

Cassinia fulvida, Hook. f.

Bed of Waimakariri River, Lower Canterbury Plain L. C.!

Senecio hectori, Buchanan.

"Between Greymouth and Point Elizabeth, 50 ft. altitude."
H. J. Matthews.

Senecio cassinioides, Hook. f.

Summit of Blowhard, 900 m. altitude. L. C.!

Senecio rotundifolius, Hook. f.

(1.) West Wanganui Inlet, north-west Nelson; H. J. Matthews. (2.) Cliffs, Centre Island, Foveaux Strait; L. C.!

ART. XXXIV. — *Note on the Behaviour in Cultivation of a Chatham Island Form of Coprosma propinqua*, A. Cunn.

By L. COCKAYNE, Ph.D.

[Read before the Philosophical Institute of Canterbury, 14th November, 1906.]

THAT certain plants normally of upright habit, when exposed to constant violent winds, especially when growing in physically or physiologically dry stations, assume a prostrate habit is well known; but such habit depends entirely upon their environment, as culture experiments readily prove. Other plants, again, growing naturally in similar positions, such as *Veronica chathamica* and *Hymenanthera crassifolia*, are always prostrate, and do not materially change in cultivation. *Coprosma propinqua* is a plant of the former category. This shrub, in its usual stations, such as lowland or subalpine scrubs and fresh-water swamps, is erect with numerous more or less divaricating branches. But when it grows on the coast—as, for instance, on the shores of Foveaux Strait, at the base of the Bluff Hill—it is usually much "wind-shorn" and frequently quite prostrate, being flattened against the rocks which emerge from the peaty ground, and clinging closely to their surface. But all transitions may be seen, from the wind-swept plant to the normal, and there is no reason to expect that the former form is in any way hereditary.

Growing on the rocky face of the most easterly of the cones of the volcanic hill known as the Horns, which forms a feature

in the landscape of the south-west corner of Chatham Island, I observed in 1901 a prostrate *Coprosma* which, at first glance, I thought to be a new species. On further examination it seemed more probable that it was merely a rock form of *Coprosma propinqua*, a common plant of the lowland swamps of the island. Also, similar plants, although not quite so prostrate, were observed by me growing on the wet peaty surface of the upland bogs. A living specimen of these latter I brought back with me to Christchurch.* This was cultivated for some time in a pot, and finally, about two years ago, I planted it in a sheltered part of the Canterbury College botanical experimental garden, in ordinary garden soil, and where, during dry weather, it is kept well watered.

Now, notwithstanding that this plant has every opportunity to assume an erect habit, it remains almost prostrate, with its branches spreading out laterally; indeed, it resembles, so far as my recollection goes, the Chatham Island plant of the xerophytic bog.

It may, of course, be argued that my identification is incorrect, and that the plant is not a form of *Coprosma propinqua* at all, but a new species. Even in that case its behaviour in cultivation is of interest, for all such cases should be tested by experiment as to the permanency of their adaptation-characters.

This particular class of plants in wind-swept localities, which hug the rocks on which they grow, and which in one set of species are merely non-hereditary variations caused by the mechanical action of the wind plus a dry station, and in the other are hereditary, seem to me to point strongly to the heredity of acquired characters under that particular class of circumstances. Of course, I know that the natural-selectionist pure and simple will point out how natural selection could have brought the special prostrate form into existence, and the mutationist would show how a mutation would do it still more effectively. But, with all deference to the opinion of both, and especially to the latter, it does seem that, had neither natural selection nor mutation ever been heard of, in such a case as this I have recorded, the inheritance of acquired characters would have been considered a sufficient and ample proof.

* I also brought plants from the Horns, but these unfortunately died.