

CONTRIBUTION TO THE MOSSES OF FIJI

By

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INTRODUCTION

The strategic position of the Fiji Islands in connection with the geographical distribution of flowering plants applies equally well to the mosses. A strong thrust of such typical southeastern Malaysian species as *Arthrocormus Schimperii*, *Leucobryum sanctum*, *Syrrhopodon Mulleri*, *Hypnodendron arborescens*, *Piloecium pseudo-rufescens*, *Meteorium Miquelianum*, *Meiothecium hamatum*, *Rhaphidostichium luxurians*, and *Microctenidium Leveilleanum* emphasizes this tendency and indicates a marked migratory current through the region.

Dixon¹ remarks that the total of 205 species included in "The Mosses of Fiji" represents probably half of the ultimate number. This estimate may be slightly optimistic but further explorations, especially in the higher regions of central Viti Levu, will surely expand the list to a generous extent. With the additional records of 19 established species, and 12 new species comprised in the following detailed list, the total of known species is increased to approximately 235.

The mosses collected by Dr. A. C. Smith in Fiji between October 1933 and July 1934 in cooperation with Bernice P. Bishop Museum are represented by some 200 numbers many of which are in sufficient quantity for wide distribution. These form the nucleus of my report. I have also included a few records based on small specimens that were separated, for the most part, from J. W. Gillespie's plants in the herbarium of Bernice P. Bishop Museum by Miss Marie C. Neal.

Smith² has written a narrative of his activities in Fiji, outlining in detail the topographical and floristic features of the country. Fortunately, from the viewpoint of a bryologist, his activities were centered on a number of the outlying islands previously unvisited by a botanist. As these areas are difficult of access the records are likely to remain unique. They represent an important addition to our knowledge of the Fiji mosses.

¹ Dixon, H. N., The Mosses of Fiji: Linnean Soc. New South Wales, Proc., vol. 55, pt. 3, pp. 261-302, 1930.

² Smith, A. C., Plant Collecting in Fiji: N. Y. Bot. Garden, Jour., vol. 35, pp. 261-280, 1934.

The type collections of the new species are represented in the herbarium of Bernice P. Bishop Museum and in the herbarium of the author.

SPHAGNACEAE

Sphagnum Seemanii C. Müller.

Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, common in swamp, Smith no. 867.

FISSIDENTACEAE

Fissidens mangarevensis Montagne.

Vanua Levu: Thakaundrove, southern slope of Valanga Range, elevation 100 meters, on decayed wood, dense forest, Smith no. 369c.

Fissidens lautokensis Dixon.

Vanua Levu: Thakaundrove, Mount Mbatini, elevation 700-1,030 meters, on tree trunks, crest of range, dense thickets, Smith no. 642b.

DICRANACEAE

Dicranoloma Braunii (C. Müller) Paris.

Viti Levu: Tholo North Province, near summit of Mt. Victoria, elevation 1,300 meters, on branches and leaves of *Ternstroemia vitiensis*, Gillespie no. 4114.

The plants under this number are few and sterile. Supplementary collections in better condition are needed to definitely establish its identity. As this is the only *Dicranoloma* so far reported from Fiji, the record is a notable one. The stems lack the filamentose propagula that are characteristic of *D. Braunii* and the leaves end in long setaceous points. It may prove to be a form of *D. Blumei* (Nees) but is certainly not typical.

Leucoloma tenuifolium Mitten.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 500 meters, on tree trunks, dense forest, eastern slope, Smith no. 1903a; Natewa Peninsula, Uluingala, elevation 600-820 meters, dense forest, on tree trunks, Smith no. 1983a. Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, Smith no. 882c; western slope between Somosomo and Wairiki, elevation 600 meters, Smith no. 756a.

Braunfelsia scariosa (Wilson) Paris.

Viti Levu: summit of Voma mountain, elevation 1,000 meters, on fern (*Dryopteris viscosa*), Gillespie no. 2746.

New to Fiji. Further collections are necessary to definitely determine this species now based on a single sterile collection.

LEUCOBRYACEAE

Leucobryum pungens C. Müller.

Viti Levu: on fern (*Blechnum vulcanicum*), Gillespie no. 2715.

Leucobryum Teysmannianum Bryologia javanica.

Vanua Levu: Thakaundrove, Mount Mbatini, elevation 700-1,030 meters, on humus, crest of range, dense forest, Smith no. 648a; Yanawai River region, Mount Kasi, elevation 300-430 meters, Smith no. 1811a. Vanua Mbalavu: northern limestone section, elevation 0-200 meters, forest, forming dense mats on humus, Smith no. 1464. Koro: on caudex of tree ferns, dense forest, main ridge, elevation 300-500 meters, Smith no. 1051a.

Leucobryum pentastichum Bryologia javanica.

Kambara: limestone formation, elevation 0-100 meters, on palm trunks, clearing, Smith no. 1249. Kandavu: hills above Namalata and Ngaloa Bays, elevation 200-400 meters, on decayed logs, dense forest, Smith no. 147a.

Leucobryum sanctum Hampe.

Viti Levu: with fern (*Lindsaya adiantoides*), Gillespie no. 2718.

Leucophanes candidum (Hornschuch) Lindberg variety **densifolium** (Mitten) Dixon.

Vanua Levu: Thakaundrove, Natewa Peninsula, hills south of Natewa, elevation 400-600 meters, forming dense mats on decayed wood, dense forest, Smith no. 1958.

Arthrocormus Schimperi Dozy and Molkenboer.

Koro: eastern slope of main ridge, elevation 300-500 meters, on tree trunk, forest, Smith no. 975; on caudex of tree ferns, dense forest, main ridge, elevation 300-500 meters, Smith no. 1051c.

New to Fiji.

Exodictyon dentatum (Mitten) Cardot.

Viti Levu: Thakaundrove, Mount Mbatini, elevation 700-1,030 meters, on decayed wood, crest of range, dense thickets, Smith no.

638. Koro: on caudex of tree ferns, dense forest, main ridge, elevation 300-500 meters, Smith no. 1051b.

CALYMPERACEAE

Syrrhopodon Banksii C. Müller.

Viti Levu: near Suva, C. H. Edmondson.
New to Fiji.

Syrrhopodon Graeffeanus C. Müller.

Vanua Levu: Thakaundrove, Mount Mariko, on tree trunks, dense forest, Smith no. 442a. Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on trees, dense forest, Smith no. 882b; with fern (*Hymenophyllum australe*), Gillespie no. 5125. Viti Levu: on fern (*Blechnum vulcanicum*) Gillespie no. 2715a; with fern (*Lindsaya adiantoides*), Gillespie no. 2366.

The lamina cells in these collections are constantly papillose. The leaves average shorter than in *S. tristichus*, the apex is uniformly more sharply pointed, and the costa distantly spinose on the back. If these distinctions are maintained the species should be perfectly valid.

Syrrhopodon (Tristichi) Smithii, new species (fig. 1).

Gracilescens, caespitosus, caespitibus densis, supra pallide viridibus intus rubescens. Caulis ad 2 cm altus, simplex, basi parce radiculosus. Folia conferta, e basi albida, erecta, erecto-patentia, sicca vix mutata, ad 6 mm longa, limbata, limbo angusto, hyalino, fere ad apicem producto; margines laminae remote et minute spinuloso-denticulati, inferne integri; costa e media basi ad apicem dorso scabra; cellulae superiores rotundatae, dense papillosae, obscurae, cancellina supra rotundata. Caetera ignota.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 900 meters, on decayed wood, crest thickets, eastern buttress; Smith no. 1880 (type).

Distinguished at once from both *S. Graeffeanus* C. Müller and *S. tristichus* Nees by the crowded, erect-spreading leaves, the larger, obscure lamina cells coarsely papillose with multifid papillae, the finely toothed leaf margins and the costa scabrous on the back to below the top of the leaf base.

I feel it a privilege to associate the name of Dr. A. C. Smith with this very distinct species.

Syrrhopodon mamillatus C. Müller.

Vanua Levu: Thakaundrove, Natewa Peninsula, hills west of

Mbutha Bay, elevation 150-350 meters, on decayed wood, forest, Smith no. 821; Mount Ndikeya, elevation 800 meters, on humus, dense forest, eastern buttress, Smith no. 1872; hills between Vatu-kawa and Wainigio Rivers, Ndrekeniwai Valley, elevation 200-500 meters, on decayed wood, Smith no. 585; Mbua, southern portion of Seatovo Range, elevation 100-350 meters, on humus, forest, Smith no. 1535; Mbua, southern slope of Mount Seatura, elevation 400 meters, on decayed wood, dense forest, Smith no. 1614. Taveuni: western slope between Somosomo and Wairiki, elevation 700-900 meters, on decayed wood, forest, Smith no. 760, 731. Kandavu: hills above Namalata and Ngaloa Bays, elevation 200-400 meters, on decayed logs, dense forest, Smith no. 148.

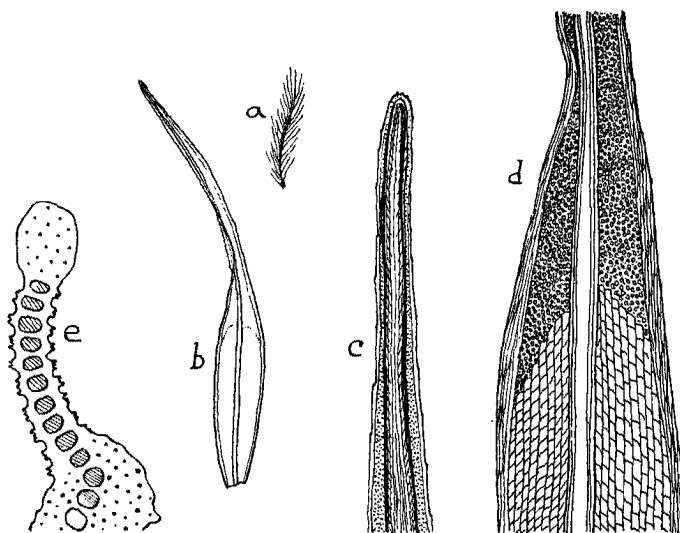


FIGURE 1.—*Syrrhopodon Smithii* Bartram: a, plant, $\times \frac{3}{4}$; b, leaf, $\times 8$; c, apex of leaf, $\times 60$; d, upper part of leaf base, $\times 60$; e, part of cross section of leaf, $\times 300$.

***Syrrhopodon Mulleri* (Dozy and Molkenboer) Bryologia javanica.**

Koro: eastern slope of main ridge, elevation 300-500 meters, on tree trunk, dense forest, Smith no. 990.

This collection deviates from the usual form in the longer setae, more uniformly acute leaf apices, and papillose lamina cells, but I doubt if any of these characters are of more than minor importance. Authentic specimens from other regions frequently have the lamina

cells papillose and leaves from the same plant often show considerable variation in the shape of the apex. New to Fiji.

Syrrhopodon croceus Mitten.

Viti Levu: Six miles from Suva, C. H. Edmondson.

Thyridium luteum Mitten.

Vanua Levu: Thakaundrove, Mount Ndikeya, on tree trunk, dense forest, eastern buttress, elevation 800 meters, Smith nos. 1864, 1903, Mbua, southern slope of Mount Seatura, elevation 600 meters, on tree trunk, Smith no. 1625. Koro: eastern slope of main ridge, elevation 300-500 meters, on tree trunks, forest, Smith no. 980.

Calymperes tahitense (Sullivant) Mitten.

Vanua Levu: Thakaundrove, southern slope of Valanga Range, elevation 200-400 meters, Smith no. 369d.

Calymperes lorifolium Mitten.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, on decayed bark, Smith no. 459d; Yanawai River region, Mount Kasi, elevation 300-430 meters, on decayed wood, dense forest, Smith no. 1814a.

Calymperes (Eucalymperes) subulatum, new species (fig. 2).

Caules brevissimi, gregarii. Folia erecto-patentia, sicca parce contorta, e basi breve, longe ligulata ad 9 mm longa et 0.5 mm lata, limbata, apice subulato-acuminato; margines basiales minute denticulati, superne limbum angustum, indistinctum, perincrassatum, minute denticulatum, apice remote dentato circumducta; costa pervalida, dorso minute papillosa, in subulam evanida; cellulae superiores minutae, rotundatae, mamillosae, vix incrassatae, cancellina supra rotundata, bene definita. Caetera ignota.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 400 meters, tree trunks, dense forest, eastern slope, Smith no. 1913a (type).

With the habit and appearance of *C. lorifolium* Mitten this species is appreciably smaller. It is apparently quite distinct in the long proboscoïd leaf apex and especially in the minute, opaque, mamillose cells of the lamina with firm but not incrassate walls.

POTTIACEAE

Hyophila Micholitzii Brotherus.

Fulanga: limestone formation, elevation 0-80 meters, on hard soil, clearing, Smith no. 1149.

BRYACEAE

Rhodobryum Graeffeanum (C. Müller) Paris.

Vanua Levu: Thakaundrove, Natewa Peninsula, hills south of Natewa, elevation 400-600 meters, forming dense mats on wet rocks, dense forest, Smith no. 1963.

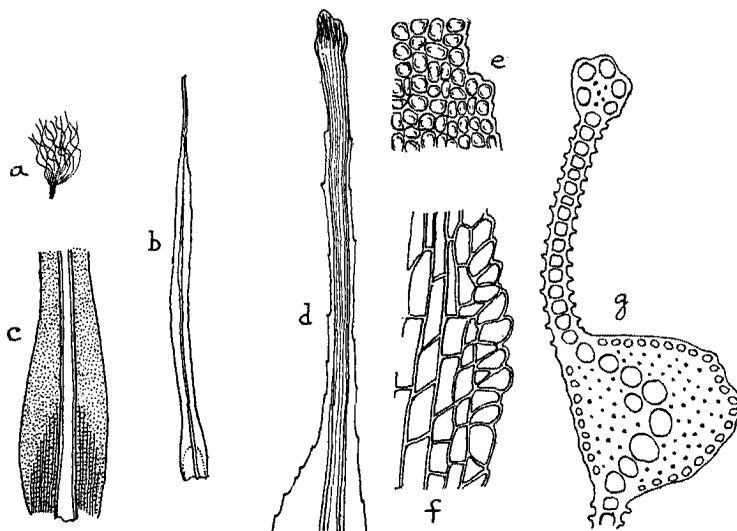


FIGURE 2.—*Calymperes subulatum* Bartram: *a*, plant, $\times \frac{3}{4}$; *b*, leaf, $\times 6$; *c*, leaf base, $\times 22.5$; *d*, apex of leaf, $\times 60$; *e*, upper leaf cells and margin, $\times 300$; *f*, marginal cells of leaf base, $\times 300$; *g*, part of cross section of leaf, $\times 300$.

CALOMNIACEAE

Calomnion Dixoni, new species (fig. 3).

Dioicum? Gracile, laxe caespitosum, sordide viride intus fuscum, haud nitidum, Caulis simplex vel parce ramosus, nigrescentibus, circa 1.5 mm latus. Folia superne sat conferta, ovata, acuta, 1-1.4 mm longa, patentia, sicca leniter contorta; costa valida, fusca, percurrans vel infra apicem evanida; marginibus planis, fere ad basin irregulariter denticulatis, cellulae superiores rotundatae, incrassatae, laevissimae, 10-12 μ , basillares lineares, parietibus incrassatis, sinus, infimae fuscae. Caetera ignota.

Viti Levu: Tholo North Province, near summit of Mt. Victoria, elevation 1,300 meters, on branches and leaves of *Ternstroemia vitiensis*, Gillespie no. 4114 (type).

This species is distinct from *C. denticulatum* Mitten, of Samoa, in the more crowded upper leaves, the broader, shorter leaf apices,

the rounded and more incrassate upper leaf cells, and particularly in the well differentiated linear basal cells with porose lateral walls.

I have named this species after Mr. H. N. Dixon, who has contributed a great deal to the study of the mosses of the Antipodes.

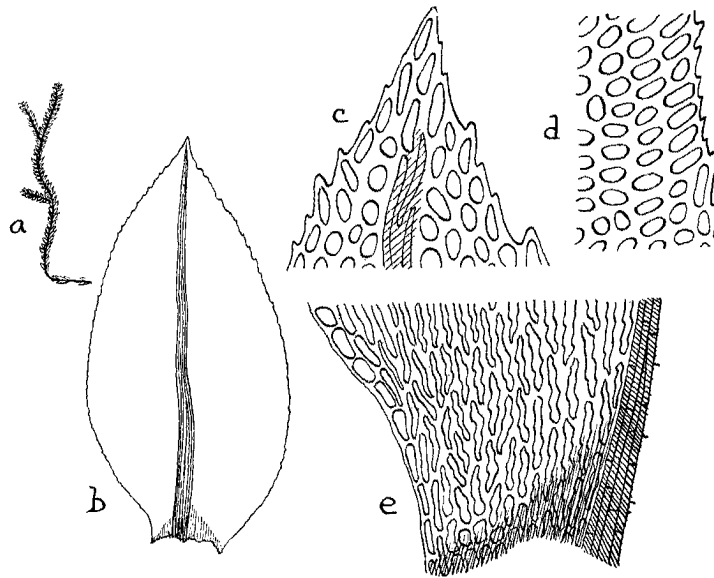


FIGURE 3.—*Calomnion Dixoni* Bartram: *a*, plant, $\times \frac{3}{4}$; *b*, leaf, $\times 45$; *c*, apex of leaf, $\times 300$; *d*, upper leaf cells and margin, $\times 300$; *e*, one side of leaf base, $\times 300$.

RHIZOGONIACEAE

Rhizogonium spiniforme (Hedwig) Bruch form **samoana** Mitten.

Specimens from Vanua Levu, Kandavu, Koro and Moala indicate that this well-known species is distributed throughout the group.

HYPNODENDRACEAE

Hypnodendron arborescens Mitten.

Vanua Levu: Thakaandrove, Mount Mbatini, elevation 700-1,030 meters, on tree trunks, crest of range, dense thickets, Smith no. 642. Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on trees, dense forest, Smith no. 882. Kandavu: Mount Mbuke Levu, elevation 750-840 meters, epiphyte, summit, dense forest, Smith no. 294.

Mniodendron tahiticum Bescherele.

Vanua Levu: Mount Ndikeya, elevation 800 meters, on humus, crest thickets, eastern buttress, Smith no. 1887a (a small form).

A small, compact form that may be attributed to the exposed habitat. The structural details are precisely those of the typical form from Tahiti.

BARTRAMIACEAE

Philonotis viridifolia, new species (fig. 4).

Robustiuscula, caespitosa, caespitibus densiusculis, depressis, mollibus, viridibus, intus fuscis. Caulis elongatus, ad 7 cm longus, simplex vel parce ramosus, inferne radiculosus. Folia secunda, ovato-lanceolata, acuminata, 2-2.3 mm longa; marginibus fere ad apicem anguste recurvis, denticulatis; costa valida, breviter excurrens, dorso superne scabra; cellulae superiores oblongae, circa 10 μ latae, chlorophyllosae, in angulis superioribus papillosae, basiales laxae, pellucidae, ad 20-22 μ latae, parietibus tenuissimis. Caetera ignota.

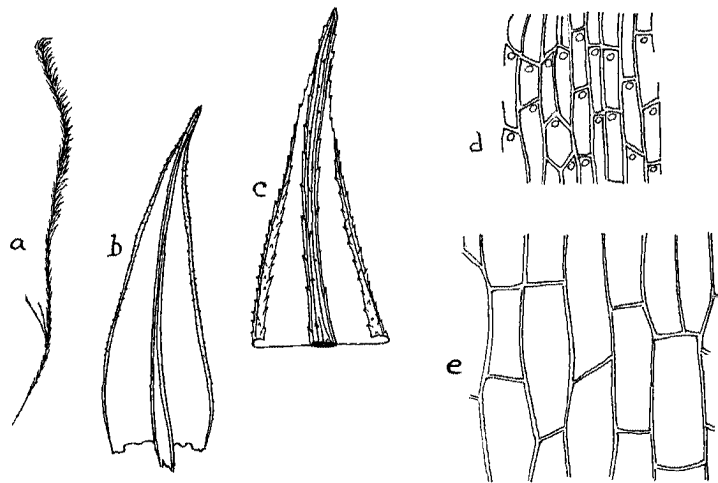


FIGURE 4.—*Philonotis viridifolia* Bartram: a, plant, $\times 3/4$; b, leaf, $\times 22.5$; c, apex of leaf, $\times 60$; d, upper leaf cells, $\times 300$; e, basal leaf cells, $\times 300$.

Vanua Levu: Mbua, upper Ndama River valley, elevation 100-300 meters, on rocks in streams, Smith no. 1695 (type).

Suggestive of a very robust form of *P. laxissima* (C. Müller) in general appearance but distinct in the broader, more sharply acuminate leaves and the papillose cells.

SPIRIDENTACEAE

Spiridens aristifolius Mitten.

Vanua Levu: Natewa Peninsula, Uluingala, elevation 600-820 meters, densely covering trees, Smith no. 1991. Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on trees, dense forest, Smith no. 924.

Spiridens flagellosus Schimper.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, epiphyte, dense forest, Smith no. 443.

ORTHOTRICHACEAE

Macromitrium tongense Sullivant.

Vanua Levu: Thakaundrove, hills between Vatukawa and Wainungio Rivers, Ndrekeniwai valley, forest, on stony soil, Smith no. 594. Vanua Mbalavu: southern limestone section, elevation 0-100 meters, on tree trunks, forest, Malatta, Smith no. 1443. Moala: on tree trunk, forest near Naroi, elevation 200 meters, Smith no. 1308.

Macromitrium Beecheyanum Mitten.

Vanua Levu: Thakaundrove, Mount Ndikeya, on tree trunks, crest thickets, eastern buttress, Smith no. 1881.

Macromitrium incurvifolium Schwaegrichen.

Vanua Levu: Natewa Peninsula, hills south of Natewa, elevation 400-600 meters, on trees, dense forest, Smith no. 1966, Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on decayed wood, dense forest, Smith no. 926.

RHACOPIACEAE

Rhacopilum spectabile Reinwardt.

Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on humus, dense forest, Smith no. 849.

CYRTOPODACEAE

Beschereillea cryphaeoides (C. Müller) Fleischer.

Vanua Levu: Thakaundrove, Natewa Peninsula, Uluingala, elevation 600-800 meters, on tree trunks, dense forest, Smith no. 1983.

PTYCHOMNIACEAE

Ptychomnion aciculare (Bridel) Mitten.

Taveuni: summit of Uluingalau, elevation 1,000-1,220 meters, on humus, dense forest, Smith no. 911.

New to Fiji. The appearance of this well-known species in Fiji is interesting but not unexpected. It simply pieces out the north-western fringe of its distribution.

MYURIACEAE

Myurium purpuratum (Mitten) Brotherus.

Viti Levu: with fern (*Lindsaya adiantoides*), Gillespie no. 2718.

New to Fiji. The limited distribution of this species makes its presence in Fiji noteworthy.

Piloecium pseudo-rufescens (Hampe) C. Müller.

Vanua Levu: Mbua, Lower Wainunu River valley, elevation 0-200 meters, on tree trunks, edge of forest, Smith no. 1751.

PTEROBRYACEAE

Euptychium setigerum (Sullivant) Brotherus.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 800 meters, on tree trunks, crest thickets, eastern buttress, Smith no. 1885; Natewa Peninsula, Uluingala, elevation 600-820 meters, covering trunks and branches, Smith no. 1989; Yanawai River region, Mount Kasi, elevation 300-430 meters, on tree trunks, dense forest, Smith no. 1810; Mount Mbatini, elevation 700-1,030 meters, on tree trunks, crest of range, dense thickets, Smith no. 650.

Symphysodon vitianus (Sullivant) Brotherus.

Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, Smith no. 926a.

Symphysodontella cylindracea (Montagne) Fleischer.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 500 meters, on tree trunks, dense forest, eastern slope, Smith 1903b.

METEORIACEAE

Papillaria crocea (Hampe) Jaeger.

Viti Levu: Tholo North Province, Nandarivatu, 2 miles along Nandrau trail, on *Memecylon vitiense* A. Gray, Gillespie no. 4217.

Papillaria intricata (Mitten) Jaeger.

Viti Levu: Namosi Province, Naitarandamu Mountain, elevation 1,100 meters, on *Cyrtandra montana*, Gillespie no. 3144a.

Meteorium Miquelianum (C. Müller) Fleischer.

Viti Levu: Tomanivi (Mount Victoria), elevation 1,200 meters, on *Freycinetia caudata*, Gillespie no. 4092.

Aerobryopsis vitiana (Sullivant) Fleischer.

Taveuni: western slope between Somosomo and Wairiki, on tree trunks, forest, Smith 756b.

Floribundaria aeruginosa (Mitten) Fleischer.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, on decayed wood, Smith no. 474a.

Floribundaria floribunda (Dozy and Molkenboer) Fleischer.

Viti Levu: Namosi Province, Naitarandamu Mountain, Gillespie nos. 3102, 3249, 3144.

PHYLLOGONIACEAE

Orthorrhynchium cylindricum (Lindberg) Brotherus.

Viti Levu: Namosi Province, slopes of Voma Mountain, elevation 600 meters, on *Litsea magnifolia*, Gillespie no. 2921.

Eucatagonium gracile (Bescherelle) Brotherus.

Kambara: limestone formation, elevation 0-100 meters, on roots of large trees, forest, Smith no. 1271.

New to Fiji. I have not seen the type of *Acrocladium gracile* Bescherelle from Tahiti but the Fiji plants seem to belong here without much question. Dixon has remarked that Bescherelle's comparison with *E. politum*, of New Zealand, is misleading in some particulars. My New Zealand specimens of *E. politum* are quite uniformly more slender than the Fiji plants but the leaf apex and areolation are quite distinctive. In *E. gracile* the leaf apex is bluntly short acuminate in bold contrast with the slender, apiculate point of *E. politum*. The leaf cells are uniformly shorter and more opaque, minutely papillose by the projecting ends and the margins minutely denticulate.

NECKERACEAE

Neckeropsis lepineana (Montagne) Fleischer.

Vanua Levu: Thakaundrove, Natewa Peninsula, hills south of Natewa, elevation 400-600 meters, in masses on wet rock, dense forest, Smith no. 1957.

Himantocladium implanum (Mitten) Fleischer.

Koro: eastern slope of main ridge, on moist stones in stream, Smith no. 987a. Vanua Levu: Thakaundrove, southern slope of Valanga Range, elevation 200-400 meters, on tree trunks, dense forest, Smith no. 394. Moala: on rocks and large roots, forest near Maloku, elevation 300 meters, Smith no. 1340.

Homaliodendron flabellatum (Dickson) Fleischer.

Vanua Levu: Thakaundrove, Mount Mbatini, elevation 700-1,030 meters, on tree trunks, crest of range, dense thickets, Smith no. 642d.

Pinnatella Kuhlana (Bryologia javanica) Fleischer.

Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on humus, dense forest, Smith no. 849a.

Thamnium subulatifolium Dixon.

Koro: eastern slope of main ridge, on moist stones in stream, dense forest, Smith no. 987.

HOOKERIAEAE

Distichophyllum vitianum (Sullivant) Bescherele.

Vanua Levu: Thakaundrove, southwestern slope of Mount Mbatini, elevation 300-700 meters, on decayed wood, Smith no. 633; southern slope of Korotini Range below Navitho Pass, elevation 300-650 meters, on wet rocks, Smith no. 511. Kandavu: Mount Mbuke Levu, elevation 750-840 meters, on decayed wood, summit, Smith no. 274a.

Distichophyllum (Mniadelphus) lingulatum, new species (fig. 5).

Dioicum? Sat robustum. Caulis ad 3 cm altus, simplex, basi fusco-tomentosus, circa 5 mm latus. Folia conferta, arcte complanata, sicca leniter undulata, haud torquata, spathulato-lingulata, apice rotundato vel minute apiculato, 3.5 mm longa et 1.8 mm lata; margines plani, superne crenulati; costa debilis, longe infra apicem soluta; limbus folii angustissimis, 1-2 seriebus cellularum compositis; cellulae superiores rotundato-hexagonae, mediane circa 25 μ latae,

versus margines multo minores, parietibus firmis, basilares rectangulares. Folia perichaetialia multo minora, acuta, cellulae omnes laxae, rhomboideae; seta hispida, ad 7 mm longa; theca parva, inclinata, vix 1 mm longa; calyptra basi longe fimbriata, superne dense hispida.

Vanua Levu: Thakaundrove, southwestern slope of Mount Mbatini, elevation 300-700 meters, on decayed wood, dense forest, Smith no. 633a. Koro: eastern slope of main ridge, on caudex of tree fern, elevation 300-500 meters, Smith no. 973 (type).

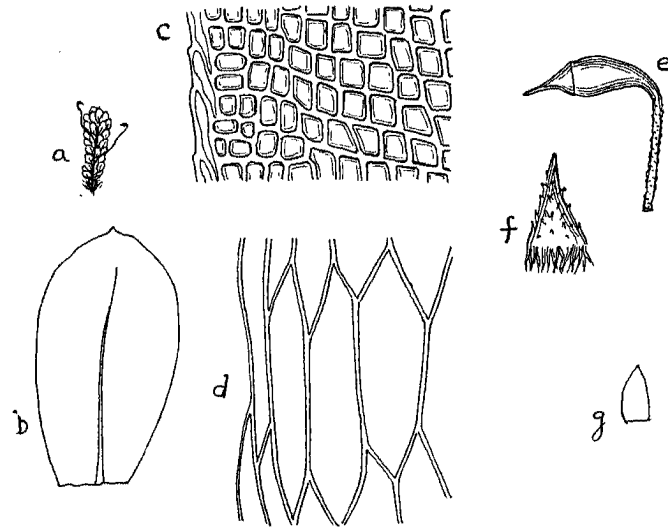


FIGURE 5.—*Distichophyllum lingulatum* Bartram: a, plant, $\times \frac{3}{4}$; b, leaf, $\times 12$; c, upper leaf cells and margin, $\times 300$; d, basal leaf cells and margin, $\times 300$; e, capsule, $\times 12$; f, calyptra, $\times 12$; g, perichaetial leaf, $\times 12$.

Sharply distinct from *D. vitianum* (Sullivant) in the minute apical and marginal cells of the upper leaf blade. It appears to be near *D. mascarenicum* Bescherelle, from the description, but differs widely in the dioicous inflorescence, the narrower leaf border, longer setae and crowded leaves with rounded or apiculate apices.

Cyclodictyon Blumeanum (Montagne) Fleischer.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, Smith nos. 467, 475.

Callicostella papillata (Montagne) Mitten.

Vanua Levu: Thakaundrove, Natewa Peninsula, hills south of

Natewa, elevation 400-600 meters, on decayed wood, dense forest, Smith no. 1973. Koro: eastern slope of main ridge, elevation 300-500 meters, Smith no. 1020. Taveuni, borders of lake east of Somosomo, elevation 700-900 meters, Smith no. 930.

Callicostella papillata (Montagne) Mitten form **longifolia** Fleischer.

Vanua Levu: Thakaundrove, southwestern slope of Mount Mbatini, elevation 300-700 meters, Smith nos. 629, 634; Mount Mbatini, crest of range, elevation 700-1,030 meters, Smith no. 646; southern slope of Korotini Range below Navitho Pass, elevation 300-650 meters, Smith no. 490; Mount Mariko, elevation 600-866 meters, Smith no. 473.

This form with longer, more sharply acuminate leaves seems to be prevalent in Vanua Levu but has not been noted elsewhere.

Chaetomitrium depressum Mitten.

Koro: eastern slope of main ridge, on tree trunks, elevation 300-500 meters, Smith no. 960.

Chaetomitrium rugifolium Sullivant.

Viti Levu: Naitarandamu Mountain, Namosi Province, Gillespie nos. 3307.9, 3307.5a, 3316; summit of Vakarongaseu Mountain, Gillespie no. 3297a; summit of Loma Langa Mountain, elevation 1,200 meters, Gillespie no. 3342a.

LEUCOMIACEAE

Leucomium debile (Sullivant) Mitten.

Vanua Levu: Thakaundrove, southern slope of Valanga Range, elevation 100 meters, on decayed wood, dense forest, Smith no. 369. Koro: eastern slope of main ridge, elevation 300-500 meters, on decayed wood, dense forest, Smith no. 1020a.

HYPOPTERYGIACEAE

Hypopterygium tahitense Aongstrom.

Vanua Levu: Thakaundrove, Mount Mariko, on decayed wood, Smith no. 467a.

New to Fiji. This collection agrees perfectly with Nadeaud's no. 437 from Tahiti, named by Bescherelle.

THUIDIACEAE

Pelekium velatum Mitten.

Vanua Levu: Thakaundrove, southern slope of Valanga Range, elevation 100 meters, on decayed wood, dense forest, Smith no. 369a.

Thuidium plumulosum (Dozy and Molkenboer) Bryologia javanica.

Vanua Levu: Thakaundrove, hills between Vatukawa and Wainungio Rivers, Ndrekeniwai Valley, elevation 200-500 meters, on fallen trees, forest, Smith no. 576.

Thuidium cymbifolium (Dozy and Molkenboer) Bryologia javanica.

Viti Levu: Namosi Prov., Voma Mountain, elevation 900 meters, Gillespie no. 2792.

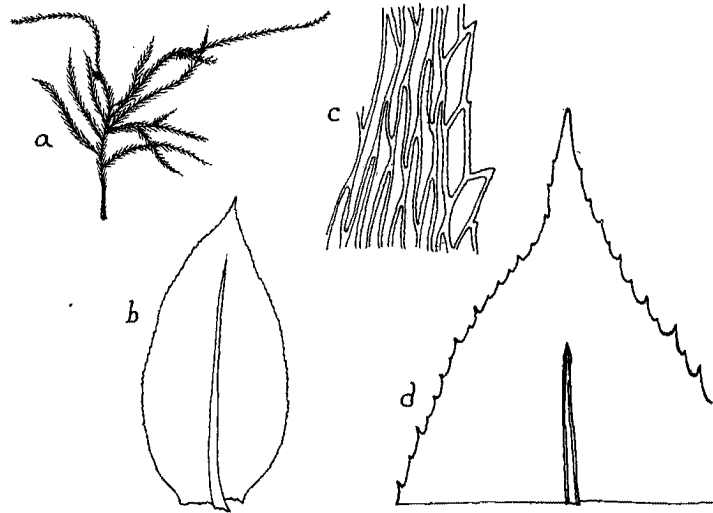


FIGURE 6.—*Rhynchostegium vitianum* Bartram and Dixon: *a*, plant, $\times \frac{3}{4}$; *b*, leaf, $\times 22.5$; *c*, upper leaf cells and margin, $\times 300$; *d*, apex of leaf, $\times 120$.

BRACHYTHECIACEAE

Rhynchostegium vitianum Bartram and Dixon, new species (fig. 6).

Dioicum videtur. Robustum, stramineum, nitidum. Caulis dense et irregulariter ramosus, ramis ad 1.5 cm longis, haud complanatis. Folia laxè disposita, ad 2 mm longa, oblongo-ovata, breviter acuminata, ubique argute serrulata; costa valida, longe infra apicem evanida, dorso apice spiniformiter exstante; cellulae lineares, circa 6μ latae et 100μ longae, infimae laxae, oblongae, alares haud diversae. Seta circa 3 cm longa; theca (unica) parva, brevis.

Viti Levu: mountains near Lautoka, Greenwood no. 9b (type).

Referred elsewhere³ to *R. selaginellifolium* C. Müller. A subsequent comparison with the Hawaiian species indicates that the plants cannot be considered as conspecific. In the Fiji species the leaves are sharply and coarsely serrate, the leaf cells longer and narrower, and the costa ends in a sharp, salient prickle on the back.

SEMATOPHYLLACEAE

Meiothecium stratosum Mitten.

Vanua Levu: Mbua, southern portion of Seatovo Range, elevation 100-350 meters, on decaying wood, forest, Smith no. 1574.

New to Fiji.

Meiothecium hamatum (C. Müller) Brotherus.

Viti Levu: Namosi Prov., summit ridge of Naitarandamu Mountain, elevation 1,200 meters, on stems of *Elaeocarpus cheloniformis*, Gillespie no. 3141; summit of Vakarongaseu Mountain, elevation 900 meters on branch of tree, Gillespie no. 3297b.

New to Fiji. The curious and very characteristic recurved leaf apex of this species is apt to be deceptive unless examined with care. The actual point of the leaf is often closely curled in and difficult to see clearly in outline. While the point varies slightly in the degree of sharpness it is never obtuse on any plants in the two collections I have examined. The agreement with Plate no. 219 in the *Bryologia javanica* is essentially complete.

Sematophyllum incrassatum, new species (fig. 7).

Autoicum. Caespitosum, caespitibus densis, pallide lutescentibus, nitidis. Caulis repens, hic illic fusco-radiculosus, dense ramosus, ramis subrectis, ad 5 mm longis. Folia ramea conferta, erecto-patentia, oblongo-lanceolata, concava, ecostata, 1.5 mm longa; margines erecti, superne crenulato-denticulati; cellulae laevissimae, omnes incrassatae, porosae, lumine angustissime lineari, alares 3, vesiculosae. Folia perichaetia erecta, sensim subulato-acuminata, marginibus superne argute serratis; seta intense rubra, superne subscabra, ad 1.5 cm longa; theca erecta vel inclinata.

Vanua Levu: Thakaundrove, Yanawai River region, Mount Kasi, elevation 300-430 meters, on decayed wood, dense brush, Smith no. 1771a (type).

The longer leaves and even more incrassate leaf cells with narrow,

³Dixon, H. N., The Mosses of Fiji: Linnean Soc. New South Wales, Proc., vol. 55, pt. 3, p. 300, 1930.

almost filiform lumens, will separate this species from *S. microcladioides* Brotherus to which it is closely allied.

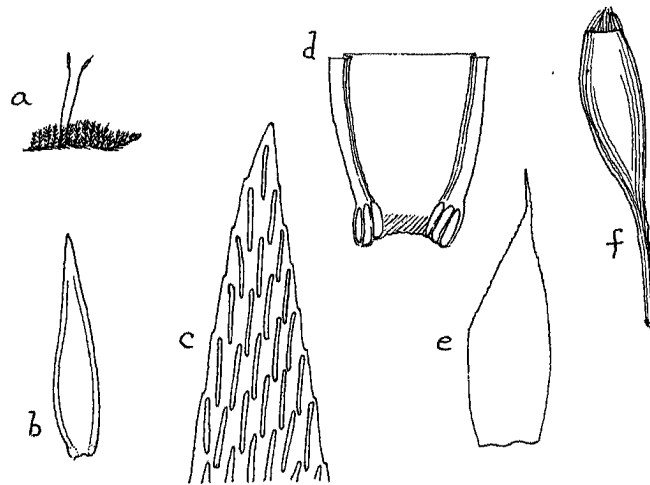


FIGURE 7.—*Sematophyllum incrassatum* Bartram: *a*, plant, $\times \frac{3}{4}$; *b*, leaf, $\times 22.5$; *c*, apex of leaf, $\times 300$; *d*, base of leaf, $\times 120$; *e*, perichaetial leaf, $\times 22.5$; *f*, capsule, $\times 22.5$.

***Rhaphidostichum bunodiocarpum* (C. Müller) Fleischer.**

Vanua Levu: Thakaundrove, Natewa Peninsula, Uluingala, elevation 600-820 meters, on tree trunks, dense forest, Smith no. 1988, 1992; Mount Ndikeya, elevation 800 meters, on humus, crest thickets, eastern buttress, Smith no. 1887.

New to Fiji. These ample collections in fine fruiting condition indicate a generous although previously unknown distribution in the Fiji group. I have tentatively included the following well-marked variants within the specific concept but a critical revision of the genus may be necessary to establish more closely their natural affinities.

***Rhaphidostichum bunodiocarpum* (C. Müller) Fleischer variety *scabriseta*, new variety.**

Seta circa 1.5 cm alta, superne humiliter tuberculosa.

Taveuni: summit of Uluingalau, elevation 1,000-1,220 meters, on humus, dense forest, Smith no 902 (type), 898.

This seems to be an extreme variant with shorter setae which are scabrous above or, in some cases, half-way down. Without any correlating features this character can hardly be considered of prime importance.

Rhaphidostichum bunodiocarpum (C. Müller) Fleischer variety **convolutum**, new variety.

Folia angustiora, sensim acuminata, divaricata vel deflexa, arcte convoluta.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 900 meters, on decayed wood, crest thickets, eastern buttress, Smith no. 1882.

While differing markedly from the typical form in appearance the leaves are not uniformly deflexed and occasionally verge toward the customary shape.

Rhaphidostichum theliporum (C. Müller) Brotherus (Syn. *R. pallidifolium* Dixon).

Vanua Levu: Thakaundrove, Natewa Peninsula, hills west of Mbutha Bay, elevation 150-350 meters, on decayed wood, forest, Smith no. 834; Mathuata, Wainunu-Ndreketi divide, elevation 200-300 meters, on rocks, dense forest, Smith no. 1843.

Both collections of this little-known species agree closely with each other and with material from the type collection for which I am indebted to Dr. Reimers. The density and direction of the leaves varies, within reasonable limits, on different stems in the same tuft and can hardly be construed as a character of major importance. Under these circumstances it would seem that *R. pallidifolium* Dixon may safely be merged with Müller's species with which it agrees in color and vegetative details.

Rhaphidostichum luxurians (Dozy and Molkenboer) Fleischer.

Taveuni: with fern (*Hymenophyllum australe*) Gillespie no. 5125.

New to Fiji. Previously known from Sumatra and Java.

Trichosteleum hamatum (Dozy and Molkenboer) Jaeger.

Numerous collections from Vanua Levu and Taveuni.

Trichosteleum monostichum (Thwaites and Mitten) Brotherus.

Vanua Levu: Thakaundrove, Natewa Bay region, hills west of Korotasere, elevation 100-300 meters, on tree trunks, Smith no. 1935; Mount Mariko, elevation 600-866 meters, on wood, Smith nos. 438, 456; Yanawai River region, Mount Kasi, elevation 300-430 meters, on humus, Smith no. 1811; Mbua, southern portion of Seatovo Range, elevation 100-350 meters, Smith no. 1534; Mathuata, Wai-

nunu-Ndreketi divide, elevation 200-300 meters, on decayed wood, Smith no. 1844.

Fleischer pertinently suggests that this species is probably a variety of *T. Boschii* with longer pointed leaves. This may prove to be true but the above series certainly represents quite a distinct variant from the plant figured on p. 274 of the *Bryologia javanica* and from the few authentic specimens I have seen. Dr. Smith's collections are reminiscent of *Taxithelium papillatum* in some ways but the short, slender setae slightly scabrous at the tip and the long beaked lid (when present) leave no doubt as to their natural affinity. The species is new to Fiji.

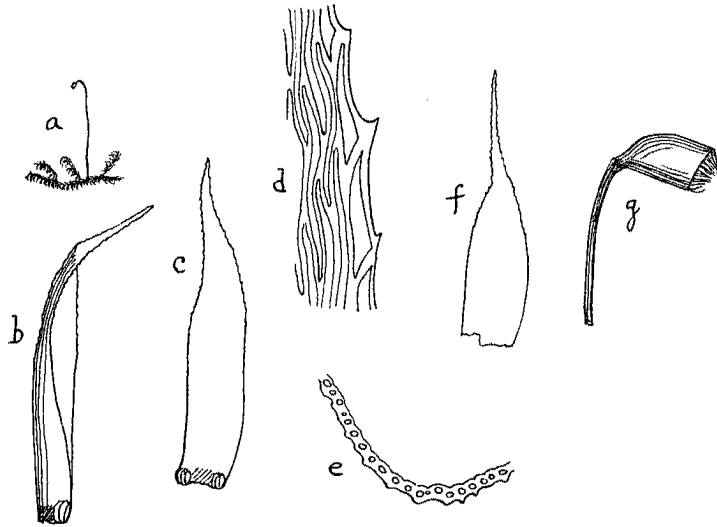


FIGURE 8.—*Trichosteleum Smithii* Bartram: *a*, plant, $\times \frac{3}{4}$; *b-c*, leaves, $\times 22.5$; *d*, upper leaf cells and margin, $\times 300$; *e*, part of cross section of leaf above middle, $\times 300$; *f*, perichaetial leaf, $\times 22.5$; *g*, capsule, $\times 12$.

***Trichosteleum Boschii* (Dozy and Molkenboer) Jaeger variety minus Dixon.**

Vanua Levu: Thakaundrove, Natewa Peninsula, Uluingala, elevation 600-820 meters, on tree trunk, Smith no. 2004.

***Trichosteleum Smithii*, new species (fig. 8).**

Autoicum. Robustiusculum, dense caespitosum, stramineum, nitidum. Caulis dense ramosus, ramis dense foliosus. Folia falcato-secunda, 2 mm longa, e basi oblongo-ovata sensim acuminata, superne argute denticulata; cellulae

lineares, humillime unipapillosae, alares vesiculosae, fuscae. Folia perichaetialia in subulam loriformem denticulatam producta; seta tenuis laevis, ad 14 mm longa; theca parva, inclinata, asymmetrica, sicca sub ore constricta; operculum longe subulato-rostratum.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, on decayed wood, Smith no. 428 (type).

This species has no parallel in the adjacent regions with which I am familiar. The papillae of the leaf cells are scarcely visible except in profile where they show as broad, rounded projections apparently central over the lumens.

Trichosteleum angustifolium, new species (fig. 9).

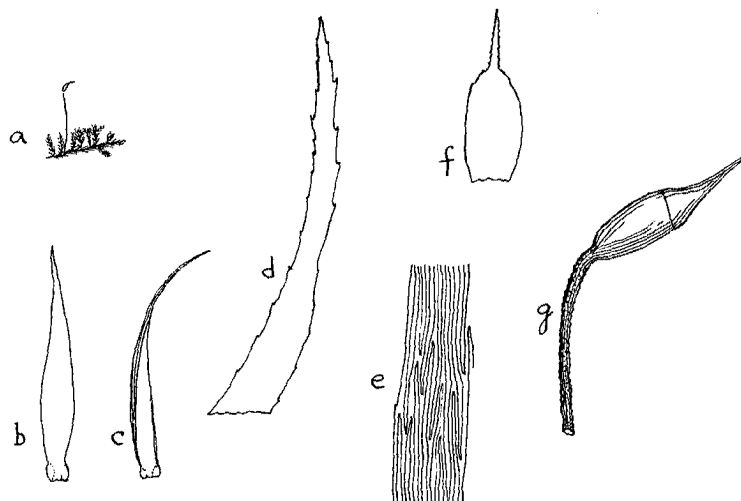


FIGURE 9.—*Trichosteleum angustifolium* Bartram: a, plant, $\times \frac{3}{4}$; b-c, leaves, $\times 22.5$; d, apex of leaf, $\times 120$; e, upper leaf cells and margin, $\times 300$; f, perichaetial leaf, $\times 22.5$; g, capsule, $\times 12$.

Autoicum. Gracile, dense caespitosum, aureo-lutescentibus, subnitidum. Caulis ruber, ramosus, ramis brevibus. Folia falcatula, 1.5 mm longa, e basi anguste ovali, concava, in subulam longam, loriformem, denticulatam, sensim contracta; cellulae angustissime lineares, laeves, alares vesiculosae, hyalinae. Folia perichaetialia vix ultra 1 mm longa, e basi ovali subito in subulam loriformem, arcte denticulatam contracta; seta 10-12 mm longa, superne scabra; theca parva, inclinata, subcylindrica; operculum longe subulato-rostratum.

Taveuni: summit of Uluinalau, elevation 1,000-1,220 meters, on humus, dense thickets, Smith no. 897 (type), 901.

While suggestive of *T. fissum* Mitten in size, color, and the coarsely-toothed perichaetial leaves, this species is amply distinguished by the narrower leaves with longer points, the very long, narrow leaf cells which are entirely smooth, and the longer setae.

Trismegistia complanatula (C. Müller) C. Müller.

Viti Levu: six miles from Suva, base of tree in forest, C. H. Edmondson.

Acroporium lamprophyllum Mitten.

Vanua Levu: Mbua, southern slope of Mount Seatura, elevation 600-700 meters, on decaying wood, Smith no 1676; Navotuvotu, summit of Mount Seatura, elevation 700-830 meters, Smith no 1662, 1673. Taveuni: Summit of Uluinalau, elevation 1,000-1,220 meters, Smith no. 911a (a very slender form); borders of lake east of Somosomo, elevation 700-900 meters, on tree trunks, Smith no. 876.

New to Fiji. With some allowance for variation in size and habit these collections seem to be representative of the species Mitten describes from Samoa. The leaf cells may be smooth or distinctly papillose but the setae are constantly scabrous above.

Acroporium brevicuspidatum Mitten.

Vanua Levu: Thakaundrove, Mount Mbatini, elevation 700-1,030 meters, on twigs, summit, dense thickets, Smith no. 708, 710; Mount Mariko, on tree trunks, Smith no. 442b.

Acroporium perserratum, new species (fig. 10).

Dioicum? Laxe caespitosum, sordide virens, nitidum. Caulis secundarius circa 4 cm altus, ramosus. Folia erecto-patentia, anguste ovato-lanceolata, concava, 3-4 mm longa, sensim longe subulato-acuminata; marginibus erectis, superne minute denticulatis; cellulae superiores breviter lineares, humillime unipapillosae, basiales longiores, porosae, laeves. Folia perichaetialia ad 1.5 mm longa, e basi ovata raptim in subulam loriformem argute dentatam contracta, cellulae superiores hic illic alte papillosae; seta 8-10 mm longa, laevis, apex vix scaberula; theca parva, erecta vel leniter inclinata; operculum subulato-rostratum; spori circa 25 μ .

Vanua Levu: Thakaundrove, Yanawai River region, Mount Kasi, elevation 300-430 meters, on decayed wood, dense forest, Smith no 1814 (type).

The long and slenderly acuminate leaves preclude any confusion with *A. brevicuspidatum* Mitten. It is a unique species in several

particulars and I know of nothing else with which it can be compared. The opaque, relatively short leaf cells are turgid or papillose on the back so that the dorsal surface of the leaf presents a peculiar wavy appearance in profile while the cells of the coarsely toothed subula of the perichaetial leaves are often sparsely but coarsely papillose.

Taxithelium samoanum (Mitten) Brotherus.

Vanua Levu: Thakaundrove, southern slope of Korotini Range, below Navitho Pass, elevation 300-650 meters, Smith no. 492b. Vanua Mbalavu: northern limestone section, elevation 0-200 meters, on tree trunks, Smith no. 1473 in part, 1478 in part.

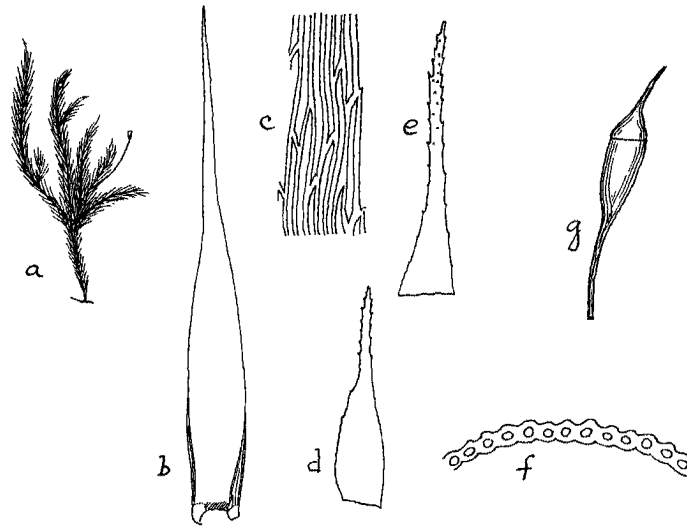


FIGURE 10.—*Acroporium perserratum* Bartram: a, plant, $\times \frac{3}{4}$; b, leaf, $\times 22.5$; c, upper leaf cells and margin, $\times 300$; d, perichaetial leaf, $\times 22.5$; e, apex of perichaetial leaf, $\times 60$; f, part of cross section from upper part of leaf, $\times 300$; g, capsule, $\times 12$.

Taxithelium Lindbergii (*Bryologia javanica*) Renauld and Cardot.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, Smith no. 438a, 442c. Taveuni: western slope between Somosomo and Wairiki, elevation 600-830 meters, Mount Manuka, on decayed wood, Smith no. 771; borders of lake east of Somosomo, elevation 700-900 meters, on tree trunks, Smith no. 873.

New to Fiji.

Taxithelium tenuisetum (Sullivant) Mitten.

Vanua Levu: Mbua, lower Wainunu River valley, elevation 0-200 meters, Smith no. 1740; Navotuvotu, summit of Mount Seatura, elevation 700-830 meters, Smith no. 1667; southern slope of Mount Seatura, elevation 500 meters, Smith no. 1618; southern portion of Seatovo Range, elevation 100-350 meters, Smith no. 1575, 1560. Taveuni: western slope between Somosomo and Wairiki, elevation 700-900 meters, on tree trunks, Smith no. 756, 793. Koro: eastern slope of main ridge, elevation 300-500 meters, on tree trunk, Smith no. 1024. Vanua Mbalavu; northern limestone section, elevation 0-200 meters, Smith no. 1473 in part, 1478 in part.

New to Fiji. Numerous gatherings indicate that this species is well distributed throughout the archipelago.

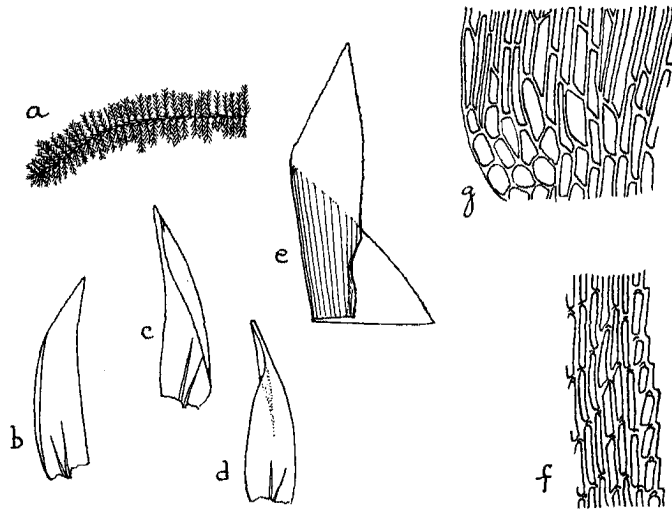


FIGURE 11.—*Glossadelphus plumosus* Bartram: a, plant, $\times \frac{3}{4}$; b-c-d, leaves, $\times 22.5$; e, apex of leaf, $\times 120$; f, upper leaf cells and margin, $\times 300$; g, basal angle of leaf, $\times 300$.

Taxithelium herpetium (C. Müller) Brotherus.

Koro: eastern slope of main ridge, elevation 300-500 meters, on tree trunk, Smith no. 1017.

Although this collection differs from *T. tenuisetum* in the narrower leaves with a more slender acumen, the faintly papillose cells, and the few, smaller alar cells, the distinctions are not very convincing.

Glossadelphus Zollingeri (C. Müller) Fleischer variety **flicaulis** (Fleischer) Fleischer.

Vanua Levu: Thakaundrove, southern slope of Valanga Range, elevation 200-400 meters, on wet rocks, densely wooded valley, Smith no. 384.

New to Fiji. This plant has a wide distribution extending from Java to the Philippines and Hawaiian Islands.

Glossadelphus plumosus, new species (fig. 11).

Dioicus? Depressus, pallide viridis, subnitidis. Caulis repens, dense et regulariter pinnatus, ramis patulis, plumosus, sat dense foliosis. Folia erecto-patentia, oblongo-lanceolata, subacuta vel brevissime acuminata, concava, 1-1.5 mm longa; marginibus erectis, ubique arcte denticulatis; costis binis, bene notatis; cellulae lineares, ad angulos apicales valde prominentes, alares paucissime, haud distinctae. Caetera ignota.

Vanua Levu: Mbua, lower Wainunu valley, elevation 0-200 meters, on tree trunks, Smith no. 1740a (type).

A unique species with no apparent relation to any of its congeners. I hope that additional collections will be made so that its natural affinities may be clarified.

HYPNACEAE

Ectropothecium percomplanatum Brotherus.

Viti Levu: Namosi Province, Naitaradamu Mountain, elevation 900-1,200 meters, Gillespie no. 3296, 3307. Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on trees, Smith no. 923b.

Ectropothecium molle Dixon.

Vanua Levu: Thakaundrove, crest of Korotini Range between Navitho Pass and Mount Ndelaikoro, Mathuata Boundary, elevation 650-900 meters, Smith no 522; southern slope of Korotini Range below Navitho Pass, elevation 300-650 meters, on rocks, Smith nos. 572, 497; Mount Mariko, elevation 600-866 meters, on decayed wood, Smith nos. 469, 474; Mount Ndikeya, elevation 900 meters, on decayed wood, Smith no. 1883; Mbua, Navotuvotu, summit of Mount Seatura, elevation 700-830 meters, Smith nos. 1654, 1663.

If these numerous collections are properly referred here it is evidently a rather common endemic species on Vanua Levu.

Ectropothecium longicaule, new species (fig. 12).

Dioicum? Pallide lutescens, nitidum. Caulis ad 25 cm longus, irregulariter pinnatum ramosus, ramis patulis, inequalibus, ad 2 cm longis. Folia falcata, circa 1.5 mm longa, oblongo-ovata, concava, brevissime acuminata, superne argute denticulata; costis binis, bene notatis; cellulae angustissime lineares, laevissimae, alares paucissime, minutae, unica magna, hyalina. Folia perichaetia erecta, ad 4 mm longa, e basi oblonga, leniter plicatula, raptim subulato-acuminata, marginibus inferne crenato-undulatis, superne irregulariter et minute spinoso-serratis; seta ad 5 cm longa, tenuis, laevis; theca inclinata, oblonga, vix 2 mm longa; operculum conico-rostratum; calyptra nuda.

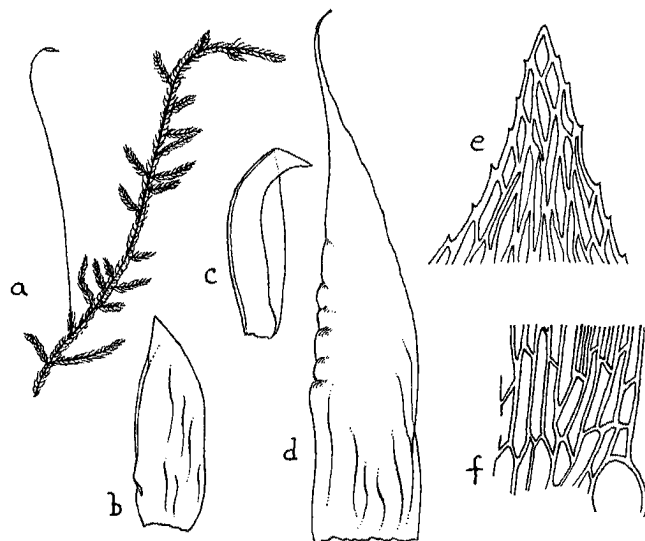


FIGURE 12.—*Ectropothecium longicaule* Bartram: *a*, part of plant, *b-c*, leaves, $\times 22.5$; *d*, perichaetial leaf, $\times 22.5$; *e*, apex of branch leaf, $\times 300$; *f*, basal angle of branch leaf, $\times 300$.

Vanua Levu: Mbua, Navotivotu, summit of Mount Seatura, elevation 700-830 meters, on tree trunks, dense forest, Smith no. 1672 (type).

Very similar to *E. molle* Dixon but differentiated by the unusually long stems and setae and by the shorter pointed leaves.

Ectropothecium pacificum Mitten.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, on decayed wood, Smith no. 440. Taveuni: borders of lake east of Somosomo, elevation 700-900 meters, on decayed wood, Smith no. 927.

Ectropothecium tutuilum (Sullivant) Mitten.

Vanua Levu: Thakaundrove, southwestern slope of Mount Mbatini, elevation 300-700 meters on decayed wood, Smith no. 635.

Ectropothecium malacoblastum (C. Müller) Paris.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 700 meters, on rocks in wet dense forest, eastern buttress, Smith no. 1893. Koro: on rocks, coastal forest, east coast, elevation, 10 meters, Smith no. 1035.

Ectropothecium cyathothecium (C. Müller) Jaeger.

Vanua Levu: Thakaundrove, Natewa Peninsula, hills south of Natewa, elevation 400-600 meters, Smith no. 1953; Yanawai River region, Mount Kasi, elevation 300-430 meters, Smith no. 1771; Mount Ndikeya, elevation 400 meters, Smith no. 1916; Mbua, southern slope of Mount Seatura, elevation 500 meters, Smith no. 1619. Koro: eastern slope of main ridge, elevation 300-500 meters, Smith nos. 991, 1066, 1052. Vanua Mbalavu: central volcanic section near Lomaloma, elevation 100-200 meters, Smith no. 1409. Moala: forest near Naro'i, elevation 200 meters, Smith no. 1320.

Isopterygium minutirameum (C. Müller) Jaeger variety **vitiense** Dixon.

Vanua Levu: Thakaundrove, southern slope of Valanga range, elevation 100 meters, Smith no. 369b.

Isopterygium albescens (Schwaegrichen) Jaeger.

Kandavu: Mount Mbuke Levu, Smith no. 274.

Vesicularia vitiana (Mitten) Dixon.

Vanua Levu: Thakaundrove, Mount Mariko, elevation 600-866 meters, Smith nos. 459, 468; Mount Mbatini, elevation 700-1,030 meters, Smith no. 646a; Mount Ndikeya, elevation 500 meters, Smith no. 1904.

Vesicularia inflectens (Bridel) C. Müller.

Vanua Levu: Mbua, upper Ndama River valley, elevation 100-300 meters, on rocks in streams, Smith no. 1694.

Microctenidium Leveilleanum (Dozy and Molkenboer) Fleischer.

Vanua Levu: Thakaundrove, Mount Ndikeya, elevation 400 meters, tree trunks, eastern slope, Smith no. 1913.

A noteworthy addition to the Fiji flora. The erect capsules and single peristome with no trace of an endostome leave little doubt as to the identity of this collection. The leaf cells are more sharply spiculate by the projecting ends than might be inferred from Fleischer's description and the operculum rather longer and more slenderly beaked than indicated by the sketch and by the plate in the *Bryologia javanica* but I doubt if these differences are of any real import.

POLYTRICHACEAE

Pseudorhacelopus philippinensis Brotherus.

Vanua Levu: Thakaundrove, Yanawai River region, Mount Kasi, elevation 300-430 meters, on clay banks, open places in dense forest, Smith no. 1822.

Pogonatum Graeffeanum (C. Müller) Jaeger.

Koro: eastern slope of main ridge, elevation 300-500 meters, on wet stones, Smith no. 1010.