epilobium nerterioides* var. *minimum*, *Cardamine heterophylla* var. *uniflora*, *Crassula moschata*, *Cotula Traillii*, *Poa Astoni*, *Carex lucida*, *Blechnum durum*, and *Brachycome Thomsoni*. The above constituents show that there is a close mat, out of which the taller plants grow singly or in groups. *Cotula Traillii* makes extensive pale-coloured mats; *Brachycome Thomsoni* (with scapes 1 ft. long in January and early February) is abundant, and makes dense mats; here and there sheets of *Crassula moschata* give a red colour. The fern *Blechnum durum*, its fronds flattened to the ground build small hillocks. Tufts of *Poa Astoni* grow up through the other plants. *Aciphylla intermedia* is in abundance, many plants growing side by side, and all touching.

At the mouth of Duck Creek, Mason Bay, as it passes through the recent dunes on the sandy bed, the ground is carpeted with a dense growth of a species of *Gunnera*,* its small dark-coloured leaves flattened to the ground; and mixed with it *Crantzia lineata*, *Epilobium nerterioides* var. *minimum*, *Hydrocotyle tripartita*, *Calamagrostis filifolia*, *Scirpus aucklandicus*, *S. filiformis*(?), *Elaeocharis acuta*, *Azorella Cockaynei*, and *Liparophyllum Gunnii*. The sand becomes very wet, owing to the spreading of the water over its bed. The *Gunnera* makes dark patches, which are relieved by the green *Hydrocotyle*, the reddish *Epilobium* and the bright-green tufts of *S. aucklandicus*. Where the ground is drier the *Gunnera* and *Azorella* are absent and the *Epilobium* and *Hydrocotyle novae-zelandiae* become dominant. On the bare sand a small species of *Juncus* is common. The above association is evidently, from its composition, related rather to bog than to salt meadow.

5. Cliffs.

The cliff vegetation is almost identical with that of the base of the Bluff Hill, on the mainland. Its luxuriance, and to some extent its character, depends on the position of the rock-face to sun and wind, and on the nature of the rock. Low cliffs are frequently shaded by the neighbouring coastal scrub, and the light is much reduced, ferns alone being present. Frequently the rock-face is thickly covered with peat, which is often a foot or more in depth, and which affords soil enough for the coastal veronica (*V. elliptica*) and many of the scrub shrubs. The chief plants of the formation are the maritime ferns (*Asplenium obtusatum*, *Blechnum durum*, *B. Banksii*), the two former frequently of large size, the thick leaves a foot or more in length, growing on the summit of short trunks; *Poa Astoni*, a grass of tussock or semi-tussock habit, the bunches isolated or close together, and frequently a foot or more in length, but generally drooping, except where exposed, when they are erect and smaller; *Myosotis albida*, its thick succulent hairy leaves 4 in. or more in length; *Crassula moschata*, forming close reddish mats or lines in crevices; *Linum monogynum*, this not everywhere; the celery (*Apium prostratum*); stiff tussocks of *Scirpus nodosus*; *Aciphylla intermedia* in the south and west. On the high cliffs of hard granite to the south of Mason Bay is, in places, abundance of *Aciphylla flabellata*, the long stout roots passing far down into the crevices. Here, too, is the fine *Celmisia robusta*, a plant with thick large green tomentose leaves in erect rosettes, but chiefly at the summit of the cliffs.

B. LOWLAND VEGETATION.

1. Forests.

(*a.*) *General.*

With the exception of certain places—notably, flat river-valley (treated of further on)—the whole of Stewart Island, up to an altitude of 1,000 ft. more or less, is covered with taxad forest, a continuation of the great formation of that character of the North and South Islands of New Zealand. This extensive assemblage of trees owes its presence to the wet and mild climate, its absence in certain spots being due to the violence of the wind or to soil-conditions. Near the shore it merges into the coastal scrub, and at its upper limit it is succeeded by a belt of manuka (*Leptospermum scoparium*), whose vertical distribution depends on the situation of the slope with regard to wind (Photo No. 17).

The differences between the taxad formation of Stewart Island and that of New Zealand generally are chiefly negative, depending partly on climatic conditions, and partly on the geological and biological history of the region, this latter, of necessity, a matter more or less obscure. Thus climate is accountable for the comparative small size of the taxads, the absence of many epiphytes among the seed-plants, the scarcity of woody lianes, the dominance of a certain class of undergrowth, and the extreme wealth of mosses and liverworts, while the geological and biological history are responsible for the absence of a number of common forest plants and the presence of others in very limited amount.

The most important fact regarding the forest formation is its being composed of two distinct associations—the "Rimu-Weinmannia" and the "Yellow-pine"—the former alone occurring in the north and east of the island, so far as I am aware, and the latter in the west and south, where it is found side by side with the Rimu-Weinmannia association, or between the two are intermediates. Ecologically, the Rimu-Weinmannia association is climatic, and the yellow-pine association depends on the soil-conditions (edaphic).

* Perhaps *Gunnera arenaria*.