

## Notes on Tasmanian Mosses from Rodway's Herbarium: II

By

G. O. K. SAINSBURY

*Wairoa, New Zealand*

## Family DICRANACEAE

Rodway adopts a wide concept of this family and includes therein genera which in the Musci are referred to the separate families Ditrichaceae and Seligeriaceae. My preference is to recognise these families, and consequently in these notes *Pleuridium*, *Ceratodon*, *Ditrichum* and *Distichium* are included in Ditrichaceae and *Blindia* in Seligeriaceae, whilst the remainder of the genera mentioned by Rodway (other than *Tridontium* which is now of the Pottiaceae) go to make up the restricted family Dicranaceae, there being several alterations of generic names. *Leucobryum* is included here instead of being separated in the family Leucobryaceae, as I adopt LeRoy Andrews' view that this is the right place for it (*Taxonomic Notes VI; The Leucobryaceae; The Bryologist*, 50 : 319).

## Family DITRICHACEAE

In this group the plants are small and erect with narrowly lanceolate leaves which are seldom falcate-secund and in which the alar cells are not differentiated. The capsule is erect and symmetrical, and the peristome usually consists of 16 narrow teeth divided to the base into two filiform papillose divisions. The operculum is shortly beaked.

PLEURIDIUM Brid. *P. nervosum* (Hook.) Par., a species occurring in South Africa, Australia and New Zealand, is not mentioned by Rodway, but there is barren material from near Launceston in his collection so named by Brotherus. It is queried by Rodway as being probably the male plant of *Bartramidula pusilla* (H. f. & W.) Schwaegr., but it certainly belongs here. It is a gemmiferous form which occurs in New Zealand and of which I have given some details (*Vegetative Reproduction in New Zealand Mosses; Journ. & Proc. Roy Soc. N.S.W.*, 69 : 89). The same form is in the collection from Mount Nelson Range, and is also sub nom. *B. pusilla*. I have examined the type of *P. gracilentum* Mitt., which appears to be conspecific with *P. nervosum*, being a form, probably a habitat-modification, with longer stems and with leaves longer and more spreading and with longer points. I do not know *P. tenellum* Mitt., which Rodway also cites, but from the description I have little doubt that it is the same plant. It is not mentioned in the Musci. *P. nervosum* in New Zealand is usually found on bare earth, densely tufted. The lower leaves are appressed, the upper ones comose, and the reddish sessile cleistocarpous capsule is very conspicuous.

CERATODON Brid. In addition to the cosmopolitan *C. purpureus* Rodway also includes *C. stenocarpus* Bry. eur. as a Tasmanian moss. The Studies cites it also for New Zealand, but with subspecific rank only and reluctantly at that. Fleischer, in the *Musci von Buitenzorg*, treats it as a form of *C. purpureus*. I have not found the material in Rodway's collection to be helpful in delimiting the two species.

*Ditrichum* Timm.

*D. elongatum* H. f. & W. When in fruit this species is recognisable at once by the very narrowly cylindrical capsule which is pale except at the mouth and neck. Barren plants are sometimes difficult to separate from *D. punctulatum* in which, as here, the cells of the subula are very short.

*D. punctulatum* Mitt. This species is widely distributed in New Zealand, and is noted and described from Tasmanian plants at Navarre Plains and Mt. Field by Weymouth and Rodway (*Papers & Proc. &c.*, 1921, p. 173). The capsule is oblong or elliptic and slightly widened at the base, and the peristome teeth are inserted under the rim, not on a projecting basal membrane as in the preceding species. When barren, *D. punctulatum* is usually known by the glossy subula which is spirally twisted when dry. In both plants the subula is irregularly dentate at the tip.

*D. strictum* Hampe. Syn. *D. australe* Mitt.

I have not seen any Tasmanian material attributable to this species, which has a subantarctic distribution. The Studies mentions the probability that not all the Tasmanian records belong to the true *D. strictum*, but it is given there as occurring in Tasmania. It differs from *D. punctulatum* in being a more robust, darker coloured plant with the leaves much more rigid. The leaf base does not show an abrupt shoulder, as in *D. punctulatum*, but gradually tapers to the subula the apex of which is often flattened out at the extreme tip. The capsule is small and pachydermatous.

*D. flexifolium* (Hook.) Hampe. Syn. *D. Oldfieldii* Mitt., *D. flavipes* C.M., *D. affine* C.M., *D. setosum* H. f. & W.

The two last-mentioned synonyms are treated as such in the Studies, and although I have not seen type material of either *D. Oldfieldii* or *D. flavipes* there are named specimens of both these species in the collection which are certainly referable to *D. flexifolium*. It is evidently the most common species in Tasmania, as it is in New Zealand, and it has a wide distribution in the southern hemisphere and in the tropics. As might be expected, the range of variation in the characters is wide. Rodway justly observes that the Tasmanian *Ditricha* with long cells could well be considered as forms of a widely distributed plant. Typically the capsule is long and ovate-cylindrical, slightly curved, asymmetrical and narrowed at the mouth, but sometimes it is much shorter and more symmetrical. The seta is usually long and is yellowish or reddish. The operculum has a suberect subulate beak, variable in length but seldom exceeding half the length of the capsule. The narrowly linear cells throughout separate it from all the other Tasmanian species.

*Distichium* Bry. eur.

*D. capillaceum* (Hedw.) Bry. eur. The habit here recalls that of *Ditrichum*, but the leaves are distichously arranged, at any rate in the upper part of the stem. The subula cells are variable in length but are mostly subquadrate. The roughness of the nerve at the back is a good diagnostic feature. The distribution is wide throughout the world.

#### Family SELIGERiaceae

The only Tasmanian genus so far recorded is *Blindia*, which differs from the other genera in that the alar cells are usually differentiated. The homologous cells of the nerve, however, and the small wide-mouthed capsule are family characters which it exhibits, and the entire, or almost entire, peristome teeth are another supporting feature.

*Blindia* (Hedw.) Bry. eur.

Rodway's species call for radical alterations. *B. arcuata* and *B. robusta* are treated in the Studies as synonyms of *B. magellanica* and *B. tenuifolia* respectively, the plant known as *Anisothecium ferruginum* is now recognised as belonging to the present genus, and a recently published species is added. The following key to the species is in substitution for Rodway's in which *B. tenuifolia* is erroneously stated to be gymnostomous.

- |   |    |                    |
|---|----|--------------------|
| 1. Plants short and slender, less than 1 inch high .....  | 2. |                    |
| Plants more robust, exceeding 1 inch .....                | 3. |                    |
| 2. Seta arcuate, alar cells differentiated .....          | 1. | <i>magellanica</i> |
| Seta straight, alar cells not differentiated .....        | 2. | <i>ferruginea</i>  |
| 3. Nerve very robust, alar cells not differentiated ..... | 3. | <i>tasmanica</i>   |
| Nerve weaker, alar cells differentiated .....             | 4. | <i>tenuifolia</i>  |

1. *Blindia magellanica* W. P. Schimp; Syn. *B. arcuata* Mitt.

The colour here is not blackish, as it often is in the genus. The subglobose capsule on an arcuate seta will distinguish it when in fruit, and vegetatively it is adequately described by Rodway, though the nerve cannot be said to be wide for the genus as mentioned there.

2. *Blindia ferruginea* (Mitt.) Broth. Syn. *Anisothecium ferruginum* Mitt.

The capsule here is also subglobose, but the seta is straight. The very short upper cells and the undifferentiated basal cells are vegetative characters to distinguish this species from the last.

3. *Blindia tasmanica* Sainsb. The Victorian Naturalist, 70 : 30.

This interesting species appears in the collection as *B. arcuata*, the locality given being Cradle Mountain. It is a rather robust blackish plant with stems attaining 4 cm. The leaves are falcate-secund, with narrow cells without a differentiated basal group, and an extremely robust nerve, about 150  $\mu$  wide, which occupies the whole of the rigid subula. The seta is stout and almost erect, the capsule short and wide, and the peristome teeth coarsely papillose above and mostly bifid at the tips. The operculum is adherent to the columella and has a long oblique beak. The calyptra is cucullate and reaches to the base of the capsule. The spores are 28-32  $\mu$ , smooth, pale green.

4. *Blindia tenuifolia* (H. f. & W.) Mitt. Syn. *B. robusta* Hampe.

This species is distinguishable from the last by the much weaker nerve and the coloured alar cells. It is a montane and more or less aquatic moss, widely spread in New Zealand. Rodway's collection contains a puzzling *Blindia* which is part of the Cradle Mountain gathering of *B. tasmanica* (No. 56A). As there, the columella adheres to the lid and the alar cells are not differentiated, but the leaves have very long filiform points and the nerve is narrow. In colour the plant is not blackish but yellowish brown. The nerve and areolation seem to preclude *B. tenuifolia*, but as this is a very variable moss Rodway's plant may possibly be an extreme form with, at any rate sometimes, a systylous capsule, in this respect agreeing with Australian material that I have seen.

Family DICRANACEAE

The family characters are narrow lanceolate or subulate leaves which are nerved and often falcate-secund. The leaf-cells are usually elongated below with the alar cells clearly differentiated. The normal "dicranoid" peristome is of 16 red teeth, transversely barred on the ventral face, and divided to about half their length into two or three forks, their dorsal surface being papillose above and vertically striolate below.

*Bruchia* Brid.

*B. minuta* Mitt. This tiny cleistocarpous moss is not represented in Rodway's collection, and from the Studies it would appear that the original and only specimen is at Kew. It is not mentioned in the Musci.

*Cynodontium* Schimp.

*C. tasmanicum* Broth. e Rodway. Rodway's description seems to be the only publication of this species, but as his volume is dated 1914 and the only specimen in his herbarium is dated 1922, this must be a subsequent collection by him at Blue Tiers, the original locality. The specimen has deoperculate and old capsules, and my general impression is that it is referable to *Campylopodium lineare* (Mitt.) Dixon. According to Rodway the leaf margin is thickened and doubly serrate, but I have found the serration to be very variable, often lacking altogether, and the leaf margin not thickened. The species is not mentioned in the Musci, and I think that the occurrence of the genus in Tasmania is doubtful.

*Campylopodium* C.M.

Small mosses that have the seta cygneous as in *Campylopus*, but differ in the setaceous leaves, narrow nerve and non-differentiated alar cells. The only species given by Rodway is a synonym.

*C. euphorocladium* (C.M.) Besch. Syn. *C. flexipes* (Mitt.) Broth. Differs from the next species in the leaves abruptly narrowed from a wide sheathing base, and with the margins entire except occasionally for some slight denticulation at the apex. It is widely distributed in the Pacific and East Indies and is fairly common in New Zealand.

*Campylopodium lineare* (Mitt.) Dixon. Collections from the West Coast are in the herbarium and attributed to the preceding species. The fruiting characters are similar, but in the present plant the leaves are gradually tapered from a narrower base and the subula is serrulate in its upper part. The cells of the subula usually have projecting transverse walls that make the leaf surface more or less scabrid. It has hitherto ranked as a New Zealand endemic, and is a rare montane moss.

*Trematodon* Michx.

*T. flexipes* Mitt. In Rodway's work this appears only as a synonym of *Campylopodium flexipes*, i.e., *C. euphorocladium*, but it is an entirely different plant. The confusion arose through a slip by Brotherus and is explained by Weymouth and Rodway (*Bryophyte Notes*, Papers & Proc. etc., 1921 : 173). In the present genus the capsule is very distinct in its long neck or apophysis, which in some species is several times the length of the spore-sac. The neck is often strumose at the base. *T. flexipes* is distinguished from the next by the peristomate capsule and smaller spores. Another character is the almost geniculately flexuose seta. It is a minute plant with stems 2-3 mm. long. The Musci gives New Zealand as its habitat though the species was published on Tasmanian material and has only been recently established as a New Zealand moss. It has been reported there from a few mountainous localities.

*Trematodon Mackayi* (R. Br. ter.) Broth. Syn. *T. Weymouthii* Bartr. & Dixon; *Botaniska Notiser*, Lund, 1937, p. 65.

This species was reported as new to Tasmania by Weymouth & Rodway (Papers & Proc. &c., 1921 : 173), it having been previously set up on New Zealand material. *T. Weymouthii*, which also occurs in New Zealand, has no marked separating characters and in my opinion is better treated as a form. *T. suberectus* Mitt., which is comparatively common in New Zealand and which has a more fully developed peristome than in *T. flexipes*, has not yet been reported from Tasmania, but to judge by the records of the other species, it could be looked for there with some prospect of success.

*Dicranodontium* Bry. eur.

*D. tapes* (C.M.) Par. I do not know this plant which apparently emanates from Deal Island. It is not mentioned by Rodway, but is recognised as a Tasmanian endemic in the Musci and Studies. The affinities of the genus are with *Campylopus* and *Dicranum*.

*Dicranella* W. P. Schimp.

Mitten's genus *Anisothectum*, which is kept up by Rodway and Brotherus, is now usually treated as a subgenus, at the most, of *Dicranella*. I am informed that Brotherus, in his herbarium, confines *A. crispum* (Schreb.) Lindb. to the northern hemisphere, and places in *D. Jamesonii* (Mitt.) Broth. all plants formerly determined by him as *A. crispum* or *A. Schreberi*. The one other species of *Anisothectum*, given by Rodway as *A. ferruginum* Mitt., is a *Blindia*, as already mentioned. In Rodway's herbarium there are several specimens of a *Dicranella perdivaricata* Burch., of which I have no information as to publication. Some of the

plants of it seem to belong to *D. Jamesonii*, and others might be a form of *D. vaginata* (Hook.) Card. If all the Tasmanian plants that I have seen are referable to *D. Jamesonii* then that species would appear to be much more variable in Tasmania than it is in New Zealand, but the condition and quantity of the material is not such as to allow satisfactory conclusions to be reached.

*Dicranoweisia* Lindb. This genus is aptly named, because the plants have an outward Weissoid appearance owing to the leaves being crisped when dry, whereas the capsule exhibits a weakly developed dicranoid peristome. Structurally the leaves often show the affinity with *Dicranum* by having the alar cells more or less differentiated and coloured.

*Dicranoweisia antarctica* (C.M.) Par. This is in the collection from Western Tiers, sub nom. *Distichium capillaceum*. It is in fruit and is certainly referable here. Mr. J. H. Willis has recently collected a barren plant on Mt. Field West which is probably this species. *D. antarctica* is taller than the next, the stems being 2-3 cm. high. The leaves are much longer, to 5 mm. and the alar cells are coloured and conspicuous. The peristome teeth are coarsely papillose, inserted under the rim.

*Dicranoweisia microcarpa* (H. f. & W.) Lindb. Syn. *Weissia microcarpa* H. f. & W. This is a much smaller plant than the preceding, the stems being less than 5 mm. high. The leaves are correspondingly shorter, barely reaching 2 mm. The upper leaf cells are, as there, subquadrate, but the alar cells are not differentiated. The areolation is curious in that the cells in midleaf often have rather sinuose walls. Those in the basal area are porose. The peristome teeth appear to be almost smooth, but the capsules seen were deoperculate and old and the teeth fragmentary. This species has not been found in New Zealand.

*Holomitrium* Brid.

*H. perichaetiale* (Hook.) Brid. There are no specimens of this in the collection, but Rodway and Brotherus include it as a Tasmanian moss, which in view of the wide distribution would be expected. It is a robust plant with stems attaining 5 cm. The leaves are strongly crisped when dry, and are narrowed from a wide base to a longer channelled subula. Normally the alar cells are enlarged and coloured, but sometimes they are scarcely differentiated. The upper cells are small, incrassate and isodiametrical. The perichaetium is very long sheathing, the capsule erect, subcylindrical and tapered to the mouth from a wider base, the peristome short and weakly developed. I have not seen the leaves undulate, as stated by Rodway, or the nerve excurrent in a long hair-point, and I suspect that he had some other moss in view.

*Campylopus* Brid. It is desirable to add to Rodway's generic description that the nerve here, which is usually very wide below, exhibits differences in structure on which are founded three subgenera. In *Eucampylopus* the nerve in section shows a dorsal group of stereid cells, the ventral cells being wide-lumened; in *Palinocraspis* there are stereid bands on both faces, i.e., both above and below the central guide-cells; whilst in *Pseudocampylopus* the cells are more or less homogeneous, without stereids. This is probably a classification that is more satisfactory than any other, but too much must not be expected of it. The

number of species that have been created on variations of the nerve structure in this genus is almost incredible. Rodway rightly comments that neither the colour of the plants nor the development of the hair-point should be unduly relied on.

*Campylopus introflexus* Hedw. Syn. *C. pudicus* (Hornsch.) Jaeg.

The main characters here are the reflexed hair-point, the wide nerve which is usually ridged dorsally in its upper part, the reduced alar cells and the basal area of hyaline colourless cells which runs out obliquely to the margin higher up the leaf. This last character is a particularly strong one, but it is exhibited in some other species, including forms of *C. clavatus*. The hair-point is sometimes not reflexed at all and occasionally is lacking altogether. The Studies (p. 90) is so sceptical about the standing of *C. pudicus* that I treat it as a synonym. In *C. introflexus* the ventral cells of the nerve in section are large and with a wide lumen. This species has a wide boreal and austral distribution.

*Campylopus clavatus* (R.Br.) H. f. & W. Syn. *C. insititius* H. f. & W. *C. Rodwayi* Broth.

An extremely variable species which is common in Australasia. When fruiting it is distinguishable at once by the subcylindrical capsule which is tuberculose at the base but otherwise smooth, symmetrical and pale brown. The peristome teeth are divided to the base into two filiform densely papillose segments, and so are far from being typically dicranoid. Barren plants often give trouble owing to the wide range of variation in the specific characters. Typically the plants are robust, with the leaves spreading above in dense comal tufts in fertile stems and erect and more or less appressed in barren ones. The nerve is about half the width of the leaf in its lower part, and is excurrent in a short hyaline arista. The basal areolation is very variable, there being sometimes present a distinct hyaline area similar to that of *C. introflexus*. The alar cells are usually developed into conspicuous auricles, but at times are practically suppressed. The nerve in section is intermediate in structure between *Eucampylopus* and *Palinocraspis* in that it exhibits, perhaps usually, some divisions of the ventral cells. Deciduous buds are often produced at the apex of the stem or branch. They are stellate, with widely spreading narrow leaves, and reproduce the plant vegetatively by developing a new stem from the growing point. This character is mentioned by Rodway for *C. Rodwayi*, two specimens of which are in his herbarium and show the buds in question. This is a common form of the species, and barren plants are often identifiable by the presence of the buds.

*Campylopus torquatus* Mitt. The stems here are slender and silky, with leaves that are narrowed to a very long capillary flexuose subula which is usually denticulate in the upper part and hyaline-tipped. The basal cells are rectangular and the upper ones irregularly four sided. There are no differentiated alar cells. The seta is erect, flexuose when dry, and the peristome dicranoid.

*Campylopus arboricola* Card. & Dix. This hitherto reputed New Zealand endemic is present in the collection, sub nom *C. capillatus*, and is indeed the first finding. The locality is Macquarie Island and the collector

G. B. Moore. The specimen is in fruit and has a sulcate capsule and dicranoid peristome. Vegetatively the species strongly resembles *C. clavatus*, but differs in the nerve of distinctly *Palinocraspis* structure, the section showing dorsal and ventral bands of stereids throughout the leaf, including the base. Moreover, the deciduous buds, which are frequently present, are of quite a different shape from those of *C. clavatus*, they being broadly pointed, abruptly cucullate and scabrous on the back.

*Campylopus bicolor* (Hornsch.) Hook. This and the next species differ from the preceding ones in having the leaves abruptly cucullate and without, or almost without, a hair-point. The present species is characterised by a very broad nerve and suppressed alar cells. In section the nerve has the ventrals wide-lumened, and this and other characters often (so far as my experience goes) cause considerable difficulties when it comes to separating the plants from epilose forms of *C. introflexus*. I have never seen authentic fruiting specimens.

*Campylopus Kirkii* Mitt. A very distinct species in the leaf cells which, with the exception of the basal ones which are hyaline and thin-walled, have a very narrow vermicular lumen and are extremely incrassate. The alar cells form inflated and coloured auricles, but they are tender and liable to be torn off when the leaves are dissected from the stem. The leaf apex is rounded and cucullate, without hair-point. The nerve is greatly broadened at the base, and in the upper part of the leaf fans out into the lamina on each side with short branches. It seems that this species has not been found fruiting in Tasmania, but fertile plants in New Zealand, which are rarely found, show that the capsule is narrowly oval and grooved, with a dicranoid peristome.

#### Doubtful species

*Campylopus capillatus* H. f. & W. Apart from the somewhat taller habit and larger leaves, there seems to be nothing to separate this species from *C. torquatus* except the presence of differentiated alar cells, but I doubt whether there is any hard and fast line to be drawn. Rodway, contrary to what is said of these cells in the Studies, states that there are no distinct alars in *C. capillatus*.

*Campylopus subappressifolius* Broth. & Geh. From Rodway's description and a specimen in his herbarium from Cradle Mountain, I should think that a form of *C. introflexus* was a possibility for this plant. I have not seen the hair-point "bent when dry" as he describes it, but the material received was small. If the hair-point is normally bent then in my opinion it would not be safe to rule out *C. introflexus* in the absence of fruit.

*Dicranoloma* Ren. All the species listed by Rodway in *Dicranum* have been transferred by one authority or another to Renauld's genus *Dicranoloma*. The boundary between the two genera, however, is indistinct, and the main separating character in *Dicranoloma*, i.e., the hyaline leaf border of narrow elongated cells, is inconstant. In other respects the characters are those of the family.



## KEY TO THE SPECIES

- |  |                      |
|--|----------------------|
| 1. Nerve with two prominent dorsal ridges; leaves biplicate below .....      | 1. dicarpum          |
| Nerve and leaves otherwise .....   | 2.                   |
| 2. Nerve narrow and faint, 40 $\mu$ (wide (or less)) in its lower part ..... | 3.                   |
| Nerve much wider and stronger .....  | 5.                   |
| 3. Leaves ovate, acute, rugose .....   | 2. eucamptodontoides |
| Leaves lanceolate-subulate, not rugose .....                                 | 4.                   |
| 4. Perichaetium very long, reaching the capsule .....                        | 4. perichaetiale     |
| Perichaetium much shorter .....  | 3. Billardieri       |
| 5. Cells of subula very short, isodiametrical or nearly so .....             | 6.                   |
| Cells of subula elongate .....   | 5. robustum          |
| 6. Peristome well developed; seta short, 1 cm. or less .....                 | 6. Menziesii         |
| Peristome short and irregular, seta long, 2 cm. or more .....                | 7. trichophorum      |

1. *Dicranoloma dicarpum* (Hornsch.) Par. Syn. *Dicranum polysetum* Hampe. The species is distinguishable not only by the plicate leaves, but also by the cells near the nerve in the subula being much shorter than those towards the margin. The upper part of the lamina and the whole of the subula are spinulose-dentate. The setae are aggregated, and I have seen as many as nine in a perichaetium.

2. *Dicranoloma eucamptodontoides* (Broth. & Geh.) Broth. Syn. *Dicranum eucamptodontoides* Broth. & Geh. The habit here is different from that of any other of the Tasmanian species. There is a strong resemblance to the New Zealand *D. obesifolium* (R. Br. ter.) Broth. and they are obviously closely related. In both the leaves are shortly and widely ovate-lanceolate, concave and cucullate at the apex, but in the New Zealand plant the apex is rounded and obtuse and the nerve is shorter than in the present species. The latter apparently has not been found in fruit. The leaves are wrinkled in the specimen that I have seen. The alar cells are strongly developed and the other cells are, as in the New Zealand species, porose throughout.

3. *Dicranoloma Billardieri* (Schwaegr.) Par. Syn. *Dicranum Billardieri* Schwaegr.; *Dicranum integerrimum* Broth. & Geh. A widely distributed austral species of very variable habit. The leaves may be either falcate or straight and the margins toothed above or almost, if not quite, entire. The nerve is narrow and thin. The alar cells are strongly developed and the cells of the subula are long and incrassate. The short and sheathing perichaetium has the inmost bracts almost constantly muticous. This last character, together with the weak nerve, distinguishes the plants from *D. robustum*. I agree with Rodway's statement that *D. integerrimum* is only an extreme form of the present species. I have been unable to find any satisfactory distinguishing features. I have not seen any of the varieties of *D. Billardieri* which are given by Rodway, and so cannot form an opinion as to their taxonomic value. The var. *angustinerve* is dealt with below.

4. *Dicranoloma perichaetiale* Sainsb. Victorian Naturalist; Vegetatively this is inseparable from *D. Billardieri*, but in fruit is distinguished at once by the extremely long perichaetium. The bracts are so long sheathing that they reach the capsule, and, unlike those of *D. Billardieri*, are tapered to a long setaceous subula. Rodway's collection does not contain any specimen of his var. *angustinerve* of the latter species, and

to judge by his description the present plant may belong there, but his account is not sufficiently full to settle the point. Moreover, although he states that the variety is common, his packet containing the new species, which he collected at Zeehan, is merely labelled "*Dicranum* sp.", which indicates that he was unfamiliar with the plant. The nerve in *D. perichaetiale* is very narrow, 25-30  $\mu$  wide below, the leaf margin obscurely denticulate in the subula, or even entire there, the cells elongate and incrassate, the alar cells large and the marginal cells of the lamina greatly narrowed and forming a distinct hyaline border.

5. *Dicranoloma robustum* (H. f. & W.) Par. Syn. *Dicranum robustum* H. f. & W.; *Dicranoloma pungens* (H. f. & W.) Par. This is an extremely polymorphous species and the wealth of forms exhibited in New Zealand is indescribable. Rodway's collection contains only a few specimens, nearly all of the var. *setosum* (H. f. & W.) Sainsb., so it would appear that the species is rare in Tasmania. It is distinguishable from *B. Billardieri* by the wider and stronger nerve (60  $\mu$  or more), the long, fine almost capillary subula, which is variably denticulate, and the aristate inner bracts of the perichaetium. The var. *setosum* (*Dicranum setosum* in Rodway's work) is a form with brittle leaves that are an adaptation for asexual reproduction.

6. *Dicranoloma Menziesii* (H. f. & W.) Par. Syn. *Dicranum Menziesii* H. f. & W. The green colour, short leaf base and very long setaceous subula, with its minute isodiametrical cells, are well-marked characters here. The leaves are erecto-patent with spreading points, rarely secund. The nerve is strong and wide, and the cells of the widened part of the lamina usually rather short. The seta is short, and often overtopped by the leaves.

7. *Dicranoloma trichopodium* (Mitt.) Broth.; Syn. *Dicranum trichopodium* Mitt. In the Musci this is a *Dicranoloma*, but in the Studies a *Dicranum*. The presence of a thin hyaline leaf border, though sporadic, would support its inclusion in the present genus, but the sporophyte has little in common with the other Tasmanian and New Zealand species, the capsule being erect, narrow and tapered from base to mouth, and the peristome being short and irregular. The seta is long, often extravagantly so. The subula cells are larger and less regular than in *D. Menziesii*, and the colour is light yellow rather than green, but otherwise there is a strong vegetative resemblance. I have not seen anything in Rodway's collection that can be referred here with certainty, and the species is not mentioned in the main work, but a specimen, presumably fertile, is reported by Weymouth and Rodway from Cradle Mountain and was determined by Dixon (Papers & Proc. &c., 1921 : 173), so there can be no doubt about the record.

*Dicnemoloma* Ren.

*D. Sieberianum* (Hornsch.) Ren.; Syn. *Sclerodontium pallidum* (Hook.) Mitt. The freely branched stems and straggling habit do not give the impression of a dicranoid moss, but the affinity is revealed by the numerous quadrate basal cells. The leaves are nerved nearly to the apex, and are narrowly hyaline bordered to far up the subula. A hyaline hair-point is sometimes present. The upper cells are short and coarsely

papillose on the dorsal face, the central basal ones being elongated and smooth. I have not seen the sporophyte, but in the genus the capsule is described as inclined and symmetrical, curved when dry, and the peristome teeth as bifid.

*Leucobryum* Brid.

*Leucobryum candidum* (Brid.) H. f. & W. The leaves here are whitish and spongy, and consist of a multistratose nerve that occupies which constitutes the true lamina. There are no differentiated alar cells, the whole width of the leaf, except for a narrow margin of hyaline cells and although the leaves are usually falcate there is nothing in their structure to indicate a dicranoid moss. The nerve consists of a median row of green chlorophyllose cells ("chlorocysts"), with ventral and dorsal layers of hyaline cells ("leucocysts"). The upper part of the subula is more or less rugose. The curved asymmetrical striate capsule, with its typically dicranoid peristome, leaves no doubt as to the real affinity of this moss. It is widely distributed and extremely variable in size and habit, but in countries where it is considered as being the only representative of the genus it can always be recognised at once by the colour and tissue of the leaves. Several varieties or subspecies are recognised, but the material that I have seen from Tasmania is referable to the typical plant.

