convex on the outer surface; strophiole very small. *H. latifolia*, var. *chathamica*, F. Mueller, Veg. Chat. Islds., 9.

North Island.—Wellington: Patea: *Sir James Hector.* Flowers and fruit not seen.

Chatham Islands.—Originally discovered by *Captain Gilbert Mair!* September, October.

Distinguished from all other species by the long lanceolate sharply-toothed leaves, strictly dioecious flowers, tetramerous stigma-lobes, and 4-seeded berries. Occasionally the leaves are linear-laceolate, and less than ¼in. in breadth. I am indebted to my friend Mr. Cox for excellent specimens of the male plant.

ART. LII.—*Notes on Certain Veronicas, and Descriptions of New Species.*

By T. KIRK, F.L.S.

[*Read before the Wellington Philosophical Society, 26th February, 1896.*]

IT is not proposed to offer a complete revision of the New Zealand Veronicas on the present occasion, although it is hoped that this much-needed work may be accomplished in a short time. It is, however, desirable to supplement the published descriptions of certain species from more copious material than was available when they were originally drawn; to amend certain errors that crept in from the examination of imperfect specimens; and to describe a few new species, most of which have been in hand for some years past.

With the full revision it is intended to furnish an account of the most striking characteristics of the New Zealand species generally, more especially with regard to their morphology and distribution. It may, however, be pointed out that the species of the dimorphic—or, as it might with equal propriety be called, the mimetic—section are invested with special interest, the entire section, with the single exception of the Australian *V. densifolia*, being endemic in the colony. At present, strangely enough, our knowledge of the early leaves of these singular plants has been chiefly obtained from old specimens on which they are often produced by reversion, especially under cultivation: the subject will not be satisfactorily worked out until the seedling as well as the more advanced stages have been studied in a systematic manner.*

* For the first recorded mention of dimorphism in the leaves of New Zealand Veronicas, see Trans. N.Z. Inst., xi. (1878), 464.

Mr. N. E. Brown, of Kew, was the first to point out that most of the plants referred in the Handbook and the "Transactions of the New Zealand Institute" to *Logania* and *Mitrasacme* were true Veronicas. To the botanist acquainted with the subalpine and alpine vegetation of New Zealand it seems the most natural mistake in the world that flowerless specimens of *Veronica tetragona* should be referred to *Podocarpus* or *Dacrydium* when examined without reference to their minute structure, while the general aspect of one or two others, coupled with tetrandrous or pentaphyllous flowers, equally accounts for their reference to *Logania* on the examination of specimens destitute of fruits, or at best with fruits in an immature condition. The reference of others to *Mitrasacme* is unquestionably due to an oversight arising from the severe physical pain under which the describer laboured during the progress of his work.

Veronica canescens, T. Kirk, in Trans. N.Z. Inst., ix. (1876), 503, t. xix., f. 2.

Limb of corolla spreading at maturity; lobes broad, rounded at the tips, the uppermost longer than the others. Capsule wholly included within the calyx, broadly ovoid, slightly compressed, retuse.

South Island: Canterbury—Lake Forsyth, *T. K.*; Lake Lyndon, *J. D. Enys* and *T. Kirk*. Otago—Oamaru, *J. Buchanan;* Maniototo Plains, *D. Petrie, T. Kirk;* Wycliffe Bay, Dunedin, *B. C. Ashton!* Sea-level to 2,800ft., but remarkably local.

According to the Index Kewensis, the trivial name has been erroneously applied to three other species: *V.* "*canescens*," Bast., Fl. Maine et Loire, Supp. 21, is *V. teucrium*, L., Sp. Pl., ed. ii., 216; *V.* "*canescens*," Presl., *ex* Schult. Mant., i., Add. II., 229 = *V. prostrata*, L., Sp. Pl., ed. ii., 22; *V.* "*canescens*," Schrad., Comm. Veron. Spic., 19 = *V. incana*, L., Sp. Pl., 10: all natives of Europe.

V. anagallis, L., Sp. Pl., 12.

This has not been observed since it was collected by the Rev. W. Colenso in Hawke's Bay. As it is a plant that produces seeds in great abundance in Europe, it is not easy to account for its disappearance, even if it be assumed that Mr. Colenso's specimens were of exotic origin.

V. hookeriana, Walp., Rep., iii., 341.

This species extends over a wider area than is generally supposed, as it is found in the Ruahine Range (Colenso), Tongariro, Ngauruhoe, and is especially abundant on Ruapehu. I believe that it occurs on the Kaimanawa Range also, but

have not seen specimens. *V. nivea*, Hook., Ic. Pl., t. 640. *V. nivalis*, Hook. f., Fl. N.Z., i., 196; Handbk., 215.

V. loganioides, J. B. Armstrong, in Trans. N.Z. Inst., xiii. (1880), 359.

Leaves of young plants in rather distant pairs, linear-subulate, dilated at base and often toothed, spreading above; stems pubescent or tomentose. Calyx-lobes ovate-lanceolate, especially in the fruiting stage. Capsule broadly elliptical, equalling or slightly exceeding the calyx, didymous, turgid.

South Island: Canterbury—Rangitata Valley, *J. F. A.*! Clyde Valley, *W. Gray*.

Notwithstanding the suffruticose character of this rare plant, the didymous capsule shows that it is closely allied to the herbaceous section.

V. erecta, n. s.

Stems 6in.–10in. high, erect, strict, simple or sparingly branched from the base, glabrous or rarely puberulous. Leaves distant, sessile, oblong-lanceolate, acute, ¾in.–1in. long, membranous, patent, margins often puberulous or ciliate at the base, bark reddish-purple. Racemes 2–6 in the axils of the apical leaves, 3in.–4in. long, strict, erect or ascending, naked below. Flowers fascicled or solitary, often distant; rhachis pedicels and bracts puberulous or pubescent. Bracteoles exceeding the pedicels, ciliate. Calyx campanulate, divided for three-fourths of its length, segments ovate-lanceolate, subacute or acute, ciliate. Corolla-tube rather broad, shorter than the spreading limb, upper lobe broadly rounded, lower narrow acuminate, stamens exserted. Capsule ovate, oblong, acute, compressed, one-third longer than the sepals.

South Island: Otago—Believed to have been collected on Mount Bonpland, but the exact habitat uncertain.

A very distinct species, remarkable for the strict erect habit and elongated interrupted racemes with the flowers often fasciculate. It should be placed next to *V. raoulii*, Hook, f. Described from cultivated specimens kindly forwarded by Mr. Martin, nurseryman, of Green Island.

V. petriei.

Stems decumbent or prostrate, woody, 4in.–6in. long; branches ascending, 3in.–4in. long. Leaves ¼in.–½in. long, elliptical oblong, rounded at the apex, narrowed into a short broad petiole, membranous, glabrous or the margins glandular, ciliated; opposite petioles connate. Flowering branches densely clothed with foliaceous obtuse linear bracts, racemes terminal; flowers solitary, sessile, partially hidden in the axils

of crowded linear ciliated bracts, which slightly exceed the calyx. Calyx cleft to the base, lobes 4, linear, obtuse, ciliated, exceeding the corolla-tube; limb much shorter than the tube, lobes spreading or reflexed, the lower acute, the uppermost rounded; stamens 2, included; style long, slender. Capsule oblong, slightly turgid, seated in a cupular disk. *Mitrasacme petriei*, J. Buchanan, in Trans. N.Z. Inst., xiv. (1881), 350, t. xxx., f. 1.

South Island: Otago — Mount Bonpland, *D. Petrie!* 6,000ft.

The densely-crowded linear bracts easily distinguish this fine plant from all other New Zealand species. It is, perhaps, the most remarkable of the many plants added to the Otago flora by its energetic discoverer, to whom I am indebted for the only specimen I possess. The stems are really perfoliate.

V. hulkeana, F. Muell., *ex* Hook. f., Handbk., 213.

Bracts oblong, obtuse, shorter than the tubular calyx; corolla-lobes subacute. Capsule retuse and turgid when mature.

Sea-level to 3,000ft.

Var. **oblonga.**

Leaves narrow-oblong, fully 3in. long including the petiole, coarsely toothed.

South Island: Marlborough—Awatere; *T. Kirk.*

Var. fairfieldii, sp., Hook. f., Bot. Mag., t. 7323.

Flowers larger and more deeply coloured than in the type, panicle usually shorter and broader. Bracts glandular-pubescent, equalling or shorter than the spreading calyx, acute; calyx-lobes acute or subacute with scarious margins; lobes of corolla rounded at the apex.

South Island: Fairfield Downs.

The typical form was originally discovered by the Hon. F. Weld.

V. macrantha, Hook. f., Handbk., 213.

Sparingly branched, 1ft.–2ft. high. Leaves varying from oblong-ovate to obovate-lanceolate, thick and glossy. Calyx broadly ovate, acute, equalling or slightly exceeding the sepals. Corolla pure white.

South Island: Mountains of Nelson, Canterbury, and North Otago, but often local; 2,500ft.–4,000ft.

V. haastii, Hook. f., Handbk., 213.

Leaves imbricating, patent or deflexed, fleshy when fresh, very coriaceous when dry. Flowers in 2–6-flowered fascicles at the tips of the branches, forming an oblong head, much

hidden by the apical leaves; bracts equalling the sepals but broader, sepals linear-oblong, obtuse, corolla small, equalling the sepals, tubular, lobes acute. Capsule equalling or shorter than the calyx, ovate-oblong, acute, glabrous.

South Island: Nelson—Mount Arthur, &c., *Cheeseman, Bryant! Gibbs!* Canterbury—Mounts Darwin, Dobson, Torlesse, and Cook, source of the Waimakariri, *Haast!* Leith Hill, *Enys!* Otago—Mountains north-east of Lake Hawea; Mount Arnould; *D. Petrie!* 3,000ft.–6,000ft.

V. dasyphylla.

Stems rigid, woody, 1in.–3in. long, creeping at the base, branches with the leaves ¼in. diameter. Leaves closely quadrifariously imbricate, connate in pairs at the base, erect or spreading above, oblong-obovate, rounded above, ciliated below, sessile, very coriaceous. Flowers solitary, terminal, sunk amongst the apical leaves. Calyx divided nearly to the base, lobes oblong, obtuse, hispid pubescent below, ciliated. Corolla broadly funnel-shaped, tube broad, shorter than the limb, lobes 5, large, rounded, spreading. Stamens 2, filaments very short; style long, slender. Capsule oblong, seated in a cupular disk, rather turgid, much shorter than the calyx, slightly retuse. *Logania tetragona*, Hook. f., Handbk., 189 and 737; J. Buchanan, in Trans. N.Z. Inst., xiv. (1881), 347, t. xxviii., f. 2.

South Island: Nelson—Mount Arthur, &c., *W. H. Bryant!* Otago—West Coast Sounds, Lake District, and Mount Alta, *J. Buchanan!* Ben Lomond and Old Man Range, *D. Petrie!* 3,500ft.–5,000ft.

A small species, remarkable for the large terminal flower with its pentamerous calyx and corolla. All the flowers examined by me are diandrous. I am indebted to the Director of the Herbarium, Kew, for a small portion of the type-specimen.

V. gilliesiana.

A prostrate or suberect shrub, stems 1in.–6in. long, much branched, spreading, tetragonous, with the leaves ¼in.–½in. diameter. Leaves glabrous in the young state, lax, linear, pinnatifid; mature closely imbricating below, connate by the broad base, tips spreading, linear or linear-oblong, convex beneath, deeply concave above or rarely flat, rounded and very obtuse at the tip, margins ciliate. Flowers terminal or near the apex of a shoot, axillary, solitary or in 2–4-flowered umbels. Calyx deeply divided, lobes 4, oblong, ciliate; corolla funnel-shaped, tube shorter than the calyx, segments orbicular spreading, the uppermost much narrowed at the base; stamens 2 or rarely 4, filaments very

short, included, style scarcely exceeding the anthers. Capsule ovate-oblong, compressed laterally, seated in a cupular disk. *Logania ciliolata*, Hook. f., Handbk., 737. *Mitrasacme hookeri*, J. Buchanan, in Trans. N.Z. Inst., xiv. (1881), 348, t. xix., f. 1.*

South Island: Nelson—Amuri, *T. Kirk;* Mount Franklin, *F. G. Gibbs!* Canterbury—Browning's Pass and source of the Rangitata, *Sir Julius von Haast!* Arthur's Pass, *T. Kirk;* source of the Waimakariri, *J. B. Armstrong!* Power's country, *J. Hadrell!* Westland—Mountains opposite Jackson's, *L. Cockayne!* Otago—Mountains of the west coast, *J. Buchanan!* 3,000ft.–5,000ft.

Probably not infrequent in alpine situations. Specimens turn black when dried. This species varies to a considerable extent in the length of the mature leaves and diameter of the branches; the former range from $\frac{1}{8}$in.–$\frac{3}{8}$in., and except at the apex are usually deeply concave for their entire length. The same plant may produce both solitary and fasciculate flowers, but when all the flowers are solitary the floral leaf has a largely-developed membranous base, with the free portion reduced to a mere point or knot. Mr. Buchanan's drawing represents a large form in which the flowers are more distant from the apex of the branch than in the form with short leaves; but there is a great amount of variation in all these points. Tetrandrous flowers appear to be confined to plants with short leaves. I am indebted to Mr. Buchanan for specimens showing the young leaves.

I have dedicated this remarkable plant to the memory of my friend the late Mr. Justice Gillies, an enthusiastic naturalist, whose munificence to the Auckland Institute and University College should be long remembered.

V. cupressoides, Hook. f., Handbk., 212; Bot. Mag., t. 7343.

Leaves of the young state linear- or ovate-oblong, often cuneate below, acute, toothed, lobed or pinnatifid, narrowed into short petioles which are free at the base. Mature leaves $\frac{1}{20}$in.–$\frac{1}{15}$in. long, ovate-oblong, obtuse, opposite leaves connate at the base, patent or appressed above. Flowers very small, 2–8 at the tips of the branchlets forming a small oblong head, sessile or very shortly pedicellate. Bracts equalling the deeply 4-cleft calyx, sepals broadly ovate, obtuse; corolla-tube very short and broad, limb spreading, upper lobe linear, exceeding the others which are broad and rounded; filaments lengthening after anthesis. Capsule cuneate-oblong or ovate, retuse, turgid. *V. cupressoides*, var. *variabilis*, N. E. Brown,

* Mr. Buchanan's diagrams of the corolla and stamens of this and other species show the stamens opposite the petals instead of alternating with them.

in Gard. Chron., vol. iii. (1888), 21, figs. 5D, 5E, represents the young state. The corolla is white or pale-purple, never violet.

V. armstrongii, T. Kirk, in Trans. N.Z. Inst., xi. (1878), 464.

South Island: Alpine districts in Nelson, Westland, Canterbury, and Otago; 2,500ft.–4,500ft.

V. tetrasticha, Hook. f., Handbk., 211.

Stems 1in.–4in. long, excessively branched. Leaves in the young state linear subulate, slightly imbricated at the base and spreading above. The mature capsules are broadly obovate or pyriform, rounded at the apex and compressed, three times as long as the calyx.

South Island: Common in alpine situations in the Nelson District; less frequent in Canterbury; rare and local in Otago; 3,000ft.–5,000ft.

V. tumida, n. s.

Stems prostrate, forming compact depressed patches 6in.–24in. diameter; branchlets excessively numerous, 1in.–3in. long, strict, erect, obtusely quadrifarious, (with the leaves) $\frac{1}{16}$in.–$\frac{1}{12}$in. diameter. Leaves densely imbricate, about $\frac{1}{30}$in. long, tumid obtuse, deltoid above, cuneate at the base and slightly connate at the side, concave on the upper surface but almost keeled beneath. Flowers in terminal 2–4-flowered fascicles, sessile. Calyx minute, deeply 4-cleft, lobes linear oblong obtuse; corolla, minute ciliolate tube equalling the limb, lobes narrow, spreading; filaments as long as the rather broad anthers; ovary conical. Capsule suborbicular, compressed, rounded at the apex.

South Island: Nelson—Mount Rintoul and Ben Nevis, *F. G. Gibbs!* Mount Starvation, *W. H. Bryant!* Otago—*J. Buchanan!* 3,000ft.–4,500ft.

A singular plant, allied to *V. salicornioides* and *V. tetrasticha*, but distinguished from both by the tumid leaves, crowded shorter branches and broad capsules, from the former in addition by its quadrifarious branchlets.

V. quadrifaria.

An erect rigid shrub 3in.–8in. high, much branched, branches with the quadrifarious leaves $\frac{1}{10}$in. diameter. Leaves very coriaceous, most densely imbricated, ovate deltoid, connate and ciliate at the base. Flowers terminal in 4-flowered umbels, each consisting of 2 opposite pairs of bracteate pedicellate flowers. Calyx divided nearly to the base, lobes 4, linear, obtuse, ciliate, shorter than the ovate bracts; corolla tube equalling the calyx, lobes 4, rounded, spreading; stamens 2, on very short filaments, included; ovary narrow oblong;

seated in a cup-shaped disc, capsule not seen. *Mitrasacme cheesemanii*, J. Buchanan, in Trans. N.Z. Inst., xiv. (1881), 348, t. xxix., f. 2.

South Island: Otago—Mount Alta, *J. Buchanan* and *McKay;* 5,000ft.

A remarkable species, allied to *V. tetrasticha*, Hook. f., but distinguished by its erect wiry branches, smaller leaves, and umbellate flowers. I am indebted to my friend Mr. Buchanan for a small portion of his original specimen, but more copious material both of this and of *V. uniflora* must be obtained before a satisfactory diagnosis can be drawn. The leaves of this plant are more minute than those of any other New Zealand species.

V. uniflora.

A rigid much-branched plant, 2in.–4in. high, with numerous short tetragonous branches ½in.–1½in. long, about ⅛in. diameter. Leaves densely imbricating, 4-farious, connate at the base, ovate, concave, ciliate near the base. Flowers solitary, terminal. Calyx deeply divided, lobes 5. Stamens 2, filaments very short, included. Ovary villous above. Capsule not seen. *Logania armstrongii*, J. Buchanan, in Trans. N.Z. Inst., xiv. (1881), 347, t. xxviii., f. 3.

South Island: Otago—Hector's Col, Mount Aspiring, *Buchanan* and *McKay!* 5,000ft.

My knowledge of this curious little plant is confined to Mr. Buchanan's original specimen, which he kindly allowed me to examine. It is allied to *V. testrasticha*, Hook. f., and *V. lycopodioides*, Hook. f., but differs from both in the solitary terminal flowers and the 5-lobed corolla.

V. lycopodioides, Hook. f., Handbk., 211.

An erect much-branched spreading shrub, 1ft.–2½ft. high. Leaves of young state filiform, simple or pectinate, or ovate or oblong, lobed or pinnatifid.

South Island: Alpine districts in Marlborough, Nelson, Westland, Canterbury, and Otago; 2,500ft.–5,000ft.

V. tetragona, Hook, Ic. Pl., t. 580.

Procumbent or erect, 6in.–30in. high. Leaves in the young state linear-subulate with a broad base, entire, obtuse, laxly imbricating. Sepals and bracts furrowed longitudinally. Capsule broadly oblong, exceeding the sepals, subacute, slightly compressed.

North Island: In mountain districts, Hikurangi, East Cape, Kaimanawa Range, Ruahine Range, Tongariro, Ngauruhoe, Ruapehu, &c., Tararua Range to Mitre Peak and Mount Holdsworth, in great abundance. South Island:

Queen Charlotte Sound, *Dieffenbach;* Gordon's Nob, *Monro;* Wai-au-ua Valley, *Travers;* but not recently observed in either of these localities. Otago — Greenstone Valley, *J. Buchanan!* 2,000ft.–4,000ft.

The only species belonging to the dimorphic section found in the North Island. Flowerless specimens are easily referred to *Dacrydium.*

V. buchananii, Hook. f., Handbk., 211.

Stems 4in.–8in. high, robust, much branched, spreading. Leaves decussate, imbricating, spreading or rarely deflexed, excessively coriaceous, glabrous, sessile, suborbicular or orbicular ovate, concave, usually rounded at the tip, $\frac{1}{8}$in.–$\frac{1}{4}$in. long and almost as broad. Flowers in 2–4 very short broad obtuse capitula or spikes, peduncles naked below, 10–15-flowered; rhachis pubescent, bracteoles equalling or exceeding the sepals. Calyx tubular divided nearly to the base, lobes ovate-oblong, obtuse, cilate; corolla-tube ventricose, equalling the rounded spreading segments; stamens not exserted; style villous at the base. Capsule twice as long as the sepals, narrowed at both ends, hairy, compressed.

South Island: Otago—Lake District, *J. Buchanan!* Mount Kyeburn, Otemata River, Mount Arnold, *D. Petrie!* 3,000ft.–4,000ft.

It is scarcely possible to add anything to Sir Joseph Hooker's excellent description except with regard to the capsule. Mr. Petrie's specimens are more robust than the original specimens given me by Mr. Buchanan, and at first sight seem different, but it is impossible to separate them. This species is closely allied to *V. carnosula*, Hook. f., of which it may ultimately prove to be a variety.

V. buxifolia, Benth., in DC. Prodr., x., 462.

Erect, 1ft.–3ft. high, sparingly branched, branches strict and rather stout. Leaves broadly oblong-obovate, keeled, coriaceous, abruptly truncate or cordate at base, narrowed into a short broad petiole, closely imbricate (in the typical form), often polished, minutely dotted beneath. Flowers in short spikes, $\frac{1}{4}$in.–1in. long or more, in the axils of the upper leaves. Bracts equalling the minutely punctulate calyx; calyx-lobes broadly oblong, obtuse, equalling the corolla-tube; limb of the corolla equalling the tube, spreading, upper segment broadly rounded, the lower narrow subacute. Capsule suborbicular or broadly oblong, compressed, obtuse.

North Island: Ruahine Range, Tongariro, and Ruapehu. South Island: In mountain localities from Nelson to Southland. 1,800ft.–4,000ft.

The leaves below, with the bracts and sepals, are usually,

but not invariably, covered with minute white dots beneath, and the thickened articulations of the stem are unusually prominent in all the forms of this species, some of which are not easily distinguished from *V. lævis*.

Var. *odora*, Hook. f., sp., Fl. Antarct., 62, t. 41.

Erect, 1ft.–8ft. high, usually much branched, branches strict or flexuous. Leaves as in the typical form, but patent. Flowers as in the type, but often larger. The capsule sometimes shows a tendency to become obovate.

South Island: Mountain districts from Nelson to Southland, attaining its greatest luxuriance on the banks of streams in alpine forests. Stewart Island; Auckland and Campbell Islands. Sea-level to 3.000ft.

The spikes are often so numerous as to present a paniculate appearance, and the bracts scarcely differ from the leaves.

V. gibbsi, n. s.

A sparingly-branched shrub, 6in.–12in. high; branches as thick as a goose-quill. Leaves decussate, sessile, $\frac{3}{8}$in.–$\frac{3}{4}$in. long, $\frac{1}{4}$in.–$\frac{1}{2}$in. broad, ovate acute or obtuse, coriaceous, imbricating, patent or deflexed, margins strongly ciliated. Racemes 2–4, naked below, shortly exceeding the leaves, broad, obtuse. Rhachis and pedicels very short or 0, pubescent, bracts fully equalling the corolla-tube, ciliated. Calyx campanulate, deeply cleft, lobes lanceolate, acute, ciliate, much shorter than the bracts; corolla-tube tubular, narrow, limb spreading, lobes narrow acute. Stamens shortly exserted, anthers oblong. Capsule ovate, acute, narrowed at both ends, compressed.

South Island: Nelson—Mount Rintoul and Ben Nevis; 3,000ft.–4,000ft.; *F. G. Gibbs!*

This species is nearly related to *V. lævis* and *V. carnosula*, but is distinguished from both by its acute sepals. The ciliate leaves are always glabrous on both surfaces, and often glaucous or purple. I take this opportunity of acknowledging my indebtedness to Mr. Gibbs for his valued assistance in botanical matters.

V. lævis, Benth., in DC. Prodr., x., 461.

Calyx-lobes ovate, obtuse or often subacute. Capsule broadly oblong, narrowed at both ends, compressed.

North Island: Ruahine Range, Tongariro, Ngauruhoe, Ruapehu, Tararua Range. South Island: Subalpine and alpine districts from Nelson to Southland. 2,000ft.–4,500ft.

V. hillii, n. s.

A small glabrous erect or spreading shrub, 6in.–12in. high; branchlets naked below. Leaves rather crowded, 1in.–1$\frac{1}{4}$in.

long, narrow oblong or lanceolate, sessile or narrowed into a short broad petiole, acute or subacute, usually entire, glaucous beneath. Flowers in axillary racemes or panicles, exceeding the upper leaves. Rhachis puberulous, bracteoles exceeding the short pedicels. Calyx divided nearly to the base, segments oblong-lanceolate equalling the corolla-tube; corolla-tube equalling the lobes, lobes patent or reflexed, rather narrow, rounded, the uppermost narrower and longer than the others. Stamens on very short filaments, scarcely exceeding the corolla-tube. Capsule ovate-lanceolate, narrowed at both ends, compressed.

North Island: Hawke's Bay—Kuripapanga; between the Rangitikei Ford and Erewhon; *A. Hamilton! H. Hill! D. Petrie!* Ruahine Mountains, W. Colenso, in Herb. Kew. South Island: Otago, *J. Buchanan!*

Allied to *V. colensoi*, with which it has hitherto been confused. I am indebted to the director of the Royal Gardens, Kew, for comparing my specimens with Colenso's Ruahine plant. Mr. Hill sends cultivated specimens of what he considers to be the same plant, but the branchlets are clothed with leaves below, the leaves are serrate at the margins, oblong, less acute, while the rhachis is glabrous and the flowers are almost sessile. To what extent these changes have been produced by cultivation it is impossible to say at present.

V. diosmæfolia, R. Cunn., in Bot. Mag., sub-t. 3461.

Leaves entire, ½in.–⅔in. long, elliptical oblong, rigidly coriaceous, keeled below. Sepals 4, obtuse (in all the specimens examined by me). Capsule oblong-lanceolate, narrowed at both ends.

North Island: Auckland—From the North Cape to Hokianga and Whangarei.

Var. *trisepala*, sp., Colenso, in Trans. N.Z. Inst., xv. (1882), 324.

Branchlets very slender. Leaves ½in.–1in., narrow, linear-oblong, with 3 or 4 incisions on each side, narrowed at both ends, falcate, spreading, not keeled. Calyx-lobes 3, broadly obtuse, the upper emarginate or obcordate. Capsule elliptic-ovate, narrowed at both ends.

North Island: Auckland—Bay of Islands and Hokianga; Hawke's Bay—North end of Te Kaweka Range;* *A. Hamilton!*

The obcordate or emarginate upper sepal pointed out by Mr. Colenso as characteristic of this form is invariably present in all the specimens examined by me, and is occasionally met

* First mentioned, but not described, in Trans. N.Z. Inst., iii. (1870), 169.

with in the type. White or purple flowers are produced on both forms, but I have not seen acute sepals on either. The extension of this species to Te Kaweka is of great interest, and quite unexpected.

V. elliptica, Forst., Prodr., n. 10.

This species varies in the colour of the flowers, which in the southern form are pure white, in the northern form white with fine purple lines on the upper petals. The former is rare on the northern side of Foveaux Strait, but is the only form on the Snares and the Auckland and Campbell Islands. The latter occurs on both coasts of the South Island, from west Wanganui, Nelson, and eastern Otago to Stewart Island. It is said to have been found on Banks Peninsula, but the statement requires confirmation.

Chatham Islands: *Captain Gilbert Mair!*

V. vernicosa, Hook. f., Handbk., 208.

The leaves of this pretty little species are sometimes distichous, and the racemes very lax, although usually the flowers are densely crowded. *V. canterburiensis*, J. B. Armstrong, in Trans. N.Z. Inst., xiii. (1880), is identical with this on the authority of Mr. N. E. Brown, of Kew; but it must be remarked that until of late years *V. vernicosa* has not been understood by New Zealand botanists, *V. odora*, Hook. f. (Fl. Antarct., i., 62, t. 41), having been mistaken for it, an error in which the authorities at Kew appear to have participated for a time. An Otago specimen of *V. odora* given me by Mr. Buchanan in 1868 was labelled *V. vernicosa*. My own specimens, n. 633, sent to Kew in 1877, were referred to the same species, and in the colony the name was applied to plants of *V. odora* cultivated in the fine collection in the Public Domain, Christchurch. The error was pointed out by Mr. N. E. Brown in 1892.

V. parviflora, Vahl, Symb. Bot., iii., 4; Bot. Mag., t. 5965.

Racemes equalling or exceeding the leaves, obtuse or tapering, pedicels shorter or longer than the flowers, puberulous. Calyx deeply divided, lobes obtuse, puberulous or ciliated; corolla-tube broad, limb unequal, spreading, upper lobe solitary and with the lateral lower lobes broadly rounded, middle lobe linear. Capsule twice as long as the calyx, ovate, subacute.

A much-branched shrub, sometimes 18ft. in height, with a trunk nearly 1ft. in diameter at the base.

North and South Islands: From the Great Barrier Islands southwards, but sometimes absent from large districts, as the Auckland Isthmus, the Thames Goldfield, &c.

Var. *arborea*, sp., J. Buchanan, in Trans. N.Z. Inst., vi. (1873), 242.

Similar to the type, but often larger. Sepals broader, ciliated; corolla-tube shorter and broader, limb less spreading, lobes shorter and broader. Capsule ovate-acute, thrice as long as the calyx.

This form attains very large dimensions on the crests of the hills between Kaiwara and Cape Terawhiti (Wellington). One specimen, with the lower part of the trunk almost prostrate, measured 28ft. from the base to the top of the highest branch; the trunk being nearly 2ft. in diameter at the base, but tapering rapidly. Lowland specimens vary from 2ft. to 10ft. in height, and usually form a compact dome-shaped head.

(?) Var. **strictissima.**

Leaves all patent, acute. Racemes 3–6 in the axils of the upper leaves, 3in.–4in. long, strict, erect, tapering; pedicels slender, exceeding the flowers, ascending. Calyx-lobes broadly oblong, rounded at the tips, ciliated. Corolla-tube exceeding the calyx, funnel-shaped, limb spreading, lobes rounded. Capsule not seen.

South Island: Akaroa, 1876, *T. Kirk.*

(?) Var. **obtusa.**

Leaves about 1½in. long, acute, patent. Racemes shorter than the leaves, broad, obtuse, patent; rhachis and pedicels slender puberulous, the latter equalling or exceeding the calyx, patent. Corolla-tube broad, fully twice as long as the calyx, lobes rounded, spreading; stamens much exserted. Capsules not seen.

North Island: Hawke's Bay, *A. Hamilton!*

I have only a single specimen of this plant, which will probably prove a distinct species.

V. ligustrifolia, A. Cunn., Bot. Mag., t. 3461.

Calyx divided nearly to the base, sepals lanceolate, acuminate, pubescent; corolla-tube shorter than the calyx, funnel-shaped, limb longer than the tube, lobes spreading, acute.

This seems a remarkably local species. Although stated to occur from the Kermadec Islands to Stewart Island, it appears to be absent from very large districts, and is rarely found in abundance.

(?) Var. **gracillima.**

Leaves spreading, 1in.–1¼in. long, ¼in. broad, linear lanceolate, acute, petioles very short or 0. Racemes 2–6 in the axils of the upper leaves, 4in.–5in. long, very slender, flowers

often fascicled, pedicels equalling the flowers or longer. Calyx nearly equalling the corolla-tube, sepals oblong, obtuse or subacute; corolla broadly funnel-shaped, tube equalling the limb, lobes spreading, unequal, upper broadly rounded, lower middle lobe linear subacute. Capsule not seen.

South Island: Westport, *Dr. Gaze!*

This has perhaps equal claim to be placed under the preceding species, but is referred here chiefly on account of the subacute sepals. It will probably prove a valid species.

V. squalida, n. s.

Erect, much branched from the base, 3ft.–5ft. high, twigs slender, naked below, flexuous. Leaves 1½in.–3in. long, ¼in. broad, narrow linear-lanceolate, acute, often falcate, usually drooping, concave above. Racemes 2in.–3in. long, ½in. diameter, lax, slender, tapering. Calyx deeply divided, lobes broad, obtuse or subacute, ¼–⅓ as long as the narrow corolla-tube, limb of corolla spreading, lobes short, rounded. Capsule (after dehiscence) orbicular-ovate, acute.

South Island: Nelson — Matori, *T. K.*, 1877; Wairoa Valley, *W. H. Bryant* and *T. Kirk.*

This species is distinguished from all others with linear-lanceolate leaves by the long and narrow tubular corolla with small spreading segments, as well as by its naked branches, drooping leaves, and inelegant appearance. The only capsules obtained were too far advanced to allow of a good description being drawn.

V. chathamica, J. Buchanan, in Trans. N.Z. Inst., vii. (1874), 339, t. 13, f. 1.

A much-branched prostrate shrub; stems 6in.–18in. long, branches very numerous, wiry, glabrous, or rarely the branchlets and peduncles sparingly pubescent. Leaves close-set, sessile or very shortly petiolate, about ¼in. long, elliptical subacute, subcoriaceous flat. Racemes 2–4 in the axils of the uppermost leaves, ½in.–¾in. long and nearly as broad, obtuse peduncles ½in.–¾in. long. Flowers densely crowded; bracteoles as long as the pedicels. Calyx deeply divided, lobes lanceolate, acute, ciliolate; corolla-tube ventricose, nearly equalling the limb, broad; lobes reflexed, broad, nearly equal, the uppermost larger and more rounded; stamens exserted, shorter than the style. Capsule broadly lanceolate, compressed.

Chatham Islands: *H. H. Travers! F. A. D. Cox!* and others.

Easily distinguished from all other species of this section by the prostrate habit and wiry branchlets, short broad racemes, and the compressed capsule narrowed at both ends.

I have ventured to give an amended description, as Mr. Buchanan confused this plant with the next.

V. coxiana, n. s.

Scarcely suffruticose, decumbent, stems 6in.–12in. high or more, soft. Stems, leaves on both surfaces; peduncles, bracteoles, and pedicels clothed with short soft pubescence. Leaves rather distant, sessile or shortly petiolate, 1in. long, elliptical, rounded at the apex, rarely narrowed below, membranous, soft. Racemes as in *V. chathamica* but broader, pedicels longer, bracteoles usually exceeding the pedicels. Sepals lanceolate-acute, pubescent. Corolla-tube exceeding the limb; lobes reflexed, uppermost broader than the others; style shortly exceeding the exserted stamens. Capsule not seen.

Chatham Islands: *H. H. Travers! F. A. D. Cox!*

Distinguished at sight from *V. chathamica* by the stouter suberect stems, pubescent membranous leaves, broader racemes, and by the corolla-tube being longer than the limb. It is the most herbaceous member of the section, being even less suffruticose than *V. cataractæ*, Forst.; usually the only portion of the stem that is at all woody is the short prostrate base. Specimens have been distributed under the name of *V. chathamica*, var. *major*.

I gladly take this opportunity of acknowledging my indebtedness to my friend Mr. Cox for specimens of the plants of the Chatham Islands, accompanied in many cases by valuable information as to their habits and distribution: so that it affords me great pleasure to attach his name to this interesting plant.

V. macrocarpa, Vahl., Symb. Bot., iii., 4.

Erect, 4ft.–7ft. high, branchlets rather stout. Leaves 3in.–4in. long, narrow-oblong-lanceolate, acute, rather coriaceous. Racemes usually exceeding the leaves, 4in.–7in. long, cylindrical, acute; sepals oblong, obtuse; corolla very large, white; stamens much exserted.

North Island: Apparently local—Bay of Islands, Waitemata, Tokatea Peaks, Mercury Bay, Tologa Bay. South Island: Marlborough — Cook Strait; Totaranui; Otago. Stewart Island. Sea-level to 2,000ft.

This species is much less frequent than might be expected from the wide area over which it is distributed. I have not seen it growing south of the East Cape, and suspect that the Stewart Island specimens, which are said to have leaves 1in. long, and short broad racemes 1in.–2in. long, belong to some other species.

V. latisepala, n. s.

Shrubby, 3ft.–5ft. high, erect, glabrous, branches stout, thick, naked below in old plants. Leaves patent, sessile, subcoriaceous, 2in.–4in. long, about ½in. wide, linear-lanceolate, acute. Racemes 2–6, axillary near the tips of the branches 1in.–2½in. long, obtuse, 1in. broad, spreading or patent; rhachis, pedicels, bracteoles, and sepals puberulous, bracteoles much shorter than the pedicels, obtuse or subacute. Flowers secund, pedicels exceeding the calyx. Calyx cleft for one-third of its length; segments very short, broadly rounded above, ciliolate; corolla ⅛in.–⅕in. in diameter, tubular, segments but slightly expanded, short, rounded, the uppermost narrower and longer than the others. Stamens exserted, exceeding the style. Capsule broadly ovate, acute, pedicels curved upwards in fruit.

North Island: Great Barrier Island, *T. Kirk;* Whangarei Harbour, T. B. Gillies and T. Kirk.

The nearest affinity of this fine plant is with *V. macrocarpa*, Vahl., from which it differs in the more fleshy narrower leaves, obtuse racemes which are always shorter than the leaves, and especially in the broadly rounded sepals. The flowers are purple, but never approach the deep-violet hue of *V. rotundata.*

V. rotundata, n. s.

A laxly-branched shrub, 2ft.–6ft. high, glabrous. Leaves about 3in. long, ¾in.–1in. broad, sessile or abruptly narrowed into a very short sheathing petiole, elliptic-oblong, subacute. Racemes 2–4 in the axils of the upper leaves, 3in.–5in. long, 1in. diameter. Flowers densely crowded, large, rhachis puberulous or pubescent. Calyx divided almost to the base, sepals oblong, subacute or acute; corolla-tube rather shorter than the spreading unequal limb, upper segment narrow, lower segments overlapping; stamens greatly exserted, exceeding the minute capitate stigma. Capsule suborbicular, compressed, broadly rounded at the apex.

North Island: Near Wellington. South Island: Near Southbridge. *T. Kirk.* Probably not infrequent.

This handsome species is distinguished from all others of this section by the broadly-rounded capsules. It has hitherto been confused with *V. salicifolia* and *V. macrocarpa*, from both of which it may be distinguished at sight by the less acute and broader leaves. The flowers are usually of a deep-violet colour when first expanded, but often change to a pale lilac. I was disposed to consider it identical with *V. myrtifolia*, Banks and Sol., but Mr. James Brittain, of the British Museum, South Kensington, who kindly compared it with the original Banksian specimen at my request, assures me that it is distinct.

V. macroura, Hook. f., *ex* Benth., in DC. Prodr., x., 459.

In old specimens the branchlets and racemes are more or less pendulous, and the pedicels of the densely-crowded capsules curved upwards.

This littoral species has not been observed either at Whangarei or on the shores of Cook Strait of late years. It is, however, plentiful on many parts of the East Coast from Hicks Bay to the Mahia Peninsula. The Tarndale locality (Nelson), recorded in the Handbook on the strength of specimens found amongst Tarndale plants in Sinclair's herbarium, is certainly erroneous, as this species is only found in the vicinity of the sea. *V. cookiana*, Colenso, in Trans. N.Z. Inst., xx. (1887), 201, from Table Cape, seems to me a variety with broader more or less pubescent leaves and longer racemes. *V. macroura* was originally discovered by the Rev. W. Colenso at Whangarei, the East Cape, and Cook Strait.

V. dieffenbachii, Benth., in DC. Prodr., x., 459.

The rather stout branches of this plant are given off in a divaricating manner, so that a single specimen may cover an area many yards in diameter. The stem and leaves are sometimes pubescent.

V. speciosa, R. Cunn., in Bot. Mag., sub-t. 3461.

I am informed that this fine plant has been destroyed in its old habitat at the south head of Hokianga Harbour, but believe that it still exists a few miles further south. On the authority of the late Dr. Lyall it is stated to have been found near Port Nicholson, but no other botanist has seen it in this locality. Mr. J. Rutland assures me that it is still to be found on maritime rocks in Titirangi Bay, Marlborough, where it is often drenched with sea-spray.

ART. LIII.—*New Zealand Musci: Notes on a New Genus.*

By ROBERT BROWN.

[*Read before the Philosophical Institute of Canterbury, 3rd July, 1895.*]

FOR a considerable number of years I have been practically interested in the New Zealand Musci, and have travelled over a large portion of New Zealand, and been successful in discovering a great number of different species of mosses at present unknown to science. I am now busily occupied in