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Additional Fijian Mosses¹

By EDWIN B. BARTRAM

INTRODUCTION

A surprising number of important and significant additions to the Fiji moss flora is being uncovered by Mr. William Greenwood. These are outlined in detail below with the hope that all the available information soon may be condensed in a comprehensive study that will cover the field. Mr. Greenwood's work, supplemented by the current explorations of Dr. A. C. Smith, should clarify our knowledge of the Fiji flora appreciably.

Before his death several years ago, Mr. H. N. Dixon had recognized a number of new species in Mr. Greenwood's earlier collections. These are described below and credited to Mr. Dixon, although I accept the responsibility for the descriptions and comments. Mr. Dixon's available notes on these items are brief and fragmentary, but I have tried to present them in the light of his knowledge as clearly as possible.

The types of all the new species described below are in my herbarium and duplicates are in the possession of Mr. Greenwood. No doubt duplicate specimens of Mr. Dixon's species will be found in his herbarium, which is now deposited in the British Museum (Natural History).

FISSIDENTACEAE

Fissidens dealbatus Hooker f. and Wilson.

Viti Levu: southern slopes Nausori highlands above Tabenasola [Tumbenasolo], bank near creek, April 6, 1947, *no. 1268*.

This species is new to Fiji and a highly significant addition to its flora, adding another element to the list of species that are common to

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Fiji and New Zealand. Through the kindness of Mr. G. O. K. Sainsbury I have had an opportunity to compare the above collection with representative collections from New Zealand. The distinctions, if there are any, are too slight to be of any practical value, so I am forced to conclude that this species, previously considered a New Zealand endemic, must be credited to Fiji.

Fissidens Dixonianus Bartram, new name.

Fissidens diversiretis Dixon, Linn. Soc. N. S. Wales, Proc. 40: 270, 1930.

As Dixon's name is preoccupied by *F. diversiretis* Brotherus (Handel-Mazzetti, Symbolae Sinicae 4: 11, 1929), I have renamed the Fiji species as indicated above. *F. diversiretis* Bartram (Philippine Jour. Sci. 68: 21, 1939) has also been renamed.

Fissidens scabrisetus Mitten.

Fissidens subinconspicuus Dixon, new species, in herbaria.

Vanua Levu: Mount Labasa [Lambasa], on wood, nos. 458, 495.
Viti Levu: Nadarivatu [Nandarivatu], alt. about 2,700 ft., no. 794;
Lautoka, Mount Evans, alt. about 3,200 ft., nos. 1017, 1018, 1094;
Mount Victoria, alt. 3,200-3,800 ft., nos. 1125, 1134.

I have seen the type collection of *F. scabrisetus* Mitten through the courtesy of the New York Botanical Garden. As far as the vegetative characters are concerned, the Fiji plants differ in no essential way from those in the Samoan collection. The type collection shows the setae to be slightly rougher than the average in the Fijian plants, but this seems to be only a relative difference and hardly merits any distinction. This species is new to Fiji.

Fissidens pellucinervis Dixon, new species, in herbaria.

Caules gregarii, ad 5 mm. alti, pallide virides. Folia sicca contorta, flexuosa, ad 1.5 mm. longa, oblongo-lanceolata, acuta; lamina dorsalis ad basin folii erata, infra lata; costa perpellucida, infra apicem evanida; lamina vaginans late flavo-limbata, caeterum margines crenulati; cellulae obscurae, minutae, pluripapillatae. Seta 3 mm. longa; theca minuta, inclinata.

Viti Levu: Nandarivatu, wet soil, alt. about 3,000 ft., no. 611 (type); Mount Victoria, alt. 3,200-4,000 ft., nos. 1123, 1124, 1138; Nandarivatu, Loma Lega [?] Mountain, alt. about 3,400 ft., no. 1133.

All but the minute lower leaves are broadly and distinctly bordered on the vaginant lamina with three to four rows of elongated cells. This is a conspicuous and distinctive feature in comparison with the other local representatives of the *Semilimbium* group.

Fissidens (Semilimbidium) brevilingulatus Bartram, new species.

Plantae gregariae, virides. Caulis simplex, ad 5 mm. longus. Folia plurijuga, sicca falcato-decurva, oblongo-lingulata, obtusa, rotundata vel minute mucronata, 1.5 mm. longa, 0.5 mm. lata; lamina dorsalis ad basin folii rotundata; costa tenuis, pellucida, infra apicem evanida; margines foliorum supremorum inconspicue limbati, caeterum ubique elimbati; cellulae minutissime, obscurae, laud incrassatae, diam. 5-7 μ , unipapillatae. Seta 2 mm. longa; theca minuta, inclinata.

Viti Levu: Mount Victoria, on dead wood, alt. about 3,200 ft., no. 1126.

This species is thoroughly distinct in the lingulate, broadly rounded leaves with the costa ending four to seven cells below the rounded or bluntly mucronate apex. Like many other species in this group the border of the vaginant lamina is confined to the uppermost leaves of the fertile stems.

Fissidens (Aloma) serrifolius Bartram, new species.

Pusillus; plantae laxe gregariae, virides. Folia 3-6 juga, infima minuta, suprema multo majora, circa 1 mm. longa, anguste lanceolata, acuta, pellucida; margines ubique argute serrati; costa valida, infra apicem evanida; lamina dorsalis ad basin costae enata; cellulae majusculae, irregulariter hexagonae, 12-15 μ latae, parietibus firmis. Caetera ignota.

Viti Levu: southern slopes of Nausori highlands above Tumbenasolo, bank near creek, alt. about 1,500 ft., no. 1277.

This is a unique species distinguished at a glance from all of its local congeners by the leaf margins, coarsely serrate all around with large, closely spaced teeth.

Fissidens sylvaticus Griffith var. **mammosus** Dixon, new variety, in herbaria.

Cellulis laminalibus alte mammillatus.

Viti Levu: Nandarivatu, alt. about 3,000 ft., no. 687 (type along with numerous other collections).

Without any other correlating characters the local form seems to be fairly well-marked. In his notes Dixon remarks that he has seen a similar plant from New Guinea.

DICRANACEAE

Trematodon longicollis Michaux.

Viti Levu: Naitasiri, near Nasino [Nasinu], no. 1036.

Apparently this is the same plant that Dixon has referred tentatively to *T. suberectus* Mitten (Linn. Soc. N. S. Wales, Proc. 40: 266,

1930). I can find no reason for changing the opinion, previously expressed (Philippine Jour. Sci. 68: 29, 1939), that *T. longicollis* in a broad sense is widely distributed in the southwest Pacific. The above collection is evidently one of the forms of this variable and widely dispersed species.

Campylopodium euphorocladum (C. Müller) Bescherele.

Aongstroemia integra C. Müller, Bot. Zeit., 777, 1857.

Viti Levu: Navai near Nandarivatu, clay bank, alt. about 2,700 ft., no. 1243.

There seem to be no distinctive features in the Fiji plants that can be relied upon to separate them from the widespread *C. euphorocladum*, and I am convinced that *C. integrum* (C. Müller) Paris should be reduced to synonymy. Sainsbury has come to the same conclusion as a result of his studies.

Campylopus (Palinocraspis) flexipilis Dixon, new species, in herbaria.

Caespitosus, caespitibus compactis, fusciscenti-viridibus. Caulis erectus, simplex, ad 5 cm. altus, dense foliosus, inferne tomentosus. Folia 6-8 mm. longa, sicca erecta, parce flexuosa, humida erecto-patentia, e basi oblonga raptim in subulam angustam, elongatam, piliferam attenuata; margines erecti, superne minute denticulati; costa in pilum hyalinum longiusculum denticulatum excurrente; cellulae basilares laxae, rectangulares, parietibus tenuibus, marginales angustiores, alares haud distinctae, superiores multo minores, rhomboideae. Fructus ignotus.

Viti Levu: Nandarivatu, damp bank, alt. about 3,000 ft., no. 612 (type); Nandarivatu, Loma Lega [?] Mountain, alt. 3,900 ft., no. 641; Lautoka, Mount Evans, alt. about 3,900 ft., no. 1096.

By a curious coincidence the leaves of this species are almost exactly the same in shape and areolation as those of *C. samoanus* Brotherus, but the costa in cross section shows the characteristic *Palinocraspis* structure with stereid bands on both sides of the median guide row. As this is a feature which cannot be ignored, *C. flexipilis* must be included in the *Brevipili* group under *Palinocraspis*. The hyaline hair points in no. 1096 are even more conspicuous than in the type collection, giving the plants a peculiar woolly appearance.

CALYMPERACEAE

Syrhopodon victorianus Bartram, new species.

Sat robustus, caespitosus, caespitibus laxis, fusciscentibus. Caulis ad 2 cm. altus, ramosus. Folia conferta, sicca erecto-flexuosa, humida patentia, 6-7 mm.

longa, e basi erecta, oblonga, anguste lineari-lanceolata, acuminata, ubique limbata; limbus folii validus, e 2-3 seriebus cellularum compositis, cellulis marginalibus brevis, chlorophyllosis; margines superne remote spinoso-serrati, dentibus saepe bigeminatis; costa percurrens, dorso superne remote denticulata, infra laevis; cellulae superiores minutae, subquadratae, papillosae, cancellina supra rotundata. Caetera ignota.

Viti Levu, Mount Victoria: on trees, alt. about 4,000 ft., no. 1159 (type); on rotten wood, alt. about 3,800 ft., no. 1190a.

This species differs widely from any of its associates in the section *Tristichii* in the short, chlorophyllose border cells (not hyaline and elongate as in the other species). In fact the leaf border at times appears intramarginal with a single row of narrow, hyaline cells inside of the shorter marginal row. In cross section the leaf border shows a core of stereid cells enclosed by three or four large, well-spaced, irregular, oval, chlorophyllose cells.

Syrropodon (Cavifolii) Greenwoodii Bartram, new species.

Gracilis, caespitosus, caespitibus viridibus, opacis. Caules 1.5 cm. alti, simplex vel parce ramosi. Folia erecta, leniter flexuosa, sicca immutata, 5-7 mm. longa, e basi oblonga lineari-lanceolata, infra sensim contracta, obtusa, lamina ubique incrassato-limbata; margines argute spinoso-serrati, in parte superior vaginae longe ciliato-spinosi; costa infra apicem folii evanida, e media basi usque ad apicem dorso et ventri fortiter spinosi; cellulae superiores sub-quadratae, diam. circa 10 μ , mammosae. Seta tenuis, rubra, laevissima, 12 mm. longa; theca erecta, cylindrica, 2 mm. longa; operculum longirostre. Caetera ignota, fructus immatur.

Viti Levu: Mount Victoria, on trees, alt. about 4,200 ft., no. 1160, in part (type).

This is a thoroughly unique species in the local flora. It may be allied to *S. hispidociliatus* Bartram of the Philippines and New Guinea but is widely different in the much longer leaves and the rounded, thickened leaf border composed of a core of stereids enclosed by the larger outer cells.

Calymperes porrectum Mitten.

Viti Levu: Suva, on tree, Meade no. 44, communication from Auckland Museum, no. 22265.

The species is new to Fiji. This collection was received for determination from Sainsbury, who had it from the Auckland Museum. The type collection was made in Samoa, but its range includes the Philippines, New Guinea, and Java under the name of *C. salakense* Beschereille.

BRYACEAE

Bryum (Argyrobryum) rectifolium Dixon, new species, in herbaria.

Pusillum, dense caespitosum, caespitibus sordide viridibus, vix nitidis, infra fusciscentibus. Caulis ad 12 mm. altus, inferne fusco-radiculosus, dense foliosus. Folia erecta, sicca leniter contorta, humida imbricata, concaviuscula, late ovata, acuta, vix 1 mm. longa; margines erecti; costa crassa, in aristam denticulatam excedente; cellulae rhomboidio-hexagonae, parietibus tenuibus, basilares paullo majores, subrectangulares, marginales haud elongatae. Caetera ignota.

Viti Levu: Mount Lautoka, alt. about 1,000 ft., no. 848.

Although sterile, this species evidently belongs in the *Argyrobryum* complex. The coloring and broad, lax upper leaf cells and the stout excurrent costa distinguish it from any form of *B. argenteum*; but until fruit is available, its affinities must remain uncertain.

Bryum nitens Hooker.

Viti Levu: Nandarivatu, Ba Road, on rocks in creek, alt. about 3,000 ft., no. 1183.

This species is new to Fiji. I am inclined to think that *B. vitianum* Dixon, *B. weberaceum* Bescherville, and possibly *B. ambiguum* Duby will eventually have to be subordinated to *B. nitens*. However, until the group can be more thoroughly studied, this is only a tentative conclusion.

RHIZOGONIACEAE

Rhizogonium Graeffeanum C. Müller.

Viti Levu: Mount Victoria, on rotten wood, alt. about 4,000 ft., no. 1235.

The species is new to Fiji. The collection has been determined from the original description, as no authentic material is available for comparison. The narrowly oblong-ovate leaves simply serrate and with the costa excurrent leave little room for doubt. The Fiji plants seem to be larger with more numerous leaves, but the variation may be due to a difference in the habitat conditions.

BARTRAMIACEAE

Philonotis (Philonotula) pilifera Dixon, new species, in herbaria.

Dioica; flores masculi magni, terminali, gemmiformi. Gracilis, caespitosa, caespitibus densis, lutescenti-viridibus. Caules ad usque 4 cm. longi, inferne fusco-tomentosi. Folia sicca laxè imbricata, parum secunda, humida erecto-patentia, ad 2 mm. longa, e basi ovata lanceolato-subulata, longe pilifera; margines anguste revoluti, serrulati; costa in pilum longiusculum denticulatum excedente; cellulis linearibus, apice papillose extantibus, basilaribus laxioribus. Fructus ignotus.

Viti Levu: Nandarivatu, alt. 2,700-3,000 ft., nos. 590, 754, 756 (type); Serua hills, dripping clay bank, alt. about 700 ft., no. 989; Nandarivatu, Ba Road, wet bank, alt. about 3,000 ft., no. 1182; Navai near Nandarivatu, on bank, alt. about 2,500 ft., no. 1211; wet bank near Nandarivatu, alt. about 3,000 ft., nos. 1221, 1236.

Possibly nearest *P. secunda* (Dozy and Molkenboer) *Bryologia Javanica*, but sharply distinguished from this and any of the allied species with which I am familiar by the costa excurrent in a very long hairlike point which is often, but not consistently, hyaline at the tip. The perigonal leaves are abruptly contracted to a long piliform, denticulate point. A later collection (no. 1221) is in good fruit showing the following characters: setae slender, flexuous, reddish, up to 3 cm. long; capsule nodding, furrowed; peristome double; lid plano-convex, bluntly apiculate.

ORTHOTRICHACEAE

Macromitrium (Goniostoma) pilicalyx Dixon, new species, in herbaria.

Gracilis, prostratum, lutescenti-viride. Caulis repens, subpinnatim ramosus, ramis 5-8 mm. altis, dense foliosis, obtusis. Folia ramulina sicca arcte crispata, humida suberecta, apice incurva, fragilis, ad 2 mm. longa, oblonga-lanceolata, acuta; margines erecti, minutissime crenulati; costa ad apicem producta; cellulae rotundatae, papillosae, haud incrassatae, basillares anguste rectangulares, laevissime, haud tuberculosae. Folia perichaetialia ramulina similis; seta tenuis erecta, 2 mm. longa, vaginula longissime pilosa; theca ovalis, ore leniter plicata; peristomium simplex, dentes breves, papilloso; calyptra profunde multifida.

Viti Levu: Nandarivatu, alt. about 3,000 ft., nos. 646, 649; Loma Lega [?] Mountain, no. 648 (type).

This species will be distinguished from *M. tongense* Sullivant by the longer branches, the leaves crispate but not spirally twisted when dry, and the appreciably shorter setae. When dry, the hairs of the vaginula often project conspicuously above the subtending crisped leaves; hence, I presume, the origin of the specific epithet.

Macromitrium (Goniostoma) vitianum Bartram, new species.

Autoicum, robustum, caespitosum, caespitibus densis, inferne fuscescentibus, apice viridibus; ramis ad 1.5 cm. altis, densissime foliosis, fastigiatum ramulosis. Folia sicca arcte contorta, humida erecto-patentia, 3.5-4.5 mm. longa, oblongo-ligulata, obtusa, breviter mucronata; margines inferne uno latere anguste recurvi, superne plani, minutissime crenulati; costa breviter excedente; cellulae superiores rotundatae, diam. 10-12 μ , grosse papillosae, haud incrassatae, basillares elongatae, lumine angustissimo, parce elevato-papillosae. Seta 2-2.5 cm. longa, tenuis, flexuosa, rubra, laevissima; theca ovali-cylindrica, microstoma, ore laeviter plicata; peristomium nullum videtur; calyptra cucullata, haud pilosa, apice fuscicula, rugulosa; spori laeves, diam. 15-38 μ .

Viti Levu: Nandarivatu, Mount Loma Lega [?], on trees, alt. about 3,500 ft., *no. 1147*.

This is a remarkable and striking species. The very long, slender setae and the naked, cucullate calyptrae are unusual characters in combination, sharply distinguishing the species from anything with which I am familiar.

RHACOPIACEAE

Powellia involutifolia Mitten.

Viti Levu: Nandarivatu, Ba Road, on trees, alt. about 3,000 ft., *no. 1146*.

New to Fiji, this species has a very local distribution. It has recently been collected in Northeast New Guinea and should eventually turn up on some of the intervening islands.

Rhacopilum brevisetum Bartram, new species.

Habitu *R. cristato* Hooker f. and Wilson similis sed seta multo breviora, 4-5 mm. longa; theca suberecta, laevis, haud plicata.

Viti Levu: Mount Victoria, on trees, alt. about 4,000 ft., *no. 1151*.

The specimen in my possession is ample and richly fruited. The numerous setae are all less than 5 mm. long, and the capsules are perfectly smooth without any trace of ribs or furrows. Under these circumstances I feel convinced that this collection represents a new and distinct endemic species. As the gametophyte characters are not impressive, I doubt that sterile plants could be satisfactorily distinguished from *R. cristatum* or *R. cuspidigerum*.

PTEROBRYACEAE

Garovaglia fissifolia Dixon, new species, in herbaria.

Dioica; robusta, lutescens, nitida. Caulis secundarius ad 5 cm. altus, flexuosus, dense foliosus, simplex, obtusus. Folia sicca laxè imbricata, humida patula, plicata, saepe profunde 2-4 fissa, oblongo-ovata, 5 mm. longa, 3 mm. lata, breviter apiculata; margines erecti, inferne minute denticulati, superne remote serrulati; costis binis, brevibus; cellulis elongatis, valde incrassatis, basilaribus infimis abbreviatis, alaribus paucis, subrectangularibus, bene notatis. Fructus caret.

Viti Levu: Nandarivatu, alt. 2,700-2,900 ft., *no. 666* (type, 746).

An odd character is the deeply cleft or rent leaves. As all the plants I have seen show this feature to a greater or lesser extent, it probably has considerable diagnostic value. *Euptychium setigerum* has somewhat the same general appearance but will immediately be distinguished by the narrowly linear lumens of the upper leaf cells.

NECKERACEAE

Calyptothecium seminerve Dixon, new species, in herbaria.

C. Urvilleano (C. Müller) Brotherus, statura aspectque simillima. Differt foliis acutioribus, costa pertenuis, infra medium folii evanida.

Viti Levu: Nandarivatu, alt. 2,700-2,900 ft., no. 672 (type, 747).

The differences between this species and *C. Urvilleanum* are not impressive. Dixon considers it to be an endemic type and has referred here the collections previously credited to *C. Urvilleanum*.

Calyptothecium tenuinerve Bartram, new species.

Diicum, late viride, nitidum. Caulis repens, ramis ad 8 cm. longis, irregulariter pinnatim ramulosis, ramulis patentibus, flexuosis, 1-3 cm. longis, complanate foliosis, saepe flagelliformiter attenuatis. Folia complanata, valde undulata, 2.5 mm. longa, 1 mm. lata, e basi cordata vix auriculata, oblongo-lingulata, obtusa; margines erecti, superne serrulati; costa tenuis, ad medium folii producta; cellulae elongatae, haud incrassatae, apicales rhomboideae, breviores, basilares infimae laxiores. Fructus ignotus.

Viti Levu: Mount Victoria, on branches and rotten wood, alt. about 3,200 ft., no. 1171 (type, 1234).

This is a distinct species near *C. crispulum* (Lacoste) Brotherus but is distinguished at once by the irregular branching. The leaves are occasionally indistinctly auriculate but for the most part broadly cordate and inflexed on one or both sides at the base.

Pinnatella nana (Williams) Bartram.

Thamnum gracillimum Dixon, in herbaria.

Viti Levu: Mount Lautoka, wet rocks, alt. about 1,000 ft., no. 821.

New to Fiji, this is unquestionably the same plant that has been recorded from the Philippines and New Guinea.

The leaf apex varies considerably from rounded-obtuse to acute. Filiform microphyllous branches are often, but not consistently, borne on the secondary stems. The costa presents a curious feature which may have some diagnostic value. It is usually laterally spurred or toothed toward the apex here as in the Philippine and New Guinea plants.

HOOKERIACEAE

Distichophyllum samoanum Fleischer var. **brevipes**, new variety.

Seta breviora, vix 2 mm. longa.

Viti Levu: Nandarivatu, Ba Road, on live branches, alt. about 3,000 ft., no. 1202 (type); Nandarivatu, Loma Lega Mountain [?],

on ground, alt. about 3,300 ft., *no. 1197* (in part); Mount Victoria, on dead wood, alt. about 3,200 ft., *no. 1204*.

In vegetative details these collections are an exact counterpart of *D. samoanum* Fleischer (Musci Frond. Archipelagi Indici et Polynesiaci, no. 440). As Fleischer makes no reference to the setae in his brief comment, it may be assumed that they are 4-6 mm. long as in *D. cuspidatum*. Unfortunately, my packet of the exsiccatae shows no fruit. The Fiji plants are well-marked by the short setae so that the capsules are exceeded by the leaf tips.

***Distichophyllum lingulatum* Bartram.**

Viti Levu: Mount Victoria, on rotten wood, alt. about 4,200 ft., *no. 1200*.

The above collection is identical with Smith's no. 973, the type of *D. lingulatum*. The description of *D. limbatulum* (C. Müller) Paris suggests no differences of any importance, but no authentic material of Müller's species is available for comparison.

***Chaetomitrium rugifolium* Sullivant.**

Chaetomitrium vitianum Dixon, new species, in herbaria.

Viti Levu: Nandarivatu, alt. about 3,000 ft., *no. 635*.

The above collection is sterile, but inseparable from the type collection of *C. rugifolium* which I have seen through the kindness of the United States National Museum. Brotherus includes this species in the group with setae 2.5-3.5 cm. long, which is rather misleading, as the setae in the original collection and in fruiting plants collected by Gillespie on Naitarandamu Mountain are only 1 cm. long. The marginal teeth of the leaves are often in pairs.

***Chaetomitrium densum* Dixon, new species, in herbaria.**

Caulis repens, elongatus, ad 6 cm. longus, dense pinnatim ramosus, ramis brevibus, suberectis, circa 5 mm. longis. Folia ramea sicca curvata, humida late patentia, haud rugulosa, ovato-lanceolata, acuta, leniter concava; margines anguste recurvi, ubique serrulati; cellulae angustissime, ad angulos apicales valde spiculosae; costis binis, bene notatis. Caetera ignota.

Viti Levu: Namosi, Hills Road, Navua to Suva, alt. 600-1,000 ft., *no. 973*.

Although sterile, the habit alone should separate this species from *C. rugifolium* Sullivant. The long, densely branched stems form a narrow frond, attenuate at the tips where the branches become progressively shorter and are in bold contrast to the more laxly and

irregularly branched stems of *C. rugifolium*. As the sporophyte characters are of prime importance in *Chaetomitrium*, a clearer understanding of this species must wait upon the discovery of fruiting plants.

HYPOPTERYGIACEAE

Hypopterygium Nadeaudianum Bescherele.

Viti Levu: Mount Victoria, on rotten wood, alt. about 3,200 ft., no. 1185.

The species is new to Fiji. As the plants are abundantly fruited and clearly autoicous, I feel that they can safely be referred to *H. Nadeaudianum* rather than to *H. tahitense*.

THUIDIACEAE

Thuidium (Euthuidium) hyalopilum Dixon, new species, in herbaria.

Dioicum, sat robustum, fuscescenti-viride, haud nitidum. Caulis elongatus, ad 8 cm. longus, arcuatus, paraphyllis numerosis, foliosis, dense vestitus, regulariter bipinnatim ramosus, ramis ad 7 mm. longis, parce ramulosis, apicem versus decrescentibus. Folia caulina sicca arcte contorta, patulo-incurva, e basi late cordate subito lanceolato-subulata, plicata, pilo hyalino terminata, 1.5 mm. longa, 0.7 mm. lata; margines minute crenulati; costa pallida, in apicem desinente; cellulis opacis, papillosis. Folia ramulina multo minora, sicca incurvula, ovato-lanceolata, acuminata, apice pilifera, hyalina; costa longe infra apicem evanida; cellulae minutae, obscurae, dense et humiliter papillosae. Caetera ignota.

Viti Levu, Lautoka, Mount Evans: on dead wood, alt. about 3,800 ft., no. 889 (type); dead wood and humus, alt. about 3,900 ft., nos. 1080, 1081; summit of Mount Evans, alt. about 3,900 ft., no. 1106.

This is a curious and highly interesting endemic species. Owing to the strongly contorted stem and branch leaves with the points bristling on all sides, the plants have a unique appearance shared by no other species. It will immediately be separated from the widespread *T. cymbifolium* (Dozy and Molkenboer) (Bryologia Javanica) by the slenderly acuminate, hyaline-tipped branch leaves with the lamina cells densely and minutely papillose.

SEMATOPHYLLACEAE

Acanthocladium extenuatum (Bridel) Mitten.

Viti Levu: Mount Victoria, on dead wood, alt. 3,800-4,200 ft., nos. 1186, 1216.

In these collections the characteristic seriate papillae of the leaf cells are conspicuous only on the younger leaves at the tips of the stems and branches; but as this character seems to be quite variable in a

broad series of specimens from Australia and New Zealand, I have little hesitation in referring the above numbers here, especially as the more typical plants with strongly seriate papillose leaf cells have been found in Fiji.

Meiothecium Greenwoodii Dixon, new species, in herbaria.

Autoicum; sat robustum, fuscescenti-viride, nitidum. Caulis ad 1.5 cm. longus, irregulariter ramosus, dense foliosus. Folia sicca imbricata, humida patentia, 2-2.2 mm. longa, oblongo-ovata, tenuiter acuminata, ecostata, leniter concava; marginibus integris, irregulariter anguste incurvis; cellulae anguste rhomboideae, incrassatae, laevissimae, infimae lutescentes, breviores, alares 5-6, magnae, oblongae, vesiculosae. Folia perichaetalia parva, acuminata; seta 4-5 mm. longa, rubra, laevis; theca inclinata, oblongo-cylindrica, 1.5 mm. longa, sicca valde infra ore contracta; operculum conico-rostratum; calyptra minuta, cucullata, apice fusca, valde scabra; dentes peristomii haud conferti, densissime grosse papilloso; spori papilloso, diam. 25-26 μ .

Viti Levu: Nandarivatu, on dead wood, alt. about 2,700 ft., no. 742.

This species is more robust than *M. microcarpum* (Harvey) Mitten with longer, more slenderly acuminate leaves and longer setae. The exothecial cells of the capsules are noteworthy. Here the lateral walls are very irregularly thickened or even nodulose so that in some places, especially near the middle, the walls become exceedingly thin and colorless. In *M. microcarpum* the lateral walls are uniformly thickened and yellowish throughout.

Trichosteleum angustirete Dixon, new species, in herbaria.

T. hamato (Dozy and Molkenboer) Jaeger, affine; differt foliis breviter acuminatis, cellulis laminalibus angustioribus. Caetera ignotus.

Viti Levu: Nandarivatu, alt. about 2,700 ft., no. 781.

This may prove to be a valid species, but the distinctions are none too sharp. *T. hamatum* is widely distributed, notoriously variable, and known in Fiji from numerous localities.

HYPNACEAE

Ectropothecium vitiense Dixon, new species, in herbaria.

Autoicum; pallidum, nitescens. Caulis irregulariter ramosus, ramis inequalibus, ad 1 cm. longis. Folia conferta, falcata, ad 1.3 mm. longa, 0.4 mm. lata, ovata-lanceolata, breviter acuminata, superne fortiter serrulata; costis binis, bene notatis; cellulae angustissime lineares, laevissimae, marginales latiores, rhomboideae. Seta tenuis, 10-14 mm. longa; theca minuta, infra ore valde contracta.

Viti Levu: Nandarivatu, on bark, alt. 2,700-3,000 ft., nos. 618, 777 (type); Mount Lautoka, on dead wood, alt. about 800 ft., no. 831.

This species apparently is quite distinct from *E. cyathothecium* (C. Müller) Jaeger in the irregularly branched stems and the larger, shorter acuminate leaves with the marginal row of cells rhomboidal and often clearly differentiated.

Vesicularia anisothecia Dixon, new species, in herbaria.

Habitus *V. inflectens* (Bridel) C. Müller, differt theca valde inequalis.

Viti Levu: Mount Lautoka, alt. about 1,000 ft., no. 825; Lautoka, Mount Evans, alt. about 3,000 ft., no. 858 (type); near Nasinu, Naitasiri, no. 1032.

Although following Dixon's judgment in creating a new species, I scarcely see how it can be satisfactorily separated from *V. inflectens*. Bridel describes the capsule of *V. inflectens* as "ovata vel obovata subinequalibus" which without much stretch of imagination might include the collections cited above. At any rate, I can see little difference between the capsules of these specimens and those of typical plants from Tahiti, where they vary from turgid oval to oblong or obovate, often gibbous on the back.

POLYTRICHACEAE

Pseudoracelopus philippinensis Brotherus var. **vitiensis** Bartram, new variety.

Foliis acutioribus, cellulis basilaribus minus tennerrimus sed vix incrassatis.

Viti Levu: Yavuna to Tumbenasolo, clay bank, alt. about 800 ft., no. 1247 (type).

The Fiji plants, represented by three collections from various localities in Viti Levu, show slight but constant differences, as compared with the Philippine collections. The leaves are firmer and more rigidly erect with sharper, slenderly pointed apices, especially the uppermost. The basal cells are firmer walled so that the leaves can be removed easily, whereas in the Philippine plants the basal areolation is so delicate and fragile that it is almost impossible to separate an entire leaf from the stem.

