

Description of a New Species with Notes and Localities for Some Otago and Southland Mosses

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OF RECENT years much field and taxonomic work has been done on our New Zealand mosses, but much still remains to be learnt, more especially perhaps about their distribution. These notes extend the known distribution of some species, verify some of the earlier records or give a definite station for some of the supposedly rarer species for which only such a general locality as Otago has been given, as well as describing a new species. These will supplement the list given by Martin (1946).

Most of the undermentioned mosses and certainly all the doubtful ones have been referred to Mr. Sainsbury for identification or verification. I have to thank him for his great help at all times, as also those who have collected and sent me specimens.

Coastal Otago, to which most of these records refer, can be considered fairly well known bryologically as compared with many other parts of New Zealand, as Hector and Buchanan, Lindsay, Lyall, Bell, Berggren and Petrie have all botanised here, but further exploration will certainly yield many more records.

BUXBAUMIACEAE.

Buxbaumia aphylla Hedw. Soil in earth pocket on south side of rock sheltered by hillside, ca. 200 ft. altitude. Near Berwick, south of Dunedin: K. W. A. 21/9/45. Not previously reported from the South Island. It is an annual never found in quantity and rarely a second year in the same spot, the few brown scattered plants without leaves being hard to find, so that it is probably widely if sparsely spread in New Zealand, where it has been found up to about 2,000 ft. altitude in the centre of the North Island and near the coast at Wairoa.

POLYTRICHACEAE.

Oligotrichum tenuirostre (Hook.) Jaeg. East of Lake Hauroko, Southland: J. Henry.

Psilopilum bellii Broth. Head of Lake Manapouri to Willmott Pass: G. Simpson. East of Lake Hauroko, Southland: J. Henry. Both specimens are sterile.

FISSIDENTACEAE.

Fissidens anisophyllus Dix. Various localities from Herbert to Milton: K. W. A. An unusual habitat is on an exposed coastal cliff, just inside the mouth of the Taieri River at Taieri Mouth.

F. asplenoides (Sw.) Hedw. Near Herbert, Outram, and in Dunedin: K. W. A. Not very common in coastal Otago.

F. delabatus H. f. and W. Town Belt, Dunedin, and near Herbert: K. W. A. Probably not uncommon. Mr. Martin reports it as common on Stewart Island.

F. leptocladus C. M. e Rodway var. *cheesemani* (C. M.) Dix. Several localities from Dunedin to Milton and Akatore: K. W. A.

GRIMMIACEAE.

Grimmia apocarpa (L.) Hedw. var. *rivularis* (Brid.) Web. and Mohr. Frequent in its usual habitat on rock and stones in shady or sheltered watercourses from Herbert to Balclutha: K. W. A.

This species belongs to the subgenus *Schistidium*, one of the characters of which is that the columella is adherent to the operculum and falls away with it on the dehiscence of the capsule, Dixon (1913-28, p. 155). Dixon there states that R. Brown described 31 new species of *Grimmia* in the *Transactions of the N.Z. Institute* in Vols. 27 and 35, grouping them under two heads, "Columella adhering to the operculum" and "Columella not adhering to the operculum," but that he included several species in the second group that did not belong there and that in these cases there must have been an error of observation on Brown's part, as the adherent columella is a fixed character of the subgenus.

In 1932 I collected a specimen at Atiamuri, Rotorua, in which the columella was certainly not adherent to the operculum. Mr. Sainsbury submitted this to Mr. Dixon, who confirmed it as *G. apocarpa*, so he apparently did not consider the character as inflexible.

None of the Otago specimens examined shows the union, and Mr. Sainsbury writes that he examined a number of specimens in his herbarium of which only one showed the union. The character would therefore seem to be usually lacking in New Zealand specimens. The species is extremely variable, but, when in fruit at least, can be easily distinguished from our other species.

G. campestris Burch. Alexandra: G. Simpson. On exposed rock, Sutton and Kyeburn: K. W. A.

G. asperitricha Dix. and Sainsb. Alexandra: G. Simpson.

DICRANACEAE.

Ditrichum brevirostrum (R. Br. ter.) Broth. Near Clarendon and Berwick: K. W. A.

D. elongatum (H. f. and W.) Mitt. Lake Manapouri: G. Simpson. Various localities between Dunedin, Berwick, and Milton: K. W. A.

D. fragilicuspis Dix. and Sainsb. Alexandra: G. Simpson.

POTTIACEAE.

Barbula torquata Tayl. Otago Peninsula: K. W. A.

Didymodon rubellus (Hoffm.), *Bry. eur.* Evansdale: K. W. A.

Gymnostomum calcareum, *Bry. germ.* On shady stone wall, Dunedin: K. W. A. On rock, Horse Range Road, near Palmerston: K. W. A.

Pottia serrata R. Br. ter. Otokia and coast near Akatore Stream mouth: K. W. A.

P. stevensii R. Br. ter. Otokia and Akatore: K. W. A.

Mr. Sainsbury obtained original specimens on loan from the British Museum which Dixon had assigned to this species and my specimens differ less from these than they do amongst themselves. One is part of the co-type collected from Christchurch (without opercula), the other a gathering from Oamaru by Petrie. My gatherings have the short leaves of the Oamaru plant, but a longer beak to the operculum than in that and also have a very thick nerve. The capsules are quite gymnostomous or may have traces of a peristome.

Tortula abruptinervis Dix. In small quantity on willow, Otokia: K. W. A.

T. papillosa Wils. Common on willow on the Taieri Plain, south of Dunedin: K. W. A.

T. phaea (H. f. and W.) Dix. On rock near Berwick: K. W. A.

Triquetrella curvifolia Dix. and Sainsb. Open lower hillside near Berwick: K. W. A. Known previously only from the type locality, Hawke's Bay, and from one locality in Victoria. Sainsbury (1945).

ENCALYPTACEAE.

Encalypta vulgaris Hedw. Near Berwick: K. W. A.

ORTHOTRICHACEAE.

Macromitrium caducipilum Lindb. Coast at Akatore Stream mouth: K. W. A. On trees in light bush, Horse Range Road, Palmerston: K. W. A.

M. grossirete C. M. East of Lake Hauoko: J. Henry. Akatore: K. W. A.

Muelleriella crassifolia (H. f. and W.) Dus. On coastal rock at mouth of Akatore Stream: K. W. A. An interesting extension of its known range from the Auckland and Campbell Islands to the mainland, where it will probably be found in further localities.

Orthotrichum lancifolium R. Br. ter. Near Berwick: K. W. A.

O. sainsburyi n.sp.

Sect. Eu-orthotrichum § *striata*. *Corticola*. *Multiramosa*, *hinc dense pulvinatim caespitosa*, ca. 3.5 cm. diametro, *caulis* ca. 2 cm. *altus*, *superne viridis vel luteo-viridis*, *inferne fuscus*, *basi variabile tomentosus*. *Folia sicca paulo mutata*, *erecta*, *imbricata*, *marginibus bene recurvis*, *madida patentia*, 2.2–3 cm. *longa*, *linearo-lanceolata*, *basi semi-ovalia*, *apice acuto vel acuminato*, *marginibus recurvis*, *elimbatis*, *apicem versus planis ubi integris*, *sinuatis aut papillis minute serrulatis*. *Costa valida*, *pallide flava*, *dorso papillata et prominens*, *in apice desinens*. *Cellulae superiores marginalesque opacae ob papillas sat altas coronatae*, 12–15 μ *metientes*, *subrotundae vel ovaliae*, *valde incrassatae*, *parietibus pellucidis*, *basilares costam versus elongatae*, *anguste ovaliae aut oblongae*, *pellucidae*, *saepe plus minusve auratae*.

Autoica. Flos ♂ parvus, complanatus, pluries in caule infra florem ♀ positi. Vaginula ochreate, epilosa. Theca immersa vel peristomii extra perichaetia exsertis, ca. 1.8 mm. longa, madida estriata, oblongo-elliptica, sicca angustiora, cylindrica, 8-costata per totam longitudinem, stomatibus paucis ad superficiem in medio theca positus. Seta ca. 0.5 mm. longa. Exothecii cellulae parietibus non multo incrassatis. Peristomium duplex, dentes externi pulcherrime rosei, 16, intime bini conglutinati, aliquando in medio plus minusve rimosi, deinde ad basi secedentes, primo erecti, mox eleganter recurvi, apicibus capsulam tangentibus. Endostomii processus 16, basi 30 μ lati, alborosei, marginibus irregulariter projectis, interdum hic illic confluentes. Opercula paulo altiora quam lata, rostro breve, valido, erecto. Calyptra campanulata, pallida, ca. 1.2 mm. longa vel ultra, ramentulosa, leniter plicata, margine sinuata vix lobata. Spori ca. 25 μ diametro, viridi, tenuiter papilloso, aliqui minores fulvique.

Hab.: On shrubs, Bull Creek, Milton, south of Dunedin: K. W. A. 13/9/46. On low shrubs, chiefly *Carmichaelia*, in open gully near Milton: K. W. A., 10/1/47. No. 996. Type. On old fruit trees in sheltered orchard near Allanton: K. W. A. 13/1/47. No. 995. Amongst *Orthotrichum tasmanicum*, Mount Cook: G. O. K. Sainsbury, February, 1947.

This moss was submitted to Professor Bartram, of America, by Mr. Sainsbury to ensure that it was not a Northern Hemisphere species. He writes: "This certainly has every appearance of being an undescribed species. The only logical comparison would be with *O. graphiomitrium*, from which it differs widely." It is similar in habit and appearance to *O. hortense* and *O. cyathiforme* (though usually larger than the latter species) and grows in association with these two. It can be separated, however, by the rosy-coloured peristome teeth, 16 rather broad endostome teeth, which is double the number in the above species, by the practically naked calyptra, and by the acute leaves.

It is named after Mr. Sainsbury as a well-deserved tribute for what he has done, and is still doing, for bryology in New Zealand and Australia.

The green or greenish-yellow cushion-like clumps grow on shrubs and are darker below and inside, with more or less tomentose stems. The leaves change little in drying, being imbricated and erect, but have more recurved margins. When wet, the leaves are spreading, linear-lanceolate, from a wider oval base, acute or acuminate, the margins recurved but not bordered, above entire, sinuate or minutely serrulate with papillae. The nerve is wide and yellowish, prominent and papillate below and disappears in the apex. The upper and marginal cells are 12–15 μ in diameter, opaque on account of the rather high papillae, rounded or oval, with greatly thickened pellucid walls, the inside basal cells being larger, narrowly oval or oblong and clearer, the lowest of all being golden.

The male flowers are small and flattened, borne on the stem below the capsule. The vaginula is not hairy, but at its top has a distinct ochrea or sheath of hyaline tissue surrounding the base of the seta. The capsule is usually completely immersed or may have the peristome

just showing above the perichaetial leaves, is about 1.8 mm. long, oblong-elliptic, and smooth when wet, but when dry and empty is narrower, cylindrical and strongly 8-ribbed throughout its length. The stomata are few and superficial (gymnoporou), about the middle of the capsule. The seta is very short, about 0.5 mm. long. The walls of the outside cells of the capsule are not greatly thickened. The peristome is double, the outer 16 teeth being of a beautiful rosy-red colour and united in pairs, sometimes each tooth being more or less cracked down the middle. They are at first erect, but soon curve back gracefully for their tips to touch the capsule wall. The 16 processes of the endostome are rather broad, being about 30μ wide at the base, pink but lighter coloured than the outer teeth, with irregular marginal projections and occasionally anastomose. The operculum has a short, straight, strong beak. The calyptra is campanulate, about 1.2 mm. long, pale, somewhat ramentose and lightly ribbed, with the base scarcely lobed. The spores are about 25μ in diameter, green and finely papillose, mixed with some smaller brown ones.

Ulota breviseta Malta, *U. lateciliata* Malta, *U. lutea* Mitt., *U. viridis* Vent. Near Dunedin: K. W. A. These species are apt to grow together and may be mixed with species of *Orthotrichum*. Care and capsules in good condition are generally necessary for their determination.

Zygodon rufescens (Hpe.) Broth. A small gathering, similar to my previous gatherings on the Volcanic Plateau of the North Island. was made on willow near Otokia and like those was sterile.

FUNARIACEAE.

Physcomitrium conicum Mitt. On damp bare ground near Berwick: K. W. A.

BRYACEAE.

Mielichhoferia tenuiseta Mitt. Waitati and Berwick: K. W. A.
Webera cruda (Hedw.) Schwaegr. Outram: K. W. A.

PTYCHOMNIACEAE.

Glyphothecium alare Dix. and Sainsb. Akatore: K. W. A.
Tetraphidopsis pusilla (H. f. and W.) Dix. Waipori Gorge: K. W. A.

NECKERACEAE.

Neckera brownii Dix. Waipori Gorge: K. W. A.
Thamniium pumilum (H. f. and W.) Par. Near Berwick: K. W. A. The plants of this gathering are much more slender than either *T. latifolium* or *T. pandum* and undoubtedly belong here. There are a few capsules present. It is an Australian and Tasmanian species of which Dixon found a few stems in one of Brown's gatherings, probably from the South Island.

HOOKERIAACEAE.

Eriopus apiculatus (H. f. and W.) Mitt. Akatore Stream and coastal cliff near Brighton: K. W. A.
E. flexicaulis (Mitt.) Jaeg. Waipori Gorge and Dunedin: K. W. A.

AMBLYSTEGIACEAE.

Amblystegium riparium (L.) Bry. eur. Pond edge in shade, Outram: K. W. A.

BRACHYTHECIACEAE.

Brachythecium albicans, Bry. eur. Lawn in Dunedin: K. W. A.

B. subplicatum (Hpe.) Jaeg. Head of Lake Manapouri: G. Simpson.

Eurhynchium asperipes (Mitt.) Dix. Dunedin District, in several localities: K. W. A.

E. austrinum (H. f. and W.) Jaeg. Maungatua Range: K. W. A.

E. praelongum (L.) Hook. Under plantations, parks, and on lawns, Dunedin to Milton: K. W. A.

Rhyncostegium peracuminatum Dix. and Sainsb. Herbert, Evansdale, Dunedin, and Waipori Gorge: K. W. A.

FABRONIACEAE.

Fabronia australis Hk. On rock and trees, Berwick and Otokia: K. W. A.

HYPNACEAE.

Isopterygium limatum (H. f. and W.) Broth. Akatore Stream and Waipori Gorge: K. W. A.

I. pulchellum (Dicks.) Jaeg. Waipori Gorge: K. W. A.

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