

## NOTES ON TASMANIAN MOSSES FROM RODWAY'S HERBARIUM: VIII

By

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## Family AMBLYSTEGIACEAE

These are hypnoid, hygrophilous mosses with irregularly or pinnately branched stems. The leaves are symmetrical and singly nerved, with rather wide cells which are not inflated at the leaf base. The operculum is shortly conical or apiculate. In Rodway's main work the Tasmanian mosses which belong to this family are those included by him in the genus *Campylium*, but referable in the Musci to *Cratoneuropsis* and *Drepanocladus*. In his *Additions to the Tasmanian Flora* (Papers, &c., Roy. Soc. of Tasmania; 31st Decr. 1915) a new species of *Amblystegium* is added.

*Cratoneuropsis relaxa* (H. f. & W.) Broth. Syn. *Campylium relaxum* (H. f. & W.) Broth., *C. decussatum* (H. f. & W.) Broth., *C. molle* Broth. I have little doubt that the three species of *Campylium* given by Rodway are referable to this variable moss. He does not mention the densely set, squarrosely spreading leaves which are a strong character. They are ovate-acuminate, with the apex reflexed. Astonishing extremes in the size and robustness of the plants are accompanied by variation in the length of the nerve and in the degree of denticulation of the leaf margins, but my study of New Zealand material has convinced me that there is no satisfactory correlation of these characters. The Studies (pg. 321) refers to *C. molle* as being perhaps an extremely slender form derived from either of the other two species in the above synonymy. The specimen of it in Rodway's collection appears to be a form of the present species. The Studies refers to *C. molle* as being ined., but Rodway's description of it would no doubt constitute valid publication.

*Drepanocladus* (C.M.) Roth. The leaves here are more or less falcate-secund, strongly nerved and with the alar cells normally inflated so as to form distinct auricles. The upper cells are rather narrow. Two species are given by Rodway in his main work, i.e., *D. fruitans* (Hedw.) Warnst. and *D. brachiatus* (Mitt.) Dixon. The former is a circumpolar moss widely distributed in both northern and southern hemispheres, and the latter is probably an antarctic form of the type species, *D. aduncus* (Hedw.) Moenk., which has a similar distribution. *D. brachiatus* has poorly developed alar cells, but in other respects conforms to the type and is connected with it, at any rate in New Zealand, by intermediate forms. Both species are extremely variable. They cannot be separated from each other by Rodway's descriptions, which moreover are misleading

in that the leaf margin in *D. fluitans* is stated to be entire, whereas some denticulation, usually at the apex, is always apparent in some of the leaves. *D. aduncus* is separable by the entire and broader leaves, which are decurrent at the auricles and cause the line of insertion to be curved, not straight as in *D. fluitans*. The cells are shorter and wider than they are there. In Rodway's Additions, cited above, *D. scudneri* Warnst. is added to the Tasmanian flora, but this species is considered by Dr. F. E. Wynne, whose papers on this difficult genus should be consulted, to be synonymous with *D. aduncus*. Another circumpolar species, *D. uncinatus* (Hedw.) Warnst., which occurs in montane regions of New Zealand, is quite likely to be found in Tasmania. It is distinguished by the plicate leaves with a serrulate acumen. It is a mesophyte and is normally corticolous.

*Amblystegium* Bry. eur. The plants here are slender, with small leaves which are straight or weakly falcate. The cells are short and wide, those at the base quadrate or rectangular, but not forming inflated auricles. In Rodway's paper above referred to an endemic species, *A. austro-serpens* Broth., is added to the flora. The locality given is "in stream at mouth of River Huon". I have not seen the plant and there is no mention of it in the Musci, but from the description I have little doubt that it is referable to the northern *A. serpens* (Hedw.) Bry. eur. which occurs in New Zealand and which I have seen from Heard and Macquarie Islands. It is a very slender plant, more or less hygrophilous, with small, spreading, ovate-acuminate leaves, less than 1 mm. long, which are singly nerved to about mid leaf. Other New Zealand representatives of boreal species of this family are *Cratoneuron filicinum* (Hedw.) Broth., *Leptodictyum riparium* (Hedw.) Warnst. and *Campylium polygamum* (Bry. eur.) Bryhn., all of which are hygrophytes and could be sought for in Tasmania with prospects of success.

#### Family BRACHYTHECIACEAE

Corticolous or terrestrial plants, rarely hygrophilous, with symmetrical leaves evenly arranged round the stem, sometimes plicate, and with the margins mostly denticulate. Nerve usually failing well below the apex, and often weak. Cells elongate and smooth, somewhat differentiated at the base, but not inflated. Seta smooth or papillose. Operculum blunt or with a long beak. Peristome hypnoid and perfect.

*Brachythecium* B. & S. The distinguishing characters here are the occasional plication of the leaves, a rather pronounced differentiation of the cells at the leaf base, and a conical operculum. The seta may be smooth or papillose, or partially one or the other, and as this papillosity is an important specific character it goes without saying that the identity of barren plants is often very difficult, and sometimes impracticable. The plants are frequently found in damp or wet stations. The specimens that I have seen from the collection are few and mostly imperfect, so I am unable to add much to Rodway's accounts of the respective species. *B. paradoxum* is distinct in the strongly falcate-secund plicate leaves, but the three other species he mentions are often difficult to deal with. In *B. salebrosum* the leaves are distinctly plicate and are narrower and longer acuminate than in *B. rutabulum*. In the latter the plants are

more robust and less glossy, the leaves are less plicate and the seta is rough throughout, whereas in *B. salebrosum* it is quite smooth. According to Dixon's Handbook, *B. campestre* B. & S. is practically indistinguishable from *B. salebrosum* except by the roughness of the seta in its upper part. So far as I know, *B. campestre* is not mentioned by anyone, except Rodway, as having been reported in the southern hemisphere. The two barren plants which I have seen from the collection seem to be referable to *B. salebrosum* and *B. rutabulum* respectively, so far as can be judged by the vegetative characters. Rodway states that *B. salebrosum* is not in any available Tasmanian collection, but it is given as a Tasmanian moss in the Musci and Studies, and in any event *B. campestre* is very close to it.

*Rhynchostegium* Bry. eur. A weak genus, distinguishable from *Eurhynchium* principally by the smooth seta. The operculum is long rostrate, not conical as in *Brachythecium*, and the leaves are more spreading and without plicae. Rodway adds a strong nerve as another character, but I do not think that this is a reliable criterion. Dixon (Studies, pg. 327) reduces *Hypnum aristatum* to a synonym of *Rhynchostegium laxatum* (Mitt.) Par. He considers that it is best separated from *R. tenuifolium* by the leaf cells being shorter and less tapered at the ends than they are there. Other characters, such as the degree of denticulation of the leaf margin, the habit of the plants, the leaf shape, &c., are given in the literature, but I have not always found these distinctions to be constant, and although the areolation is usually a safe guide it must, I think, be conceded that some of the plants can only be considered as intermediate between the two species.

*Rhynchostegiella* (Bry. eur.) Limpr. Plants as in *Rhynchostegium* but very small and slender. Seta rough in the Australasian species.

*Rhynchostegiella muriculata* (H. f. & W.) Broth. This has an Australasian distribution. It grows in soft dense tufts on bark, the stems being short, slender and irregularly pinnate. The leaves are up to 1 mm. long, acuminate and subpiliferous, with a slender short nerve and with cells usually lax, scarcely differentiated at the base. The rough seta will distinguish it from *Rhynchostegium laxatum*.

*Rhynchostegiella cucullata* (Mitt.) Dix. Syn. *Hypnum convolutifolium* Hpe. Separable from the preceding by the obtuse or bluntly acute branch leaves and the short opaque cells which are subquadrate at the base. This rare Victorian moss is very slender and small. The only Tasmanian record appears to be the Latrobe locality mentioned by Rodway. The specimen in his herbarium was collected by Weymouth, No. 242, March 1893, at Latrobe Waterworks, River Mersey. Dixon reduced the later published *Hypnum convolutifolium* to synonymy in Journ. Bot. 62: 234 (1924). The New Zealand *R. novae-zealandiae* Dix., which is also a very slender small plant, is rather closely related, but has acute and finely acuminate leaves, with longer cells. In both the spores are large, 18-28  $\mu$  in the New Zealand plant.

*Eurhynchium* Bry. eur. This genus, as treated here, is delimited according to Dixon's treatment in the Studies. (p. 323). The seta is rough, and the leaves are often dimorphous and usually somewhat plicate. The nerve occasionally ends dorsally in a spicule. In Rodway's work the plants are placed in the genus *Oxyrrhynchium*.

*Eurhynchium praelongum* (Hedw.) Hobk. This is a widely distributed moss in the northern hemisphere, but the only southern records are from New Zealand. The only Tasmanian specimen that I have seen or heard of was collected at Lymington, near Cygnet, Huon River, by R. N. Farquhar. It is barren but is certainly this species. I have not received particulars of the surroundings and so am unable to venture an opinion as to the possibility of the moss having been introduced. In New Zealand a number of records are from artificial surroundings. *E. praelongum* is easily recognised by the pronounced dimorphism of the leaves, those of the stem being widely triangular-cordate, long acuminate and with the acumen squarrosely recurved, whilst the branch leaves are much narrower, lanceolate and gradually tapering.

*Eurhynchium asperipes* (Mitt.) Dix. This appears in Rodway's work as a synonym of *Hypnum remotifolium*, with Mitten erroneously given as the author; but Dixon established (Studies, p. 226) that there are two mosses thus named, one of which is the South American *H. remotifolium* Grev., whilst the other is the plant of the same name in the Flora Novae-Zelandiae and Hooker's Handbook, and further that it is this latter which is identical with, and a synonym of, the present species. The only specimen named as *H. remotifolium* that I have seen from the collection is referable to *E. austrinum*, so I am not familiar with the Tasmanian plant. The leaves in *E. asperipes* are imbricated all round the stem and are rigidly divaricate when dry, with their upper parts bent inwards. In appearance the stem or branch is somewhat catenulate. The leaves are widely cordate-ovate and suddenly and finely acuminate. The cells are linear-rhomboid or linear-fusiform, somewhat laxer at the leaf base.

*Eurhynchium austrinum* (H. f. & W.) Broth. A robuster plant than *E. asperipes*, with erecto-patent leaves little altered when dry, sometimes vaguely plicate, rather shortly acuminate. Another difference is in the habitat, the present species being markedly hygrophilous and often aquatic.

#### Family PLAGIOTHECIACEAE

This is treated in the Studies as a subfamily of Hypnaceae. It is not a satisfactory group and the genera have been shifted about by systematists without agreement being reached. The distinguishing characters are the more or less complanate habit, the glossy appearance, leaves often asymmetrical, weakly nerved or nerveless, with mostly narrow smooth cells, with or without differentiated alar cells. The peristome is double and normal. The genera represented in Tasmania are *Plagiothecium*, *Isopterygium* and *Catagonium*.

*Plagiothecium denticulatum* (Hedw.) Bry. eur. The Studies gives *P. lamprostachys* Hpe. as a synonym of this widely spread northern species. It is recognisable by the glossy, green, complanate leaves, broadly ovate and somewhat asymmetrical, the short and obscure double nerve and the lax basal cells. Some forms of *Rhynchostegium tenuifolium* with complanate leaves are rather similar in gross appearance, but the leaves there are symmetrical, more sharply pointed, the nerve is single and the alar cells only slightly differentiated. Moreover, the operculum in the *Plagiothecium* is conical, not rostrate.

*Isopterygium* Mitt. The areolation differs from that of *Plagiothecium* in being narrower and practically unchanged at the leaf base. The Tasmanian species are much smaller plants, and the habit of the common *Isopterygium limatum* is entirely different, the leaves there being usually secund and strongly curved. They are gradually tapered from a very broad straight base to a fine, sometimes almost piliform point. It is noteworthy that *I. limatum* is evidently plentiful in Tasmania and Stewart Island, but rare in the main islands of New Zealand.

*Isopterygium acuminatum* Bosw. The Musci places this in the same group as the foregoing, and from Rodway's description, which accords with what I have seen of the original material in his collection, it differs from *I. limatum* in the straight and more or less complanate leaves with piliferous apices. It is a puzzling plant and its rediscovery would be welcome.

*Catagonium politum* (H. f. & W.) Dus. In Tasmanian specimens that I have seen of this very variable moss, there is no development of slender or flagelliform branches as often occurs in the New Zealand plant. This would account for the fact that in Rodway's description there is no mention of such branches, nor of their leaves tending to become more distant and to be narrowed to a fine long point, instead of ending, as they normally do, in a short recurved mucro.

#### Family SEMATOPHYLLACEAE

The Australasian genera of this large family form a group of mosses of small or medium size with lanceolate, falcate-secund and nerveless leaves and mostly smooth cells which are inflated and hyaline at the angles. The Tasmanian genera are *Acanthocladium* and *Sematophyllum* (formerly *Rhaphidostegium*). The former is represented by *A. extenuatum*, where the leaves are hair-pointed, the cells sporadically papillose and the operculum conical, and the latter by several species where the hair-point is lacking, the cells smooth and the operculum long-beaked.

*Acanthocladium extenuatum* (Brid.) Mitt. The robust habit, oblong piliferous leaves and enlarged vesicular alar cells are very distinctive. The seriate papillae on the leaf cells, which seem to have been first observed by Rodway, are often conspicuous but are by no means constant.

*Sematophyllum* Mitt. The species are difficult to delimit, and Rodway recognises this in presenting his key. The Studies' treatment is invaluable for the student of the Tasmanian plants since these all occur in New Zealand. The following key takes no account of the serrulation of the leaf margin, as I have not found this character to be very helpful.

## KEY TO THE SPECIES

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|---|----------------|
| 1. Robust rupestral plants with wide, not finely subulate leaves    | 2.             |
| Plants slender and corticolous with narrowly subulate leaves        | 3.             |
| 2. Hygrophilous, alar cells inflated                                | 4. tenuirostre |
| Mesophytes; on maritime rocks; alar cells incrassate, not inflated  | 5. homomallum  |
| 3. Leaves falcate and curved downwards                              | 4.             |
| Leaves straight and pointing upwards                                | 3. contiguum   |
| 4. Branches obtuse; seta smooth; plants autoicous                   | 1. amoenum     |
| Branches usually cuspidate; seta roughened at apex; plants dioicous | 2. leucocytus  |

1. *Sematophyllum amoenum* (Hedw.) Mitt. Syn. *Rhaphidostegium calliferum* Hpe. & Geh.; *R. callidioides* Hpe. & C.M.; *R. cyprarioides* (Brid.). A small and common moss which forms dense patches on rotting logs. There is a superficial likeness to small forms of *Hypnum cypressiforme* where, as here, the leaf lacks a nerve, but in the present species the alar cells are hyaline and inflated and the operculum has a long subulate beak. The seta and capsule vary in length, and no doubt this is responsible for the creation of several synonymous species. *S. amoenum* is a widely spread Australasian moss. It is a free fruiter.

2. *Sematophyllum leucocytus* (C.M.) Jaeg. Syn. *Hypnum cerviculum* H. f. & W. Vegetatively there is a resemblance to some forms of the preceding. Fertile plants are recognisable by the slight roughness of the seta in its upper part. The capsule is larger than in *S. amoenum* and is ringed at the base.

3. *Sematophyllum contiguum* (H. f. & W.) Par. This is usually separable without difficulty by the pale whitish colour and by the leaves which are very narrow, secund and straight, or nearly so. In this and the two preceding species the areolation is practically the same, the cells being narrowly linear, with pointed ends, and the angle cells being large, hyaline and inflated. Rodway treats this species as a synonym of *Rhaphidostegium crassiusculum* (Brid.), but Dixon (Studies, p. 311) doubts whether the two mosses are identical.

4. *Sematophyllum tenuirostre* (Hook.) Dix. Nearly all the specimens I have seen from the collection are sub nom. *Rhaphidostegium Jolliffii*, and it would appear from these determinations and from Rodway's remarks and key to the species that he failed to recognise the differences between this species and *S. amoenum*. Normally *S. tenuirostre* is a much more robust plant. The branches are cuspidate and the leaf acumen shorter and broader. The perichaetial bracts have shorter points and the spores are larger, 14-20  $\mu$ . The plants are rupestral and hygrophilous.

5. *Sematophyllum homomallum* (Hpe.) Broth. This species is distinguishable by the robust, golden-brown, glossy patches which seem to be confined to maritime rocks. The leaves are all secund and the alar cells differ from those in the other species in being orange-yellow and incrassate, not at all inflated.

## Family HYPNACEAE

The mosses of Mitten's *Stereodon* which are cited by Rodway as of that genus are usually now assigned to the genus *Hypnum* as limited by Fleischer. The type species, *H. cupressiforme* Hedw. is one of the most common and most variable mosses in the world. Typically it is a fairly robust plant with irregularly branched stems. The leaves are imbricated and falcate-secund, nerveless or practically so, and usually entire and with plane margins. The cells are smooth, narrowly linear-vermicular, except for those at the angles which form an area of dark, small, subquadrate cells that are neither hyaline nor inflated. The capsule is usually suberect and the peristome is perfect. The operculum is conical, acute or shortly beaked. As Dixon mentions in his Handbook, the prominent characters of distinction are the rapidly acuminate leaves and the area of small, opaque, angular cells. Of the six remaining species cited by Rodway, *Hypnum Mossmanianum* is reduced to *H. cupressiforme* in the Studies, whilst *H. chrysogaster* has been proposed as a variety by myself (Rev. Bry. et Lich., 21: 224). *H. Walterianum*, to judge by the specimens so named in the collection, is referable to the var. *filiforme* (Brid.), which is an extreme slender form. I have not seen *Stereodon Nelsoni* which is doubtfully included by Rodway in the genus. So far as *S. flagelliramus* is concerned, the two specimens in the collection (Weymouth 196, Hobart Rivulet, and Rodway 248, April 1917, Wedge Bay), which presumably are correctly named as this plant, are both flagelliferous forms of *Acanthocladium extenuatum* which occur at Waihau Bay, Bay of Plenty, North Island, New Zealand. There are two gatherings of *H. cupressiforme* which I think must be attributable to the var. *lucunosum* Brid. (i.e., var. *elatum* B. & S.). They are Weymouth 199, Circular Head and Rodway, Mowbray, near Launceston. This variety is characterised by the tumid julaceous stems and branches, and by the wide imbricated leaves with only their tips falcate. It is noteworthy that whereas in New Zealand the var. *filiforme* is a very shy fruiter, there are several Tasmanian specimens in Rodway's herbarium in mature fertile condition.

