

SOME NOTES ON THE FLORA OF MT. EGMONTA.P. DRUCE

These notes have been prompted by a letter from the Editor, concerning my recent "Check List of the Higher Plants of Mount Egmont." In the letter he writes: "We were a bit confused about the Celmisias and I would be interested to know why you have returned to Celmisia gracilentia var. rather than C. major var. brevis." Besides answering that question, I thought this might be a suitable opportunity to discuss one or two other "problem plants" of Egmont, and to provide a little background information on the flora of the area.

First the background information. Now that we know that there are something like 670 distinct plants on Egmont (about 100 fewer if those confined to the coast are omitted) it is interesting to see what various people have said in the past.

John Buchanan in 1869: "Although all who go up do not collect plants still many do, and probably no locality in New Zealand has been better searched. Plants have been passing to Britain from there through various channels for many years. All idea therefore of finding much novelty may be dismissed, and the result of the present expedition has proved that the botany of this isolated mountain was well ascertained prior to my visit." (About 180 species were listed).

George Thomson in 1917: "Botanically Mount Egmont is an interesting spot, and yet it is a singularly poor collecting ground."

Leonard Cockayne about 1925: "..... the conditions under which the mountain was colonised made it impossible for the establishment of a great number of species. The total number of trees, shrubs, herbs, grasses, ferns, etc., is about 220"

How do we account for this underestimation of the number of plants on Egmont? Possibly the answer is that most people had their sights fixed on the summit cone soaring above the surrounding ring-plain, and as a result took little notice of the forest, let alone the bogs and swamps, on their way to the alpine tussock and herbfield. Without doubt the tussock and herbfield are rather poor in species; many of the 300 - odd "missing plants" - plants found in the central North Island at the same latitude as Mount Egmont - are those one would expect to find in such communities. The forest, however, contains most of the common trees, shrubs and lianes (some noteworthy exceptions, besides the four beech species, are pink pine, celery pine, several species of Coprosma, Cyathodes juniperina, Melicope simplex, and Melicytus micranthus). Nearly all the common ferns are there, totalling nearly two-thirds of all the ferns known in the North Island. The lowland and montane bogs and swamps, especially Ahukawakawa Swamp between Egmont and the Pouakai Range, contain a great number of species. From Ahukawakawa and its margins nearly 260 species are known - more than Cockayne's total for the whole mountain, and not one of them mentioned by Buchanan in 1869 in "crossing

the great swamp by one mile of heavy walking, the legs sinking deep in Sphagnum moss."

But there's an additional reason why the size of the flora was at first underestimated. Many of the plants are very local - whether this is more so on Egmont than elsewhere I'm not altogether sure - and it was only when the area was more fully covered that these species were found. I shall never forget the surprise I got when I realised I was standing under a "South Island" mountain lacebark (Hoheria glabrata) for the first time on Egmont. Just to mention a few, here are some other plants so far known from only one or two places on Egmont: Ascarina lucida, Coprosma colensoi, Mida salicifolia, Podocarpus nivalis, Adenochilus gracilis, Caladenia lyallii, Clematis foetida, C forsteri, Hymenophyllum rufescens, Phymatodes novae-zelandiae, Carex hectori, Uncinia divaricata, Libertia peregrinans, Callitriche muelleri, Stackhousia minima.

There are some plants recorded from Egmont that I have been unable to find. One that particularly puzzles me is Gentiana bellidifolia, recorded by both Cheeseman and Cockayne, and also more recently by George Mason. I can't think that all three people were mistaken with such a well known plant of the central North Island.

Doubtless there are plants still to be discovered on Egmont; even since I completed the check list last November three have been added - and by three different people! As things stand at the moment just over half of all the higher plants (club-mosses, ferns, gymnosperms, flowering plants) known to occur in the North Island have been found on Egmont. The fraction varies for different groups of plants. Thus about two-thirds of the lianes, ferns and rushes are present, but only about one-third of the shrubs. For most other groups (trees, orchids, grasses, sedges, dicot herbs) the fraction is about half. Five species appear to be endemic (two on the coast), but it is probably only a matter of time before some or all of these are found elsewhere. In addition there are nine "Egmont varieties" but two of these are doubtful. In the check list I noted 14 plants as being found only on Egmont in the North Island. Only this summer two of these have been found elsewhere in the North Island (Ranunculus recens in the Kaimanawa Mountains, and Uncinia involuta in the Tararua Ranges). One could almost say that Egmont is noteworthy not so much for what is there, but for what isn't there (the 300 - odd "missing plants").

Now to the Celmisia gracilentata question. Let's admit at once we can't be sure that the plant on Egmont is C. gracilentata; it's a hunch (hypothesis) based on the growing of C. gracilentata - like plants, collected from many places in the North Island, side by side in pots. The Egmont population of plants is slightly different alright, but then so are some of the others; in other words it is but one of the many forms C. gracilentata can take in different places. Maybe typical C. major is yet another part of this species. If the Egmont plant and typical C. gracilentata grew together somewhere, i.e. were sympatric, and stayed distinct, then we could say they were different species. Take the case of C. gracilentata and C. setacea (the latter described by

Colenso (from Tongariro). At first I thought C. setacea was just a habitat form of C. gracilentia, growing in bogs and seepages; later I grew it and found that it spread all over the pot I had it in by means of rhizomes. Like Colenso, who described it as "apparently growing singly", whenever I had collected a specimen I had not dug deep enough to get a piece of the rhizome, which commonly runs 10 cm. or more below the surface. On the Pouakai Range C. gracilentia var. and C. setacea grow side by side, with no intermediates. Clearly then they are different species. To cap it off Dr J.B. Hair of Botany Division, D.S.I.R., has found they have different chromosome numbers.

Celmisia glandulosa on Egmont, described as var. latifolia, is supposed to be distinct from the typical form from Tongariro. Plants will have to be grown to see if this is so. So far I have found that central Ruahine plants differ hardly at all from Egmont ones. Surprisingly C. glandulosa crosses with C. gracilentia var. on Egmont, but very rarely. One such plant used to grow on the "lawn" just above the North Egmont Chalet.

Another "problem" plant on Egmont that has provoked much hard thinking is the native broom (Carmichaelia sp.) growing there. Cockayne called it C. arborea (with a question mark), Cockayne and Allan C. australis var. egmontiana, and Simpson C. egmontiana. Egmont plants vary a good deal but they fall roughly half way between, and are barely distinguishable from, C. flagelliformis and C. cunninghamii. (The latter grows on the Taranaki coast and to the west of Egmont). But C. flagelliformis is very close to various South Island plants, including C. arborea, and similarly C. cunninghamii "leads on" to C. aligera. I have a feeling - an uncomfortable feeling I might add, because at first sight C. arborea and C. aligera look so distinct - that there are far fewer species than the Flora of N.Z. would have us believe. I may be wrong, but for the time being I'm postulating that there are only four species in the North Island: C. williamsii, C. odorata, C. enysii (includes C. orbiculata), and C. arborea (includes the rest). Incidentally, hybrids are found wherever the last two meet in central North Island. I have many plants of the C. arborea group growing and the situation seems remarkably like that in the Celmisia gracilentia group, with broad-stemmed/broad-leaved plants being distributed to the north and west of the North Island. Here's a table suggesting North Island Carmichaelia arborea group/Celmisia gracilentia group equivalents (the stems/leaves increase in width from top to bottom) :

<u>flagelliformis</u> , <u>hookeri</u> , <u>corymbosa</u> , <u>acuminata</u>	<u>gracilentia</u> (typical and similar forms)
<u>solandri</u>	<u>graminifolia</u>
<u>egmontiana</u>	<u>brevis</u>
<u>cunninghamii</u>	<u>major</u>
<u>silvatica</u>	<u>rugulosa</u>
<u>aligera</u>	<u>adamsii</u>

Is the variety densifolia of Forstera bidwillii on Egmont really different from the typical form of Tongariro? It could be a habitat form. So far plants have proved rather difficult to keep in cultivation. I'll keep on trying!

And so one could go on. There are still many hundreds of such "problem" plants in the New Zealand flora as a whole. As soon as one problem is "solved" to one's satisfaction, even temporarily, another one appears to take its place. I thought Calystegia soldanella was a "clear-cut" species till I started growing some plants from Cape Egmont. They varied considerably, as a result I think of crossing with a pink-flowered (indigenous?) form of C. sepium.

We may approach "finality", "the truth", whatever you like to call it, but make no mistake we never get there!

If anyone wishes to obtain a copy of the "Check List" please write to:
Botany Division Substation, Soil Bureau, D.S.I.R., Private Bag, Lower Hutt.

A FORM OF "FLOWERING" IN METROSIDEROS EXCELSA SEEDLINGS

A.J. DAKIN

Recently observed at Hunua nursery was an odd form of "flowering" in a batch of pohutukawa (Metrosideros excelsa) seedlings. These were raised from seed sown in June 1973, seed being collected from a tree at Cosseys Dam, Hunua Ranges.

Germination took 15 days under unheated glasshouse conditions, and seedlings have been continuously under glass since sowing. All have grown on in the same conditions of temperature, light, container and growing medium.

The plants are now 20 - 22 cm. high (on average) and out of 648 seedlings resulting from germination, 42 or 6.4% have developed the unusual flower phenomenon described.

In the diagram (a) shows a typical stem apex showing the position of stamens which have grown out in two whorls around the stem. This occurs above the last set of "normal" leaves, these being smaller than others further down the stem.

Filaments of stamens are bright red in colour, stamen length is about 10 - 20 mm. in the plant examined, anthers are well formed, and some appear to contain pollen masses. No pistil was evident.