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New Zealand Hepaticae (Liverworts)—XVI
A Miscellany of New Genera, New Species and Notes, Part I

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Summary

The following new genera are described: *Isophyllaria,* type *I. murrayana*; *Neogrollea,* type, *N. notabilis*; *Rhizocaulia,* type *R. westlandica*; *Maculia,* type *M. filosa*; *Allisoniella,* type *A. obcordata.*

New species other than the types of the new genera: *Trichocolea hatcheri; Metahygrobiella tayloriae; Metahygrobiella monoica; Chiloscyphus furcistipulus; Jamesoniella allisonii*; *Acrobolbus aequilobus; Schistochila pusilla; Schistochila altissima; Radula parviretis; Leptolejeunea australis; Jubula novae-zelandiae; Symphyogyna pseudoterebellata; Symphyogyna purpureo-limbata.*

New combinations: *Adelanthus capillaris* (Berggr.) c. n.; *Telaranea paludicola* (Hodg.) c. n.; *Micrisophylla leptodictyon* (Herz.) c. n.; *Goebelobryum paradoxum* (Schust.) c. n.; *Telaranea gibbsiana* (Steph.) c. n.; *Riccardia crispa* (Col.) c. n.; *Riccardia lobulata* (Col.) c. n.; *Riccardia perpusilla* (Col.) c. n.; *Riccardia effusa* (Steph.) c. n.; *Riccardia nitida* (Col.) c. n.; *Maculia berggrenii* (Herz.) c. n.

New variety: *Acromastigum anisostomum* (L. & L.) Evans var. *minuta.*

New synonyms: *Diplophyllum domesticum* (G.) Steph. = *D. obtusifolium* Dum.; *Frullania obtusiloba* (Pears.) = *Frullania pentapleura* (Hook. & Tayl.) G. L. & N.; *Frullania shanensis* (Svih.) = *Frullania pentapleura* (Hook. & Tayl.) G. L. & N.; *Radula levieri* Steph. = *Radula strangulata* Tayl.; *Zoopsis tenuicaulis* Col. = *Zoopsis leitgebiana* (C. & P.) Steph.

New recordings for New Zealand: *Chiloscyphus conjugatus* from Tasmania; *Radula caespitosa* Steph. from Reunion Island.

New recordings for rare New Zealand species.

This paper is written with a view to presenting new knowledge of our hepatics prior to compiling a check-list of New Zealand Hepaticae.

Ptilidium Nees

Ptilidium hodgsoniae Allison (1950)

The following new stations are recorded for this beautiful, glossy, brown, high alpine species: Nelson Lakes National Park: edge of tarn, St. Arnaud Range, 5,700ft (M. J. Simpson) 106867 CHR, also in *Danthonia australis,* Hopeless Creek

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(M. J. Simpson); in *Danthonia rigida* snowgrass, Craigieburn Range, 4,500–5,500ft (C. J. Burrows); in dense snowgrass, Phipps Basin, Arthur's Pass area (C. J. Burrows); damp bank, Rough Creek Basin, 4,800ft, Arthur's Pass (C. J. Burrows); Coronet Peak, Central Otago, 5,000ft (A. F. Mark) H6349 Herb. Allison.

No fruiting stems have yet been discovered. The species is near to *P. ciliare* of the Northern Hemisphere, which I understand has been collected in South America.

TEMNOMA Mitt.

Temnoma palmatiloba (Hodgs.) Hodgs. & Allis.

Dr Jane Taylor has studied the fructification of this species, and noticed the swollen portion at the base of the perianth (Hodgson, 1949), which is, Dr Taylor thinks, suggestive of a coelocaule, and the scattered archegonia on the remnants of the calyptra suggestive of a shoot calyptra. Fruiting specimens of this taxon were not discovered when I placed it in *Isotachis,* because of its resemblance to *I. intortifolia* (Hook. & Tayl.). Dr Taylor, however, sees in it a resemblance to *Pseudolepicolea* Fulf. & Tayl.

A new locality for this species has been reported; Soda Springs, Mt. Ngauruhoe, Tongariro National Park, coll. Jenny Barr, H6667 Herb. Allison.

Several new stations have also been noted for *Temnoma palmatum* Lindb. ex Pearson.

ISOPHYLLARIA gen. nov. Hodgson & Allison

Isophyllaria

Planta parva, sterilis, nigrescens. Caulis brevis, erectus, solitarius, parum ramosus, ramis ventralibus ex axillis amphigastriorum, rhizoidibus nullis (in caulibus visis). Folia incuba, imbricata, erecto-patentia, symmetricaliter vel subsymmetricaliter biloba ad ¾, lobis lanceolatis, acutis. Amphigastria biloba ad ⅓, lobis, divergentibus, lanceolatis. Cellulae parvae, oleis nullis. ♂ bractea intercalaria vel terminalia, 3–5 jugis, saccatis, inanibus, bracteoles non-saccatae.

Generitypus *Isophyllaria murrayana* Hodgson & Allison sp. nov.

Isophyllaria murrayana

Planta parva, ad 1.5cm, nigrescens, palludicola. Caulis erectus, flexuosus, rigidus, simplex vel parum ramosus, ramis ventralibus, ex axillis amphigastriorum, 0.125mm diametro, cellulis omnino parvis, densis, haud pellucidis. Folia incuba, imbricata, basalia remota, erecto-patentia, 0.5mm longa, biloba ad ¾, lobis aequalibus, lanceolatis, acutis, ventrale arcuato cum margine recurvo, sinubus rotundato-obtusis, cuticula minute aspera. Cellulae parvae, 10–20μ, irregulariter quadrata, basalibus duobus longioribus, parietibus omnibus crassis, pigmentatis. Amphigastria magna, symmetrica, fere aequalia foliis, biloba ad ⅔, lobis divaricatis, lanceolatis acutis, marginibus strictis, planis. ♂ bractea intercalaria vel terminalia, 3–5 jugis, saccata, inanibus, bracteola non-saccata, antheridia non visa.

Typus: in bog with *Ditrichum* sp., Mt Allen, Stewart Island, coll. Dr J. Murray, no 2193 p.p., Feb. 1949, no. H6184 Herb. K. W. Allison, 11702 Herb. E. A. H.

This new monotypic genus appears to be quite distinct. It could probably be placed in the family *Herbertaceae*. It differs from *Herberta* in its small size, dark colour, small cells without trigones and the complete absence of a vitta. The small thick-walled cells and non-saccate androecial underleaves would separate it from *Triandrophyllum*.

The type is notable for its small size and dark colour, its crowded, deeply bilobed leaves and underleaves all sub-equal. The small cells with thick brown walls without trigones and with a minutely papillose cuticle are characteristic. The roughness of the cuticle shows up better in the dry state. A marginal row of cells is well defined. The apex of one stem was seen to be flagelliform, with leaves decreasing in size and becoming more remote.

This new species is named for the late Dr J. Murray, a lichenologist who collected it.

TRICHOCOLEA Dumort.

Trichocolea hatcheri Hodgson sp. nov.

Planta dioica, media (parva in comparatione), compacta depressa, sordide viridis vel badio-virens, raro albida. Caules 3–6cm longi, implicati, regulariter bipinnati, raro tripinnati, cortice striolo-papillose, cellulis parvis; rami ad 4mm longi, pinnati, propinqui, pinnae inaequalia, 0.4–1cm longi. Folia imbricata, sub-symmetrica, 0.6mm longa x 0.8mm lata, 5–6-fida, segmentis pinnatis, ciliatis; lamina 2–3 cellulas longa, cellulae ca. 45 x 20μ, cellulae ciliarum ca 104μ x 14μ. Amphigastria ad 0.5mm longa x 0.6mm lata, bifida, segmentis laterale 3–4 ramosis, ubique ciliatis ut in foliis, ♂ bractea et bracteola symmetrica, triseriata, intime majora 5–6-fida segmentis ciliatis; lamina 2–4 cellulas longa, coelocaulis 3–4mm longus, clavatus, dense paraphyllosus. Capsula oblonga, elateres 123μ, longi, 12 lati, bispirosi. Sporae ad 12, minute punctatae.

Typus, Roto-Kui Bush, east of Taupo, coll. K. W. Allison, 1934, no. 7558 Herb. Hodgson.

In 1930, this species was sent to the late Dr Herzog, who saw in it the likelihood of a new species. Further specimens were submitted to Dr R. E. Hatcher, who classed it as Taylor's *Trichocolea mollissima* from the subantarctic islands (Hatcher, 1958). This was surprising, as not only did the name seem wrong, but *T. mollissima* was described as "albida", and no mention was made of its small size. Moreover more recent specimens from the type region are not *T. hatcheri*.

It is named for Dr R. E. Hatcher, to whom I am indebted for some of the measurements.

TELARANEA Spruce

Telaranea paludicola (Hodgson) Hodgson comb. nov.

Lepidozia meridiana Hodgs. var. *paludicola* Hodgs., *Trans. Roy. Soc. N.Z.*, 83, part 4, p. 611, 1956.

I now consider this taxon to be a separate species. It differs from *T. meridiana* (Hodgs.) Hodgs. in the much slenderer leaf-lobes based on 3–4 cells, then 2–5 rows of twin cells, then 5 cells in a single series. The ventral margin is decurrent as in *T. gottscheana* (Lindenb.) Hodg.

Typus: Bog in Oriwa Lake Hollow 3,500ft, Tararuas, V. D. Zotov, 6619 CHR. Localities additional to those already listed are: Damp ground by path, Orakei Korako Thermal Reserve, Rotorua Region, 10380 Herb. Hodgson 1953; Waiho. Westland, E. O. Campbell, 1953.

Telaranea gibbsiana (Steph.) Hodgson comb. nov.

Lepidozia gibbsiana Steph. *Spec. Hep.*, vi, 328, 1922.

Telaranea is a large genus, so complicated that it is impracticable to subdivide it into subgenera.

The type, *Telaranea chaetophylla* Spruce, has leaves almost transverse, with a very low discus and 2–3 leaf-lobes uniseriate to the base.

Telaranea tetradactyla (Hook. & Tayl.) Hodgs. and a few other species (Fulford, 1963a), have incubous leaves with 4–6 uniseriate leaf-lobes, and a discus 2–4–6 cells high.

Other Telaraneas including the majority of New Zealand species have incubous leaves with a high discus but with non-uniseriate leaf-lobes from a base of 2 or more cells (= genus *Neolepidozia* Fulford and Taylor).

Telaranea gibbsiana (Steph.) Hodgs. has a densely pinnate stem, leaves with a high discus and 4–6 longly setaceous leaf-lobes of up to 8 single cells based on 2 or more cells, while *T. pulcherrima* (Steph.) Schust. also has densely pinnate stems of 8 leaf-lobes uniseriate as in the type, but of 8 single cells from a medium discus. Both of these agree with *T. tetradactyla* in having incubous leaves. Fulford (1963a) agrees that *T. tetradactyla* (Hook. & Tayl.) Hodgs. is a *Telaranea,* though formerly placed under *Neolepidozia* (Fulford & J. Taylor, 1959).

Telaranea herzogii (Hodgs.) Hodgs. is an *Arachniopsis* (Hodgson, 1964).

The taxon wrongly identified as *Lepidozia longiscypha* (Hook. & Tayl.) G. L. & N. by Hodgson (1956) is now a new species, *Kurzia* (= *Microlepidozia*) *pallescens* Grolle, according to Grolle (1963c).

The real *Lepidozia longiscypha* is a *Hyalolepidozia* according to Grolle (1963c).

NEOGROLLEA Hodgson gen. nov.

Neogrollea

Planta parva, prostrata, paludicola. Caulis simplex vel ventrale ramosus,* rhiziferus; ramis longissimis, plerumque ventralibus, intercalaribus, interdum foliosis basi, stoloniformibus, microphyllosis vel nudis, rhiziferis. Folia transversa, concavissima, rotundata, multilobata, multicolorata, interdum fere hyalina, circumdentata, dentibus remotis 1–2 cellulas longis, Cellulae magnae, minute papillosae, ad 45μ, vergentes hexagonae, trigonis magnis. Amphigastria magna similia foliis sed apicibus plerumque bidentatis. ♂ bracteae imbricata 4–6 jugis in caule mediano, majores foliis. Antheridia non visa. Perianthia absentia.

Generitypus *Neogrollea notabilis* Hodgson sp. nov. In open bog, 6 miles from Charleston on Westport side, Westland, South Island; no. 135588 CHR. 12961 Herb. E. A. Hodgson, coll. Dr J. Taylor, Oct. 9, 1962.

Neogrollea notabilis sp. nov.

Planta dioica, parva, prostrata, paludicola, cum sphagno et aliis plantis associata. Caulis simplex vel ramosus ventrale, 1–1.5cm longus, 0.3mm latus, cellulae corticis parum majores internis, medullae irregulares. Rami ventrales intercalares, interdum axillares, interdum foliosi basi et deinde flagelliformes, vel stoloniformes omnibus foliis inchoatis, laxis vel nullis; radicellis dispersis, raro fasce. Folia nitentia, contigua vel parum imbricata, transverse inserta, apice irregulariter 3–4 dentato-lobato, vel irregulariter bisbilobato, circumdentata,

* Dr Grolle me nuntiare voluit quattuor typos ramorum in hoc genere novo adesse.

marginibus hyalinis sparse dentatis. Cellulae magnae ad 45μ, vergentes hexagones, minute papillosae, corpora oleosa absentia, trigonis magnis. Amphigastria magna, similia foliis sed late ovatis, apice plerumque 2-dentato-lobato. ♂ bracteae imbricatae, 4–6 jugis in caule mediano, majores foliis, ad prope 1mm longae, non-saccatae. Antheridia non visa.

Plants dioicous, small to medium, pale green to red-brown, partly hyaline, glistening, in sphagnum and other bog constituents, with the facies of a *Lepidozia*. Stems simple or more usually ventrally branched 1–1.5cm long, 0.3mm wide in transection, cortical cells a little larger than those of the medulla, rectangular on the stem surface. Branches stout, ventral, intercalary, maybe leafy at the base, then usually longly stoloniform, whitish with lax rudimentary hyaline leaves which become smaller and distant, rhizoids may be present. A leafy shoot was seen on one such branch. Leaves glossy, symmetrical, contiguous to imbricate, occasionally with a slightly decurrent dorsal margin, usually transverse, rounded, very concave, apices 3–4 dentate-lobate, or bis-bilobate, irregular; margins sparsely dentate from a narrow or widening hyaline zone which may take in half the upper portion of the leaf, teeth 1–2 cells long. Cells large, uniform to 45μ, not or only slightly lengthened at the base, basal row hyaline, roughly hexagonal, with minute ringlike papillae in rings or clusters, mostly near the margins of the cell, oil-bodies absent; trigones medium to large or very large, triangular or quadrate, sometimes with concave sides, occasionally confluent. Underleaves large, rounded or more often broadly ovate, concave, almost equalling the leaves, usually bilobed, margins and cells as in the leaves. Androecia in a few pairs of bracts, intercalary on the main stem, larger than the ordinary leaves to nearly 1mm long, non-saccate, maybe decreasing in size upwards, with the stem extended in an apical flagellum. Antheridia not seen. Typus as above.

This is a beautiful species. Although it has the facies of a *Lepidozia* (s. st.) it differs from that genus, and other members of the Lepidoziaceae, in the unusual colouring, the absence of normal leafy shoots, the exceptional areolation, the prevalence of hyaline cells, the almost equal leaves and underleaves, the transverse leaf insertion, and the non-saccate intercalary ♂ bracts. It is named for Dr Riclef Grolle of Jena.

ACROMASTIGUM Evans

Acromastigum anisostomum (L. & L.) Evans var. **minuta** Hodgson var. nov.

Planta minuta, caulis ad 4mm, rami pauci. Folia ad 0.2mm longa x 0.13mm lata. Vitta parva in media folia. Cellulae paucae.

Typus: from sandbank near Cedric Creek, N.W. Arm, Paterson's Inlet, Stewart Id., coll. W. Martin, 29/1/49, with other small hepatics, 12151 Herb. Hodgson.

This minute form of *Acromastigum anisostomum* is the most striking of an association of tiny plants on a sandbank. The others are: *Anastrophyllum schismoides* (Mont.) Steph., *Frullania rostrata* (Hook. & Tayl.) G. L. & N., *Jamesoniella sonderi* (G.) Steph. and a *Clasmatocolea*.

MICRISOPHYLLA Fulford

Micrisophylla leptodictyon (Herz.) Hodgs. comb. nov.

Lepidozia leptodictyon Herz., *Trans. Roy. Soc. N.Z.*, 68, pp. 42–46, Pl. 6, 1938.

This genus differs from *Telaranea* in the erect caespitose habit, irregular branching and acrogynous perianths. The New Zealand species is described in Hodgson (1956).

The plants are paludicolous, very small, shrivelled when dry and slow to take up moisture, somewhat dingy brown, everywhere hyaline. The branching is mixed and irregular, mostly lateral terminal, the stems with numerous stolons, efoliose or with minute remote leaves, all delicate and hyaline. The leaves are mostly 3–4-lobed with the lobes 4–6 cells across at their bases, from a large (comparatively) discus 6 cells deep, broadly lanceolate and shortly acuminate. The perianths are numerous and acrogynous on the branches, ♂ branches are " longe spicata, vermicularia, bractiis multijugis, concavissimis, 3-fidis ".

Herzog's type was from edge of swamp, near Atiamuri ca 1,000ft, coll. K. W. Allison 18/7/1929, 6386 Herb. Hodgson.

Micrisophylla Fulford is a South American genus with species from Southern Patagonia, Chile and Tristan da Cunha.

LEMBIDIUM Mitt.

Lembidium cucullatum Hodgs.

Isolembidium cucullatum nom. nud. Schust. (1963)

Another locality for this distinct *Lembidium* is: earthen bank, Pegasus, Stewart Island, coll. W. Martin, Jan. 1949, no. 2590 Herb. Hodgs.

The type was from Musgrave Peninsula, Auckland Islands, coll. Oliver.

MACULIA Hodgson gen. nov.

Maculia

Parva, sterilis. Caulis non-cernuus, rami terminalia a latere, flagellis posticis intercalaribus. Folia densa, integerrima parum succuba sed squarrosa apicibus assurgentibus, 3-loba, cellulae subuniformae, minute punctulato-asperulae.

Generitypus *Maculia filosa* sp. nov., Bealey River, Arthur's Pass area, South Island, New Zealand, coll. S. Berggren, unnumbered, Feb. 1874, no. 8446 Herb. Hodgson, Isotype, Lund Herbarium.

Maculia filosa Hodgs. sp. nov.

Planta sterilis minuta, caespitosa, viridis. Caulis 0.4–0.5cm longus, erectus ex rhizifero base, nudus, deinde dense foliosus, transectione ovalis 0.2mm latus cellulae corticis medullaeque parvae et majores intermixtae flagellis distinctis, filiformibus, numerosis, basalibus, longissimis, ramosis, implicatis. Folia caulina leviter succuba, densa, parum concava, 0.6 x 0.4mm, maculae, 3-raro 4-lobata ad ⅓, medio lobo maximo, lobis triangularibus, incurvis. Cellulae omnes magnae ca. 50 x 30–40μ, minute punctulato-asperulae, parum obscurae. Amphigastria minima vel vestigialia, 2–3 lobis, inchoatis.

Plants minute, 0.4–0.5 cm, greenish enveloped in long, branched filamentous flagellae. Stems arising close together, erect, 0.2mm wide, bare below then densely foliose, little branched, branches lateral, cortical surface cells obscure but similar to those of the leaves, oval in transverse section, cortical cells in 20 vertical rows, varying in diameter from 30–40μ; medullary cells in 5 x 7 rows, width varying from 20–43μ, rhizoids present; foliose branches few, basal, lateral, flagelliform branches ventral, basal, differentiated, 0.12mm wide, very long, branched, enveloping the plants, rudimentary hyaline leaves at long intervals or bare of leaves; rhizoids sparse; cortex of long hyaline cells with a darker interior strand discernible. Leaves 0.6 x 0.4mm, transverse to weakly succubous, squarrose, dense, 3, rarely 4-lobed to ⅓ or more, lobes lanceolate or triangular to triangular-acuminate, the middle lobe the largest, to 0.3mm, sometimes ending in 2–5 single cells, shallowly concave, cells large, averaging ca. 50μ x 30–40μ, may be narrower in the lobes, basal row not enlarged, minutely punctate, somewhat obscure, with minute greenish-brown chloroplasts of varying shapes, congregated mostly at the ends of the cells, walls thinnish. Underleaves vestigial or minute with rudimentary lobes. Typus as above.

This genus differs from *Lembidium* as represented by the type *L. nutans* (Tayl.) Mitt., in the straight not cernuous stem-tips (though this is not a constant feature of *L. nutans*), in the slightly succubous leaves, the uniformly large cells throughout, and in the unevenly 3-lobed, evenly margined leaves, appearing speckled under the lens (hence the name *Maculia*). The stem structure is similar to that of *Lembidium*, except that *Maculia* lacks the central large hyaline cell at each side of the stem; and the exceptionally long, filiform basal flagella of *M. filosa* appear to be absent in *L. nutans*.

Maculia berggrenii (Herzog) Hodgson comb. nov.

Lembidium Berggrenii Herzog *Ark. f. Bot.* 1 (13) 485, fig. 3 a-e, 1951.

M. berggrenii differs from *M. filosa* in its more shortly lobed leaves, lobes triangular, smaller cells, and its well developed underleaves. Both agree in their succubous-inclined multi-lobed leaves, curved upwards at their apices, otherwise squarrose, and their uniform cells not differentiated with a basal zone of large hyaline cells, also in their stem-structure and terminal lateral branching.

Locality of *M. berggrenii* examined: clay bank by track, Leith Valley, Dunedin, South Island, comm. J. Taylor, Dec. 1961.

ZOOPSIS Hooker

Zoopsis caledonica Steph. Spec. Hep., vi, 318, 1924

I am indebted to Dr R. M. Schuster for identifying as *Z. caledonica* this beautiful New Zealand species which has long been with us under the herbarium name of *Zoopsis foliosa* Herzog. As Stephani's type was sterile and his analysis very short, I append the following description:

Plants dioicous, terrestrial, in depressed mats, loosely intricate, in a pure colony or in association with other bryophytes, glossy with a prismatic sheen. Stem to 1cm, once or twice branched, cortical cells large, in 6, 3 dorsal and 3 ventral, rows forming a hyalodermis, enclosing a slender strand; vegetative branches lateral with the incomplete leaf on the dorsal side, fertile branches ventral, intercalary, short, may be several in a series, rhizoids in tufts at bases of underleaf initials, flagelliform branches with minute leaves consisting of 1 row of cells, rare. Cauline leaves contiguous to sub-remote, rectangular to subrectangular, symmetrical, longitudinally inserted, plano-distichous, at right angles to the stem or nearly so, as though a continuation of the cortex, 0.6mm long x 0.2mm broad, margins straight or ventral a little arched, occasionally both dorsal and ventral somewhat curved, normally 4 cells wide, but sometimes 5–6 cells across the middle; apex bilobed, each lobe based on 2 cells, then with 2 single cells diminishing in size. Cells of leaves and hyaloderm irregularly hexagonal, very large, 70–80μ, tumid hyaline, a pale green squarish chloroplast sometimes present, but smaller longer ones may be against the walls, walls thin. Underleaves variable, not always present, normally bilobed, each lobe based on 2 cells, with 2 single cells uppermost, narrowed and perhaps pointing inwards towards the stem. Invol. leaves larger than the cauline, deeply bifid with longly acuminate lobes, from a broad base and ending in at least 3 single rows. Perianths 0.9mm long, on special short ventral branches, may be several in a row, smooth cylindrical, not contracted at the mouth with 5–6 longly setose lobes, ending in a series of narrow, elongate cells. Sporophyte and antheridia not seen.

North Island: 5 gatherings from Urewera National Park, 2,000–3,000ft, 9296, 8391, 8298, 9729, 8540, E.A.H.; damp rotten log, Puaiti Bush, near Rotorua, 6834 K.W.A.

South Island: Supper Cove, Fiordland, 6835, H. H. Allan; on log, Wilmot Pass to L. Manapouri, W. M.; in bog near L. Virginia, Fiordland, 100020, CHR, M. J. Simpson.

Stewart Island: roadside bank, 146, C. Smith; on tree-fern, Thule, 135165 CHR, J. Taylor.

The type was from New Caledonia coll. Lerat. First collected in New Zealand by K. W. Allison, Nov. 1932.

Zoopsis argentea (H. f. & T.) Hook.

Jungermannia (*Metzgeria*) *argentea* H. f & T. *Lond. Journ. of Bot.* 1844.
Zoopsis argentea Hook. *Lond. Journ. of Bot.*, p. 55, 1844.
Zoopsis flagelliforme Col. *Trans. N.Z. Inst.*, 17, 250, 1885.
Zoopsis basilaris Col. *Trans. N.Z. Inst.*, 21, 77, 1888.
Zoopsis muscosa Col. *Trans. N.Z. Inst.*, 21, 78, 1888.

Zoopsis argentea is common in New Zealand bush areas, usually on rotting logs or tree-ferns. It is easily recognized by its narrow interwoven, silvery thalloid stems, glistening green when young.

Of Colenso's 3 synonyms referred here by Stephani (1892), *Z. flagelliforme* and *Z. basilaris* are in WELT, *Z. muscosa* I have not seen. *Z. flagelliforme* corrected by Stephani to *Z. flagelliformis* consists of a few fronds which are narrowed and tapering, rather unusual it would seem.

The type was from Auckland Island, on the ground at the roots of tree-ferns and mosses. It is also found in Tasmania, E. Australia, and Indonesia. *Z. argentea* is the type of the genus.

Zoopsis setulosa Leitgeb, Nat. Verein. fur Steierm, 1876

Zoopsis setulosa differs from *Z. argentea* in the 2-celled lobate stem-appendages being closer together (if not contiguous) giving it a somewhat different appearance; and each cell bearing at its apex a 2-celled (septate) setula, whereas in *Z. argentea* the 2-celled lobate appendages are distant and each of the terminal cells is crowned with a narrow, curved (bow-shaped) cell lying along its apex. This narrow supernumerary cell is often absent, as though deciduous, perhaps a kind of gemma.

Z. setulosa is rare compared with *Z. argentea*, but I have it from the following localities: North Island: Puke-iti Bush, New Plymouth, 11204 E. A. H.; Alex Knob, Westland, with *Balantiopsis rosea* in rain forest, J. Taylor 135688 CHR; with *Telaranea gottscheana*, track to Alex Knob, Westland, J. Taylor 135678 CHR; Stewart Island: Tin Range, 5337 W. Martin.

Stephani also lists E. Australia, Amboina, New Guinea. Leitgeb does not state the locality of his type.

Zoopsis leitgebiana (C. & P.) Steph.

Cephalozia (Zoopsis) leitgebiana C. & P. *Trans. & Proc. Roy. Soc. Tasm.* p. 3, 1888.
Zoopsis tenuicaulis Col., *Trans. N.Z. Inst.*, 20, 253, May 1888.

In a tuft of hepatics collected in New Zealand by Dr Buchanan and sent to Professor Leitgeb of Graz, was a new *Zoopsis* which Leitgeb described but did not name. Later Carrington and Pearson recognized as the same thing an Australian plant collected at Sydney by T. Whitelegge and described it under the name of *Cephalozia* (*Zoopsis*) *leitgebiana*.

I am greatly indebted to Dr Winifred Curtis, of the University of Tasmania, assisted by the librarian of the Royal Society of Tasmania, for investigating the matter of the priority of Carrington and Pearson's name. According to these investigations, the minutes of the meeting of the Royal Society of Tasmania on April 19, 1887, say that the paper submitted by Messrs Carrington and Pearson was read by the secretary, and at a meeting in February 1888 it was stated that the printed

papers would soon be ready for publication. In August 1888 an acknowledgment of the receipt of the papers was received in Hobart from Hamburg. It therefore seems likely that Carrington and Pearson's name of *C. leitgebiana* would precede Colenso's name of *Z. tenuicaulis*, of May 1888, though with little to spare.

Colenso's description of his *Z. tenuicaulis* makes it quite clear to which species he is referring. *Z. leitgebiana* has distant, hyaline, very short, succubous, subhorizontal, bi-lobed leaves, with the dorsal (lower) lobe smaller than the ventral from a slender somewhat flattened axis with large, hyaline cortical cells. Unlike *Z. caledonica* and *Z. argentea*, it shrivels when dry and is liable to be overlooked.

Colenso's type was from the base of Mt. Tongariro, coll. H. Hill.

Other localities are: North Island, under heavy growth of fern, Waipoua Forest, H709 K.W.A.; by stream in bush, Mt. Tauhara, 6820 A. L. Hodgson; numerous specimens from underrunners, Kiwi Hills, damp shady bank, Pinehaven, Hutt Valley, 7034 E.A.H.; with *Isotachis intortifolia, Kurzia hippuroides*, Mokai Patea ca. 5,000ft Ruahines, 5939 A. P. Druce; damp shady bog, near Atiamuri, H410 K.W.A.

South Island: Eglinton Valley, 17142 CHR.

Stewart Island: Waterfall, N.W. Arm, Paterson's Inlet, 5410 W.M.

Zoopsis ciliata Col. *Trans. N.Z. Inst.*, 22, 253, 1888.

From Colenso's description I cannot imagine what this "curious and strange-looking little plant" may be. Colenso himself was greatly puzzled and placed it in this genus only provisionally. A possibility for this is *Riccia crinita* Tayl. 1846.

METAHYGROBIELLA Schuster

Metahygrobiella tayloriae Hodgson sp. nov.

Plantae steriles, parvae, procumbentes, rosaceae. Caulis non-flaccidus, ad 1 cm, pauce ramosus, rami laterales terminales, raro ventrales, intercalares, cellulae corticis majores quam medullae. Folia caulina rotundata, concava, biloba ad fere ½, lobis late triangularibus, sinu obtuso vel rotundato, transverse inserta, 0.6mm longa, ca. 0.6mm lata. Cellulae magnae inaequales, 40 x 40–40 x 65, basales non elongatae, parietibus valides, trigonis nullis, amphigastria absentia.

Plants sterile, minute, prostrate or erect, rose-tinted. Stems to 1cm but usually shorter, not flaccid, simple or sparsely branched, branching lateral, of *Frullania* type, with thinner ventral intercalary branches rarely present with minute leaves. Surface cells of stem quadrate ca. 50μ, to rectangular-quadrate 65μ long. In cross section cortical cells in mostly 8–9 rows, larger than the medullary in 4–6 rows. Rhizoids absent or few. Leaves loosely imbricate, transverse to slightly succubous, concave from a broad base, non-canaliculate, almost round in most cases, 0.5–0.6mm long, bi-lobed to ½ or nearly so, lobes scarcely equal, the dorsal lobe a little smaller, broadly triangular, obtuse or with an 1-celled apiculus, about 8 cells broad at the base of each lobe, 6–8 cells from the sinus to the leaf-base, sinus obtuse or rounded, lower leaves paler and not so concave, then becoming faintly to deeply pigmented, specially the cell walls. Cells uneven in size, quadrate-hexagonal or quadrate-rectangular, 40 x 40– 40 x 60μ, walls firm, trigones absent, underleaves absent.

Typus from subalpine bog, Key Summit, Fiordland, coll. J. Taylor, 135778 pp. CHR, mixed with *Lembidium* sp., no. 12634 Herb. E. A. Hodgson.

This plant has the appearance of a *Cephalozia,* but the transverse leaves, and lateral branching would rule out that genus. Though differing somewhat in cells and leaf-shape, it seems better to place this new species in *Metahygrobiella* than to propose a new genus for it. It is a pleasure to name it for Dr Jane Taylor, who has so generously sent me the material.

Another locality is Kelly's Hill, Westland, where it was collected by S. Berggren, no. 3907. In this case the stems are more or less erect mixed with a small erect-growing moss.

Metahygrobiella monoica Hodgson sp. nov.

Planta parva monoica. Caulis simplex 1cm longus, separatus, procumbens cum *Riccardia,* 1.75mm latus, cellulae corticis parvae, quadratae vel auguste rectangulares, transsectione minutae, numerosae. Folia flaccida 0.5–0.8mm remota, superne ex parte roseo-tincta, bi- vel triloba ¼–⅓, lobis triangularibus acutis vel obtusis, conniventibus vel porrectis. Cellulae superne ca. 25μ, raro 30μ, basales elongatae. Folia floralia ad 1mm longa, 3–4 lobata, amphigastrium angustum, breve bilobum. Perianthium ad 3mm, cylindricum, 0.95mm latum, ore 4–5 lobato, lobis acutis breve piliferis. ♂ rami 2, orti infra perianthium, bracteis 4–5 jugis, saccatis, inflatis, antheridia non visa.

Typus 12548 Herb. E. A. Hodgson, from mountains above Nancy Sound, 3,600ft, Fiordland, coll. C. J. Burrows, Jan. 1963.

Plants monoicous, growing with *Riccardia* species. Stems 1cm, isolated, 1.75mm in diameter, cortical cells in cross section numerous, very small with thickish walls, surface cortical cells small, quadrate or narrow triangular. Leaves flaccid, from 0.5–0.8mm, distant, upper partly tinged with rose, bi-trilobed to ca. ¼–⅓, lobes triangular acute ending in 1 cell or obtuse, conniving or straight. Upper cells small, ca. 25μ in some cases 30μ, mid-leaf and basal elongating to twice that length. Floral leaves not crowded, 3–4-lobed, lobes 1mm with or without a small lateral tooth, lobes broadly triangular; underleaf narrow, shortly bilobed. Perianth to 3mm, smooth, cylindrical, 0.95mm wide, mouth variable, 4–5 lobed, lobes acute to shortly piliferous. ♂ branches directly below the perianth with 3–4 foliage leaves, then 4–5 pairs of inflated saccate leaves, the ventral margin of the sac reaching to ½ the width of the dorsal portion of the leaf. Antheridia not seen.

This species differs from *M. tayloriae* in the absence of a hyaloderm and the monoicous inflorescence, while the leaves of *M. tayloriae* are more round and concave with uniform large cells.

ADELANTHUS Mitt.

Spruce (1876) tried to change the type of Mitten's genus *Adelanthus* from *Adelanthus falcatus* to *Adelanthus decipiens.* But Mitten's type (Mitten, 1864) is *A. falcatus,* and it cannot be gainsaid, as the following extract will show.

"*Adelanthus,* a new genus of Hepaticae.

" Perianthium in ramulo brevi ad basin ramulorum celatum, tubulosum subtrigonum, ore connovente, dentato. Involucri folia trifaria. Flores masculi in spicis parvis ventralibus. Caulis inferus procumbens intricatus; stoloniferus aphyllus, ramis simplicibus, erectis, curvatis, Folia disticha, fere verticalia, margine dorsale decurrente.

"*Adelanthus falcatus; Jungermannia falcata* Hook. *Musci Exotici* t. 89; *Plagiochila falcata Synopsis Hepaticarum* 649; *Alicularia occlusa* Hook. & Tayl. *Crypto Antarc.* t. 62 f. 8.

Hab. New Zealand, Menzies & Colenso; Tasmania, Gunn and Oldfield. Lord Auckland Islands and Campbell Island."

Alicularia occlusa was linked with *Jungermannia falcata,* because, as we know from the *Flora Novae Zealandiae* (1854–1855) Mitten considered these two to be synonymous, " very different in appearance but connected by intermediate forms ".

Mitten used the term " perianth " in its broad sense, meaning a floral envelope. He then proceeds to discredit Taylor's story that the " perianths " figured in Hooker's admirable illustration of Menzies' specimen from Dusky Sound, New Zealand, in 1791, are those of an associated *Aneura.*

In further paragraphs Mitten names several new combinations, including *Adelanthus decipiens* for fruiting specimens of Spruce's.

Spruce, at odds with Mitten, tried to make this *Adelanthus decipiens* a new type of *Adelanthus* (1876).

Adelanthus decipiens is a British plant, *Jungermannia decipiens* Hooker (1813) with the following synonymy, taken mainly from Macvicar (1926):

Plagiochila decipiens Dum., Rec. d'obs. p. 15, 1835; G. L. & N., Syn. Hep. p. 24.

Adelanthus decipiens Mitt. *Journ. Linn. Soc.,* p. 264, 1864.

Adelocolea decipiens Mitt. *Challenger Expedition. Rep. Bot.* 1, 2, p. 106, 1884.

Pseudomarsupidium decipiens (Hook.) *Grolle, Zwei Gattungen der Lophoziaceae neu für Afrika, Trans. Brit. Bry. Soc.,* 4 part 3, 1963.

It is rarely found in fruit, but Macvicar, who would know the plant in its distribution from Wales to Inverness and Ireland, describes both a calyptra and a perianth (*Pseudomarsupidium* Herzog has no perianth) which is at variance with *Adelanthus falcatus* Mitt. in which the floral envelope is a calyptra, and not a perianth in the modern sense.

Assuming that Macvicar is correct, it would seem that *Jungermannia decipiens* is therefore not an *Adelanthus.* Perhaps *Adelocolea decipiens* Mitt. is the correct name, providing Mitten's identification is correct.

Adelanthus capillare (Berggr.) Hodgson comb. nov.

Marsupidium capillare Berggren. New Zealand Hepaticae, Lund, 1896.

This small species from Castle Hill, Canterbury, was invalidly combined with *Plagiochila* (Hodgson, 1958). I now consider it to be an *Adelanthus.* It is a very small plant, with the lower portion of the stem bare. The lower leaves are quite entire, and the marginal toothing of the upper ones varies considerably, with the uppermost ones lobate, hence Berggren's description of them as 2–3-fid with triangular lobes. This is so in the type, but plants collected at Cass by L. Visch have the leaves more dentate than lobate.

PSEUDOMARSUPIDIUM Herz.

Pseudomarsupidium piliferum (Steph.) Herz.

This species, the type of the genus, is a New Zealand plant. The genus, which is close to *Adelanthus,* has no perianth and the fructification is basal. The leaves (in *P. piliferum*) bear 2 spines at the angles of the apex.

This genus was omitted from my generic key in *Tuatara,* though listed in the key of 1950.

Stephani's specific type of *Marsupidium piliferum* was from New South Wales, while Herzog's type of the new genus, again *Marsupidium piliferum,* was from Chile.

LOPHOCOLEA Dumort.

Lophocolea multipenna (Hook. & Tayl.) G. L. & N.

Lophocolea pallida Mitt. *Fl. Nov. Zel.*, ii, 135, 1864.

The type packet of *Lophocolea multipenna* contains 2 species, *Lophocolea pallida* Mitt. and the one commonly known as *Lophocolea australis,* now known to be invalid as there was an earlier *Lophocolea australis.*

Earlier (Hodgson, 1953, p. 335) I thought that the name *Lophocolea multipenna* applied to the *L. australis* one, but further study has shown that it is the correct name for *Lophocolea pallida* Mitt. In fact Hooker (1867) refers *Lophocolea multipenna* (Hook. & Tayl.) to synonymy with *L. pallida* Mitt. but of course it should be the other way round.

If *Lophocolea australis* is to remain in the genus *Lophocolea*, and Grolle (1962a) excludes it from *Leptoscyphus,* where Schuster placed it (1963), it must have a new specific name.

In this particular instance it was wrongly identified by Hooker & Taylor as *Leioscyphus chiloscyphoides* = *Leptoscyphus expansus* (L. & L.) Grolle.

RHIZOCAULIA Hodgson gen. nov.

Rhizocaulia

Sterilis, caulis cortice non hyalino, parce ramosus, ramis longis, terminalibus lateralibus, rhizoidibus longissimis, fasciculosis. Folia transverse vel sub-transverse inserta, concavo-conduplicata, trilobata. Cellulae apice parvae, mediae et basales elongatae ad 50μ, trigonis nullis. Amphigastria magna, biloba, lobis anguste lanceolato-acuminatis, interdum absentia.

Generitypus: *Rhizocaulia westlandica* Hodgson sp. nov., from Teremakau, Westland, in sand, coll. S. Berggren, no. 4073, Feb. 1874.

Rhizocaulia westlandica sp. nov.

Planta sterilis, media, flaccida, pallida, caespitosa, arenosa. Caulis sub-erectus vel prostratus, ad 2cm longus, parce ramosus, ramis plerumque longis, lateralibus, terminalibus. Cellulae corticis minor quam medullae. Folia non imbricata, mollia, transverse vel sub-transverse inserta, concavo-conduplicata, trilobata, ad 1mm longa. Cellulae irregulares, parvae in apice, mediae et basales elongatae ad 50μ, trigonis nullis. Amphigastria magna, biloba, lobis anguste lanceolato-acuminatis, subtenta rhizoidibus longissimis fasciculosis, interdum absentia.

Plants sterile, medium in size, flaccid, pale. Stems flaccid to 2cm long, but usually shorter, 2.5–3mm broad at the base, shortly or longly sparingly branched, branches lateral terminal, rhizoids long to very long, conspicuous in distant or not so distant tufts, near the bases of the underleaves when these are present. Cells of cortex narrowly elongate, in transection much smaller than those of the medulla, about 15μ wide, interior to 40μ, with some considerably smaller, watery looking, pellucid, about 8–10 in number, becoming smaller towards the cortex. Leaves flimsy, transverse, insertion reaching half way round the stem, to 1mm long and 1mm broad, becoming smaller towards the base in some stems, concave-conduplicate, 3-lobed, lobes broadly triangular, ± obtuse, the ventral lobe smaller. Cells without oil-bodies, irregular in size and shape, small at the apex, but gradually elongating to mid-leaf and base to ca. 50μ, with thickened ends, and more or less in rows, recalling those of *Balantiopsis rosea*, trigones absent. Underleaves large, bilobed, lobes narrowly lanceolate-acuminate. Typus as above.

Berggren gave this taxon the herbarium name of *Lophocolea cavifolia*, but the 3-lobed, transverse flimsy leaves with narrow cells thickened at the ends, are surely not those of a *Lophocolea.* It has more the facies of a *Metahygrobiella* Schuster, but the 3-lobed leaves, the large underleaves, and long, tufted, trailing rhizoids rule out this genus (Schuster, 1963, p. 214).

CHILOSCYPHUS Corda

Chiloscyphus furcistipulus Hodgson sp. nov.

Planta dioica, media, fulva, depressa, calcicola. Caulis saepe fuscus, procumbens ad 1.5cm sed plerumque 1–1.3cm, subsimplex, cellulae corticis rectangulares. Folia caulina, succuba, parum imbricata, lingulata, ad 1mm longa, 0.5mm lata, margine ventrali parum arcuata, apicis rotundata, integerrima. Cellulae variabiles ca. 30μ isodiametrae, vel elongatae intermixtae, ad 60μ, trigonis parvis. Amphigastria 0.7mm longa, ovalia, bifida, integerrima, sinu obtuso, lobis lanceolato-acuminatis. Folia floralia majora, breve biloba et sparsim dentata. Amphigastrium oblongum, breve trilobum. Perianthium 1.6mm, trilobum, ore lato, dentato. Androecia spicata, spicis interdum seriatim, bractiis nonnihil dentatis, saltem 6-jugis.

Plants dioicous, smallish, in a depressed mat, often on limestone, rarely fruiting, becoming brown when dry. Stems often dark in colour, subsimple, flexuous, procumbent, to 1.5cm, but usually 1–1.3cm, cortical cells rectangular. Leaves succubous, a little imbricate, lingulate, varying in size on the stem, increasing, then smaller as if growth were arrested, basal may be 2–3 dentate and small, 0.5mm across the middle, widening somewhat towards the base, insertion slightly oblique, dorsal base reaching to a quarter the width of the stem, ventral margin somewhat arched below the middle. Apices rounded, rarely truncate-rounded, entire, cells rounded to oval or faintly hexagonal, 30μ–40μ, or elongated to as much as 60μ. Trigones small. Underleaves to 0.7mm, oval-oblong, bifid to $\frac{1}{2}$, sinus obtuse, connate on one side with the leaf; lobes simple, lanceolate-acuminate, parallel or diverging, entire. Floral leaves larger, bidentate to ca. $\frac{1}{4}$, margin sparsely dentate. Underleaf shortly bilobed, lobes triangular, scarcely toothed. Perianth 1.6mm, mouth broadened, more or less toothed, cells variable in size, mostly elongated to 60μ, with thickened walls. Androecia spicate, the short branches in a series along the stem in some cases from the axils of the leaves; bracts in 6 or more pairs, apices may be somewhat toothed or entire.

Typus: damp earth at mouth to cave, 300–400ft, Horse Range Road, Palmerston S., 5089 Herb. Hodgson, subnumber H1405, 26/8/47, K. W. Allison

Sterile specimens of *Chiloscyphus furcistipulus* differ from *Lophocolea minor* (syn. *L. calcarea* Steph., also calcareous) in the larger size, rounded leaf-apices without gemmae, and distinct, oval, entire, bifid underleaves. The much smaller size and distinctive underleaves of *C. furcistipulus* at once separate it from *C. normalis* Hodg., while in *C. conistipulus* Steph. the leaf apices are not so regular and the underleaves are shorter and broader.

North Island: near Keri Keri Falls, Bay of Islands, Nov. 1940, 4334 V. W. Lindauer; Waikare Gorge, Napier-Wairoa Road, Nov. 1930, 290, damp bank by caves, Otupae Station, N.W. Ruahines, by side of gorge, Otupae Station, Mar. 1934, 2967, E.A.H.; Coal Creek, Ruahines, Oct., 1933, CHR 7613, V.D.Z.; Ruahines, Jan. 1945, 1576, N. M. Elder; on limestone cliffs near Te Reinga Falls, Wairoa, 12356, E.A.H., Herb. Hodgson.

South Island: entrance to limestone caves at Broken River, Broken R. Basin, 11783, L. Visch 199; damp bank at entrance to cave in limestone face, Horse Range, North of Palmerston, H3410 L. J. Jack; with *Dicranoloma robustum* var. *setosum*, Tableland, Mt. Arthur, Nelson, 12510 H. M. Druce.

Chiloscyphus conjugatus Mitt. in Fl. Tas.

This Tasmanian species was discovered in a subalpine meadow, Tin Range, Stewart Island, by Dr J. Taylor, 14/1/92 no. 135198 CHR. The stems are almost terete, the leaves suborbicular, very concave and dorsally secund, and it is difficult to flatten them to ascertain that the dorsal leaf bases are really connate. The underleaves are also round and concave with all margins entire. Trigones everywhere large and nodulose.

Chiloscyphus physanthus (H. f. & T.) Mitt.

Under the heading *Leioscyphus repens*, which is a synonym of *Chiloscyphus physanthus*, Grolle (p. 70 1962a) gives my number of *C. physanthus* no. 3369, as from Auckland Islands. This specimen is from Bay of Islands, North Auckland of the North Island of New Zealand. I know of no record of *C. physanthus* from the subantarctic Lord Auckland Islands.

ALLISONIELLA Hodgson gen. nov.

Allinsoniella

Planta fusco-brunnea, intricate caespitosa. Caulis simplex, nigrescens, ca. 1cm longus, ortus e repente caudice, arcuata val flexuosa. Folia 0.5mm longa et lata, obcordata, biloba, lobis aequalibus, rotundatis, remota ad imbricata, plerumque complicata. Cellulae parvae ca. 10μ, quadrate, parietibus crassis. Folia floralia majora, similia caulium. Perianthium ad 1.3mm oblongum, valide 5 carinatum, apice non-contracto, fere lobato, vix dentato.

Generitypus *Allisoniella obcordata* Hodgson sp. nov. On boulder in Waipoua River, at water level, North Auckland coll., K. W. Allison, 2/4/45, H919 Herb. K.W.A., 12962 Herb. E.A.H.

Allisoniella obcordata Hodgson sp. nov.

Planta parva, dioica, fusco-brunnea, intricate caespitosa. Caulis simplex, nigrescens, ca. 1cm longus, tenax, arcuatus vel flexuosus, ortus e repente caudice, stolonibus basalibus, numerosis inferne efoliosus vel foliis minutis, raro rhiziferus. Folia remota ad imbricata, subtransversa, decurva, patentia vel erecto-patentia, superne complicata, obcordata, 0.4mm longa x 0.4mm lata, sursum majora (caulibus fertilibus), biloba ad $\frac{1}{4}$, lobi aequales, rotundati, sinu rotundato nec profundo, margine basale reflexo. Cellulae minutae, ca. 10μ, parietibus crassis, nodulosis. Folia floralia majora, ad 8mm longum, bilobum, lobis rotundatis integris. Perianthum ad 1.3mm oblongum, valide 5 carinatum et sulcatum ore non-contracto, hyalino, irregulariter crenato-lobato, vix dentato.

Plants small, dioicous, brown to blackish, light brown at the tips of the sterile stems. Stems simple, arcuate or flexuous, from a creeping rhizome, rarely more than 1cm long, blackish, basal stolons very numerous, lower portion leafless or with minute leaves, in cross-section with several rows of small dark cells, interior hyaline and larger. Leaves distant to loosely imbricate or imbricate, decurved or spreading or erecto-patent, obcordate, a little decurrent dorsally, ventrally with a somewhat hooked insertion, 0.4mm long x 0.4mm wide at the widest part, but becoming smaller and more complicate towards the tips of sterile stems, larger towards the apex in fertile stems, bilobed to $\frac{1}{4}$, lobes equal, very rounded, sinus shallow or rounded with basal margin reflexed, lighter brown towards the extremities of the sterile stems. Cells very small ca. 10μ, walls thick nodulose. Floral leaves in at least 2 rows, innermost to 8mm long, appressed to the perianth, similar to the stem leaves but larger, margins entire. Perianth 1.3mm long, oblong, strongly 5-ribbed and sulcate, 1 dorsal, 2 ventral and 2 lateral, cells larger than the foliar ones, mouth hyaline, unevenly crenate-lobed, shortly and very sparsely toothed, not contracted at the mouth. Androecia not seen. Typus as above.

As regards the new genus, the obcordate leaves and strongly ribbed and furrowed perianth must rule out *Lophozia* and *Sphenolobus*. It is known only from the type which is somewhat waterworn with detritus around the base. It is named for Mr K. W. Allison, whose numerous collections have been so helpful.

JAMESONIELLA Spruce

Jamesoniella pseudocclusa Hodgs.

Syn. *Cryptochila pseudocclusa* (Hodgs.) Schuster (1963).

In Hodgson (1962) it was stated that perianth-bearing plants of this species had been found at Otira Gorge by L. Visch. A further collection is from beech forest, on wet roadside face on Haast Pass Highway, Westland, coll. K. W. Allison,

no. 13954 Herb. Hodgs. These are splendid specimens to 10cm long, sometimes with long lateral branches from a short distance below the perianth. On some of of the branches and stems the leaves may be plano-distichous and succubous with the recurved ventral margins usually conspicuous. The perianths are long and slender, 5–7mm, folded to the apex and a little twisted, mouth lobed, mainly entire; spores ca. 15μ, elaters 0.15–0.25mm long. Floral leaves concave, appressed, ventral margins incised, underleaf bifid, lacerate, appears to be partly connate with the floral leaves.

Jamesoniella cambewarrana Steph.

Spec. Hep. vi, p. 97, given as from Great Barrier Islands of New Zealand (Watts legit) is of course from the Great Barrier Reef Islands, Australia.

Jamesoniella allisonii Hodgson sp. nov.

Planta dioica, mediocris, pallide straminea, muscicola. Caulis ad 3cm, flexuosus, simplex vel parce ramosus, ramis lateralibus, terminalibus vel ventralibus; rhizoidibus numerosis vel paucis, dispersis. Folia succuba, laxe impricate vel subremota, longulato-ovata, dorsale secunda vel planodisticha, apicibus integris, retusis, inaequaliter bilobisve; cellulis ca. 30μ, minoribus in margine. Folia floralia terminalia, lacera, amphigastria bifida, cum 1–3 innovationibus.

Plants smallish, dioicous, muscicolous, pale brown. Stems to 3cm, 0.3mm in diameter, flexuous, simple or with one or two branches, branches mostly lateral terminal, occasionally ventral intercalary, rhizoids present, sparse or numerous, scattered along the stem, lower portion may be bare of leaves, no flagella seen. Leaves succubous 0.8–1.25mm long, 0.65–0.8mm wide, a little imbricate to subremote, often dorsally secund, ovate-lingulate, entire with apices variable, broadly or obtusely rounded, truncate, shallowly retuse or unequally bilobed, specially on the branches. Floral leaves terminal, in at least two rows, lacerate enclosing archegonia, involucral underleaf 2-fid, with 1–3 sub-floral innovations arising side by side. Perianth and antheridia not seen.

That this is a hitherto undescribed species of *Jamesoniella* has been confirmed by Herr Dr Riclef Grolle. Its lingulate dorsally secund leaves and flexuous stem recall *J. flexicaulis*, but it is much less robust than that distinctive plant with much smaller leaves, scarcely contiguous to loosely imbricate. Moreover, the leaves of *J. allisonii* are less regular in shape, varying from entire to unevenly bilobed or in one instance even trilobed.

Typus: growing in dense cushion of *Lepyrodon lagurus* (moss) on earth in beech forest ca. 1,200ft, on hillside above Queenstown, Central Otago, coll. K. W. Allison, no. H3601 Herb. Allison, 11592 Herb. Hodgson.

I take much pleasure in naming this species for Mr K. W. Allison, who collected it.

ACROBOLBUS Nees

Subgenus MARSUPELLOPSIS

Acrobolbus aequaelobus Hodgson sp. nov.

Planta sterilis, mediocris, cum aliis hepaticis associata, non terrestris. Caulis ad 2 cm longus, 0.2mm latus minute papillosus, rhizoidibus numerosis vel parcis, interdum apicibus ramosis. Folia succuba, plano-disticha vel dorsale secunda, sub-imbricata vel remotiuscula, ad 0.9mm longa, biloba ad $\frac{1}{2}$; lobis plerumque aequalibus, triangularibus, sinu obtuso, acutis vel obtusis. Cellulae ca. 20μ, crassae, substellatae, trigonis maximis, basalibus majoribus, trigonis minoribus. Amphigastria linearia, ca 0.2mm arcuata.

Plants sterile, medium, epiphytic on *Dracophyllum* shrub with other hepatics Stem to 2cm long, 0.2mm wide in the thickest part, minutely papillose; rhizoids scattered, sparse or plentiful, colourless; branches few, lateral-terminal with an incomplete dorsal leaf. Leaves succubous, a little dorsally decurrent, horizontally spreading or dorsally secund, sub-imbricate or a little remote, to 0.9mm on main stems, sub-symmetrical with dorsal and ventral margins a little arched, bilobed to one half, lobes more or less equal, triangular, acute or obtuse, sinus obtuse. Cells ca. 20μ, incrassate, sub-stellate, trigones very large, confluent, cuticle minutely papillose, roughly hexagonal, basal larger to 35μ, with smaller trigones. Underleaves linear-lanceolate occasionally with a small basal lobe, ca 0.2mm, arcuate.

This species differs from *A. cinerascens* in the pale leaves, equally bilobed, the small papillae, the incrassate, stellate, almost empty cells, and the conspicuous underleaves; nor does Stephani describe any species having these correlated characteristics. In *A. cinerascens* the dorsal lobe is much smaller than the ventral.

Typus on *Dracophyllum* with *Cuspidatula, Lepicolea, Frullania* and *Leptocolea cucullifolia*, Mangawaru Plateau, Raukumara Range, coll. A. P. Druce, Jan. 1953, no. 9274 Herb. E. A. Hodgson.

GOEBELOBRYUM Grolle

Goebelobryum paradoxum (Schust.) Hodgs. comb. nov.

Austrolophozia paradoxa Schust. *Journ. Hattori Bot. Lab.* No. 26, 1963.

Small, amongst other hepatics in snowgrass. Stems to 1.5cm, usually shorter, simple, or sparsely branched, 0.4mm in diameter, cells numerous with little differentiation, from a creeping densely rhizeriferous axis, rhizoids also present, long, on the basal portion of the leafy stem. Leaves succubous, with a wide arched insertion, from the mid-ventral stem, and somewhat dorsally decurrent, concave, to 1.4mm wide, ca. 1mm long, smaller on the branches, trilobate, lobes broadly triangular, apices acute or apiculate to shortly aristate, ending in 1–3 single cells. Underleaves absent or rudimentary. Cells rounded-hexagonal or oval-hexagonal, ca. 30μ to 30 x 45μ, basal rectangular walls thick in older leaves trigones absent or minute, marginal cells quadrate or quadrate-rectangular. Oil-bodies small to comparatively large, mostly oval, 1–3 in each cell. Marsupium just forming at the stem apex, sheathed in small bracts.

The habit, wide concave, succubous, 3-lobed, soft-substanced leaves, oil-bodies and rudimentary underleaves suggest *Goebelobryum* for this taxon. It lacks the network of basal stolons to be found in Marsupidium. From *G. unguiculatum* (H. & T.) Grolle it differs in the non-ciliate leaves and its alpine habitat.

With *Lepidozia obtusiloba, Telaranea patentissima* in snow grass, Kelly Range, Westland, 4,500ft, coll. C. J. Burrows, Mar. 1963, in Herb. C. J. Burrows, Canterbury University, No. 12584 Herb. Hodgson.

Experience with such genera as *Temnoma, Schistochila, Balantiopsis, Lepidolaena,* etc., shows that the presence or absence of marginal spines or cilia need not constitute a generic determinant.

The relationship of this supposedly new species to *Goebelobryum unguiculatum* (Hook. & Tayl.) Grolle is being investigated. Hooker (1967, p. 519) records *Gymnanthe unguiculata* (Hook. & Tayl.) Mitt. from Middle Island, which is the South Island. Schuster's type was from Mt Maunganui, Dunedin.

Goebelobryum unguiculatum (Hook. & Tayl.) Grolle

In his description of the new genus *Goebelobryum*, Grolle (1962) misquotes me as listing *Acrobolbus unguiculatus* for the Auckland Islands (Hodgson, 1946). The Auckland here listed is the Auckland of the North Island of New Zealand.

In Hooker's *Handbook of the New Zealand Flora*, Supplement p. 753, 1876, Mitten stated: "*Acrobolbus* Lehm. & Lindb. includes *Gymnanthe unguiculata* and *Gymnanthe lophocoleoides*". Grolle (1962b) does not allow these as new combinations for Mitten.

PLAGIOCHILA Dumort.

Plagiochila annotina (Menz.) Lindenb.

This species was first described in the *Musci Exotici* (Hook. 1818), but in spite of Menzies' manuscript naming it *Jungermannia annotina,* Hooker placed it under *J. adiantoides.* It remained for Lindenberg (L839) to give it specific recognition under Menzies' name, using the same type as Menzies and Hooker from Dusky Sound.

P. annotina is perhaps the most variable of all our species of *Plagiochila.* The original plant is tall, with closely imbricate horizontal dimidiate-ovate leaves, longly dorsally decurrent. A constant feature of the species is the continuation of the ventral marginal teeth, in some form or other, right down to the dorsal base of the leaf.

Variations occur in the size, number and disposition of the marginal teeth, which may be sub-ciliate, numerous or few, or in some cases even dentate-crenulate, also in the leaf shape varying from dimidiate-ovate, to shorter and broadly obtuse, and the varying size of the cells and trigones in the specimens. One more than usually distinct form from Rangitoto Island, Auckland Harbour (Millener) 4867 is black with narrow arcuate leaves ending in 2–3 strong teeth, and with large trigones.

The shorter obtuse-leaved specimens come very near to *Plagiochila circumdentata* Steph. which, as its name implies, also has marginal teeth continued round the leaf. The stem "paraphylls" (Hodgson, 1944) are really processes on the end of the longly decurrent dorsal margin. These are not restricted to *P. circumdentata* as was thought (Hodgson, 1944), but appear also in strongly dentate specimens of *P. annotina.*

Typical leaves of *P. circumdentata* are similar in shape to those of *P. deltoidea,* with the dorsal margin not so strongly revolute, and I am led to the conclusion that *P. annotina* freely hybridizes with *P. deltoidea* and that *P. circumdentata* may be a common hybrid of this cross.

PEDINOPHYLLUM Lindbg.

Pedinophyllum monoicum (Steph.) Grolle

Plagiochila monoica Steph.

Two new records for this species are, North Island: in grass with *Marsupidium perpusillum* and *Catagonium politum,* on lower slopes of Mt. Maunsell near Castle Point, 12346 H. M. Druce.

South Island: with *Metzgeria* sp., Cass, W. R. Philipson.

Except for the absence of underleaves, this species would be scarcely distinguishable from a *Leptoscyphus.* Strange to say the Mt Maunsell plant appears to be dioicous.

ACROCHILA Schuster

Acrochila simpsonii (Mart. & Hodgs.) Schust.

Plagiochila simpsonii Mart. & Hodgs.

This genus was separated from *Plagiochila* on account of the apparently exclusively postical branching (*Plagiochila circinalis* also has postical vegetative branching) and the flat to faintly incurved dorsal margins. Previously known only from

Fiordland and Stewart Island, I now have it from Ngamoko Track, Waikaremoana, 2,000–3,000ft, North Island, 9934, with *Riccardia colensoi* coll. E.A.H.; and from Mt Pukeamaru, East Cape, North Island, 3,200ft, 11453, on bark mixed with small "Lejeuneas", coll. Alison Druce. This specimen is pale green, lacking all traces of the typical pigmentation, and has small trigones, also a more or less distinct row of marginal cells.

Also from Tasmania mixed with *Plagiochila decurvifolia* Steph. or a specimen so labelled.

BLEPHARIDOPHYLLUM Angstrom

Blepharidophyllum densifolium (Hook.) Angstr.

Schuster (1963, p. 272) questions the presence of this beautiful species in Stewart Island, but W. Martin collected it near West Hut, Tin Range, 15/1/49, 2045, subnumber 408. Another specimen is from Hari Hari, Westland, growing intermixed with *Schistochila*, Leg. J. B. Langridge, H307 Herb. K. W. Allison. It is not yet known from the North Island.

DIPLOPHYLLUM Dumort.

Diplophyllum obtusifolium (Hook.) Dumort.

Syn. *Diplophyllum domesticum* (G.) Steph. *Hedwigia,* 1894.
Jungermannia domestica Gottsche, *Linnaea,* 1857.

Plants usually paroicous, caespitose or semi-prostrate,, often mixed with other bryophytes, bright green when fresh, sometimes rose or brownish rose, alpine, terrestrial. Stems to 1.5cm but shorter when mixed with other bryophytes, usually simple, rhizoids spread along the stem, branches lateral either from the axil of a leaf between the lobes, or between two leaves with much reduced dorsal leaves; one or occasionally two subfloral innovations from the axils of the female bracts of a non-paroicous stem (in one instance). Leaves approximate, spreading, sometimes a little falcate, transverse, divided into two unequal conduplicate lobes, partly embracing the stem, the dorsal lobe smaller with a narrow hyaline keel at the fold of the leaf often reaching to half-way along the leaf, at the base merging into the hyaline cortex of the stem; dorsal lobe to threequarters the length of the ventral lobe, appressed, directed away from the stem, rounded obtuse; ventral lobe rounded obtuse occasionally apiculate, margins everywhere minutely denticulate, cells small, dense, 14–16μ, rounded polygonal or subquadrate, elongated in the mid-basal region to as much as 30μ, cuticle minutely papillose; underleaves absent. Floral leaves larger than the cauline to 1.4mm, otherwise similar, the ventral lobe with an auricle where the dorsal leaves it (in one instance). Perianth oval to nearly 2mm, pluriplicate, mouth lobed with as many lobes as there are folds, lobes triangular, margins dentate, apex hyaline. ♂ bracts below the perianth, saccate at the base and convexly arched, antheridia 1–2, small.

Diplophyllum domesticum (G.) Steph. was first discovered in E. Australia, then later collected in Tasmania. It seems probable that it was first collected in New Zealand by G. O. K. Sainsbury on Mt Arthur, Nelson, and identified as this by the late E. W. Nicholson. Schuster (1963, p. 272) thinks it might be conspecific with *D. obtusifolium* of the Northern Hemisphere, and Arnell (1956) evidently is of the same opinion, as he includes New Zealand in the distribution note for this species. Schuster, however (1963, p. 272) says that *D. domesticum* differs primarily from *D. obtusifolium* in being freely gemmiparous. I cannot confirm this, though I have looked carefully through numerous specimens, and have found no gemmae at all. I have also examined plants from Washington coll. T. C. Frye, and from Sweden, and can find no constant differences, though in the overseas specimens ♂ bracts are occasionally terminal on ordinary branches.

New Zealand localities are—North Island: lava flow in crater, Mt Tongariro, H186, rocks of crater rim with *Jamesoniella inflexo-limbata,* 8355 L.B.M.; earth pocket on rock, Mt Ruapehu, 6161 G. O. K. Sainsbury, Ruakituri, Wairoa, 9342 B. Teague; Gorge above Rangitikei Forks, Kaimanawas, 3615; headwaters of Rangitikei R., 8354, Orua V. Ruahines, 8353 H.M.H.; Mt Egmont, 6,000ft, A.P.D.

South Island: Arthur's Pass, 8359, A.L.H.; Avalanche Peak, 3,700ft, 44 W.M.; Buller Gorge, A. M. and L. G. Jack H5680; Lewis Pass, tussock land, 4,500–5,500ft, 12279 C. J. Burrows; steep bank of gully in tussock, Maungatua Range, Otago, ca. 2,500ft, H846 K.W.A.; Milford Track, 13606 CHR, J. Taylor.

Also examined from Mt Buffalo National Park, N.E. Victoria, ca. 4,500ft, 94W, J. H. Willis.

SCHISTOCHILA Dumort

Schistochila pusilla sp. nov.

Planta sterilis, parva, carnosa, pallida, non repens. Caulis simplex ad 1cm longus, 0.4mm latus, dorsale planus, ventrale convexus, rhizoidibus pallide fulvis. Folia ad 1.2mm longa, biloba, carinata, concava, sinu rotundato, transverse inserta, oblique patula vel squarrosa, laxe complicata; lobis subaequalibus, dorsali ventrali adnato, convexo; oblique truncato, angulo superiore acuto prolongato; marginibus integris, crenulatis. Cellulae rotundatae, 40μ, basales longiores, convexae, parietibus tenuibus. Amphigastria oblonga-ovata, biloba, sinu obtuso, lobis erectis vel convergentibus.

Plants small, sterile, not creeping, probably caespitose, pale green, fleshy. Stems fleshy, simple, to 1cm, usually somewhat shorter, 0.4mm wide, flattened on the dorsal surface, rounded on the ventral, cells all similar to those of the leaf, but somewhat smaller, those of the cortex appearing more opaque in cross section, rhizoids pale brown, clear, mostly near the base, single, or in pairs or groups. Leaves to 1.2mm long, squarrose to obliquely spreading, insertion almost straight, transverse, lobes subequal in length, narrowly ovate, loosely complicate, not appressed, margins entire but crenulate from bulging cells; ventral lobe (leaf) 1.2mm long x 0.5mm wide, excluding the wing or keel, which is 3–4 cells wide; dorsal lobe 1mm from base to apex, 0.3–0.4mm wide with the free upper angle acute to acuminate, and an occasional tooth near the apex, line of insertion with the ventral ca. 0.8mm long, cells rounded, 40μ basal cells elongated to 50μ, walls thin, chloroplasts near the cell walls, trigones very small or appearing as with a network of contents. Underleaves ovate to longly ovate, to 0.5mm long x 0.3mm broad, bilobed to less than $\frac{1}{2}$, sinus obtuse, lobes triangular-acuminate straight or converging from a base of 4 cells ending in a series of 2–3 single cells.

Taken together, the small size, fleshy substance, non-creeping habit, the obliquely truncate acute or acuminate dorsal lobe, and entire margins, add up to a very distinct little species. It is known only from the type.

Typus 829 Herb. E. A. Hodgson.

Locality: Otupae Range, N.W. Ruahines, coll. A. P. Druce, Jan. 1948.

Schistochila altissima Hodgson sp. nov.

Planta parva vel mediocris, viridis, alpina, caespitosa. Caulis ad 1.5cm longus x 0.5mm diametro, simplex vel parum ramosus, erectus, carnosus, ramis ex axilla ventrale foliorum. Folia caulina non-imbricata, ca. 1.5mm longa x prope 2mm lata, concava, insertio V-formata, bilobata, sinu lunato, lobis aequalibus vel subaequalibus, integerrimis, carina brevior quam lobis (in typo) media, 0.1–0.2mm lata, cellulae parvae, haud pellucidae (in typo), irregulares, ad 25μ x 18μ. Amphigastria ovata, biloba, lobis obtusis, sinu obtuso. Antheridia numerosa, longe stipitata, in foliis terminalibus, foliis non-saccatis.

Plants green to dark green, tufted, erect or sub-erect. Stem to 1.5cm, flexuose in the lower portion where rhizoids are usually numerous, pale, thick, fleshy, 0.5mm across, cells dense, opaque, cortical cells much the same size as the interior ones, branches 1 or 2, arising from the ventral side of the leaf-axil. Leaves more or less remote, transverse, with line of insertion somewhat V-shaped, sub-squarrose, bilobed, broadly rounded, entire, may be broader than long, ca. 1.5mm long x nearer 2mm broad, concave, not conduplicate, sinus lunate, lobes subequal, apices bluntly acute or obtuse; carina not always starting at the base of the leaf, and in the type reaching only to ½–⅔ the length of the leaf, 0.1 to 0.2mm broad across the middle, cells small, dense, opaque, with chloroplasts, irregular in size and shape, ca. 25 x 18μ. Underleaves ovate, to 0.7mm x 0.5mm, bilobed, sinus obtuse, reaching to about ⅓ or less the length of the underleaf, lobed or bluntly acute or rounded-truncate. Antheridia in the 2–3 upper pairs of leaves, pale to yellowish, 0.2–0.23mm in diameter, to as many as 6 in the cavity of the leaf, stalk as long as the antheridia.

The broadly rounded, transversely inserted, non-conduplicate, entire leaves distinguish this species from all the other New Zealand ones. With its sub-squarrose concave leaves it resembles a *Lophozia* in appearance (disregarding the keel). In the Egmont plants, the keel does not reach the sinus but only ½–⅔ the length of the leaf, and the cells are opaque with chloroplasts. In the Arthur's Pass plant, the keel reaches to the sinus, and the cells are much clearer. The Ruapehu plant, which is diminutive and collected from under snow, seems intermediate, with a shortish keel, but the cells are more like those of the southern plant.

North Island: With *Polytrichum* and *Bryum*, Mt Ruapehu, 6,000ft, H4660, S. A. Rose; (N. J. Butler 1519) 14/5/49; seepage amongst rocks, Mt Egmont, 6,000ft 1239, 3,000ft 3641, Dec. 1948; Mt Egmont, 5,000ft, 11697, 11882, 11721, Mt Egmont, 7,000ft, 11700, A.P.D.

South Island: snowgrass, rough Creek Basin, Arthur's Pass area, 5,200ft, J. C. Burrows, 1961.

Typus 11697 Herb. E. A. Hodgson, from Mt Egmont, 5,000ft, A. P. Druce, Jan. 1961.

RADULA Dumort.

We have in New Zealand a species of *Radula* which Dr Castle has tentatively referred to *R. caespitosa* Steph. of the Mascarene Islands. Vegetatively they are the same, but the perianth of the type from the Reunion Islands, Herb. Bescherelle (as sent by Dr Castle) lacks the basal neck of the New Zealand plant. However, I accede to Dr Castle's suggestion that our plant is *R. caespitosa* and describe it as follows:

Radula caespitosa Steph.

Plants dioicous, medium sized, tufted or creeping on bark, pale brown to light gold, without amentula. Stem leaves imbricate, 0.8mm long, apices rounded, recurved, dorsal margin shortly attached to the stem at the base, basal portion ampliate and reaching across the stem, and overlapping the dorsal basal portion of the alternate leaf above; keel arched, the ventral margin slightly incurved at the union with the keel, with a concave outline, then more incurved; lobule ovate-oblong, half the length of the leaf, 0.4mm long x 0.25mm broad, basal portion inflated, base fused with the stem, the free end truncate, with the free angle obtuse. Cells variable, mainly 20–25μ, incrassate with chloroplasts more or less surrounding the lumen. Floral leaves somewhat larger than those of the stem, in 2 pairs, decurrent, lobules half as long and half as broad as the leaves. Perianth terminal on the stem or longish branch, usually with two subfloral innovations, longly obconic, 3 mm long including the neck, ca. 0.75mm broad at the apex, often a little decurved, mouth shallowly retuse. ♂ plants not seen.

In the dry state the ventral margins are increasingly recurved from the lobule towards the apex, thus affording a uniform triangular appearance to the leaves when viewed dorsally. It is perhaps nearest to *R. sainsburiana* (paroicous), but the leaves of that specimen are more irregular in both size and direction. With its medium size and distinctive lobule there is no other New Zealand species with which it may be confused.

Localities—North Island: rain forest, 2,000ft, Te Moehau Mt, L. B. Moore, 2/8/30, 12000Hb. E. A. Hodgson; Mt. Climie, Rimutakas, 2,000ft, 1132, with *Marsupidium setulosum* 2678, A.P.D.

Stewart Island: track to Tin Range, near top, 2624, W.M., 15/1/49; Mt Anglem, 2,000ft, 11959, W.M.; by stream, above Carrington's Hut, 135198D, CHR, J. Taylor.

South Island: near Fox Glacier, 6567, Mrs Knight; edge of bush, 2,500ft, Denniston, 135682 CHR, J. Taylor.

This species belongs in the subgenus *Acroradula* Spruce, in which the perianth is terminal on the main axis, on a leading branch, or on a more or less elongated ordinary branch.*

Radula sainsburiana Hodgs. & Allis.

Additional localities for this small paroicous species are as follow: Bealey, S. Berggren 1874; mountains above Nancy Sound, 3,600ft, 12560 C. J. Burrows; under log in forest, Mt Gray, near L. Manapouri, 106054 CHR, M. J. A. Simpson.

Stewart Island: Mt Anglem, 391 W.M.; track to Tin Range, 11999 W.M.

It would thus appear that Dr S. Berggren first collected this species. The type is from Tongariro National Park coll. G. O. K. Sainsbury.

Radula parviretis Hodgson sp. nov.

Planta sterilis, parva, dense implicata, depressa, sordide viridis. Caulis plerumque 1cm longus, 0.12mm latus, ramosus, rami regulariter alterni. Folia parum imbricata vel contigua, late obovata, apice rotundata, basi antica supra caulem producta, lobulo 0.25–0.3mm x 0.2mm, subquadrato, angulo obtuso vel rotundato. Cellulae minutae, marginales 8μ diametro, medianae basalesque majoribus ad 15μ, intermixtae, parietibus crassis.

Plants sterile, small, densely matted, dingy green. Stems to 1cm, but may be longer, 0.12mm broad, alternately branched, branches mainly short but occasionally quite long. Leaves a little imbricate, broadly obovate, to 0.8mm long, 0.5mm broad, keel slightly arched, scarcely or not at all falcate, ventral margin not infolded, apex broadly rounded, dorsal basal portion free, rounded and reaching well across the stem, line of attachment short; lobule variable, 0.25–0.3mm x 0.2mm, subquadrate, free angle obtuse to rounded, basal line of attachment curved in the upper portion and reaching a short distance across the stem. Cells minute to small, marginal 8μ in diameter, basal and median with larger cells to 15μ intermixed, shape irregular, walls thickened irregularly. The cells tend to appear larger in larger leaves. Perianth and androecia not seen.

R. parviretis differs from other New Zealand species in its small size, together with its roundish leaves and peculiar cell-type. It was referred to Dr Castle, whose comment was, " I have been rather carefully through my types, and although *R. parviretis* troubles me a little, I think it is a good species ".

Typus: on peaty bank at landing for Tin Range, Port Pegasus, Stewart Island, No. 9746 Herb. E. A. Hodgson, coll W. Martin, 10/1/49. Also on log by forest stream, Port Pegasus, Stewart Island, coll. W. Martin 484, 5/1/49.

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* A specimen with somewhat flatter leaves, and noticeably papillose cells has been collected by Dr G. A. M. Scott on *Podocarpus hallii*, with *Lepicolea scolopendra, Chiloscyphus chlorophyllus,* etc., Secretary Island, Fiordland, no. 609249 OTA, presumably this species.

Radula helmsiana Steph. & **Radula allisonii** Castle

In 1936 I sent a small parcel of *Radulae* to Dr H. Castle, of Yale University. Unfortunately these were put in the herbarium storage room while Dr Castle was on leave, and not retrieved till last year when Dr Castle sent me his determinations for the specimens, from which I learn that the names of *Radula helmsiana* Steph. and *R. allisonii* Castle, in Hodgson (1944) must be transposed. With *R. marginata* (Hook. & Tayl.) G. L. & N., these belong to Stephani's section *Longilobae*, in which the lobule is parallel with the stem axis and reaches more than halfway across the width of the lobe.

It is possible that in Dr F. Verdoorn's *Hepaticae Selectae et Criticae* (1935) there might have been a mixture of both *R. helmsiana* and *R. allisonii*. *Radula allisonii* Castle was not validated by Castle till 1963.

Dr Castle has confirmed (in litt.) my suggestion (Hodgson, 1944) that *Radula levieri* Steph. is *R. strangulata* (*stragulata* ?) Tayl. Nov. Hep. *Lond. Journ. of Bot.* 1846, the type of which was collected by Hooker at Bay of Islands in 1840.

Radula levieri Steph. is therefore reduced to synonymy under *Radula strangulata*.

The list of New Zealand *Radulae* to date is as follows: *R. physoloba* Mont., *R. uvifera* (Hook. & Tayl.) G. L. & N., *R. multiamentula* Hodg. (1962), *R. grandis* Steph., *R. papulosa* Steph., *R. sainsburiana* Hodgs. and Allis. (1944), *R. plicata* Mitt., *R. parviretis* Hodgs. (1964), *R. buccinifera* (Hook. & Tayl.) G. L. & N, *R. strangulata* (Hook. & Tayl.) G. L. & N., *R. caespitosa* Steph., *R. silvosa* Hodgs. & Allis. (1944), *R. marginata* (Hook. & Tayl.) G. L. & N., *R. helmsiana* Steph., *R. allisonii* Castle, *R. dentifolia* Grolle nomen nov. (*R. dentata* Mitt.), *R. cuspidata* Steph. (recognized by Castle, 1961).

FRULLANIA Raddi

Frullania prosbosciphora Tayl. (1846)

A long-standing error regarding *Frullania prosbosciphora* Tayl. and *F. cranialis* Tayl. has been cleared up by the late Mr P. N. S. Bibby (Bibby, 1955). It appears that Taylor's type of *F. cranialis*, supposedly from W. Australia, does not agree with Australian and New Zealand plants, but does agree with the European *F. dilitata* with a tuberculate perianth, therefore "another name must be found for the Australian and New Zealand population hitherto passing as *F. cranialis*".

In my review of the New Zealand species of *Frullania* (Hodgson, 1949) I was very doubtful as to the advisability of keeping separate the two supposed species, *F. cranialis* and *F. reptans* Mitt. Bibby (p. 102) does not hesitate to combine these two with *F. reptans* Mitt. as the synonym of *F. cranialis*, which Bibby then proceeds to show is *F. prosbosciphora* Tayl. Mr Bibby kindly sent me a photograph of this species on the sheet from Taylor's Herbarium, Kew. It agrees very well with our plants, the only difference being that there is something of a short proboscis on the distal side of the lobule. *Frullania patula* Mitt. also varies in this respect.

It is therefore apparent that New Zealand plants formerly named *F. cranialis* must now be known as *F. prosbosciphora* Tayl.

The error has been traced to Mitten, who in the *Flora Tasmaniae,* t CLXXX, fig. 5 (1858) gave a wrong representation of *F. prosbosciphora,* the plant figured being *F. clavata* (Hook. & Tayl.) Tayl. This error may have arisen from there being on the lower right hand corner of the type sheet of *F. prosbosciphora* a small envelope containing a small piece of the real *F. clavata.* Mr Bibby checked this piece with the type specimen and drawings of *Jungermannia clavata* Hook. & Tayl. which proved beyond doubt that " this was the species wrongly figured as *F. prosbosciphora* by Mitten in *Fl. Tas.* 2, t 180, fig. 5."

F. prosbosciphora was mis-spelled by Rodway (1916) as *F. proboscifera* and by Mitten as *F. proboscidophora* (1858).

Frullania pentapleura Tayl. (1846)

Syn. nov. *Frullania obtusiloba* Pears. (1923).

I have compared Pearson's type of *F. obtusiloba* with our specimens of *F. pentapleura* and can find nothing specifically different. (*F. laciniaeflora* Pears. has already been referred to *F. pycnantha* (Hook. & Tayl.) G. L. & N. (Hodgson, 1949)).

Syn. nov. *Frullania shanensis* Svihla (1957).

Dr Svihla's careful drawings of this Burman species reveal nothing that is inconsistent with *F. pentapleura.* This is an interesting extension of the distribution of this species.

The type was from Australia.

LEPTOLEJEUNEA Steph. ?

Leptolejeunea australis Hodgson sp. nov.

Planta sterilis, parva, sordido brunnea, epiphylla, adpressa. Caulis tenuis ca. 1.2cm long, 0.04–0.05mm latus, implicati, irregularite pinnate ramosi. Folia oblonga, angusta, ad 0.5mm longa x 1.5mm lata sub-patentia vel erecto-patentia, obtusa vel rotundata, integerrima, lobulus magnus, inflatus, late ovalis, carina valde arcuata, cellulae inaequales, 20–30μ, ocelli pauci, plerumque rotundata, raro 50μ in diametro, trigonis majusculis, hyalinis, rotundatis. Amphigastria distantia biloba, lobis setaceis divergentibus ex disco subtrapezoideo. Androecia terminalia in parvo ramo, bracteis 3 jugis lobulis maximis.

Plants small, sterile, dingy brown, closely appressed to a leaf of *Freycinetia banksii.* Stems slender, ca. 1.2cm, but intricately spreading and hard to measure, pinnately branched, branches of varying length, cortex of 6 rows of cells, bunches of tissue sometimes present at intervals of the stem. Leaves oblong, narrow, scarcely 0.5mm long, 0.15mm wide, wider at the base on account of the bulging lobule, patent to erecto-patent, apex rounded or obtuse, margins entire; lobule broadly oval, large inflated, ¼–⅓ the length of the lobe, carina strongly arched. Cells irregular in size and shape, 20–30μ, ocelli few, rarely larger than 40μ in diameter but occasionally reaching 50μ; trigones hyaline, rounded, similar rounded hyaline thickenings often present in the cell walls. Underleaves distant, narrowed to the base, laterally produced into two widely diverging setaceous lobes of three single cells, separated by three conspicuous cells; rhizoids from the underleaves (characteristic of *Leptolejeunea*) not discernible. Androecia on a short lateral branch, from below a stem leaf, consisting of three pairs of contiguous bracts, empty, with greatly enlarged lobules, almost as large as the dorsal lobes.

Typus: on kie-kie (*Freycinetia banksii*) Kauri Valley, locality not stated, probably Northland, coll. H. B. Matthews, 23/7/1920, 2671 Herb. Hodgson, 36861 AK.

This species differs from New Zealand species of *Drepanolejeunea* in that the leaves are in no way narrowed to the apex, and the diverging segments of the underleaves are produced from a basal discus, while ocelli are present.

Only the one gathering of this species is known, unfortunately without perianths. Perianths of *Leptolejeunea* are described as being strongly ribbed, with the ribs sometimes produced into horns.

Stephani describes 58 species of *Leptolejeunea*. Its occurrence in New Zealand would seem to be the most southerly penetration of this almost exclusively tropical genus.

The genus of this taxon was determined by the late Dr Th. Herzog (in litt.). It could conceivably be an already described Pacific species.

JUBULA Dumort.

Jubula novae-zelandiae E. A. Hodgson et S. Arnell sp. nov.

Sterilis, laxe caespitosa, brunnea. Caulis decumbens, c. 3–4cm longus, pinnatus-bipinnatus, pinnis primariis remotiusculis, 3–4mm longis. Folia caulina imbricata, 0.75mm longa, 0.5mm lata, lobulo ovato-subrotundato, margine spionso-dentato, spinulis recte patulis, 1–3 cellularibus, apice rotundato, cellulae marginales aequaliter incrassatae, 12 x 14–14 x 20μ, cellulae interiores 14 x 20–20 x 28μ, in parietibus nodulose incrassatis, trigonis nodulosis. Lobulus oblongus-obovatus, longior quam latus, vertice rotundatus, sub ore constrictus, ore bilabiato, rotundato-truncato. Amphigastria caulina transverse inserta, caule parum latiora-aequilata, obcuneata, ad $\frac{3}{4}$ inciso-biloba, lobis lanceolatis-triangulatis, acutis, basi utrinque breviter hastata.

Sterilis, brown-red-brown, up to 3.5cm long, pinnately branched, branches sometimes with secondary branches. Stem pale brown, 120–180μ in diameter, cortical cells thick-walled, ca. 12 x 70 – 80μ. Leaves of stem imbricate, ca. 0.5 x 0.75mm, asymmetrical, ovate, slightly convex, crossing and somewhat overlapping the stem, upper margin strongly arched, lower margin less arched, apex rounded, margin spinosely dentate except nearest the insertion, teeth usually 1 (–3) cells long and at base 1 (–2) cells broad. Marginal cells of the lobe 12 x 14–20 x 28μ, walls $\mp$ thickened and with intermediate thickenings. No ocelli. Lobule oblong-ovate, somewhat contracted at the base, 0.25 x 0.35mm, in the branches shorter and narrower (about 0.25 x 0.06mm), mouth bilabiate, in small lobules truncate. Stylus triangular, foliate, when well developed up to 8 cells long and at base 7 cells broad, frequently rudimentary, and generally lacking in the leaves of the branches. Leaves of the branches smaller and less dentate, sometimes lobe or lobule or stylus is lacking. Amphigastria of the stem about as broad as the stem, deeply bilobed, lobes lanceolate-triangular and when undamaged acute, sinus subacute, at the base of the amphigastria a basal marginal tooth, insertion line almost straight. Amphigastria of the branches rudimentary or lacking, sometimes developed to 1 or 2 lobules.

Typus: Stewart Island, summit of Mt Anglem 3,200ft, on rocks, associated with *Plagiochila ramosissima*. Coll. W. Martin 1/9/46, 11547 Herb. Hodgson and Paleobotanical Department, Swedish Museum of Natural History, Stockholm.

This species from Stewart Island differs from all known species of the genus in the shape of the lobe of the leaves and the deeply bilobed amphigastria with basal lateral teeth.*

RICCARDIA Gray

Riccardia crispa (Col.) Hodgson comb. nov.

Aneura crispa Col., *Trans. N.Z. Inst.*, 18, 252, 1886.

Plants small to medium, monoicous on dead wood, usually dark green or dark blue-green. Thallus not or scarcely winged, creeping on and adhering very closely to the wood, ca. 2cm long and irregularly bipinnately branched to ca. 1.2mm wide 0.2mm thick, with 5–6 cells, but thinner when elongated. Branches suberect, maybe curled, usually ca. 1mm wide, but variable; stems and branches guttate with shiny spots visible with a hand lens,

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* I wish to express my appreciation and thanks to Dr Sigfrid Arnell for describing and illustrating this new species.

due to large cortical cells ca. 75μ long of varying width with dark walls. ♀ branch scaly, calyptra clavate, often curved, 2mm long, white to brownish, rough; ligulate, transparent appendages often projecting from the surface. ♂ branches variable in length, antheridia to as many as 12 pairs, but usually fewer, sometimes close to the base of the calyptra.

This name of Colenso's (1885) invalidates *Aneura crispa* Schiff. *Exped. Gazelle* iv, 41, 1889. I have seen Colenso's type and another identified by Evans as *A. crispa* Schiff., and they are quite distinct.

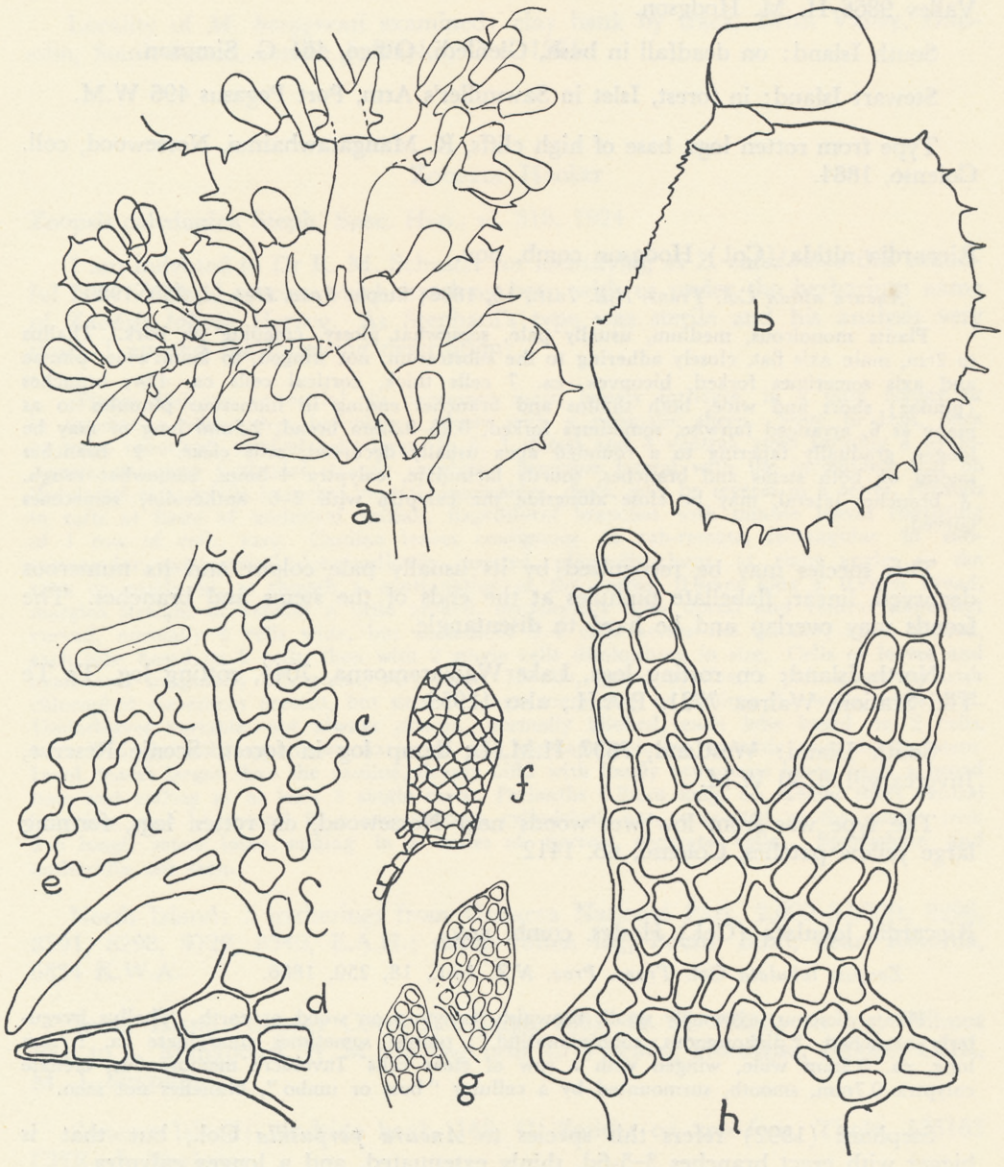

FIG. 1.—*Jubula novae-zelandiae* Hodgs. & Arnell. a—Fragment of a shoot in ventral view. b—Leaf from the stem. c—Marginal cells from a lobe. d—Tooth from a branch leaf. e—Cells from the centre of a lobe. f—Lobule. g—Styli. h—Amphigastrium from the stem.

Large shiny cortical cells are a help in distinguishing this species, while the non-flabellate branches and the dark colour distinguish it from *R. nitida.* Calyptras are numerous in the type, presenting as Colenso remarks, a novel appearance being all more or less decurved.

North Island: Coromandel, 4167 S. Berggren; Waikaremoana 7901, 7843, rotting logs in bush remnant, Kiwi Valley, Wairoa, 12957; rotting log, Morere Bush, Wairoa, E.A.H.; Mangaroa, S. Berggren 4172; Wilton's Bush, Wellington, R. Mason 7843. Also from Bay of Islands, V. W. Lindauer, 7715; Little Akatarawa Valley 9866 H. M. Hodgson.

South Island: on deadfall in bush, Glenledi, Otago, 461 G. Simpson.

Stewart Island: in forest, Islet in Sawmiller's Arm, Port Pegasus 496 W.M.

Type from rotten logs, base of high cliffs, R. Mangatawhainui, Norsewood, coll. Colenso, 1884.

Riccardia nitida (Col.) Hodgson comb. nov.

Aneura nitida Col. *Trans. N.Z. Inst.,* 18, 1886; Steph. *Spec. Hep.,* i, 250, 1900.

Plants monoicous, medium, usually pale, somewhat glossy, creeping on bark. Thallus to 2cm, main axis flat, closely adhering to the substratum, not winged, to 2mm wide, pinnae and axis sometimes forked, biconvex, ca. 7 cells thick, cortical cells ca. 45μ; branches (pinnae) short and wide, both thallus and branches ending in numerous pinnules to as many as 6, arranged fanwise, sometimes forked, 0.25–0.5mm broad, 2.5mm long or may be longer, gradually tapering to a rounded apex usually decurved, cells clear. ♀ branches lateral on both stems and branches, shortly lacinulate, calyptra 4–5mm, somewhat rough. ♂ branches lateral, may be close alongside the calyptra with 2–6 antheridia, sometimes curved.

This species may be recognized by its usually pale colour and its numerous decurved, linear, flabellate pinnules at the ends of the stems and branches. The fronds may overlap and be hard to disentangle.

North Island: on rotting logs, Lake Waikaremoana, 7044, rotting log, Te Te Tiki Station, Wairoa 7721, E.A.H., also 12959.

South Island: Westland, 7837 H.M.H.; damp log in forest, Scenic Reserve, Invercargill 9750 W.M.

The type was from low wet woods near Norsewood, on rotten logs, forming large yellow patches, Colenso, no. 1412.

Riccardia lobulata (Col.) Hodgs. comb. nov.

Zoopsis lobulata Col. *Trans. Proc. N.Z. Inst.,* 18, 250, 1886.

Plants dioicous, extremely small, brownish, creeping on wood or earth. Thallus irregularly branched, "dichotomous, subbipinnatifid"; pinnae sometimes emarginate ca. 1.7mm long, ca. 0.3mm wide, winged with a row of clear cells Involucre membranous, crenate calyptra 0.7mm, smooth, surmounted by a cellular "boss or umbo", branches not seen.

Stephani (1892) refers this species to *Aneura perpusilla* Col., but that is bigger with erect branches 3–5-fid, thinly extenuated, and a longer calyptra.

Miss Helen Hewson, of the University of New South Wales, is in agreement that *R. lobulata* and *R. perpusilla* are distinct.

North Island: Huiarau Range, Waikaremoana-Rotorua road, 3,400ft, 10945 H. M. Druce; Mt. Tauhara, Taupo, 11430 B. & G. Tanner; rotten log, Pukerimu Bush, E. of Taupo, ca. 2,500ft, 11364, bark of dead pine ground in heavy shade in pine forest, Kaingaroa, Rotorua Co. 1746 K.W.A.; Waikaremoana, on rotting wood, 2,000ft 7902, E.A.H.

South Island: Woolshed Hill, Cass, E17 Canterbury University.

Colenso's type is from, " on denuded rotten logs, in large continuous patches: shaded wet forests near Norsewood, County of Waipawa 1885 ", Colenso no. a1372.

Riccardia perpusilla (Col.) Hodgson comb. nov.

Aneura perpusilla Col. *Trans. N.Z. Inst.* 22, 456, 1889.

This is a small species either terrestrial or corticolous, with the main thallus creeping when on wood, and closely appressed, bipinnatifid, pinnae comparatively long and flaccid with obtuse decurved apices as in Colenso's description. Cells everywhere lax and vague. In *R. lobulata* which I have seen, the pinnae are firm and margined with clear cells.

The description is based on an identification by the late W. E. Nicholson who saw the type at Kew, which is not now available owing to its small size. A fragment from Stephani's Herbarium labelled *Aneura perpusilla* coll. Lauterbach is the same as Nicholson's plant, but this is not the same as *R. lobulata* which Stephani makes synonymous with *R. perpusilla*, and which precedes the latter by five years.

Localities—North Island: on damp shady clay cutting, Waikaremoana, Rotorua Highway, Urewera National Park, 392 Herb. Hodgson det. W. E. Nicholson; Waikaremoana, 7761 Herb. Hodgson.

Rodway records it from Australia, but this may be something else with the apex of the calyptra ringed with " pilose hairs ".

Riccardia effusa (Steph.) Hodgson

Aneura effusa Steph. *Spec. Hep.* vi, 25, 1924

Plants medium, blackish, shiny, densely intricated. Thallus 1½–2cm irregularly but fairly closely bipinnate, pinnae varying in size, 0.65mm broad, 6 cells thick across the middle, margins acute, cortical cells large, mostly linear-hexagonal. ♂ branches on more simple axes, opposite 0.6–0.7mm long with 5–6 pairs of antheridial pits.

The much-branched, shiny thallus and dark colour appear to distinguish this species.

No. 534 W. Martin from forest floor, West Hut, Tin Range, Stewart Island, matches the piece of type from Stephani's Herbarium, measurements of which are smaller than those given by Stephani (1924).

The type was collected by T. Kirk, no. 511, near Wellington.

SYMPHYOGYNA Mont. & Nees

Symphyogyna pseudoterebellata Hodgs. & Herz. sp. nov. (Text-fig. 2)

Planta dioica, parva, olivacea, terricola. Thallus repens rhizoidibus e costa ortis creberrimis affixis, simplex vel breviter furcatus, apice ascendens, 1–1.5cm longus ca. 3–3.5mm latus, marginibus inflexis, crispato-undulatis, aspectu fallaci quasi terebellato tortus. Costa crassa, 1mm fere lata, brunnea, dorso plana, ventre semirotundata prominens, medio ca. 14

cellulas alta, fasciculo centrali simplici. Alae valde crispato-undulatae, leviter et remote crenato-constrictae, ceterum integerrimae, cellulis exincrassatis, margine 27 x 40μ, juxta costam 40–44 x 50–60μ metientibus. Flores in costa remote seriati, bractea singula inaequaliter laciniata obtecti, laciniis angustis obtusiusculis, cellulis tumidulis. Archegonia 10–12. Sporae (adhaerentes) diametro 24–40μ, lineolis vermicularibus minutissimis asperulae, rufo-brunneae.

Plants small, lightish green, in continuous patches. Fronds crowded, simple or furcate with margins and apices ascending, 1–1.5cm long x 3–3.5mm broad; margins inflexed, crispate and undulate. Costa thick to 14 cells, to 1mm broad, dark, dorsally flat, strongly convex on the ventral surface, rhizoids numerous. Wings much waved and crisped, entire, marginal cells 27–40μ, adjacent to the costa 40–44 x 50–60μ, walls thin. Inflorescences seriate, remote, involucres each consisting of one single scale, irregularly laciniate. Archegonia 10–12 in the axil of the scale. Spores (adhering) 20–40μ in diameter, minutely asperate, reddish brown. Calyptra not seen. ♂ fronds (not seen by Herzog), short, not more than 5mm, arched, congested, rhizoids few, margins undulate, ascending, slightly tinted. Bracts very small and tightly packed in numerous rows on the upper portion of the frond, 0.3mm long and broad, unevenly margined, one antheridium to each bract, all forming a cushion within the ascending margins.

Typus: from damp hillside, near homestead, Otupae, N.W. Ruahines, coll. E. A. Hodgson, 8061, Herb. Hodgson (March, 1934).

The involucre of *Symphyogyna* always consists of a single scale, variously excised, in the axil of which are the archegonia, whereas in the related genus *Pallavicinia*, the archegonia, calyptra, and pseudoperianth are always ringed with scales.

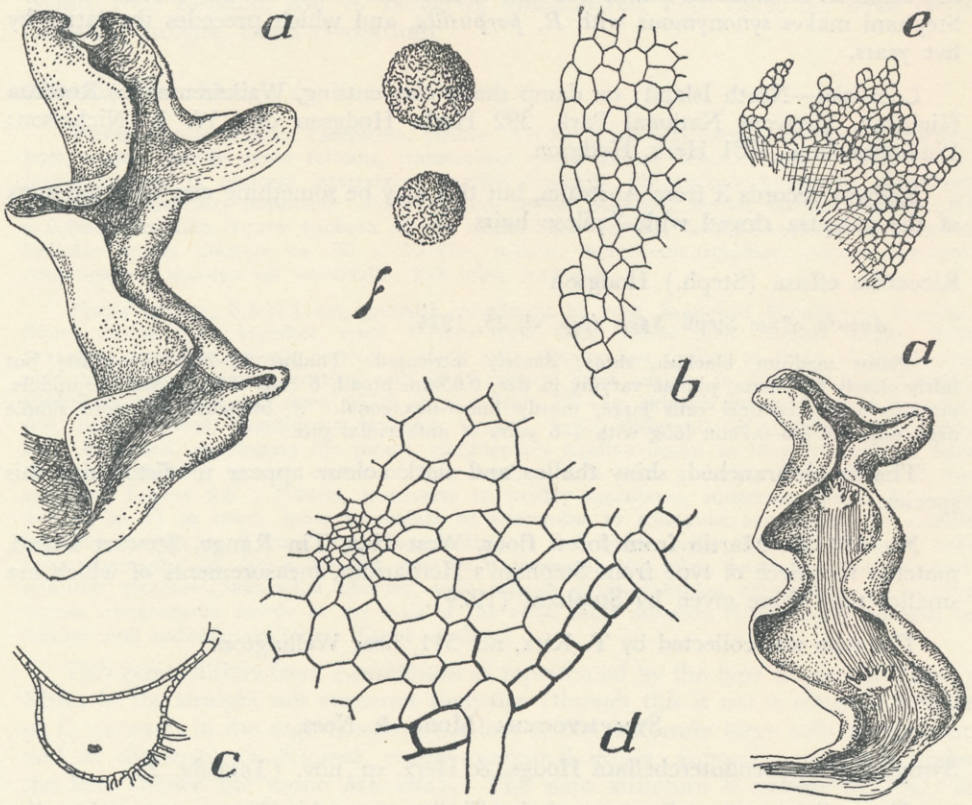

FIG. 2.—*Symphyogyna pseudoterebellata* Hodgs. & Herz. a—Habit × 10. b—Margin of frond × 67. c—Transection of costa × 18. d—Portion of costa × 132. e—Involucral scale × 18. f—Two spores × 275.

This species differs from *S. undulata* Col. (1883) a common North Island species, in the paler colour and much smaller size, the minute spores, and the numerous rows of tightly packed androecia on the fronds. The dark colour and structure of the costa is the same in both species.

Also from Otupae, 3706 A. P. & H. M. Druce, Jan. 1948; Taihape, 11831 E. O. Campbell; cliffs facing the sea, Mahia Peninsula 362, E.A.H., Jan. 1932.

Symphyogna purpureo-limbata Hodgson sp. nov.

Planta sterilis, parva, rigidula, pallide virens, terricola. Frons ad 4mm longa, 1.5mm lata, simplex vel 1-furcata, stipitata, orta e rhizomate ramoso, nigrescente, rhizifero, alis undulatis-complicatis, assurgentibus, marginibus conniventibus vel ascendentibus, integerrimis saepe purpureis. Cellulae 3–6-angulatae, ad 45–50μ, parietibus crassis, virentibus, marginis angustae, ad 70μ, acutae, costa in sectione ovalis, 3 cellulas x 5 cellulas.

Typus: sand by waterfall, Pegasus Creek, Stewart Island, coll. W. Martin, 12/1/49; 12030 Herb. Hodgson. Also from Summit rocks, Tin Range, Stewart Island, with *Acromastigum cavifolium* ex 53119 Herb. Schuster.

Plants small, sterile, light green; fronds to .5mm long x 1.5mm wide, stipitate, from a branched rhizome-like, blackish creeping stem with brown rhizoids, rigid, simple or furcate. Wings ascending often undulate-crispate, conniving at the margins, margins green or purple, the purple at times extending inwards towards the costa. Costa small, oval, 3 x 5 cells. Cells of fronds quadrate or 3–6-angled, 45–50μ, unevenly lined with green cellules or isolated groups of cellules sometimes in the lumen itself; marginal rows narrow ca. 20μ wide, elongated to as much as 70μ long, pointed at one end or with no dividing septae at all, becoming purple, the purple margin then widening somewhat to take in the walls of the next row of cells. Cell walls otherwise clear and hyaline or smudged with green.

Rhizomatous stem to 3cm, dark reddish brown to blackish, little or much branched. Young branches may be tinted rose; rhizoids clear, light brown to rose-tinted, occasionally branched at the apex, distributed singly along the stem, but densely clustered where branched or where a frond arises.

I have not seen Stephani's *Pallavicinia purpurea* from Australia, but according to the description (1924, p. 64) it has larger fronds, 8mm x 3mm, and no mention is made of the entangled much branched, rhiziferous, blackish, creeping rhizome-like stems which comprise most of each specimen.

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