

Chatham Island

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THE Chatham group of islands lies roughly five hundred miles east of Lyttelton, and its length from the Sisters in the north to Pyramid Rock in the south is about eighty miles. The plant formations of this interesting region have affinities with the southern portion of the North Island and with the New Zealand subantarctic islands.

Since the days of the early botanical explorers New Zealand botanists have been well-informed of the interesting features of this region through the writings of the late Dr. Cockayne. Most of us have seen isolated examples of the Chatham Island plants growing in New Zealand public gardens and have no doubt formed mental pictures of them growing in their natural environment. Perhaps after all we have taken our unique Chatham Island flora too much for granted. The writer's recent visit to the main island of the Chatham group was a long anticipated pleasure not unmingled with disappointment. Most of the original plant formations are drastically modified by man and his agents; and some of the noble local endemic plants, for which the islands have long been famous, are found with difficulty in inaccessible places.

In a short article of this type it is possible only to make a brief sketch of the important plant formations as they exist to-day, and at the same time outline the conservation measures which are urgently required.

Originally Chatham Island was said to be an entirely bush-covered island except for extensive areas of lagoons, lakes, swamps and bogs. To-day one's first impression is of a relatively treeless island. Much of the original forest has been replaced by pastureland of varying quality, and there has been inadequate planting of exotic trees for timber, firewood and shelter.

Although there are some fine sandy beaches in parts of the island, much of the Chatham Island coastline is rugged. Especially is this so on the west and south coasts where the bull-kelp (*Durvillea antarctica*) fringes the rocks and grows to a size which would delight the heart of a Stewart Island mutton-bird. The shore vegetation was once dominated by that most famous of Chatham Island's thirty-one local endemics, the giant forget-me-not (*Myosotidium hortensia*). This splendid plant was equally at home, not only on sandy shore, but also on cliff ledges, rocky shore, and low peaty ground near the sea. To-day it is almost extinct as a primitive formation, except on some inaccessible ledges on the cliffs of the south coast, but it is cultivated in very many Chatham Island gardens. Humbler species now occupy the available maritime stations. *Samolus repens*, *Ranunculus acaulis*, *Apium prostratum*, *Salicornia australis*, *Senecio lautus*



C. A. Fleming.

Coxella dieffenbachii, on cliff near "The Horns," Chatham Island.

and *Cotula coronopifolia*—all these are here as in New Zealand. The Chatham Island geranium (*G. traversii*) grows abundantly in rock clefts lashed by salt spray. *Mesembryanthemum australe*, *Hebe chathamica*, and *Blechnum durum* grow on maritime rocks. *Selliera radicans* and the pretty pale green *Cotula potentillina* invade the pasture sward forming a damp salty turf to the upper limit of the sea spray. The local endemic *Senecio radiolatus* was found in small pure colonies among boulders near Durham Point.

The writer did not visit Red Bluff, the original collecting site of the fine endemic *Sonchus grandifolius*. This plant is now uncommon, but was seen in isolated colonies on the southern maritime cliffs. These cliffs are notable for luxuriant green sheets of vegetation which extend upwards in places almost for five hundred feet. At the mouths of the gorges which intersect the high southern portion of the island this lush formation in places extends three hundred yards inland. Closer examination shows it to consist of *Salicornia australis*, *Cotula potentillina*, and *Mesembryanthemum australe*, the last-mentioned being the dominant plant.

The only known colony of the famous *Coxella dieffenbachii* exists at the mouth of the Awatotara gorge where it reaches the west coast at a gloomy little cove reminiscent of similar wild spots on the bleak coastline of the Auckland Islands. Here on an outward sloping ledge, thirty feet from the base of the cliffs, this unique species is inaccessible to stock. No more than fifty plants exist in the main colony but other isolated specimens were seen on the cliff face in the vicinity. Perhaps *Coxella* exists in other places on the south coast cliffs but it was not found in any of the localities examined.

The visitor to Chatham Island is at first puzzled when he hears local residents referring to the "clears," a term which is used to describe such dense formations as *Dracophyllum-Olearia* bog and other associations which are anything but "clear" to the intruder attempting to force a passage. The term was originally used to refer to those extensive areas on Chatham Island which, on account of wind exposure and other factors, have always been "clear" of forest. It includes all kinds of bog as well as the extensive areas of bracken and heath.

The wettest part of the bogs consists of sphagnum moss, with *Drosera binata*, *Pratia arenaria*, *Myriophyllum* sp. and *Poa anceps* var. *chathamica* occupying the hollows between the mounds of sphagnum. On the drier margins of these places sheets of *Gleichenia circinata* occur with stunted plants of *Dracophyllum palludosum*. *Gentiana chathamica* and the ground orchids *Thelymitra longifolia* and *Corybas macranthus* are present. Where drainage is a little better, the sphagnum bog is replaced by a shrubby association of *Dracophyllum palludosum*, *Olearia semidentata*, and the large rush *Lepyrodia traversii*. The two last-named species still occur abundantly



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Olearia chathamica, Chatham Island.

in a few places, but the consolidating effect of stock trampling has enabled *D. palludosum* to dominate extensive areas which were once damp enough to support *Lepyrodia-Olearia bog*. The showy, purple-flowered *Olearia semidentata*, one of Chatham Island's most esteemed horticultural plants, is unfortunately eaten by stock, and has disappeared entirely from large areas where it was once abundant. In the opinion of a reliable Chatham Island resident, who has lived his lifetime on the island, it is doomed to extinction unless protective action is taken. It now exists only in small stands in some of the boggy depressions in the dracophyllum country bordering the northern and western parts of the tableland forest. The *Dracophyllum palludosum* formation is in turn replaced on the drier part of the "clears" by a heath formation dominated by *Cyathodes robusta* associated in order of occurrence with *Pimelea arenaria*, *Libertia ixioides*, and *Leucopogon richei*. On areas of the original bog formation where man and his animals have had the greatest influence, the heath now consists almost entirely of bracken.

A low forest of even height, the Chatham Island lowland forest bears a superficial external resemblance to the New Zealand coastal forest near Waikanae and Paekakariki. It differs from New Zealand forest in the absence of podocarps, and in the comparatively small number of species. *Corynocarpus laevigata*, locally known as the "kopi", is the commonest tree, followed closely by *Olearia traversii*. This latter grows to a larger size than any New Zealand olearia, and

it makes fine timber for fence posts. These two trees are followed in order of frequency by *Coprosma chathamica*, *Hymenanthera chathamica*, *Myrsine (Suttonia) chathamica*, *Corokia macrocarpa*, *Pseudopanax chathamica*, *Hebe gigantea*, *Macropiper excelsum*, and *Rhopalostylis sapida*. *Plagianthus* "chathamica" and *Sophora* "chathamica" are found in the limestone country at the air base on the west shore of Te Whanga lagoon, and *Myoporum laetum* is found on the northern coast of the main island and at Pitt island.

The only lianes are *Rhipogonum scandens* and *Muehlenbeckia australis*. The tree-ferns *Dicksonia fibrosa*, *D. squarrosa*, *Cyathea dealbata*, *C. medullaris* and *C. cunninghamii* occur plentifully throughout the forest. *D. fibrosa* is the commonest tree-fern on Chatham Island, and because of the desperate scarcity of suitable timber, finds a use as a fence post with a wooden batten wired on to it to hold the staples!

No one plant formation on Chatham Island has suffered more at the hands of man than has the lowland forest, which, formerly covering large areas, has now been reduced to moribund remnants. Everywhere are seen dead and dying trees, and no regeneration is taking place.

In respect of the tableland forest which occupies the whole of the south-west corner of the island, extending northwards to Pipitarawai trig, a more encouraging state of affairs prevails. This forest, partly surrounded by an extensive belt of uneconomic dracophyllum country, is still comparatively untouched. A type of rain forest unique in the world, this area is the last stronghold of the Chatham Island wood pigeon and the red-fronted parrakeet on the main island. With a much higher rainfall than the lower, more northerly parts of the island, conditions for rain forest formation are here ideal. A different combination of trees from that found in the lowland forest occurs. *Senecio huntii* and *Dracophyllum arboreum* are the dominants. *Olearia traversii*, *Corynocarpus laevigata* and *Rhopalostylis sapida* are absent. *Hymenanthera chathamica* with its pale green foliage, so characteristic of the lowland forest, is very rare on the tableland, and the other trees enumerated for the lowland forest occur in much inferior numbers to the two dominants.

The magnificent *Senecio huntii* characteristically forms the outer line of the forest, and when in bloom, with its masses of yellow flowers, makes a magnificent sight. Seen from an adjacent high ridge the upper surface of the forest is very dense and almost uniform in height. On entering the forest after slogging through the dense dracophyllum scrub which borders it, one is immediately impressed by the humidity, like that felt in a glasshouse fernery on a summer's day. The forest floor is densely carpeted with mosses and filmy ferns which cover the many decaying stems of trees and tree-ferns. Tree-ferns in all stages of growth are extremely abundant; epiphytic

on their stems are luxuriant filmy ferns and kidney fern (*Cardio-manes reniforme*). The kidney fern here grows with a luxuriance unsurpassed in any New Zealand mainland rain forest.

In the shade of the dense canopy of this forest an agreeable aromatic scent diffuses from the numerous *Senecio huntii* trees which occur plentifully throughout. Some of these are huge and apparently of great age. The short plaintive song of the Chatham Island warbler is heard everywhere in the deep shady gullies; and from the tree-tops and higher ridges the chatter of parrakeets can often be heard.

Where this tableland forest reaches the south coast at the locality known as "The Horns" an opportunity occurs to inspect the *Olearea chathamica* formation which grows as a belt on the forest margin at the south cliffs. One of the largest of the oleareas, this magnificent purple tree-daisy is probably the most showy of the genus, surpassing the famous teteawaka (*O. angustifolia*) of Foveaux Strait. This tree-daisy, or cliff aster as it is locally known, is still abundant on the cliff tops and it also follows the gorges inland where it is conspicuous on the summits of the ridges. Unlike its close relative *Olearia semidentata*, this plant is too tough to be eaten by stock, but it is ultimately in danger of extinction by stock trampling and wind exposure as planned land development spreads further around the fertile coastal area above the south cliffs.

And now what of the problems of conservation? For a long time New Zealand botanists have deplored the lack of a plant conservation policy on the Chatham group. Chatham Island forest appears even more vulnerable to the effects of grazing and wind exposure than its New Zealand counterpart. On the fertile land close to the coast it is only necessary to introduce stock and the forest soon dies. Volunteer strains of white clover and even some English grasses quickly establish without over-sowing. For this reason the coastal lowland forest is doomed and in a few years will be lost. There are still areas of lowland forest to the south of Te Whanga lagoon and Lake Huro which could be saved.

Although south-east Island has been declared a sanctuary, no national park, state forest reserve, or sanctuary exists on the main island of the Chatham group. The tableland forest is a most suitable area for such a project. Several square miles in extent, it has survived in a relatively untouched condition but cannot continue to do so without legal safeguards. Only agricultural economics have allowed it to be spared so long. This land, and the dracophyllum country which borders it, is still regarded as uneconomic; but the impact of modern mechanised land development methods has not yet been felt on Chatham Island. It is probable that, provided prices in primary industry remain high, this "uneconomic" land would eventually be brought into production. Conservation measures should be implemented now before land development schemes on Chatham

Island produce an inflation in value of this "uneconomic" land. With the removal of stock from south-east Island it should be practicable to establish colonies of *Coxella*, *Myosotidium*, and *Olearia semidentata* as well as many of the other local endemics.

In conclusion one must stress the point that despite over a century of tragic depredation there is still much left to save of our Chatham Island wildlife heritage. There is still time to act effectively. Let us not repeat the mistakes of Mangere Island.

Recent Publications

A list of books and bulletins that have come to the notice of the editor, concerning the plants and vegetation of New Zealand. Mention of a publication does not necessarily imply a recommendation.

Pioneer Plant Geography: The Phytogeographical Researches of Sir Joseph Dalton Hooker, by W. B. Turrill. Vol. 4 of Lotsya—A Biological Miscellany. Hague: Martinus Nijhof.

A Handbook of the New Zealand Mosses, by G. O. K. Sainsbury; with illustrations by Nancy M. Adams. Bulletin No. 5, Royal Society of New Zealand, Victoria University College, Wellington. 25/-.

A Book of Ferns, by Greta Stevenson. 10/-.

The High-Altitude Snow-Tussock Grassland in South Island, New Zealand, by The Tussock Grassland Research Committee. Reprinted from the New Zealand Journal of Science and Technology, Section A, Volume 36 (4).

Forests and Climates in the South Island of New Zealand, by John T. Holloway. Technical Paper No. 3, Forest Research Institute, New Zealand Forest Service, Wellington.

The Mountains of New Zealand, by Rodney Hewitt and Mavis Davidson. A. H. and A. W. Reed, Wellington. 18/6.

New Zealand Birds and Flowers; A selection of Colour Plates. Revised Edition. A. H. and A. W. Reed, Wellington. 6/-.

Forest Fungi, by Margaret E. Lancaster. Government Printer, Wellington. 9/6.