ART. V.—*Notes on New Zealand Floristic Botany, including Descriptions of New Species, &c. (No. 2).*

By L COCKAYNE, Ph.D., F.L.S., F R.S., Hutton and Hector Memorial Medallist.

[*Read before the Wellington Philosophical Society, 23rd August, 1916; received by Editors, 30th December, 1916; issued separately, 9th July, 1917.*]

Plate VII.

I TAXONOMIC.

15.* Acaena Sanguisorbae Vahl. var. minor Hook. f.

The above variety was constituted in 1844 by J D. Hooker in the *Flora Antarctica* to accommodate a certain form of *Acaena* collected by him on Lord Auckland and Campbell Islands, and differing from what Hooker considered the typical *Acaena Sanguisorbae* in its smaller size and greater degree of hairiness. Later, in the *Flora Novae-Zelandiae* (1853), he referred the pilose mountain form of the South Island to this variety. Strange to say, this var *minor* of Hooker f has been overlooked or disregarded by all who have dealt with *Acaena Sanguisorbae* since the publication of the *Flora Novae-Zelandiae*, including Hooker himself in the *Handbook of the New Zealand Flora.*

In the *Students' Flora of New Zealand*, 1899, p. 133, T. Kirk described under the varietal name *pilosa* what are almost certainly the same plants as those constituting the var. *minor* of the *Flora Novae-Zelandiae—i.e.*, the subantarctic form together with the South Island mountain form.

In 1904 I showed that the mainland plant differed in essential particulars from the subantarctic plant, for which I proposed the varietal name *antarctica* (*Trans. N Z Inst.*, vol. 36, p. 319, 1904), thus restricting Kirk's varietal name to the plant, or, as I now know, series of plants, of the mainland This action of mine was approved by Cheeseman in the *Subantarctic Islands of New Zealand*, vol. 2, p. 403, 1909. Later, in 1911, G. Bitter (*Die Gattung Acaena*, Heft 4, p 274) constituted his subspecies *aucklandica* to receive the subantarctic plant But, undoubtedly, the latter is synonymous with my var. *antarctica*, an opinion in which Bitter in a letter to me concurred upon receiving some of my original material.

From the above it seems obvious, since Hooker's var *minor* was the original name of the subantarctic plant, the names *antarctica* and *aucklandica* must be abandoned, and that the *Acaena* in question must be known henceforth as *A. Sanguisorbae* Vahl. var. *minor* Hook f

16. Carmichaelia Williamsii T. Kirk.

I have recently had an opportunity of examining fresh flowers of this shrub, gathered from a cultivated specimen in the garden of my friend Professor H. B Kirk. The colour of these flowers differed greatly from what had been stated in all previous descriptions, as may be seen from what follows, so that either the species is polymorphic so far as colour is concerned, or the descriptions hitherto have been inaccurate.

The species was originally described by T Kirk in *Trans N Z Inst.*, vol. 12, pp. 394–95, 1880, where it is stated, "The flowers appear to be of

---

* The numbers are continued consecutively from the first paper of this series, in *Trans. N.Z. Inst.*, vol 48, pp. 193–202, 1916.

a lurid-red colour similar to those of *C. nana.*"* Later, in Featon's *Art Album of New Zealand Flora*, p. 112, pl. 26, fig. 3, 1889, the flowers are described as pale yellow, but the plate shows the colour as fairly bright yellow marked with a few pale lines. Kirk, in the *Students' Flora*, p. 110, 1899, contrary to his first description, gives the colour as "lurid yellow, veined." Cheeseman, in the *Manual of the New Zealand Flora*, p. 112, 1906, states that the colour is yellowish-red, and this statement he upholds in the *Illustrations of the New Zealand Flora*, vol. 1, pl. 32, 1914; but the illustration depicts lines on the flowers, the colour of which is not stated.

The petals of the flower from Professor Kirk's garden are coloured as follows: *Standard* (on its upper surface) pale yellow, striped with rather dark purple coarse lines which broaden out towards the apex of the leaf so as to stain this recurved apex almost uniformly purple; the under-surface has the same pale-yellow ground-colour, but the purple lines are much finer, while, above, they broaden out into rich purple; at the base of the standard, just above its claw, there is a rich purple blotch. The *keel* and *wings* are pale greenish-yellow, stained near their apices with pale purple. The purple is richer upon the recurved apical margin of the standard than elsewhere. Certainly in all the flowers examined the purple was quite as conspicuous as the yellow, and perhaps more so.

17. **Celmisia glandulosa** Hook. f.

Celmisia glandulosa, as first described by J. D. Hooker in the *Flora Novae-Zelandiae*, referred only to certain specimens of a celmisia collected by Colenso on the Volcanic Plateau, near the base of Mount Tongariro. Since that time the species, as defined by Hooker, has been collected, or observed, in many parts of the subalpine belt of New Zealand, where it is common in bogs and wet peaty ground on those mountains where the rainfall is considerable, but it is wanting on the drier mountains. The species, generally speaking, is constant in its characters, and answers to the description in the *Manual of the New Zealand Flora*, p. 318. At the same time, taking a broad view of the contents of the species, there is some well-marked local polymorphism, so that the "type," here named "var. *vera*," can be readily distinguished from the two other varieties described below.

(*a.*) **C. glandulosa** Hook. f. var. *α* **vera** Cockayne var. nov.

This, the common form of what is here made an aggregate species, requires no special description, since it is sufficiently described in the *Flora Novae-Zelandiae*, p. 124, and in the *Handbook of the New Zealand Flora*, pp. 135–36 It is readily recognized by its small ovate- or oblong-spathulate, acute, acutely serrate, thin, pale-green leaves which are covered more or less closely with minute glandular pubescence, and its slender scape generally less than 12 cm high

(*b.*) **C. glandulosa** Hook. f. var. *β* **latifolia** Cockayne var. nov.

Folia late oblongo-spathulata, apice rotundata, in petiolum latum angustata, glanduloso-pilosa, margine ciliata.

North Island: Egmont-Wanganui Botanical District—Mount Egmont; common as a member of the tussock-grassland and herb-field plant associations. L. C.

* The flowers of *Carmichaelia nana* are certainly *not* "lurid red," but in the absence of fresh flowers I cannot state the exact colour.

This well-marked variety is distinguished at a glance by the broadly oblong-spathulate leaves with wide petioles shorter than the lamina and rounded, never acute, apex.

Whether this variety is confined to Mount Egmont and the Pouakai Range I do not know, but it is apparently the only form of the species in that area.

(*c.*) **C. glandulosa** Hook. f. var. γ **longiscapa** Cockayne var. nov.

Folia oblongo-lanceolata vel obovato-lanceolata, cum petiolo ± 5·5 cm. longa, glabra, apice acuta; petioli laminam longitudine aequantes vel superantes. Scapus ± 20 cm. longus, gracilis, strictus

South Island: Fiord Botanical District—Upper Clinton Valley, on old moraine. L. C.

At first sight this variety looks so distinct from the "type" (var. *vera*) that one feels inclined to separate it as a distinct species. But, except for its larger longer-petioled leaves and much longer scape, its characters are virtually the same as the plant of the Volcanic Plateau. It bears a good deal of resemblance to *Celmisia glabrescens* Petrie of Stewart Island, but the latter is separated by its still longer leaves, which are thinly tomentose beneath and which lack the strong network of veins.

18. **Celmisia longifolia** Cass. var. **gracilenta** (Hook. f.) T. Kirk, form with branched scape.

In the garden at Dunedin of the late Mr H. J. Matthews there were at least two forms of *Celmisia coriacea* Hook. f. with branched scapes. To these names were given by T. Kirk (*Students' Flora*, p 288), although he considered that the branching was due to cultivation Cheeseman supports Kirk in this opinion, stating (*Manual of the New Zealand Flora*, p. 311), "In cultivation it [*C. coriacea*] varies still more largely, and often produces branched scapes, a peculiarity quite unknown in any *Celmisia* in the wild state, so far as my observations go."

Some years ago, however, before the above statement was published, I collected a number of specimens on the Port Hills, Banks Peninsula, from a wild plant of *Celmisia longifolia* var. *gracilenta* with branched scapes Possibly the occurrence of such branching may be commoner than hitherto suspected Nor do I see any reason for assuming that the branching in Matthews's plants was the result of cultivation, especially as they were grown under the purely natural conditions his garden supplied. Further, according to Cheeseman (*l c*), Matthews stated that var *ensata* T Kirk, another branched form, was collected by himself from a wild branched plant growing near Lake Harris, Cheeseman remarking, however, that "I have only seen cultivated specimens"

19. **Leptospermum scoparium** Forst. var. incanum Cockayne var. nov.

Folia lanceolata vel lineari-lanceolata, circ 8 mm longa, subtus praecipue juventute ± pilis sericeis albidis obsita, flores magni petalis roseis leve tinctis.

North Island: North Auckland Botanical District—Common, especially in the northern part of the district, in many places forming thickets. L. C.

This well-marked variety is distinguished at a glance from any other forms of the species with which it may be associated by its young branchlets and leaves hoary with silky whitish hairs which persist for a considerable time on older leaves especially near the base, its rather large flowers with

the petals more or less stained rose-colour, and the rather large capsules. As the variety is widespread in its range and frequently occurs in considerable quantity, there can be little doubt regarding its coming true from seed and thus being a valid taxonomic variety.

So greatly was I impressed by the distinctness of the plant under consideration that in my original notes, taken near the Rangaumu Estuary on the 5th March, 1905, it is stated, "No description of the vegetation is complete which does not lay stress upon the two forms of manuka so distinct when growing," and also upon "the pink flowers" of the variety with hoary leaves.

20. Notospartium Carmichaeliae Hook. f. and N. torulosum T. Kirk.

In *Illustrations of the New Zealand Flora*, when dealing with the plate of *Notospartium Carmichaeliae*, Cheeseman writes, regarding that species and *N torulosum* T. Kirk, "I have been much puzzled at finding little or no difference in the whole of the specimens brought under my notice, while there is considerable deviation in the shape of the pod." Regarding this shape of pod, I do not intend to discuss the question here, since I understand that Mr. D. Petrie proposes to deal with a quantity of material collected by Mr. B. C. Aston in the Clarence Valley, the pod of which is much broader than that of *N. Carmichaeliae* from farther north, but an examination of certain specimens has shown that there are considerable distinctions in the flowers of two species of the genus.

The material at my disposal for studying the flowers of *Notospartium* was derived from the following sources: (1) Avondale, which is a branch valley of the Waihopai, the original habitat of *N. Carmichaeliae;* (2) the neighbourhood of Hanmer Plain, only a few miles distant from one of the two original habitats of *N. torulosum.* The Avondale and Hanmer habitats have been already recorded by me (*Trans. N.Z. Inst.*, vol. 48, p. 206, 1916). I will assume for sake of argument that the Hanmer plant is *N. torulosum*, while the Avondale plant is certainly *N. Carmichaeliae.*

Description of the Hanmer plant (*Notospartium torulosum*):—

Final twigs extremely slender, drooping, ? rather dark green. *Racemes* frequently in pairs from a much-reduced branchlet, sometimes branching sparingly, ± 5 cm. long, flowers not crowded. *Flowers* with large black-purple blotch at base, whence many dark-purple lines radiate upwards to margin, becoming rather paler as they ascend; keel 8·5 mm. long, with black-purple blotch at apex, whence purple lines pass towards base; standard 9 mm. long and 5 mm. broad, wings rather shorter than the keel, linear-oblong about 1 mm. wide; calyx campanulate, glabrous except on teeth, which are large, broad, minutely pilose on margin and within, and rounded at apex

Notospartium Carmichaeliae (Avondale) has racemes shorter (3·5 cm. long) than those of *N. torulosum;* they are unbranched, dense-flowered, and pilose. The flowers have a shorter but much broader standard and much shorter claw, subacute calyx-teeth, pilose calyx, and much broader wings The flowers are far more showy

Notospartium torulosum (Hanmer) differs from *N. Carmichaeliae* (Avondale) in its longer, glabrous, branched, more open-flowered racemes, narrower and longer standard, much narrower wings, and obtuse or rounded calyx-teeth, which are glabrous outside but minutely hairy within and on margins.

The colour-differences are also considerable, but I have no exact notes regarding the colour of *N. Carmichaeliae,* since the flowers quickly fade

after gathering. But *N. torulosum* is purple, and it could never have received the popular name "pink broom" which *N. Carmichaeliae* bears.

21. Rubus Barkeri Cockayne.

It may be remembered that the remarkable feature of the above plant was that *it had never flowered, although it had been cultivated in gardens, under different conditions, for nearly twelve years.* I had therefore suggested that it might be a "*non-flowering species.*" At the same time, I was careful to make no definite statement on this head, but wrote, "Whether the non-flowering depends upon the environments hitherto provided being unsuitable, as is the case with certain non-flowering plants in Europe and elsewhere, or whether the species is actually unable to bloom, the future alone will determine" (*Trans. N Z Inst.*, vol. 42, p. 325, 1910). After about nineteen years since the plant first came into cultivation, a specimen, which was raised from the ground and tied to a support, grown in the garden of my friend Mr. D. L Poppelwell, of Gore (Southland), has produced a small panicle of five flowers, all of which, but for the presence of a stamen on one of them, are female, the species being apparently dioecious.

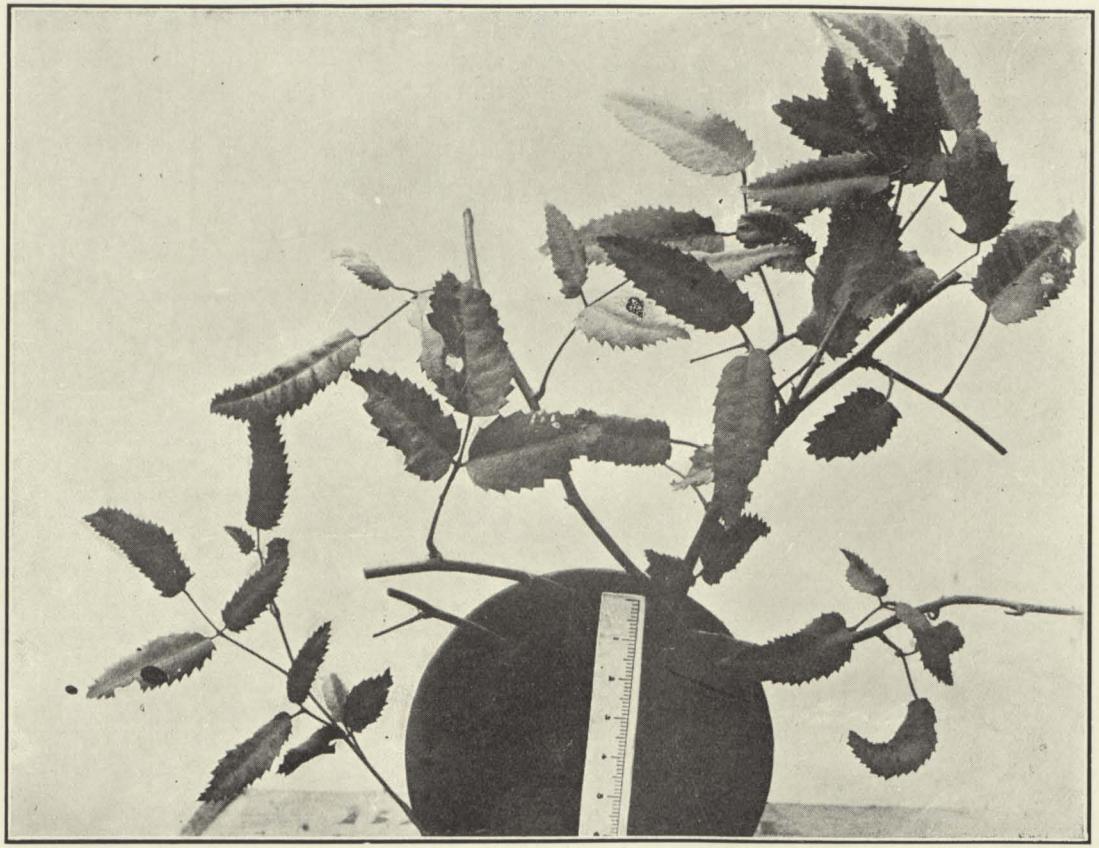
The following is a brief description of the flower, so far as may be ascertained from the scanty dried material: *Calyx-segments* broadly oblong, obtuse or subacute, about 2·5 mm. long, densely pilose beneath and on margin; *corolla* white, ovate, obtuse, about twice as long as the calyx-segments; *carpels* numerous. I have no female flowers of the closely related *Rubus parvus* Buchanan for comparison, but fruiting specimens show much longer, narrower, acuminate calyx-segments, which are similar to those of the male flower of the last-named species. (*Cf* also the calyx-segments of the male and partly developed fruiting flower in Cheeseman's *Illustrations of the New Zealand Flora*, pl. 37, 1914.)

The eventual flowering of *Rubus Barkeri* after such a long period of vegetative growth only may arouse a suspicion that the original cuttings were taken from a juvenile and not from an adult plant. Such a suspicion may, I think, be dismissed, since the original cuttings taken by the late Mr S D. Barker were not only numerous, but, as shown by the photograph on Plate VII, too thick in the stem and too large generally to have been gathered from an immature plant. Also, since *R Barkeri* resembles *R parvus* so greatly in manner of growth, even had the original plant been a seedling it would almost certainly have flowered in a year or two. All who are acquainted with *R. Barkeri* in cultivation are fully aware of its extreme vigour and capability of most rapid vegetative increase. So too, with *R parvus*, both wild and in cultivation.

22. Senecio Christensenii Cockayne sp. nov.

Frutex parvus, pauciramosus, ± 10 cm altus. Folia plerumque radicalia, pauca caulina, anguste oblonga, apice obtusa, integra, petiolata petiolis gracilibus, teretibus, tomentosis, usque ad 2 cm longis; lamina ± 2·9 cm longa, 1·1 cm lata, coriacea, supra primo subtomentosa deinde paena glabra dilute flavo-viridis conspicue reticulato-nervosa nervis impressis, subtus pilis tenuibus sordide albidis dense tomentosa medio nervo prominente. Scapus gracilis, rigidus, sparse tomentosus, basim versus interdum brachiatus, pilis numerosis brevibus glandulosis munitus, bractae numerosae, appressae, linear-oblongae sed scapi apicem versus lineares, supra virides, infra capitula circ. ? 2 cm diam; involucri-bractae lineares,

[Face p. 60.]



[*L. Cockayne, photo.*

One of the original cuttings of *Rubus Barkeri* taken from the parent plant of Inch Bonny, near Lake Brunner, Westland. From this cutting, so far as the author knows, all the plants of this species now in cultivation have originated. Centimetre scale on surface of soil in flower-pot.

subcarnosae, primo tomentosae, mox virides pilis glandulosis obsitae; radii ligulae circ. 9, ungue 11 mm. longo munitae; disci flores numerosae; achenia scabra.

South Island: North-eastern Botanical District — Leslie Hills, near Hanmer, on dry rock. C. E. Christensen!

This species bears a superficial resemblance to *Senecio bellidioides* Hook. f. and to small forms of *S. lagopus* Hook. f.; but it differs from either in its shrubby or perhaps suffruticose habit, narrower and differently shaped leaves, some of which are cauline, sunken reticulating veins of upper surface of leaf, absence of bristles and denser tomentum.

The description of the inflorescence and florets may need revision, since it was drawn up from scanty material taken from a plant cultivated for me by Mr. Glen, Curator of the Wellington Botanical Gardens, to whom my grateful thanks are due.

23. **Veronica rotundata** T. Kirk.

This species was founded by T. Kirk upon specimens of a veronica collected "near Wellington" and "near Southbridge," that botanist expressing the opinion that the plant was "probably not infrequent" (*Trans. N.Z. Inst.*, vol. 28, p. 530, 1896). Cheeseman, in his *Manual*, pp. 504–5, admitted the species as valid, but he had no material other than that originally used by Kirk. An examination of the specimens of *Veronica* in Kirk's herbarium, now in the possession of the Biological Department of Victoria College, showed that there was only one sheet of specimens of *V. rotundata*, and the habitat was "Newtown Park." Thus, so far as the Wellington habitat goes, the obvious assumption is that the veronica in question is possibly a garden form of hybrid origin. Nor is this discounted by the Southbridge habitat, since that locality is a most unlikely one for any rare New Zealand plant. The general appearance of the "species" also points to a hybrid origin, and this is further supported by the fact that the plant is more or less common in cultivation.

24. **Veronica salicifolia** Forst. f. var. **longiracemosa** Cockayne var. nov.

Frutex multiramosus usque 2·5 m. altus, valde floriferus. Folia lanceolata vel late lanceolata, apiculata, chartacea, ± 12 cm. longa, ± 2 cm. lata, integerrima, apicem versus interdum minutissime ciliata. Racemi longissimi, cum pedunculo ± 20 cm. longi; rhachis pedicelli calyxque pilosissimi; corollae-lobi apice rotundati

North Island: Egmont-Wanganui Botanical District—Abundant with other shrubs in open places both wet and dry. L. C.

This exceedingly handsome shrub appears to be constant in its characters in such parts of the botanical district mentioned above as I have visited. It is distinguished from *Veronica salicifolia* Forst. f. var. *communis* Cockayne in *Trans. N.Z Inst.*, vol. 48, p. 202, 1916, by its much longer racemes (which are frequently more than 18 cm. long), the more pilose rhachis, pedicels, and calyx, and the longer leaves.

The description of *V. Parkinsoniana* Col. in *Trans. N.Z. Inst.*, vol. 21, p 97, 1889, in many particulars matches this variety, but the apex of the leaf is described as obtuse. Possibly the two varieties should be united, but uncertainty as to Colenso's plant forbids me using his specific name for my variety.

Occasionally the raceme of var. *communis* is much longer than ordinary. For instance, there is in my herbarium a specimen gathered from a cultivated plant in the former garden of Mrs F. Weymouth, Christchurch, which

originally came from Catlin's River (South Otago Botanical District), in which the raceme is 31 cm. long, while near its base the bracteoles are large and leaf-like. But such unusual development is a teratological matter, and, though a specific character of the variety under certain unknown conditions, does not appear under ordinary circumstances.

II. Phytogeographic.

The Proposed Botanical Districts of New Zealand.

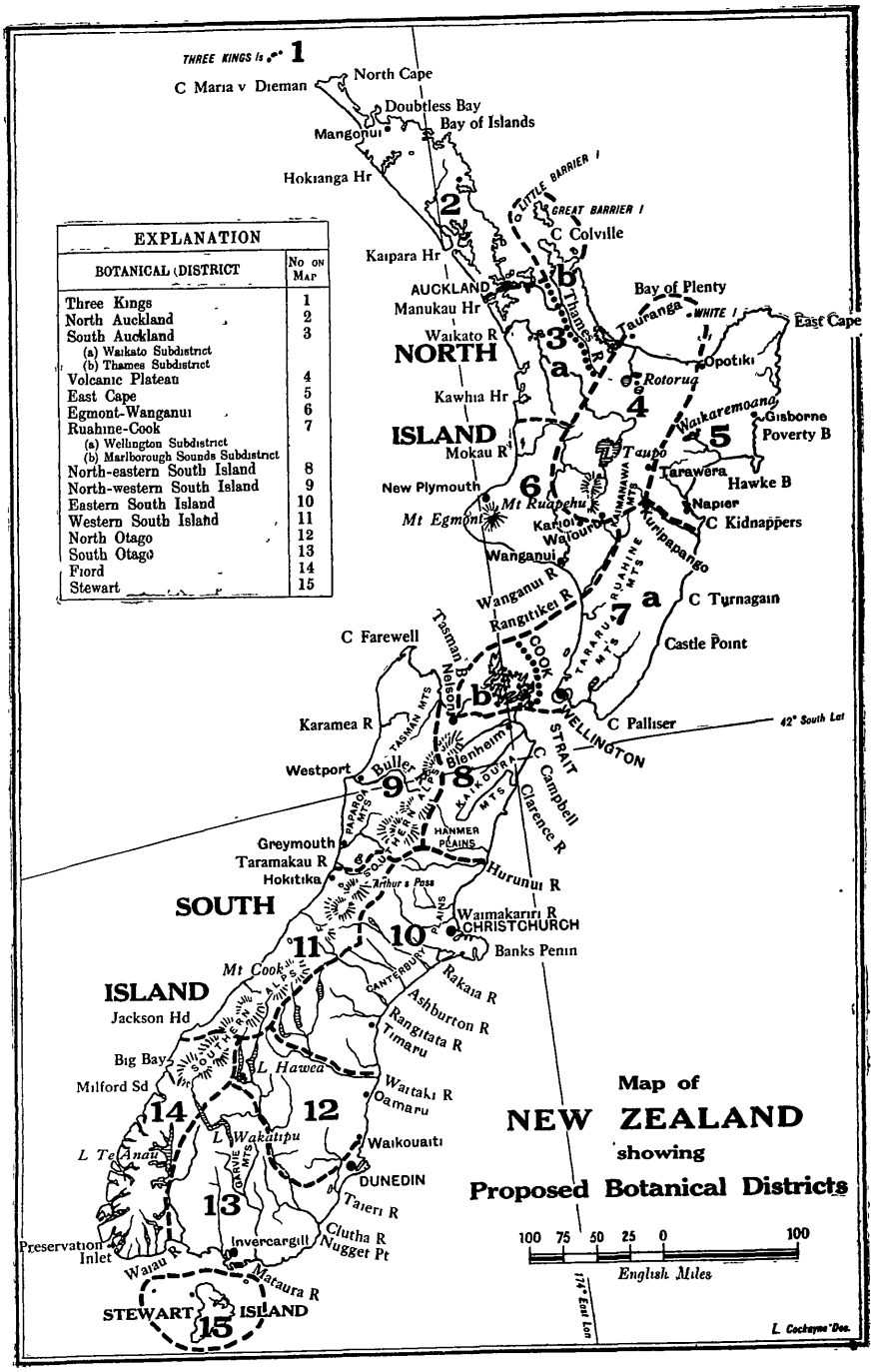
In certain papers published by me last year in the *Transactions of the New Zealand Institute* some of the botanical districts proposed in my yet unpublished *Vegetation of New Zealand* were cited and defined. As for the future I intend to use these "districts" when stating the distribution of plants, rather than the quite unnatural areas—the political provincial districts of New Zealand—hitherto used by me in common with other New Zealand botanists, it seems necessary to give a list of such districts, together with the boundaries of each, which can be still more easily seen on the accompanying map (p 63). These districts are merely provisional, and will be subject to considerable modification for years to come. Further, I am not stating here my reasons for having adopted these subdivisions, accompanied by the necessary details, but reserve them for a further communication Suffice it to say that in the delimiting of a "district" an attempt has been made to mark off *natural areas* which are distinguished principally by the following circumstances—some floristic (these the most important, since the districts are essentially floristic), some ecological: (1) The presence of a more or less extensive locally endemic element; (2) the absence of species more or less characteristic of adjacent botanical districts, (3) the presence of species of restricted distribution elsewhere; (4) the presence in abundance of widespread species much rarer elsewhere, (5) the relative abunbance of the various species comprising the florula; (6) the general physiognomy of the vegetation, (7) the presence of special characteristic plant-associations, (8) the differences in widespread plant-formations; (9) the agriculture, horticulture, and introduced plants of the proposed area. Here only the two main islands, their adjacent islets, and Stewart Island receive consideration Some of the "districts" must ultimately be subdivided into subdistricts, while others may be united; and in all there are distinct altitudinal belts, each with its special floristic and ecological peculiarities.

The actual boundaries of many of the districts are extremely hard to fix, and in no few cases must always be artificial, though that detailed research which must take place in due course as phytogeographic workers increase in number will eventually find out the most natural limits On the other hand, there are certain well-marked natural boundaries, of which the line marking the supposed average limit of the western rainfall in the South Island, as defined by junction of forest and grassland on the east of the dividing range, is the best example Cook Strait, on the contrary is of slight importance as a dividing-line

The following are the names of the proposed botanical districts, and their boundaries:—

(1.) *The Three Kings Botanical District*—This comprises the various islets of the Three Kings group

(2.) *The North Auckland Botanical District* — This includes all that portion of the North Island lying to the north of and including the Auckland Isthmus (excepting the Cape Colville Peninsula and the two Barrier Islands),


EXPLANATION
BOTANICAL DISTRICT | No ON MAP
Three Kings 1
North Auckland 2
South Auckland 3
(a) Waikato Subdistrict
(b) Thames Subdistrict
Volcanic Plateau 4
East Cape 5
Egmont-Wanganui 6
Ruahine-Cook 7
(a) Wellington Subdistrict
(b) Marlborough Sounds Subdistrict
North-eastern South Island 8
North-western South Island 9
Eastern South Island 10
Western South Island 11
North Otago 12
South Otago 13
Fiord 14
Stewart 15
THREE KINGS Is
C Maria v Dieman
North Cape
Doubtless Bay
Bay of Islands
Mangonui
Hokianga Hr
LITTLE BARRIER I
GREAT BARRIER I
C Colville
Kaipara Hr
AUCKLAND
Manukau Hr
Waikato R
Thames R
Tauranga
Bay of Plenty
WHITE I
East Cape
NORTH
ISLAND
Opotiki
Rotorua
Kawhia Hr
Waikaremoana
Gisborne
Poverty B
Mokau R
Taupo
Tarawera
Hawke B
New Plymouth
Mt Ruapehu
Mt Egmont
Kaitoke
Wairoura
TARARUA MTS
RUAHINE MTS
Napier
C Kidnappers
Wanganui
Kuripapango
Wanganui R
Rangitikei R
C Turnagain
C Farewell
Tasman B
Nelson
COOK STRAIT
Castle Point
Karamea R
TASMAN MTS
C Palliser
42° South Lat
WELLINGTON
Westport
Buller
Blenheim
C Campbell
Clarence R
KAIKOURA MTS
HANMER PLAINS
Greymouth
Taramakau R
Hokitika
Arthur's Pass
Hurunui R
SOUTH
Waimakariri R
CHRISTCHURCH
Banks Penin
Mt Cook
ISLAND
CANTERBURY PLAINS
Rakaia R
Ashburton R
Jackson Hd
Rangitata R
Timaru
Big Bay
L Hawea
Waitaki R
Oamaru
Milford Sd
L Wakatipu
Waikouaiti
L Te Anau
DUNEDIN
Taieri R
Clutha R
Nugget Pt
Preservation Inlet
Invercargill
Waiau R
Mataura R
STEWART ISLAND
Map of
NEW ZEALAND
showing
Proposed Botanical Districts
100 75 50 25 0 100
English Miles
174° East Lon
L. Cockayne 'Dec.

together with the outlying islands. It can be naturally subdivided into two subdistricts, a north and a south, but neither their names nor boundaries are given here.

(3.) *The South Auckland Botanical District.*—This includes that portion of the North Island lying to the south of the North Auckland District and bounded on the south and south-east by a line extending from Te Reinga Point to about the source of the River Mokau and thence passing Tauranga a little to the south reaches the coast.

This district may be subdivided into (*a*) the *Waikato Subdistrict*, which includes all the area west of the River Thames, and (*b*) the *Thames Subdistrict*, which includes all the area to the east of the above river, together with the Little and Great Barrier Islands, and the islets lying off the east coast.

The southern limit of the district is little better than a guess, especially in its extreme southern portion.

(4.) *The Volcanic Plateau Botanical District*.—Although this district, as a whole, is well-marked, its boundaries are quite uncertain. These are —to the north, the coast from near Tauranga to Opotiki; on the west the boundary is as already cited for part of the southern boundary of the South Auckland District; thence it follows the course of the Main Trunk line to a little south of Waiouru; thence to a little to the east of Kuripaponga, and thence by a fairly straight line through Tarawera and Ruatahuna to Opotiki. Motiti and White Islands are included in this district.

(5.) *The East Cape Botanical District*.—This includes all that part of the North Island east of the eastern boundary of the Volcanic Plateau District, with its southern boundary extending from a little to the north of Kuripaponga to a few miles to the south of Cape Kidnappers Possibly the southern boundary should extend considerably farther to the south, including some of the area south of the southern boundary of the Volcanic Plateau District

(6.) *The Egmont-Wanganui Botanical District*.—This includes all that area of the North Island lying to the west of the southern part of the Volcanic Plateau District and of a line a little to the south of Waiouru and following the Rivers Hautapu and Rangitikei to the sea. On the north it is bounded by part of the southern boundary of the South Auckland District

(7.) *The Ruahine-Cook Botanical District*.—This includes all the remaining part of the North Island, together with that portion of the South Island comprising the Marlborough Sounds area, including a narrow strip of land in Nelson subject to the same forest-climate as that of the Marlborough Sounds

The district may be divided into two subdistricts—viz., (*a*) the *Wellington Subdistrict*, which includes the North Island portion, and (*b*) the *Marlborough Sounds Subdistrict*, which includes all the South Island portion.

Of the botanical districts already dealt with, the Three Kings and the two Auckland districts make up my Northern Botanical Province, and the remainder my Central Botanical Province. The following botanical districts make up my Southern Botanical Province:—*

---

* These provinces were first defined by me in 1907 (*Trans N Z Inst.*, vol. 39, pp. 313–14, in footnote), but, as now defined, the actual boundaries are somewhat different, latitude 38° S and latitude 42° S being no longer used as the lines separating the Northern and Central Provinces and the Central and Southern Provinces respectively. The other botanical provinces of the New Zealand botanical region, together with their botanical districts in brackets, but not here defined, are: Kermadec Province (Kermadec District); Chatham Province (Chatham District), Subantarctic Province (Snares, Lord Auckland, Campbell, Antipodes, and Macquarie District).

(8.) *The North-eastern South Island* Botanical District.*—This includes all the north-eastern portion of the South Island except the Marlborough Sounds Subdistrict. It is bounded on the south by a line, as shown on the map, extending from the mouth of the Hurunui River to the average limit of the western rainfall east of the Hope Saddle, and thence on the west by the average eastern limit of the western rainfall to some point or other on Tasman Bay, probably near Motueka.

(9.) *The North-western South Island Botanical District.*—This is bounded on the east by the western boundary of the North-eastern District, and thence by a line following the average eastern limit of the western rainfall to near the Hurunui Pass. Its southern boundary extends from midway between Greymouth and Hokitika, thence to a few miles north-east of Lake Brunner, and thence to a little to the east of the Hurunui Pass.

(10.) *The Eastern South Island Botanical District.*—This is bounded on the north by the North-eastern District, on the south by a line following the Rivers Waitaki and Ohau to Omarama, and thence extending to a point, shown on the map, lying to the westward of Lake Ohau near the dividing range at the average eastern limit of the western rainfall. On the west the boundary is the average eastern limit of the western rainfall.

(11.) *The Western South Island Botanical District.*—This is bounded on the north by the southern boundary of the North-western District, on the east by a line following the average limit of the western rainfall, and on the south by a line not yet determined, but extending possibly from a few miles south of Jackson Head to a point, shown on the map, on the eastern limit of the average western rainfall, a little to the south of the Haast Pass.†

(12.) *The North Otago Botanical District.*—This is bounded on the north by the Eastern District, on the west by a short line marking the average eastern limit of the western rainfall, extending from the south-western corner of the Eastern District to a point, shown on the map, marking the average eastern limit of the western rainfall, a few miles to the south of Lake Wanaka. Its southern boundary, as shown on the map, is most irregular in shape, and extends from about Waikouaiti, along a line denoting the average northern limit of the south-western rainfall, and terminating at the point south of Lake Wanaka already mentioned.

(13.) *The South Otago Botanical District.*—The northern boundary of this district is the southern boundary of the preceding district; its western boundary the average eastern limit of the western rainfall as shown on the map; and its eastern and southern boundaries the sea.

(14.) *The Fiord Botanical District.*—This is bounded on the north by the southern boundary of the Western District, on the east by the western boundaries of the North and South Otago Districts, and on the west and south by the sea.

(15.) *The Stewart Botanical District.*—This includes Stewart Island and all the adjacent islets, including those of Foveaux Strait.‡ The Snares Islands are related floristically and ecologically to this district, but the evidence is in favour of their being constituted a special district of the Subantarctic Botanical Province.§

* For sake of brevity in using the above term the words "South Island" are usually omitted, and so with certain other South Island districts.

† D. L. POPPELWELL, Botanical Results of an Excursion to the Upper Makarora Valley and the Haast Pass, supported by a List of the Species observed. p. 161 of this volume.

‡ Dog Island, though so close to the South Island, is included.

§ D. L. POPPELWELL, Notes on a Botanical Excursion to Long Island, near Stewart Island, including a List of Species. p. 167 of this volume.