

4. AFFINITIES WITH THE CHATHAM ISLANDS.

The occurrence of *Suttonia chathamica* at Wilson Bay in abundance, sparingly at the Old Neck, many miles to the north, and perhaps on Ruapuke is very remarkable. Wilson Bay was an old Maori settlement, and a suspicion must arise that perhaps the tree was introduced at no distant date by the Maoris; but, without going into the matter, it seems to me unlikely, and this will be certain if the Stewart Island form differs in any way; but to ascertain this I require better Chatham Island material than is available while writing.* The macrocephalous *Olearias*, *Urtica australis*, the close relationship of *Senecio Stewartiae* with *S. Huntii* (Chatham) and of *Cotula Traillii* with *C. Muelleri* (Chatham) also show affinities between the respective floras.

5. GENERAL CONCLUSIONS.

To sum up, Stewart Island may have been connected at an early period with the subantarctic islands, the mainland of New Zealand, and perhaps with the Chatham Islands. A comparatively recent depression would sever the connection with the South Island, finally reducing it to a group of islands. This would bring about greater exposure to the wind and a fiercer struggle between the species, in which many—*Nothofagus*, e.g.—would go to the wall. Re-expansion of the land-surface owing to its being crowded with plants would not lead to new population. The glaciation of the mountains would also have induced stronger competition between the species, and driven alpine plants to the lowlands; but the presence of such there at the present time may be better explained by the majority of the species not being alpine but subantarctic.† Finally, the presence of man has not, as yet, modified the vegetation to any extent, so that it is truly virgin.

PART V.—REMARKS ON THE BIRD-LIFE OF STEWART ISLAND.

1. GENERAL.

Except in the immediate neighbourhood of the settlements, and in certain cases detailed below, the birds of Stewart Island are just as plentiful as they ever were. This pleasing state of affairs arises from the smallness of the population, the difficult nature of the country, the primeval character of the vegetation, and the absence of naturalised ferrets, weasels, and stoats. But the birds are not without their enemies. Wild cats are common in many parts of the lowland regions, and rats—the most deadly enemy of the indigenous birds—are abundant. Also, visitors from the mainland, in wanton so-called "sport," work havoc amongst the sea-birds, shooting them from boats; nor are those of the land unmolested, notwithstanding most are protected by law. Burning the heath and bog vegetation also causes much destruction so far as certain birds are concerned. I would strongly recommend that notices pointing out that shooting birds was illegal be posted up in public places, especially on the wharf. Nearly all native birds are protected, while scenic reserves and areas for preservation of the fauna and flora are sanctuaries.

Regarding the depredations of cats and rats, the island of Ulva furnishes an important object-lesson. This beautiful island, now a scenic reserve (Photos Nos. 32, 33, 34), is well cared for by Mr. Walter Traill, whose dogs allow no cats to exist, and also keep the rats in check, while he himself is able to prevent shooting on the island. The consequence is that certain of the birds—e.g., the bell-bird, now quite wanting in the neighbourhood of settlements—is still extremely abundant.

So far as I know, no list of the birds of Stewart Island has been published. The works of Buller, especially the Supplement (14), as also Hutton and Drummond's popular book (46), contain references to certain species as occurring on the island, but many common birds are not noted. Reischek also furnishes a few details as to the bird-life of Lords River (74), and Black notes twenty species in his report (6, p. 7). For what follows I am indebted to Mr. J. W. Murdoch, who has most generously put at my disposal the information he has gathered for many years, both as a most accurate observer and lover of the birds. Without his assistance I could have published nothing on this head of any moment. The account of the mutton-bird is drawn up from an interview with Mr. Bragg, whose knowledge is first-hand, and derived from having yearly been engaged in "mutton-birding" since as long as he can remember.

2. LIST OF SPECIES AND NOTES THEREON.

The Orange-wattled Crow (*Glaucopsis cinerea*).—This beautiful bird, now extinct in most parts of the South Island, where formerly it was abundant, is plentiful in the country to the south of Paterson Inlet up to the upper limit of the subalpine scrub. The birds always go in pairs, and are never found solitary. Extremely tame, they approach, hopping, to within a few feet of the intruder. Their power of flight is slight, progress being made by hopping or by very short flights. Unaided, the species could hardly have reached Stewart Island had Foveaux Strait always existed.

The Fern-bird (*Bowdleria fulva Roth.*).—Perhaps this identification is wrong, and the Stewart Island species may be the extremely closely related *B. punctata*. The bird in question is found chiefly on the low-lying open boggy or swampy ground, but I have seen it in the low forest near the Freshwater River, where, early in October, it was probably nesting amongst the low shrubs. Although still present

* I would unhesitatingly declare the two forms distinct, were it not for the fact of the leaf-variation according to change of environment as detailed in Part II.

† There is no relation between the low altitude of the alpine plants in Stewart Island and a severe climate, as originally suggested by Petrie (69, p. 325)—i.e., if by "severe" extremely cold was meant. On the contrary, the winter climate is comparatively warm, as already shown.