

Notes on Tasmanian Mosses from Rodway's Herbarium

By

G. O. K. SAINSBURY

Wairoa, New Zealand

INTRODUCTION

Many years have passed since the publication, in 1914, of volume 1 (Mosses) of Rodway's Tasmanian Bryophyta. In the meantime bryological knowledge has evolved through fresh discoveries and new ideas, and interest has been stimulated by the publication of many works, some of outstanding importance. It results from this advance that Rodway's work now requires revision, and as I am being given the opportunity of studying the material in his collection, it has occurred to me that the publication of notes on the mosses seen and on those appearing in his work, may be of some use to local students of this difficult but fascinating group. I propose to take the families set out in the book, though not necessarily in their order as dealt with there, and to indicate some of the taxonomic and nomenclature changes which, either by more or less common consent of modern workers or by my own predilection, I would recommend to be made. I understand that Weymouth's main herbarium is in England, so it is not practicable to consult it in its entirety, but this disadvantage is lessened by the fact that Rodway's collection contains many specimens supplied by Weymouth. It will be appreciated that the scope of this investigation is greatly narrowed by the limited material available as well as by the paucity of ecological data. No attempt will or can be made to rewrite Rodway's book. General principles of classification, &c., will not be dealt with, and keys to genera and species and descriptions of same as they now stand will not be altered except where necessary. Synonyms will usually be restricted to such of Rodway's names as are altered or dropped in the notes. Frequent reference will be made to Brotherus's work on the mosses in the second edition of Engler and Prantl's *Die Natürlichen Pflanzenfamilien*, and to Dixon's *Studies in the Bryology of New Zealand*, Bulletin No. 3 of the New Zealand Institute, and for the sake of brevity these works will be referred to as the "Musci" and the "Studies" respectively.

Family TORTULACEAE = Family POTTIACEAE

Of the genera given by Rodway the following are included elsewhere; *Ephemerum* in Funariaceae, *Holomitrium* in Dicranaceae and *Encalypta* in Encalyptaceae. On the other hand *Tridontium*, which he includes in Dicranaceae, is now treated as of the present family, and the genera *Gymnostonium*, *Desmatodon* and *Erythrobarbula* are added. *Eucladium* is dropped as a Tasmanian genus.

Acaulon apiculatum (H. f. & W.) Jaeg.

This tiny moss, with its red, immersed, cleistocarpous and globular capsule, is found in New Zealand, and I suspect that one or other, or both, of Carl Muller's *A. integrifolium* and *A. Sullivani* from Victoria, should be referred to it.

Phascum Hedw.

P. cylindricum Tayl. is the only species mentioned by Rodway, but *P. Weymouthii* is added in the Musci as a Tasmanian moss. Both are transferred by Brotherus to *Tetrapterum*, but LeRoy Andrews (The Bryologist, 48: 190) considers that this genus is monotypic and should be confined to the South African *T. capense* (Harv.) Broth. Another *Phascum*, i.e., *P. tasmanicum* Rod. & Dix., was published by Dixon and Rodway (1922). It is described as being near the European *P. Floerkianum* W. & M., with ovate-lanceolate acuminate leaves, margins revolute, and the nerve far excurrent in a squarrose recurved point; cells highly papillose. No particulars of locality, &c., are given and Rodway's collection contains no specimen of this, or any other *Phascum*.

Pottia Furnr.*P. tasmanicum* Broth.

I have seen a stem in the collection of what is presumably the original (and sole?) gathering from Brighton, but it is impossible to form a definite opinion on the species from either the material or the description.

P. truncata (Hedw.) Furnr.

This widely spread boreal species is distinguished by the capsule being truncate when empty, and with a long rostrate acute beak. The leaves are oblong or oblong-spathulate with a shortly excurrent nerve and plane or somewhat recurved margins; cells smooth, rather large, irregular in shape; peristome lacking.

I am unable to find any satisfactory differentiating features between this northern species and *P. melbourniana* Dix. or *P. subphyscomitrioides* Broth. Dixon's species, as identified by him, is given for Tasmania (from Glenorchy, coll. Weymouth) by Weymouth and Rodway (1922), and *P. subphyscomitrioides* was published by Brotherus (1916) on Victorian and Tasmanian plants, the latter from Port Esperance, coll. Rodway. It is in his collection sub nom. *P. subphyscomitrium*. In my opinion the Australasian plants are referable to *P. truncata* as a local race characterised perhaps by greater variation in the size of the spores, which can attain 40 μ in diameter.

Pottia Heimii (Hedw.) Furnr.

This is another species with a wide northern distribution. It is reported as new to Tasmania by Weymouth and Rodway in the paper mentioned above. The locality was stated to be unrecorded, and the collector was Weymouth. Rodway's collection also has a specimen from the Domain, Hobart, collected by himself and identified by Dixon. To

judge by this data there may be some doubt as to whether the plant is indigenous. *P. Heimii* is recognisable by the serrulation of the margin of the leaf towards the apex and by the multipapillose cells which at the margin often become smoother and yellowish so as to form a more or less noticeable border. In Rodway's specimen, however, there is no trace of this, but it has the characteristic capsule of the species, the flattened operculum being attached to the columella after maturity. There is no peristome.

Desmatodon Brid.

In this genus the peristome differs from that of *Tortula* in that the teeth are either not twisted or are only slightly so. They are mostly short and often irregular.

Desmatodon convolutus (Brid.) Grout. Syn. *Tortula atrovirens* Londb.
T. recurvata Hook.

The nerve here is usually thickened in its upper part where its ventral surface is granulose with projecting branched papillae, but this development is sometimes slight or even absent. The basal membrane of the peristome is distinct, but the teeth are short and sub-erect or faintly twisted. *D. convolutus* has a wide distribution in the northern and southern hemispheres.

Desmatodon sp.

There are two packets in the collection which are probably referable to this genus and which look to be an unreported species. Both gatherings are from "Kingston Road" in August 1911. One is sub. nom. *Brachymenium* sp. and contains a few stems of what would be *B. Preissianum* mixed in with the present moss, and the other is labelled *Zygodon obtusifolius* but contains nothing but the *Desmatodon*. There is a superficial resemblance to the *Zygodon* in the obtuse or rounded lingulate leaves, but the structure of the nerve is quite different and the papillae on the cells distinct. Moreover the fruit, such as it is in its imperfect state, is not that of *Zygodon* but would fit *Desmatodon*. The broadly lingulate leaves, with the apex rounded or broadly obtuse and the margin variably revolute, recall those of the New Zealand *Didymodon lingulatus* (H. f. & W.) Broth., which is itself a *Desmatodon*, and the vanishing nerve and the areolation are so much like what is found in the New Zealand species that there is a possibility that the present plant may be a form of that, perhaps the *Gymnostomum Knightii* Schimp. referred to in the Studies, p. 126. As against this, however, Rodway's plants have the upper leaf-cells larger, $10\ \mu$ as against $8\ \mu$, and more papillose, and the nerve is rough on the back towards the apex instead of being smooth as in *D. lingulatus*. Nevertheless the differences in the gametophyte are slight and further collections, in better fruiting condition, may show that the plants are conspecific. I could not find any trace of a peristome in the immature capsules seen.

Calyptopogon Mitt.

Calyptopogon mnioides (Schwaegr.) Broth. Syn. *Streptopogon crispatus* (Hampe).

In this striking moss multicellular brood-bodies are present on the ventral surface of the nerve towards the apex. They resemble the gemmae in *Tortula papillosa*. It appears that fruit has not been recorded from Tasmania, but though rare in New Zealand it is not outstandingly so. The perichaetium is sheathing and very long, often exceeding the capsule. The peristome-teeth are strongly twisted to the left, the operculum is erect and as long as the capsule, and the calyptra is mitriform and deeply lobed at the base.

Tortula Hedw.

This and the preceding genera belong to the subfamily Pottioideae where the leaves are usually broad and where the nerve in section shows only one band of stereid cells (i.e., those having thickened walls), this band being on the dorsal face of the wide-lumened (deuter) central cells. The cells in the upper part of the leaf are comparatively large, and the basal cells tend to be lax and hyaline. The remaining genera of Pottiaceae belong to the subfamily Trichostomoideae, where the leaves are mostly narrow and where the nerve has two bands of stereids, one above and one below the deuters. The upper cells are small and obscure and the basal ones narrow. In the present genus the peristome is well-developed with the teeth strongly twisted and the peristome-tube often greatly lengthened. The remaining *Tortula* species in Rodway's work, other than those mentioned below, will be found in *Barbula*.

Tortula princeps De Not.

I have not seen much of the Tasmanian plants of this species, and have not been able to investigate the inflorescence. It is primarily synoicous, but in the New Zealand race it is sometimes dioicous and some of the forms are very troublesome. The lower rectangular leaf-cells are hyaline and thin-walled, those at the margin being in several rows shorter and smaller, sometimes coloured, and forming a more or less distinct border. Rodway's collection has a *Tortula*, from Eaglehawk Neck, East Coast, named *T. brachytheca* "Burchard, n. sp.". The species appears in the Musci as a dioicous *Syntrichia*, the citation being "(C.M.) Broth.". From what I could see, I should consider it as a form of the present species. The distribution is very wide in the northern hemisphere.

T. muralis Hedw.

Almost cosmopolitan. It is an efficient coloniser of lime substrates, such as the mortar of brick wells, &c. In shady and damp stations the hair-point tends to be reduced and inconspicuous.

T. papillosa Wils.

According to some authorities this species has been found fruiting in New Zealand, but this is incorrect; apparently fruit has been known only from Australia. In New Zealand *T. papillosa* is often found growing

on bark in close association with *T. laevipila* (Brid.) Schwaegr., so possibly the latter moss may be discovered also in Tasmania. The two are superficially alike, but the cells in *T. papillosa* are larger and the gemmae quite different.

Gymnostomum Hedw.

G. calcareum Bry. germ. Syn. *Weissia calcarea* C.M.

The plants are small and form very dense tufts on damp rock or earth, usually calcareous. The only gathering so-named in Rodway's collection is from Hobart Waterworks. It is common in New Zealand and has a wide distribution throughout the world. The Studies (p. 117) mentions its author's suspicion that *Eucladium tasmanicum* Broth. was probably, from its description by Rodway, the var. *longifolium* Dixon of *G. calcareum*. I have seen the Frenchman's Cap specimen cited by Rodway and have no doubt that it is referable to the present species. Brotherus evidently withdrew his species as it is not mentioned in the Musci.

Weissia Hedw.

W. Weymouthii C.M. e Rodway

The Studies (p. 114) has a note on this species, Dixon suggesting that, from the description, it is either a *Hymenostomum* or a gymnostomous form of *W. controversa*. From specimens in the collection I take it to be probably the latter. It is quite different from the *W. Weymouthii* R.Br. ter. of New Zealand and, being a later name, would have required changing had it been a good species.

W. microcarpa H. f. & W.

This is a *Dicranoweisia* and is known as *D. microcarpa* (Hedw.) Lindb.

W. bicolor (Hpe.)

I am indebted to Mr. J. H. Willis of Melbourne for information about this species. Rodway cites it from several localities, but the only plant that I have seen so-named in the collection is referable to *Dicranoweisia microcarpa*. It will be noted that he describes them as being very similar. *W. bicolor* appears in Flora Tasmaniae as a *Gymnostomum*, and the name *G. bicolor* Br. & S. is there given (though doubtfully) to a barren plant collected by Oldfield. Mr. Willis, however, has examined European specimens of *Barbula bicolor* (B. & S.) Lindb., which is the same thing, and informs me that Oldfield's plant must be something different.

W. controversa Hedw. Syn. *W. flavipes* H. f. & W.

In this common ground moss the leaves are markedly crisped when dry and the empty capsule is often somewhat furrowed. The peristome is very variable in its development but is always more or less irregular.

Tridontium tasmanicum Hook. f.

Tridontium is a monotypic genus, and the plant has well-marked characters in the very obtuse leaf-apex, robust capsule and trifid peristome teeth. It should be mentioned, however, that at any rate in the New Zealand plant the teeth are not by any means as regularly divided as illustrated in the Musci. The Studies (p. 122) draws attention to the marginal areolation at the base of the leaf and to the thickening of the margin. *T. tasmanicum* occurs also in Australia, and I have received a barren specimen from Macquarie Island.

Tortella (C.M.) Limpr.

In this genus the peristome-teeth are long and spirally twisted, as in *Barbula* and *Tortula*, but the leaf-margins are never recurved but are either plane or incurved. The leaves are much curled when dry, and the basal cells are lengthened and hyaline.

Tortella Knightii (Mitt.) Broth.

Vegetatively there is some resemblance here to *Weissia controversa*, but the basal areolation is quite different, there being in the present plant an obliquely bounded area of long hyaline thin-walled cells which ascends from the nerve to the margin. Moreover, the leaf has undulate margins and is, at any rate in the New Zealand plant, more or less fragile.

T. calycina (Schwaegr.) Dixon. Syn. *Barbula calycina* Schwaegr.

The Studies (p. 124) proposes this change of genus, but the Musci retains the species as a *Barbula* in the Section *Streblotrichum* where the critical character is the highly sheathing perichaetium. Dixon, however, considers that the erect margin of the leaf is in favour of *Tortella*, and the elongated hyaline basal cells are no doubt more compatible with that genus than with *Barbula*. The description of the areolation given by Rodway requires to be supplemented by the account in the Studies where mention is made of the two rows of golden cells which adjoin the lower part of the nerve, one on each side, and which are marked with seriate papillae. This character, which is usually exhibited, is a very useful one for identifying barren plants of this moss which in that condition can be troublesome. The fruit is distinct in the long slender seta and high tubular perichaetium.

Erythrobarbula Steere

The plants here were formerly included in the subgenus *Erythrophyl- lum* of *Didymodon*. The group is marked by the rusty-red colour and the sporadic denticulation of the leaf-apex. The widely distributed northern *E. recurvirostra* (Hedw.) Steere is given by Rodway as a Tasmanian moss as *Barbula rubella* (Hoffm.) Mitt., but the specimens that I have seen from his collection (the localities being Bellerive and Colebrook) are not this species but the allied *Didymodon Binnsii* (R. Br. ter.) Dixon of the Studies. Rodway's description of *Barbula rubella* in some ways is more applicable to that plant than to *D. Binnsii*, but in the absence of authentic specimens I do not think that *E. recurvirostra* should, in the

meantime, be considered as a Tasmanian moss. Both plants are indigenous in New Zealand, and *D. Binnsii* (which I am publishing elsewhere in a new combination) ranked as an endemic.

Barbula Hedw.

This genus has a worldwide distribution, mostly in temperate regions and the number of described species is very large. Steere, in Grout's Moss Flora of North America, remarks that in his revision the seventy-odd species which had been described or reported from that region were reduced to eighteen, this going to show the great inflation of species that had taken place in the genus. The peristome-teeth are, as in *Tortula*, well developed and spirally twisted and the leaves usually have the margins recurved, as there; but the structure of the nerve differs in that two stereid bands are present, the leaves are usually narrower and more acuminate, and the basal cells are less differentiated.

***B. australasiae* (Hook. & Grev.) Brid.**

Rodway's description of this species is somewhat misleading. The leaf margin is not incurved, as stated, but either reflexed or plane, and the peristome-teeth are not, at any rate normally, nearly as long as the capsule, but are quite short. The leaf margin is often bistratose towards the apex. It should also be mentioned that the basal cells are rectangular, hyaline and thin-walled, this being a subgeneric character in *Astericium* C.M. to which the plant belongs. The Musci mentions a *B. nanocaulis* C.M. from Tasmania which presumably is the same thing as a specimen bearing that name in the collection, the author being "O. Burchard n. sp." and the locality Eaglehawk Neck. It is certainly referable to the present species.

***B. torquata* Tayl.**

Rodway omits this species from his book, but it is a recognised Tasmanian moss and is mentioned in the Flora Tasmaniae and other works. There is a specimen in the collection coll. Weymouth, Mt. Dromedary, sub. nom. *Tortula crispifolia*. It is a robust plant, with the leaves spirally twisted when dry with their apices sometimes harshly projecting. The leaves are rather broadly lanceolate with the margins usually closely recurved. The nerve is strong, percurrent or shortly excurrent; the upper cells subquadrate and slightly papillose, the basal cells but little altered and not hyaline. The peristome-teeth are strongly twisted.

***B. subtorquata* C.M. & Hpe.**

This is a derivative of the last species and is close to it, but has the leaves far more narrowly tapering. The basal cells are probably more differentiated, but I have not seen much of the species and cannot feel sure about this. The type collection, from South Australia, has the dry leaves crisped as in some plants of *Tortella*, whereas the habit of the Tasmanian plant resembles more that of *B. torquata*. The latter species is common in New Zealand, but the present one has not been reported from there.

B. pseudopilifera Hpe. & C.M. Syn. *Tortula pseudopilifera* (Hpe. & C.M.)
T. pungens H. f. & W.

I have found that the nerve structure here is that of *Barbula* and not of *Tortula*, and therefore consider that the original name should be restored. Mr. Willis has gone fully into Australian material referable to the plant and has established that this name is the earliest published of several Australasian conspecific names. Moreover, we have compared the type collection of *Tortula pungens* with the present species and are satisfied that the plants are identical. I think that *Tortula flavinervis* Dix., published in the Studies (p. 144) is certainly the same thing. *T. pungens* is there distinguished by having wider leaves which are not fragile, obscure upper cells and the nerve excurrent in a very short mucro. Since the publication of the Studies *T. flavinervis* has been collected on many occasions and has proved itself to be very variable in the characters mentioned, especially as regards the length of the excurrent nerve. Subject to the qualification that the New Zealand plant has not yet been found in really good fruiting condition I feel satisfied that all the Australasian plants are conspecific.

B. unguiculata Hedw.

Apparently there is only one record of this species from Tasmania. This is given by Rodway as "on ground, New Town", and the specimen in the collection purports to be from there. To judge from the barren material I have seen the leaves would appear to be too sharply pointed for the species, and moreover the nerve is smooth on the back: but Rodway's description of the fruit seems to agree with that of *B. unguiculata*. I have seen one or two barren plants from New Zealand which may be forms of this northern plant which is the type species of the genus.

Barbula sp.

This moss is in the collection under No. 7, but there is no collecting data whatever. The material purports to be identified by Brotherus as *Tortula pungens* H. f. & W., but there must have been a confusion and mixture because what I have seen of the gathering contained no plants of that species. Some barren stems of *Tortella calycina* were present, mixed with a few fruiting plants of what Mr. E. B. Bartram, who kindly examined it for me, considered to be a *Barbula*. Presumably it is from Tasmania, but even this is not definitely established. I have not seen any Australasian species of *Barbula* to which it could be referred, but in the circumstances I prefer not to propose a new species but to record a short description of what I have seen of it; Stems about 7 mm. high, singly branched at the apex. Leaves crisped when dry, patent when moist, 1.5-1.75 mm. long, linear-lanceolate, acute or obtuse; margins entire, plane above and variably recurved below. Nerve yellow-brown, excurrent in a short mucro. Upper cells very obscure, thin-walled, papillose with low papillae, isodiametrical, ca. 8 μ . Those towards the base longer (to ca. 40 μ), rectangular, thin-walled, smooth. Perichaetial bracts larger, not otherwise differentiated, not sheathing. Seta ca. 7 mm. Capsule 1.6 mm. long, erect, oblong-cylindric, brown, slightly asymmetrical. Peristome

twisted, nearly equal to the capsule; filaments 32, brown, papillose, from a low basal membrane. Spores ca. 12 μ , smooth. Operculum and calyptra not seen.

This has a resemblance to *B. subtorquata*, but differs in the very obscure thin-walled cells and the more bluntly pointed leaves.

Triquetrella C.M.

T. papillata (H. f. & W.) Broth. Syn. *Leptodontium papillatum* (H. f. & W.)

The arrangement of the leaves here is strikingly trifarious and this, with the straggling habit, makes for easy recognition. The dry leaves are closely appressed, and when moistened quickly become spreading or squarrose. It is a frequent pasture moss in New Zealand, and there, as in Tasmania, fruits very seldom. Brotherus, in the Musci, gives the peristome-teeth in this genus as not being striate, but in the present species I have found them to be obliquely and obscurely so. The systematic position of the genus is perhaps somewhat doubtful.

DOUBTFUL SPECIES

Anoetangium (Hedw.) Bry. eur.

This genus is of the subfamily Pleuroweisioidae which Brotherus includes in Pottiaceae, though this is a questionable proceeding. The outstanding characters are the lateral fruit and gymnostomous capsule. The collection contains a specimen of what may well be an *Anoetangium*, but which is barren and so could scarcely be referred there with confidence in view of the fact that the genus has not been reported from Tasmania. The plant is from Colebrook, No. 98, and is sub. nom. *Zygodon intermedius* B. & S., but it cannot belong there. As the nerve is sometimes rough at the back the New Zealand *A. Bellii* Broth. suggests itself as a possibility.

Family ENCALYPTACEAE

The sole genus *Encalypta* appears in Rodway's work as of Pottiaceae, but modern systematists agree in recognising a separate family for it. This is on account of the variation in the peristome which in the genus may be single, double or wanting altogether. The Flora Tasmaniae gives two species, the European *E. vulgaris* Hedw. and the Australasian *E. australis* Mitt. The latter is the only one appearing in Rodway's work, but Dixon in the Studies maintains that it is conspecific with *E. vulgaris*, and this view does not appear to have been contested. Another species, *E. tasmanica* Hpe. & C. M., is listed for Tasmania in the Musci, but Dixon treats this, too, as a synonym.

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