

conjecture that *Gaslondia* of the latter botanist was the same genus having proved correct. Messrs. Brongniart and Gris show that it agrees in all respects with *Eugenia* (sect. *Jambosa*), except that the flowers are 3-merous—a character which, I believe, in the whole tribe occurs only in one or two species of *Myrcia*. If, however, it prove constant, it may serve to maintain the genus, although in close proximity to *Eugenia*.

#### Tribe IV. LECYTHIDEÆ.

The three well-known subtribes Barringtoniæ, Lecythideæ, and Napoleoneæ, which we have thought might well be grouped into a tribe under the name of Lecythideæ, require no comment on the present occasion. We have proposed no alteration in the circumscription of the thirteen genera of which the tribe is composed, the American ones having been well distinguished by Berg, and the Asiatic ones by Blume and others; I have already had occasion to allude to the affinities of *Napoleona* in a note on *Asteranthos*, printed in the third vol. of our Journal; and the curious anomalies in the stamens and staminodia of these two genera will, I believe, be fully discussed in a paper prepared for the Society by Dr. Masters.

---

A List of the Musci collected by the Rev. THOMAS POWELL in the Samoa or Navigator's Islands. By WILLIAM MITTEN, Esq., A.L.S.

(With two Plates.)

[Read March 7, 1867.]

THE Mosses enumerated in the following pages have been gathered chiefly in the Island of Tutuila. Including a few incomplete specimens, about 100 species have been obtained; with only two or three exceptions, all are from the bark of trees or from decayed wood. As might have been expected, the Samoan Musci manifest a close correspondence with those inhabiting the Fiji Islands, and with them approach generally most nearly to the forms which appear especially to belong to the islands of the Indian Archipelago. Conspicuous amongst Mr. Powell's collection are two species of *Spiridens*, generally resembling the original *S. Rienwardtii* of Java, but both more robust—and two species of *Garovaglia*, also closely corresponding with other species found in Java and the Moluccas. Accompanying these, Mr. Powell has found a new genus, in its leaves and habit very nearly resembling the Tropical-American *Helicophyllum*, and another in all respects

corresponding with the smaller forms of *Thuidium*, but having the calyptra of *Hookeria*. Besides these, there are a few barren stems of a Moss either congeneric with the Tropical American *Drepanophyllum* or belonging to some unknown but closely allied genus, a second species of *Calomnion*, and some new forms of *Octoblepharum*.

The numbers appended to the species are those under which the specimens were originally transmitted to Europe and exist in various herbaria.

**MACROMITRIUM BEECHEYANUM**, sp. n. Rami elongati, cæspitosi; folia dense inserta, e basi brevi erectiore recurva, patentia, apicibus incurvis, a medio sensim subloriformi-angustata, apice obtusiuscula subacuta, nervo pellucidiore in carina profunde exarata percurrente, integerrima, cellulis curvatis pellucidis ad tertiam partem folii longitudinis productis, inde parvis rotundatis obscuriusculis; perichætalia breviora, erecta, pellucidiora; vaginula ramentis exsertis; theca in pedunculo brevi, ovalis, operculo longe subulato, ore parvo, ætate obtuse plicato, gymnostoma; calyptra ramentosa.

*Hab.* Tutuila, on living trees, mostly *Hibiscus tiliaceus* (20-500 ft.). No. 1.

Closely resembling *M. incurvifolium* (*Orthotrichum*), Hook. et Grev., which is probably identical with *M. subtile*, Schw. t. 192, but with its leaves a little larger, their apices more obtuse, and the curved cells of the lower portion occupying relatively a larger space.

**M. ANGULATUM**, sp. n. Rami humiles, graciles, ramosi, laxè cæspitosi; folia patentia, pentasticha, sicca ppressa contorta, oblongo-linearita, acuta, nervo percurrente carinata, marginibus cellulis prominulis crenulatis, cellulis omnibus grossiusculis rotundatis obscuris, perichætalia propria nulla; vaginula pilosa; theca in pedunculo brevi tetragono asperimo, ovata, ore parvo (evacuata), quater plicato, operculo subulato; calyptra ramentis inferioribus divaricatis pilosa.

*Hab.* Tutuila, on Hibiscus trees (1000 ft.). No. 67.

Very nearly resembling *M. orthostichum*, Nees ab E., from Java, but with leaves not wider at their base, and patent, not squarrose or divaricated.

**M. GLAUCUM**, sp. n. Rami elongati, ramulosi, late cæspitosi; folia quinquefaria, dense inserta, in spiras ad dextram ascendentes disposita, elongate lanceolata, apice obtusa, nervo in mucronem excurrente, dimidio folii inferiore erectiore, superiore recurvo divaricato carinato, apice subcucullato-carinata integerrima, cellulis inferioribus pellucidis arcuatis ad nervum ultra folii medium productis, superioribus minutis rotundatis obscuris, perichætalia plura conformia æquilonga

erecta pellucida; theca in pedunculo breviusculo, ovata, ore parvo, operculo subulato; peristomium parvum, dentibus brevibus pallidis; calyptra ramentis appressis eam longitudine haud excedentibus pilosa.

*Hab.* Tutuila, forming extensive mats on Bread-fruit trees nearly at the sea-level. No. 109.

Habit that of *M. gracile*, but with leaves having a longer pale base, their apices complicate, so as to appear more acute than they are in reality.

*M. POWELLII*, sp. n. Rami elongati, in cæspitibus latis aggregati; folia dense inserta, a basi brevi erecta, recurva, divaricata, sensim ad apicem acutum angustata, nervo rufescente subexcurrente carinata, integerima, cellulis basi elongatis pellucidis subrectis dimidium folii longitudinis occupantibus sensim in rotundatas obscuriusculas transeuntibus, perichætalia interna breviora lanceolato-subulata pellucida; vaginula pilis paucis brevibus; theca in pedunculo breviusculo, parva, ovalis, ore parvo, operculo subulato, peristomio dentibus brevibus pallidis; calyptra ramentis appressis pilosa.

*Hab.* Tutuila, on Cocoa-nut-trees near the sea-level. No. 110.

This differs from *M. gracile* (Hook. Musc. Exot. 27) and from *M. recurvifolium*, Hook. et Grev., in its pilose calyptra, and from *M. incurvifolium*, Hook. et Grev., in its gradually narrowed acute leaves; in this last particular it differs also from *M. glaucum* and *M. Beecheyanum*.

#### NECKERA, sectio nova *Teniocladium*.

Caulis repens, ramis elongatis liberis pendulis æqualiter foliatis pinnatis. Folia distichacea, nervo plus minus elongato, cellulis in partibus folii exterioribus rotundatis. Fructus e partibus remotioribus ramorum ramulorumque oriens. Theca oblonga, æqualis, perichætio immersa. Calyptra brevis, plurifida.

NECKERA LEPINIANA, *Mont. Ann. des Sc. Nat.* 1848, p. 107; *Bryol. Javan.* t. 191.

*Hab.* Tutuila, on living trees; in fruit near Lanutoo, the mountain lake, Upolu (2570 ft.). No. 2.

*N. GRACILENTA*, *Van den Bosch et Lacoste, Bryol. Javan.* t. 192.

*Hab.* Tutuila. No. 95, without fruit.

#### *Himantocladium*.

Caulis repens, ramis elongatis liberis inferne stipitatis superne pinnatis arbusculosis fasciculatisve. Folia distichacea, nervo plus minus elongato, cellulis in partibus folii ab insertione ulterioribus rotundatis firmis. Fructus e ramis ramulisque

superioribus. Theca oblonga, æqualis, e perichætio parvo exserta. Calyptra brevis, uno latere fissa.

*N. IMPLANA*, sp. n. Dioica; rami ramulis dispersis subplumæformes, pinnati; folia complanata, lateralia, patentia, ligulata, obtusa, angulo parvo apicali, lævia, plana, nervo crassiusculo infra apicem evanido, marginibus apice minute crenulatis, cellulis apicalibus parvis ovali-rotundis, inferioribus sensim longioribus angustis; folia ramea conformia, rarius subundulata; perichætialia parva, a basi convoluta subrotunda subulata patentia, apicibus subserrulatis, enervia; theca ovali-cylindracea, in pedunculo æquilongo, operculo conico curvirostro; peristomium dentibus processibusque angustis obscuriusculis minute punctulatis linea media notatis.

*Hab.* Tutuila, on living trees near Letaumata (1000 ft.). No. 34.

This very nearly resembles *Neckera loriformis*, Bryol. Javanica, t. 183; but the leaves are wider and flat.

*N. LORIFORMIS*, *V. d. Bosch et Lac. Bryol. Javan. t. 183.*

*Hab.* Tutuila, No. 118.

*N. MUCRONATA*, *V. d. Bosch et Lac. Bryol. Javan. t. 187.*

*Hab.* Tutuila, on trees (1000 ft.). No. 119.

*GAROVAGLIA POWELLII*, sp. n. Folia compressa, lateralia, patentia, ovato-oblonga, acuta vel breviter acuminata, quater plicata, plicis dorso infra apicem spinuliferis, marginibus late recurvis a medio usque ad apicem serrulatis, nervis obsoletis, cellulis elongatis, basalibus ad angulos paucis latioribus inconspicuis; perichætialia exserta, erecta, interna convolutacea, latissime obovata, apice subito in acumen subulatum serrulatum producta; theca ovalis, immersa, operculo subulato; peristomium intra orificium callosum rubrum horizontale; dentes rubri, incurvi, teneri, internum processibus pallidis angustissimis æquilongum; calyptra parva, basi lobata, operculo brevior.

*Hab.* Tutuila, on living trees near Letaumata (1000 ft.). No. 3.

Entirely agreeing with *G. plicata*, Endl., *Endotrichum densum*, Dozy et Molk. Musci Archip. Ind. fasc. i. t. 1, but less robust and evidently compressed, the apices of its leaves scarcely acuminate, and the perichætial leaves wider and more suddenly contracted towards their points.

#### Sect. *Endotrichum*.

Theca exserta, peristomio infra orificium capsulæ immerso. Calyptra uno latere fissa.

*G. SAMOANA*, sp. n. Folia subcompressa, lateralia, patentia patulave, late oblongo-ovata, acumine breviusculo semitorto, quater plicata, dorso lævia, nervis crassiusculis ad  $\frac{1}{4}$  folii longitudinis productis, mar-

ginibus superne planis denticulato-serrulatis, basin versus reflexis, cellulis elongate ellipticis, basi paucis incrassatis, aurantiacis; perichætalia parva, interna vaginulam parum excedentia, breviter oblonga, apice subtruncato acumineque brevi subcrenulato, enervia; theca in pedunculo subæquilongo, ovali-cylindracea, basi subinæquali, operculo subulato, peristomio parvo intra orificium sepulto, dentibus parvis, processibus angustis æquilongis.

*Hab.* Mâtie and Tutuila near Letaumata (1000 ft.). No. 70.

The beautiful figure in the Bryol. Javan. of *G. Moluccensis*, V. d. Bosch. et Lac. t. 196, gives a good idea of the size and general appearance of the Samoan species—which, however, has narrower leaves, with the lower margins reflexed.

*G. ANGUSTIFOLIA*, sp. n. Folia compressa, lateralia, patula, elongate lanceolata, sensim acuta, quater plicata, dorso lævia, nervis obsoletis, marginibus plus minus recurvis revolutisve superne serrulatis, cellulis elongatis angustis, ad angulos paucis brevioribus latioribusque; perichætalia quam caulina dimidio breviora, erecta, ovato-lanceolata, apice acuminato dentato; theca in pedunculo thecam cylindraceam inclinatam æquante; operculum curvirostrum.

*Hab.* Pacific islands, Nightingale, in herb. Hooker.

This agrees with *G. Samoana* and *G. Moluccensis* in having its capsule exserted; but the leaves are little more than half as wide as in either of those species, and their nerves, as in *G. Samoana*, obsolete.

*G. setigera*, Sull. Amer. Expl. Exped. t. 18, B (*Endotrichum*), from the Fiji Islands, has the teeth of its external peristome trabeculate within, and the internal peristome with narrow processes equalling the external teeth in length, and supported on a membrane which extends to near their middle, in these particulars agreeing with *G. cuspidata* (*Esenbeckia*), Mitten in Hook. Journ. of Bot. vol. viii. p. 263, from Moreton Bay, Australia, and thus differing from *G. plicata* and its allies in the more complete evolution of the peristome, upon which is founded, by M. Schimper, the genus *Euptychium* (*Euptychium*, Muscorum Neocaledonicorum genus novum, Dresden, 1865), *E. neocaledonicum*, Schimp., the only species there mentioned, being, so far as can be seen from the excellent plate, t. 1, identical with *G. cuspidata*.

All the very handsome Mosses referable to *Garovaglia* appear to be destitute of a creeping stem, and in this respect, as well as in the leaves and general appearance, seem to approach very nearly to *Cladomnion* and *Ptychomnion* of Wilson.

*AEROBRYUM LANOSUM*, Mitten in Journ. of the Proceed. of the Linn. Soc. 1859, Suppl. p. 90 (Meteorium): (*M. longissimum*, Dozy et Molk.

*Musci Archip. Ind. t. 48? et Bryol. Javan. t. 202, var. tenue.*—M.

*Vitianum, Sull. Amer. Expl. Exped. p. 22, t. 21?*

*Hab.* Tutuila, on trees in a damp place (1000–1500 ft.). No. 4.

*Meteorium Vitianum* is probably identical with this species; for, notwithstanding Sullivant's remark that in *Aerobryum longissimum* there are no papillæ, I find them present in authentic specimens of that Moss as well as in the Samoan specimens; and they in each arise from the middle of the cell.

The specific name "*longissimum*" was applied by Raddi to a Brazilian Moss which may prove to be referable to this genus, having the calyptra cucullate and not mitriform as in *Meteorium*.

The rarity of the fruit in these mosses renders the certain identification of species very difficult.

In Mr. Powell's specimens the young calyptra is elongate, as in *A. speciosum*.

**METEORIUM INTRICATUM, sp. n.** Dioicum; rami graciles, elongati, flexuosi, ramulis divergentibus curvatis laxè pinnatim ramosi; folia ramea undique erecto-patentia, torta, a basi cordata, auriculis crenatis, ovato-lanceolata, sensim acuminata, integerrima, nervo obsoleto, cellulis angustis elongatis brevissime obscureque pluripapillatis; folia ramulina superne latiora, haud acuminata, subserrulata, semitorta, medio inferne canaliculata, nervo tenui infra medium obsoleto; folia perichætialia patentia, longe acuminata; vaginula filis exsertis barbata; pedunculus crassiusculus, sublævis, foliis perichætialibus subduplo longior, curvatus; theca oblongo-cylindracea, inæqualis, operculo subulato; peristomium dentibus elongatis irregularibus nonnullis inter se cohærentibus fissisve obscuris, internum processibus angustis obscuris brevioribus, membrana basilari carens; calyptra inferne pilis paucis barbata. Flos masculus parvus, gemmiformis, antheridia 8–10, paraphysibus paucis immixta fovens.

*Hab.* Tutuila, on living trees in the shady forests (20–1000 ft.). No. 5.

Also in the Figi Islands, *Seemann*.

Branches 2 to 6 inches long, branchlets about half an inch in length, foliage green, dark brown in age. In size, colour, and habit, this species agrees with *M. helictophyllum*, Mont. (*Cryphæa*), from Tahiti; but its longer capsule is exserted, and thus it comes nearer to *M. floribundum*, Dozy et Molk. *Musc. Archip. Ind. t. 53*; but it differs from this in the cordate-auriculate base of its leaves, and also in the teeth of the external peristome not being united on a base that is exserted above the mouth of the capsule.

**M. ÆRUGINOSUM, sp. n.** Dioicum; rami elongati, gracillimi, flexuosi,

flaccidi, ramulis curvatis axe pinnatim ramosi; folia a basi rotundata angulis parvis decurrentibus, ovato-lanceolata, sensim acuminata, planiuscula, compressa, lateraliter patentia, nervo vix cernendo infra medium obsoleto, margine ubique minute serrulata, cellulis angustis minutissime papillois obscuriusculis; folia ramulina conformia; perichætalia patentia, longius acuminata, pedunculo curvato breviora; theca oblongo-cylindracea, subæqualis, operculo subulato; peristomium dentibus validis intus trabeculatis, internum processibus angustis carinatis in membrana ad dentium longitudinis  $\frac{1}{3}$  exserta impositis.

*Hab.* Upolu, on trees (1000–2000 ft.). No. 88.

Branches very slender. Foliage, in the young state, pale æruginous green without gloss; when older, of a pale brown.

From *M. floribundum*, Dozy et Molk. Musci Archip. Ind. t. 53, this species differs in its more compressed divergent foliage, and in the teeth of its external peristome being divided to the mouth of the capsule, and not exserted on a combined base.

*CRYPTOTHECA VITIANA*, Sull. in *Proceed. of the Amer. Acad. of Arts and Sciences*, 1855 (Pilotrichum).

*Hab.* Tutuila, on Cocoa-nut, Hibiscus, and other trees (1000–2000 ft.). No. 7.

*CALYMPERES (HYOPHILINA) PORRECTUM*, sp. n. Caulis humilis elongatusve; folia a basi erecta, suboblonga, patentia, ligulata, latiuscule acuta, nervo concolori obscuro brevissime excurrente acuto, marginibus limbo obscuro vix incrassato apicem versus dentato, inferne intra marginem minute crenulatam ad basin sensim evanido producto, cellulis hyalinis quadratis abbreviatis totam partem folii erectiorem occupantibus, superioribus minutis rotundatis crasse limbatis; folia apicalia (anomala) erecta, longiora, nervo crassiore, lamina folii angustissima, marginato-subulata, apice subcupulata, corpuscula septata foveantia.

*Hab.* Tutuila, on bark. No. 10.

Stems from 3 lines to 2 inches high, leaves about a line and a half long, pale yellowish green, when dry curved, the terminal anomalous ones remaining erect. This species, although destitute of fruit, is distinct from *C. Dozyanum*, and all the others belonging to the same group, in its dentate leaves.

*C. (HYOPHILINA) DOZYANUM*, Mitten. (*C. Moluccense*, Dozy et Molk. *Bryol. Javan.* t. 37.)

*Hab.* Tutuila, on Cocoa-nut-trees, mostly on their western side, which is probably the most humid (10–50 ft.). No. 17.

*C. (HYOPHILINA) TAITENSE*, Sull. *Amer. Expl. Exp.* p. 6, t. 4 (Syrhopodon).

*Hab.* Tutuila, on the sides of stones and rocks over which the rain flows, also on damp trees (20–1000 ft.). No. 25.

A large species, with the habit of those species of *Syrrhodon* referable to the group *Orthotheca*, Brid.

CALYPERES, sectio nova *Himantophyllum*. Folia elongata, angusta, loriformia, indurata, limbata, minutissime areolata.

C. (H.) LORIFOLIUM, sp. n. Dioicum (?); caulis humilis; folia a basi oblonga, latiora, cellulis hyalinis quadratis distinctis fere ad apicem usque areolata, ad latera fascia latiuscula e cellulis parvis angustis elongatis firmis, et limbo tenerrimo e cellulis apicibus exstantibus crenulato marginata, subito contracta, longe loriformia, erecto-patentia, sicca laxe curvata subcrispata, apice acuminata, nervo percurrente, limbo obscuro parum incrassato remote serrulato apice paucidenticulato circumducta, cellulis incrassatis pellucidis rotundatis oblatisque; perichætalia conformia, apicibus ad orificium thecæ cylindraceæ attinentibus; pedunculus ruber; operculum conico-subulatum; calyptra plicata, apice acuminata, scabra, basi infra thecam descendens, torta.

*Hab.* Manua, on *Alsophila lunulata*, on the ascent of the mountain Olotane (1400 ft.). No. 47. Figi Islands, *Milne*; also in Borneo, *Molley*.

Stems half an inch high. Leaves half an inch and more long, rigid.

This differs from *C. serratum* in its narrower stiffer leaves, with the hyaline cells well defined and extending to near the top of the oblong base.

In the *Bryol. Javanica*, t. 40, there are figured (No. 5 and No. 6) two stems which probably belong to *C. lorifolium*.

C. (H.) SERRATUM, *Braun, Bryol. Javan.* t. 40.

*Hab.* Tutuila, No. 139.

In this species the stems appear to be always very short in proportion to the length of the leaves and seta.

Belonging to this section, and known only in a barren state, is

C. (H.) LONGIFOLIUM, sp. n. Caulis brevissimus; folia a basi elliptico-oblonga, superne marginibus denticulis ciliata et cellulis hyalinis usque ad apicem continuatis areolata, inde angustata, patentia, longissime anguste loriformia (biuncialia), apice acuminata, margine remote breviter serrulata, limbata, nervo excurrente, cellulis superioribus minutis rotundatis firmis.

*Hab.* in insula archipelagi Indici Labuan, *Molley*.

This remarkable species has leaves exceeding in length those of any other known moss; they are, however, very narrow and thin, but firm and scarcely altered by drying.



## PYRRHOBYUM, gen. nov.

Caulis erectus, simplex, rarius divisus. Folia undique inserta, inferiora minora sensim versus caulium altitudinem mediam majora, exinde ad apicem decrescentia, rigida, nervo rigido valido percurrente excurrenteve marginibusque argute serratis, cellulis parvis rotundis limitibus latis rigidis obscuris. Fructus in ramulo brevissimo basilari. Theca cylindracea, plicata, horizontalis, operculo rostrato, peristomio *Stereodontis*. Calyptra cucullata.

*P. SETOSUM*, sp. n. Dioicum; folia in ramis sterilibus patentia, apicalia, erecta, appressa, recta subsecundave, a basi sensim subulata, angusta, elongata, setacea, rigida, nervo crasso percurrente, superne dorso dentato, margine incrassata, basi integerrima, superne breviter duplicato-dentata, a medio usque ad apicem dentibus validioribus simplicibus serrata, cellulis parvis rotundis limitibus latis; perichætium in ramo brevi, foliis a basi parva ovata longe anguste subulata curvata, nervo excurrente marginibusque superne dentatis. Habitus *P. spiniformis*.

*Hab.* Upolu, on trees on the way to Lanutoo (2000 ft.). No. 11.

Size, mode of growth, and colour of the foliage as in *P. spiniforme*, Linn. (*Hypnum*), but with leaves scarcely half as wide, more bristle-like and rigid; the teeth towards the apex of the leaf are evidently a continuation of the margin; so that the nerve is not terete and excurrent, as is stated to be the case in *P. pungens*, Sull. Amer. Expl. Exp. (*Rhizogonium*), which appears also to be a much larger species in all its parts.

*P. SPINIFORME*, Linn. (*Hypnum*), forma Samoana. Folia angustissime lineari-lanceolata, nervo percurrente, dorso dentata, margine duplicato serrata; perichætialia ovato-subulata, simpliciter serrulata; theca oblonga, operculo brevirostro, peristomio interno processibus quam dentes brevioribus in membrana fere ad eorum medium exserta impositis, ciliis obsolete.

*Hab.* Upolu, on trees (1000-2000 ft.). No. 90.

A little more slender than the usual states of this common Tropical-American species, and possibly distinct; but the cilia are not uniform in length or number in American specimens.

Besides the *P. latifolium* of Java, there is another species in that region.

*P. LONGIFLORUM*, sp. n. Dioicum? folia in caule sterili patula, incurva, anguste lineari-elliptico-lanceolata, basi angustata, nervo crasso superne dorso dentato percurrente, marginibus incrassatis et dentibus brevibus duplicatis serratis, cellulis parvis rotundis firmis; folia flo-

ralia a basi parva oblonga parum latiore, longe loriformi-subulata, duplicato-serrata, nervo percurrente; theca elongato-oblonga, arcuata, plicata, operculo subulato, peristomio normali completo.

*Hab.* in insula archipelagi Indici Labuan, in arboribus emortuis putrescentibusque sylvarum densissimarum, *Motley*.

Habit, size, and general appearance that of *P. spiniforme*, Linn. (*Hypnum*), but distinct in its leaves being narrowed at the base, its different inflorescence, and elongated perichæatial leaves; it is as maller species than *P. latifolium*, V. d. B. et Lac. Bryol. Javanica, t. 133 (*Rhizogonium*), and has narrower leaves.

#### PHOTINOPHYLLUM, gen. nov.

Caulis erectus, simplex, basi tantum inter radices ramulos brevissimos florentes fovens. Folia undique inserta, nervo angusto, cellulis majusculis pellucidis splendentibus areolata. Theca longe pedunculata, lævis, horizontalis, operculo brevi, peristomio *Stereodontis*. Calyptra angusta, cucullata.

*P. SUBBASILARE*, *Hook. Musc. Exot.* t. 10 (*Hypnum*).

*Hab.* Tutuila. No. 136.

A few fragments only of this species were found, amongst other Mosses; and they appear to be specifically indentical with the Fuegian Moss.

Other species belonging to this genus are *P. reticulatum*, Hook. f. et Wils. Crypt. Ant. t. 154. f. 5 (which appears to have its foliage compressed, although not bifariously inserted, as might be supposed from the figure), and

*P. PELLUCIDUM*, sp. n. Monoicum; folia laxe patentia, ligulato-elliptica, nervo sub apice evanescente, limbo angustissimo, superne denticulis duplicatis serrato-marginata, cellulis oblongo-ellipticis pellucidis anguste limitatis areolata; perichætialia lanceolato-subulata, parce serulata; theca in pedunculo elongato, cylindræa, collo crasso subito flexo, horizontalis, operculo conico, peristomio interno processibus subulatis carinatis, ciliis tribus capillaribus interpositis, in membrana parietibus cellularum prominulis, ad dentium peristomii exterioris medium usque exserta impositis.

*Hab.* in Tasmania, *Archer*; Australia, *Dr. F. Mueller*; New Zealand, *Dr. Knight*.

Like *P. subbasilare* in size and habit, but with more pellucid leaves, which are also serrate, with duplicate teeth.

SYRRHOPODON (ORTHOTHECA) CROCEUS, *Mitten, Journ. of the Proceed. Linn. Soc.* 1859.

*Hab.* Tutuila, and in all the islands, on trees (2000–2500 ft.). No. 12.

In some of the Samoan specimens of this moss the stems are 6 inches high; it seems to grow in large tufts.

*S. (ORTHOHECA) GLAUCO-VIRENS*, sp. n. Dense caespitosus; caulis elongatus; folia a basi oblonga erecta, superne marginibus denticulis armata, inde lineari-spathulata, obtusiuscula, patentia, nervo percurrente dorso sub apice papilloso spiculoso, marginibus basi latiusculis teneris superne limbo teretiusculo crassiore involutis papillosis denticulis remotis inconspicuis apice suberenulatis, cellulis hyalinis basis  $\frac{2}{3}$  occupantibus, superioribus minutis rotundatis obscuris papillosis.

*Hab.* Tutuila and Upolu, on trees. No. 99.

A little less than *S. croceus*, its leaves of a pale brownish green, the younger somewhat glaucous, and not coloured at the base, where the margins are denticulate.

*S. ALBOVAGINATUS*, Schw. t. 131.

*Hab.* Tutuila, Le Taumata, on decayed wood (1000 ft.). No. 23.

*S. TRISTICHUS*, Nees, Schw. t. 311; *Bryol. Javan.* t. 44.

*Hab.* Upolu, on trees near the crater of Tafua-ā-Upolu (1000 ft.). No. 74.

*S. (CALYMPERIDIUM) ARISTIFOLIUM*, sp. n. Caulis brevis; folia e basi erecta ovata, subulata, patentia, longissime angustissime angustata, nervo crassiusculo in aristam plus minus elongatam excurrente apice subdenticulato, margine superne remote breviter subdentato hic illic parum recurvo, limbo nullo, cellulis hyalinis dimidiam inferiorem occupantibus ovatis et per totam, folii latitudinem dispositis, superioribus minutis quadrato-rotundatis lævibus pellucidis; perichætialia conformia; theca in pedunculo quam folia breviora, parva, cylindracea; calyptra (juvenilis) inferne plicata, apice scabra.

*Hab.* Upolu, on trees (1000-2000 ft.). No. 89.

Habit and foliage like that of the next species, entirely agreeing with the species of *Calymperes* belonging to the section *Himantophyllum*; so that, in the absence of fruit with calyptras, the species can only be referred to either with doubt.

*S. (CALYMPERIDIUM) MULLERI*, *Bryol. Javan.* t. 42.

*Hab.* Upolu, on trees. No. 120.

#### PELEKIUM, gen. nov.

Caulis procumbens, bipinnatim ramosus, phyllidiis vestitus. Folia uninervia, cellulis rotundatis papillosis areolata. Fructus lateralis, theca longe pedunculata. Peristomium *Leskeæ*. Calyptra magna, plicata, basi multifida.

*P. VELATUM*. Monoicum; caulis depressus, procumbens, subarcuatus,

repens, radicans, elongatus, phyllidiis obtectus, ramis phyllidiis paucis sparsis plumæformibus pinnatis bipinnatus; folia in caule primario laxè disposita, patentia, a basi parva, cordato-triangularia, biplicata, caviuscula, longè subulata, attenuata, apice cellulis in serie singula confervoidea articulata pellucida terminata, nervo crassiusculo concolori dorso scabro supra medium evanido, marginibus inferne recurvis usque ad basin apiculi confervoidei crenulatis, cellulis rotundatis papillois haud obscuris; folia ramea compressa, lateraliter patentia, ovata, acuta, nervo dorso crenato supra medium evanido carinata, margine late recurvo crenulata; ramulina compressa, ovata, obtusiuscula, nervo dorso crenato prominulo sub apice evanescente carinata, marginibus crenulatis, cellulis papillois obscuriusculis; folia perichætialia patentia, albida, a basi lata truncata, sensim longè lanceolato-subulata, nervo crassiusculo superne subdenticulato longè excurrente, marginibus inferioribus serrulatis, cellulis elongatis angustis lævibus; vaginula filis paucis vestita; pedunculus elongatus, rufus, ubique setulis pallidioribus obtectus; theca horizontalis, demum pendula, ovalis, brevis; operculum subulatum, longè rostratum; peristomium dentibus rubris firmis subulato-attenuatis, internum processibus solidis carinatis subæquilongis, ciliis brevibus in uno coalitis carentibusve, in membrana fere ad dentium medium exserta impositis. Calyptra magna, albida, companulata, acuminata, thecam totam obtegens, inferne plicata pluries lobata, setulis ubique inpersa.

*Hab.* Tutuila, on damp stones and decayed logs in woods and other shady places (10–50 ft.). No. 14. Also found in Borneo and Java, *Motley*.

In habit, colour, and appearance, this small moss corresponds with the smaller species of that group of *Hypna* which have been named *Thuidium* by Schimper, but differs in having the calyptra as in *Hookeria*.

Under the name of *Thuidium trachypodium* (Mitten), Van den Bosch et Lac., there are figured in 'Bryologia Javanica,' t. 225, portions of *P. velatum*, or of some closely allied species, which has been mistaken for, or confused with, the *Thuidium*; the portions which probably belong to *Pelekium* are figured at Nos. 38, 39, 40, 41 & 43. *Thuidium trachypodium* has its calyptra small, split on one side, and smooth, its capsule more cylindraceous, and its setæ papillose and not setulose.

DICRANELLA FLACCIDULA, *Mitten in Bonplandia*, 1861, p. 365 (Lep-  
totrichum).

*Hab.* Tutuila, on muddy banks (10–20 ft.). No. 15.

BRYUM (DICRANOBRYUM) COARCTATUM, *C. Müller. Syn. i. p. 312.*

*Hab.* Tutuila, mostly on stone walls, especially where there is lime (1–10 ft.). No. 16.

**OCTOBLEPHARUM DENTATUM**, sp. n. Caulis elongatus, cæspitosus; folia a basi erecta, elongate oblonga, cellulis breviter oblongis hyalinis areolata, limbo tenui angusto marginata, sensim subulata, elongata, patenti-recurva, apice obtusiuscula, minute multidentata, nervo basi angusto superne incrassato et supra basin oblongam totam folii occupante trigono spongioso lævi; perichætalia interna minora, acutiora; theca in pedunculo brevi, elliptico-cylindracea, collo sensim attenuato.

*Hab.* Upolu, near the crater called Tafuā-ā-Upolu (1000 ft.). No. 19.

Stems from 1 to 2 inches high, brownish red, but everywhere covered by the appressed clasping bases of the leaves, which are about 4 lines long, white or with a slight tinge of green; they retain the same position and appearance either wet or dry.

Much taller, and with more recurved leaves than *O. Schimperii*, Dozy et Molk., Musc. Archip. Ind. t. 27 (*Arthrocormus*), which differs scarcely in any particular from *Octoblepharum* beyond the tristichous leaves.

**O. ASPERUM**, sp. n. Dense cæspitosum, glauco-albo-virens; folia a basi erecta, oblonga, cellulis oblongis hyalinis areolata, subulato-angustata, acuta, erecto-patentia, nervo, in basi oblonga tertiam partem folii latitudinis, superne fere totam occupante, intus extusque superne papillis dense obtecto, utraque lamina folii angusta, e cellularum quadratarum serie singula usque ad apicem continuata, ubique limbo cartilagineo angusto supra partem oblongam minute versus apicem argutius serrulatum marginata.

*Hab.* Upolu, on trees (1000 ft.). No. 113.

Stems half an inch or an inch high, very much like *O. dentatum*, but a little more slender.

**O. SCABRUM**, sp. n. Humilis; folia a basi anguste oblonga, erecta, cellulis oblongis areolata, limbo angusto superne denticulis aculeiformibus ciliato marginata, nervo crasso excurrente elongato patente subtereti-trigono ubique scaberrimo apice obtusiusculo minute denticulato.

*Hab.* Tutuila. No. 126.

This curious species agrees very nearly with *O. Blumei*; but it is considerably larger, and the thick nearly terete nerve is covered with shorter papillæ.

Besides the above, two other intimately allied species have been sent from Java.

**O. HISPIDULUM**, sp. n. Humilis; folia a basi erecta, oblonga, cellulis oblongis quadratisque pellucidis areolata, angustata, linearia, obusiuscula, patentia, nervo crasso intus extusque setulis hispidulo, lamina folii e cellularum quadratarum hyalinarum in seriebus binis ad apicem usque continua, limbo angusto supra basin denticulis aculeiformibus elongatis inferioribus longioribus ciliato marginata.

*Hab.* in Java, in regione superiore montis Pangerango (7000–10000 ft.),  
*Motley.*

In size similar to *O. Blumei*, Nees (*Syrrhopodon*), but differing in the leaves having to their apices a distinct narrow pellucid lamina.

*O. PAPILLOSUM*, sp. n. Humilis; folia a basi erecta, oblonga, cellulis rhombeis quadratisque areolata, angustata, linearia, obtusiuscula, patentia, nervo crasso in parte patente papillis elongatis setulæformibus oblecto, lamina folii usque ad apicem continuata e seriebus singulis binisve cellularum quadratarum hyalinarum composita, limbo incrassato dense papilloso-serrulato marginata.

*Hab.* in Java, *ex herb. Nees v. Esenbeck.*

This differs from *O. Blumei* in the same respect as *O. hispidulum*.

In *O. Blumei*, which has been placed by C. Müller, Syn. ii. p. 537, in *Leucophanes*, the leaves above the base are entirely occupied by the plano-convex nerve, and thus differ from those of *Leucophanes candidum*, Hornsch. (*Syrrhopodon*), which have the nerve flattened; and it is scarcely observable, except on cross section, that the leaf is really composed of dilated nerve two cells thick, with a narrow obscure thread running through the middle.

*O. RECURVUM*, sp. n. Caulis elongatus, densifolius; folia a basi erecta, ovali, convoluta, sensim angustata, patentia recurvaque, subcomplicata, apice denticulata, nervo excurrente dorso subserrulato, limbo angustissimo in parte folii erectiore latiore marginata; perichætialia erecta, angustiora; theca in pedunculo gracili rubro, ovali-cylindracea, fusca, vernicosa.

*Hab.* Upolu, on trees. No. 104.

Similar to *O. densifolium*, Mitten (*Leucophanes*), from the Fiji Islands, but with leaves more narrowed above, the lower leaves more recurved, very white, those towards the apices of the stems slightly tinged with very pale green or brown.

Notwithstanding the remarks in C. Müller, Syn. i. p. 86, where, and in p. 85, *Arthrocnemum Schimperii* is stated to have nerveless leaves, and the opposite opinion held by Bridel and Dozy et Molkenboer is considered erroneous, an examination of the species referred to the genera *Octoblepharum* and *Leucophanes* can only lead to the conclusion that the whole of the upper portion of the leaf of *O. albidum* is a dilated nerve, thickened with five or six layers of cells, that of *Leucophanes octoblepharoides* differing only in being but two layers of cells in thickness.

## ECTROPOTHECIUM, gen. nov.

*Caulis procumbens prostratusve, pinnatus. Folia compressa, diversiformia, sæpe secunda falcatave, brevissime binervata enerviave, cellulis angustis alaribus inconspicuis. Theca longe pedunculata, flexura brevissima, pendula, brevis, subæqualis, ore magno, operculo brevirostro, peristomio Stereodontis.*

*E. TUTUILUM, Sull. Amer. Expl. Exp. t. 10. f. A (Hypnum).*

*Hab.* Tutuila, on decayed logs (500–1000 ft.). No. 20.

In this, as in many other allied congeneric species, the upper ends of the cells are protuberant on the back of the leaves.

*E. SODALE, Sull. Amer. Expl. Exp. t. 12. f. B (Hypnum).*

*Hab.* Tutuila, on decayed logs (10–1000 ft.). No. 46.

*E. PACIFICUM, sp. n. Monoicum; caulis procumbens, elongatus, ramis brevibus approximatis pinnatus; folia subcompressa, media ovato-elongate-lanceolata, in acumen sensim angustata, breviter binervata, margine ubique serrulata, cellulis angustis supra folii medium finitis dorso exstantibus papillata, alaribus paucissimis pallidis; folia intermedia, lateralia, inferioraque falcata uncinataque; perichætialia erecta, interna elongata, apicibus subulatis serrulatis; theca in pedunculo elongato, breviter oblonga, flexura pedunculi angustissima, pendula.*

*Hab.* Samoa, without fruit, *Powell*; Jobic Island, also in Erromanga, *Bennett, herb. Hooker.*

In size and appearance similar to *E. Buitenzorgii*, Bel. (*Hypnum*); but in that the leaves are smooth.

Under the genus *Ectropothecium* it is proposed to arrange a number of species hitherto referred to *Hypnum*. All the species are conspicuous for their regularity and closely pinnate prostrate stems, which do not appear to become congested into tufts, but to be always appressed to the surface on which they grow. The foliage, as is usual in the extensive family of Mosses, of which this genus is but a small portion, is composed of leaves inserted in ten different positions on the stem, each leaf having a distinct form, and none of symmetrical outline but those which are inserted on the middle of the upperside of the stem. The capsule is in all the species small, short, and without an attenuated neck, perfectly pendulous when old, and supported upon a long seta, curved only at its apex.

*E. FUSCESCENS, Hook. et Arnott in Beechey, Voy. t. 19 (Hypnum).*  
(*H. apertum, Sull. Amer. Exped. t. 16. f. A.*)

*Hab.* Tutuila, on stones and rocks in gullies and streams where the flow of water is frequent (1-100 ft.). No. 45.

In Beechey's specimen from Tahiti the inflorescence is monoëcious; and there seems to be no difference between it and those from Tutuila, excepting that the latter are greener, and, when old, change to pale brown.

This is the largest described species belonging to the group named in Dr. C. Müller's Synopsis, ii. p. 233, *Vesicularia*, there made a section of his *Omalia*; but they do not present any considerable difference from *Ectropothecium* beyond the very lax areolation, which at first sight might lead to their being supposed to be *Hookeria*, to which some species have been referred.

#### LEUCOMIUM, gen. nov.

*Caulis procumbens, parce vageque ramosus. Folia compressa, diversiformia, enervia, laxissime elongate areolata, cellulis alaribus carentibus. Theca parva. horizontalis, operculo longirostro, calyptra angusta latere fissa, peristomio Stereodontis.*

*L. DEBILE*, *Sull. Amer. Expl. Exp. t. 21* (Hookeria).

*Hab.* Tutuila, on decayed trees (500-1000 ft.). No. 24.

The soft, pale, almost white foliage of the species belonging to this small genus gives the plants much the appearance of being diminutive allies to *Hookeria lucens*, Sm.; but the calyptra is not different from that found in mosses usually referred to *Hypnum*. *L. debile*, like all its congeners, has a very lax areolation; and this, with the sparingly branched stems, which seem to be without any creeping base, and adhere by a few rootlets either to decaying wood or leaves, renders it difficult to place them in any known group of Hypnoid Mosses, or to avoid the conclusion that they form a natural genus of themselves.

#### TRICHOSTELEUM, gen. nov.

*Caulis repens, ramis assurgentibus in cæspites laxos depressos congestis pinnatus. Folia uniformia, enervia, cellulis plus minus angustis ut plurimum papilliferis, alaribus conspicuis coloratis. Fructus e ramis oriens. Theca in pedunculo elongato gracillimo, minuta, ovalis, siccitate sub ore magno contracta, demum pendula, ore hiante, operculo tenuiter rostrato, peristomio Stereodontis.*

*T. STIGMOSUM*, sp. n. Monoicum, depresso cæspitosum; folia patentia, elliptica, acuminata, acumine semitorto, concava, margine ser-



mulata, cellulis elongatis papillis grossis, alaribus conspicuis; perichætalia erecta, longiora, angustiora, apice latiuscula, argute denticulata; theca in pedunculo elongato, ovalis, pendula; peristomium internum ciliis singulis brevibus; calyptra versus apicem scabra.

*Hab.* Upolu, Matafao (1000 ft.). No. 21.

Pale straw-coloured without gloss. Seta smooth. Nearly resembling *T. papillatum* (*Hypnum*), Hornsch., but more slender.

*T. FISSUM*, sp. n. Dioicum; caulis ruber, brevis, fasciculatim ramosus, in cæspitem latum depressum congestus; folia patentia, anguste elliptico-lanceolata, concava, acuminata, versus apicem flexuosa, margine recurva, superne serrulata, cellulis elongatis supra folii medium, papillis singulis e media cellularum singularum superficie oriundis punctata, cellulis alaribus conspicuis pallidis; folia perichætalia brevia, subovata, superne bi-trifida, laciniis serrulatis; theca in pedunculo flexuoso dimidio superiore scabro, ovalis, æqualis, suberecta, operculo longe subulato, peristomio dentibus crassiusculis intus trabeculatis, interno processibus æquilongis carinatis, ciliis nullis, in membrana ad dentium longitudinis  $\frac{1}{2}$  exserta; calyptra apice subscahra.

*Hab.* Upolu, on trees. No. 116.

A little less than *T. stigmatosum*, and more yellow; in the form of its leaves closely resembling it, but sufficiently different in the scabrous setæ and lacerate perichætial leaves.

#### ACANTHODIUM, gen. nov.

Caulis repens, assurgens, arcuatus, ramos fasciculatim ramulosos in cæspites latos congestos fovens. Folia æqualia, ut plurimum lata, longe cuspidata, cellulis angustis alaribus conspicuis. Fructus e ramis oriens. Theca longe pedunculata, oblonga, inæqualis, horizontalis, operculo brevirostro; peristomium *Stereodontis*.

*A. RIGIDUM*, *Nees et Reinw.* (*Hypnum*), *Bryol. Javan.* t. 238.—*Hypnum trismegistum*, *Mont.*—*H. Calderense*, *Sull. Amer. Expl. Exp.* t. 15?

*Hab.* Tutuila, on trees and rocks in gullies on the sides of the mountains (1200–1500 ft.). No. 55.

*A. PAPILLATUM*, *Harvey in Lond. Journ. of Bot.* 1840; *Hook. Icon. Plant. Rar.* i. t. 23. f. 8 (*Hypnum*).

*Hab.* Tutuila. No. 125.

#### ACROPORIUM, gen. nov.

Caulis primarius repens, ramos elongatos ramosos in cæspites congestos prodens. Folia nitida, undique inserta, uniformia, in ramorum apicibus cuspidatim imbricata, cellulis elongatis alaribus magnis conspicuis. Fructus e partibus superioribus ramorum

oriens. Theca in pedunculo gracillimo, minuta, ovalis, inclinata, operculo longirostro, peristomio *Stereodontis*.

**A. LAMPROPHYLLUM**, sp. n. Dioicum? late cæspitosum, ramulosum; folia patentia, subcompressa, in ramulorum apicibus in cuspidem angustam appressa, anguste lanceolata, sensim acuminata, margine versus apicem involuta, integerrima, dorso infra apicem apicibus parvis cellularum elongatarum exstantibus subpapillosa, inferne lævia cellulis alaribus conspicuis pallidis; perichætalia a basi erecta ovata, subulato-attenuata, serrulata, patula; theca in pedunculo elongato subscabro, ovalis, inclinata; peristomium externum dentibus crassis trabeculatis, internum ciliis singulis inter processus impositis.

*Hab.* Upolu, on trees (1000 ft.). No. 114.

The figure, in Hampe, 'Icones Muscorum,' of *Hypnum subulatum* very well represents this moss; but its leaves are entire and subpapillose on the back.

**A. MACRORHYNCHUM**, sp. n. Dioicum, elatum, subpinnatum, dense cæspitosum; folia patentia, in ramorum apicibus in cuspidem angustam imbricata, elliptico-lanceolata, sensim acuta, marginibus superne involutis integerrimis, enervia, cellulis elongatis lævibus, alaribus conspicuis; perichætalia e basi erecta late ovali, convoluta, breviter subulata, apicibus serrulatis; theca in pedunculo tenui elongato apice subscabro, ovalis, inclinata, operculo rostro tenui quam theca duplo longiore, peristomio interno processibus dentium longitudinis, ciliis singulis brevioribus.

*Hab.* Manua, on large trees in moist places (2000 ft.). No. 115.

Stems 4 inches. Habit that of *A. hyalinum*, Reinw. (*Hypnum*); Schw. t. 227, but with acute leaves, which are longer and more spreading than those of *A. turgidum*, Dozy et Molk. (*Hypnum*).

**A. BREVICUSPIDATUM**, sp. n. Monoicum; caulis inæqualiter pinnatim ramosus, elongatus; folia patentia, laxè imbricata, in ramorum apicibus in cuspidem brevem congesta, late oblongo-ovalia, breviter acuminata, concava, margine versus apicem incurva, integerrima, cellulis angustis lævibus pellucidis, alaribus conspicuis aurantiacis; perichætalia parva, caulinis conformia, integerrima; theca in pedunculo elongato gracillimo apice scabro, oblonga, parva, inclinata, peristomio interno ciliis singulis processibus brevioribus?

*Hab.* Manua, on large trees (1500 ft.). No. 137. Also from the Sandwich Islands and South-Sea Islands, *herb. Hooker*.

Corresponding in size, habit, and appearance with *A. turgidum*, Dozy et Molk. (*Hypnum*); inflorescence, however, monœcious, and foliage paler and softer.

**A. TURGIDUM**, Dozy et Molk., C. Müller, *Syn.* ii. p. 390 (*Hypnum*).

*Hab.* Upolu, trees near the crater called Tafuā-ā-Upolu (1000 ft.). No. 138.

Appears to be identical with the Javan species; but our specimens are incomplete.

**HYPNUM (SIGMATELLA) SAMOANUM**, sp. n. Monoicum, late depresso cæspitosum; folia compressa, lateralia, patentia, ovato-lanceolata, acuminata, rameaovata concava acuta basi constricta, marginibus serrulatis, cellulis elongatis papillis conspicuis quatuor notatis, basalibus ad angulos paucis minoribus abbreviatis; perichætalia erecta, interna subulata, apicibus angustis serrulatis; theca in pedunculo gracillimo rubro, ovalis, pyriformis, horizontalis.

*Hab.* Upolu, on trees (2000 ft.). No. 132.

More slender than the Indian *Hypnum Nepalense*, Schw., but with the same habit and structure.

**H. (S.) TENUSETUM**, *Sull. Amer. Expl. Exp.*

*Hab.* Tutuila. No. 133.

**H. (S.) BORBONICUM**, *Bel. Voy. Crypt. t. 11. f. 2* (Leskea).—*H. Pickeringii*, *Sull. Amer. Expl. Exp. t. 15. f. A.*

*Hab.* Tutuila. No. 117.

**FISSIDENS LAGENARIUS**, sp. n. Monoicus, pusillus; folia circiter 10-juga, patentia, oblongo-lineararia, acuta, nervo pellucido percurrente, lamina vera usque ad medium producta, apice subæquali, una cum lamina dorsali apicalique limbo carente minutissime crenata, cellulis minutis rotundis inter se remotiusculis vix obscuris minute papillosis; pedunculus foliis superioribus æquilongus; theca inclinata, cylindræa, pallida, laxe areolata, post operculi conico-subulati delapsus infra os constricta sublageniformi; peristomium dentibus teneris luteis brevibus irregularibus.

*Hab.* Tutuila, on *Cyathea leucolepis*, Mett. (1000–2000 ft.). No. 22.

Entire plant, including the fruit, about 3 lines high. This species differs from the following in its less obscure leaves and in the elongate capsule.

**F. SCABRISETUS**, sp. n. Monoicus; caulis elongatus; folia patentia, approximata, elliptico-lanceolata, nervo angusto pellucido percurrente, lamina vera ad medium usque producta subæquali, a basi usque ad medium hyalino-limbata, lamina dorsali basi rotundata, marginibus ubique tenuissime crenulatis, cellulis minutis obscuris viridibus minutissime papillosis; theca in pedunculo brevi aspero, ovalis, inclinata, operculo subulato obliquo; flos masculus in axillis foliorum superiorum.

*Hab.* Tutuila. No. 63.

Stems about 4 lines high, with about twelve pairs of leaves, the entire width of the fronds being about 1 line. The seta a line or a line and a half long. The capsule with vesicular cells and a red mouth.

**F. INCONSPICUUS**, sp. n. Monoicus, pusillus; folia circiter sexjuga, patentia, lineari-lanceolata, acuminata, nervo pellucido percurrente, lamina vera usque ad medium producta subæquali, omnibus laminarum marginibus crenulatis, limbo carente, cellulis minutis rotundis pallidis obscuris papillois; theca in pedunculo breviusculo, parva, obovata, inclinata, operculo subulato.

*Hab.* Tutuila and Upolu, on *Cyathea leucolepis* (1000–2000 ft.), No. 121.

Stems and leaves about a line high, pale green or rusty brown. Seta half as long again as the leaves.

#### MEIOTHECIUM, gen. nov.

Caulis procumbens, repens, ramos assurgentes emittens. Folia undique inserta, enervia, cellulis elongatis lævibus, alaribus plus minus conspicuis areolata. Fructus lateralis, parvus; theca parva, breviter pedunculata. Peristomium simplex, externum, vel cum interno plus minus evolutum. Calyptra parva, latere fissa.

**M. STRATOSUM**, sp. n. Dioicum; caulis procumbens, subpinnatus; folia laxè inserta, compressa, lateralia, patentia, elliptico-lanceolata, subacuminata, superiora ovali-oblonga acuta, inferiora lanceolata, omnia integerrima concava, marginibus subplanis, cellulis elongatis, alaribus 3–5; perichætialia erecta, lanceolata, denticulata; theca in pedunculo brevi, ovalis, inclinata; calyptra apice scabra.

*Hab.* Tutuila. No. 27.

In size less than *M. microcarpum*, and differing from it in inflorescence and perichætial leaves.

**M. MICROCARPUM**, *Harvey in Hook. Icon. Pl. Rar. t. 24. f. 12* (Pterogonium).

*Hab.* Tutuila, on the bark of orange-trees (600 ft.). No. 36.

**M. INTXTUM**, sp. n. Dioicum; caulis subpinnatim ramosus, in cæspitem latum depressum intextus; folia sursum secunda, patentia, ovato-oblonga, acuta, concava, marginibus late recurvis integerrimis, cellulis oblongis ovalibusque, alaribus pluribus, parvis per folii basis latitudinem dispositis; perichætialia lanceolata, obtusiuscula, serrulata; theca in pedunculo brevi rubro, ovalis, inclinata, operculo conico brevirostro; peristomium simplex; calyptra scaberrima.

*Hab.* Manua, on bread-fruit trees (500 ft.). No. 42.

Obscure fulvous green, rather rigid, closely interwoven into extensive patches. It is very much less than *M. microcarpum*, and differs from it in the dicocious inflorescence and incomplete peristome.

**PHILONOTIS ASPERIFOLIA**, sp. n. Dioica; caules humiles, graciles, in cæspites latos aggregati; folia patentia, ovato-lanceolata, ramea magis

oblongo-lanceolata, omnia nervis dorso superne serratis percurrentibus, marginibus anguste recurvis serrulatis, cellulis pellucidis, superioribus oblongis, inferioribus subquadratis; perichætialia longiora, a basi latiora, subulata, serrulata; theca in pedunculo elongato, subglobosa, inæqualis, horizontalis, plicata, operculo depresso conico; peristomium depressum, internum externumque dentibus fere lævibus; flos masculus parvus, foliis a basi rotundata subulatis erectis.

*Hab.* Tutuila, on damp earth and on rocks by water-courses (20–100 ft.). No. 28.

Stems from a quarter to half an inch high. Leaves pale green, small and short, very rough from the serratures of the margins and nerve. Seta half an inch long.

Near to the South-American *P. tenella*, C. Müller.

*THUIDIUM EROSULUM*, sp. n. Monoicum; caulis repens, intricatus, bipinnatim ramosus; folia patentia, triangularia, subulato-acuminata, nervo sub apice evanido, marginibus reflexis subintegerrimis, cellulis obscuris, papillis brevissimis; folia ramea ovata acuta ramulinq̄ue ovata obtusiuscula compressa, nervo pallido dorso scabro carinata, marginibus crenulatis, cellulis papillosis obscuris areolata; perichætialia ovata, superne denticulata, exinde longe subulata, anguste attenuata, subintegerrima, nervis percurrentibus; pedunculus elongatus, scaber; theca oblonga, subhorizontalis, operculo subulato; peristomium internum ciliis in unum coalitis.

*Hab.* Tutuila, on stones, rocks, and roots of trees in shady places (10–50 ft.). No. 29. Wakoya, Figi Islands, *Milne*.

This small species resembles very closely in its size and habit, as well as in the colour of its foliage, *Pelekium velatum*; but its fruit and calyptra are as usual in the smaller forms of *Thuidium*.

*T. SAMOANUM*, sp. n. Caules procumbentes, erecti arcuatique, pennæformiter bipinnati; folia caulina appressa, a basi subtriangulati-ovata sensim in acumen ligulatum obtusiusculum producta, lævia, nervo infra apicem evanido, margine crenulato, cellulis rotundis, papillis fere obsolete; perichætialia interna, a basi lata sensim angustata et in acumen elongatum loriforme flexosum obtusum crenulatum producta, marginibus inferne ciliis pluribus elongatis angustis ciliata; theca in pedunculo elongato, cylindræa, arcuata, horizontalis.

*Hab.* Tutuila and Manua, on large stones in gullies (100–2000 ft.). No. 105. Guadalcanar, Solomon Islands, *Milne*. Figi Islands, *Seemann*.

Very distinct from the many allied species in the ligulate apices of its cauline leaves and in the smoothness of those of the ramuli.

*T. RAMENTOSUM*, *Mitten in Bonplandia*, 1861 (Leskea).

*Hab.* Manua, in beds of gullies (1400–1500 ft.). No. 124.

**POROTRICHUM ELEGANTISSIMUM**, sp. n. Dioicum; stipes brevis, foliis paucis patulis ovatis, superne in frondem eleganter plumæformi-bipinnatim ramosam expansus; folia in rami primarii medio compressa, lateraliter patentia, ovata, apice latiuscule acuta, nervo infra apicem desinente, marginibus apice serrulatis, cellulis superioribus rotundis, mediis oblongis, basalibus elongatis; folia ramulina minora, conformia; perichætialia a basi lata, suborbiculata, subulata.

*Hab.* Tutuila, on living trees near Letaumata and elsewhere (1000 ft.). No. 33.

In habit and size resembling *Neckera anacamptolepis*, C. Müller, *Bryol. Javan.* t. 186, but with leaves not undulated.

**PHYLLOGONIUM ANGUSTIFOLIUM**, *Schimp.*

*Hab.* Samoa, on living trees in all the islands, principally in the low woods. No. 35.

Agrees exactly with a specimen from the Marquesas Islands given by Dr. Schimper.

**RHACOPILUM CONVOLUTUM**, C. Müller, *Syn.* ii. p. 13.

*Hab.* Upolu, near Tafuā-ā-Upolu (1000 ft.). No. 39.

All the specimens without fruit, but probably referable to this species.

**R. SPECTABILE**, *Reinw. et Hornsch. Bryol. Javan.* t. 144 et 145.

*Hab.* Tutuila, on trees (2000 ft.). No. 65.

#### POWELLIA, gen. nov.

*Caulis repens. Folia diversiformia, superiora minora, inferiora majora. Fructus lateralis. Theca æqualis, pedunculata. Calyptra latere fissa (lævis?).*

**P. INVOLUTIFOLIA**, sp. n. *Caulis prostratus, repens, ramosus, latere inferiore densissime radiculosus; folia heteromorpha, subsexfaria, seriebus duabus superioribus minoribus ovato-ligulata, obtusa subacutave, sursum patentia recurvave, seriebus inferioribus utroque latere binis lateraliter patentibus divergentibus, paginis eorum superioribus ad caulis latus superius spectantibus, oblonga obtusa obtuseve acuta, apicibus sursum curvatis, statu sicco arcte involuta, margine inferne ad caulis latus superius sinuato-incurvo, ad latus, inferius appressa imbricata, ubique limbo angusto cartilagineo pallidiore superne indistincte serrulato integerrime circumducta, nervo concolori ætate rufescente sub summo apice evanido, cellulis parvis rotundatis utraque pagina papilliferis inde subobscuris viridibus; perichætia e latere caulis superiore orientia, basi radiculosa, foliis erectis ovato-lanceolatis basi truncatis apice acuminatis, vaginulam crassam filis elongatis pellucidis barbatam vix tegentibus, cellulis elongatis areolatis; pedunculus elongatus, crassus, superne trigonus; theca erecta, ob-*

longa, sicca infra os plicata, gymnostoma? basi collo sensim angustato, calyptra angusta lævi pallida filis paucis elongatis pilosa; planta mascula gracilior, floribus parvis gemmæformibus, antheridiis pluribus paraphysibus æquilongis immixtis repletis.

*Hab.* Tutuila, on a Coconut-tree a little inland, Fangasâ Bay (1-2 ft.). No. 43.

Growing in extensive thin mats of a dull green colour, the stems everywhere closely attached to the bark or stone by the abundant rusty-brown roots. The leaves, when dry, uniformly closely rolled inwards towards the stem; in the wet state, from the shortness of those leaves arising from the upperside of the stem, the foliage appears compressed.

This genus agrees nearly with *Rhacopilum*, and must be arranged in the same natural family with it.

#### THYRIDIDIUM, gen. nov.

Caulis repens. Rami erecti, apice fructiferi. Folia basi cellulis hyalinis a superioribus conspicue diversis areolata. Theca æqualis, lævis. Peristomium duplex, externum dentibus 16, internum ciliis totidem, membranæ parum exsertæ impositis, conniventibus, nullisve. Calyptra latere fissa, cuculliformis.—*Codonoblepharum*, Dozy et Molk. Musc. Archip. Ind. p. 95, t. 33. *Calymperes* et *Syrrhopodon* auctorum ex parte.

The group of mosses here proposed to be separated from *Calymperes* and *Syrrhopodon* contains, beside those obtained by Mr. Powell, the East-Indian *T. repens*, Harvey (*Syrrhopodon*), *T. Jungquilianum*, Mitten, Bryol. Javan. t. 46 (*Syrrhopodon*), and some others as yet undescribed, all, with the exception of a single South-American species gathered by Mr. Spruce, found in the Indian archipelago and Pacific islands. From *Codonoblepharum*, Schw., founded on *C. Meroziesii*, *Thyrididium* differs in its creeping stems and in the structure of its leaves being similar to that of *Calymperes* and *Syrrhopodon*.

**T. CONSTRICTUM**, *Sull. Amer. Expl. Exp.* p. 6, t. 3. f. A.

*Hab.* Tutuila, on trees. No. 49.

Remarkable for its tristichous leaves; the fruit is still unknown.

**T. LUTEUM**, sp. n. Rami elongati; folia a basi brevi erectiore, ad insertionem constricta, superne parum latiora, patentia, sicca contorta subsecunda, linearia, elongata, sensim acuminata, nervo percurrente, margine undulata, serrulata, limbo inferne latiore, infra apicem evanido, cellulis hyalinis spatium parvum occupantibus, reliquis omnibus

parvis anguloso-rotundatis obscuriusculis, papillis inconspicuis parietibus pellucidioribus; perichætalia erectiora, caulinis similia; theca in pedunculo brevi, cylindracea.

*Hab.* Tutuila. No. 106. Ovolan, Figi Islands, on stones in the mountains, *Milne*.

A little more slender than *T. fasciculare*, with narrower leaves, scarcely dilated at the base, and when dry more loosely contorted and subsecund.

*T. FASCICULATUM*, *Hook. et Grev.* (*Syrhropodon*), *Schw.* t. 299.

*Hab.* Tutuila, on cocoanut-trees near the sea-level. No. 112.

The branches of this fine species are from 1 to 3 inches long; and the plant appears to grow in large tufts. The fruit has only been seen on Dickson's original specimens. The calyptra is long; and although it may clasp the base or neck of the capsule as it does in some species of *Syrhropodon* occasionally, it is very different from the plicate calyptra of *Calymperes*.

*T. CRASSINERVE*, sp. n. Rami humiles, dense cæspitosi; folia a basi dilatata erecta subrotundata, subito contracta, patentia, oblonga, apice obtusa obtuseve acuta, nervo infra apicem abrupto, dorso lævi, interdum valde incrassato, marginibus integerrimis, limbo angusto subconcolori inconspicuo ultra folii medium producto, cellulis hyalinis partem folii rotundatam erectam totam occupantibus, superioribus rotundatis obscuris minute papillois; folia anomala apice longiora acuminata, corpuscula septata in glomerulis satis magnis ferentia.

*Hab.* Tutuila, on bark. No. 129.

Branches 3 or 4 lines high. Leaves short, incurved when dry. In size this species agrees with *T. repens* of the East Indies.

*CHÆTOMITRIUM FRONDOSUM*, sp. n. Rami elongati, ramulis brevibus irregularibus pinnatim ramosi; folia compressa, lateralia, patentia, oblonga, sicca longitudinaliter undulata, breviter acuminata, superne infra apicem excavata, margine apiceque planato flexuoso denticulatis, illo a medio usque ad basin anguste reflexo integerrimo, nervis brevibus, cellulis angustis dorso versus folii apicem finibus aculeiformibus extantibus; perichætalia conformia, plicata, superne denticulis ciliatis; pedunculus elongatus, basi nudus, superne setulis divaricatis vestitus; theca oblonga, inclinata, ætate pendula, operculo subulato; calyptra setis brevibus obtecta.

*Hab.* Tutuila, on trees by the ascent to Matafao (1500–2000 ft.). No. 68.

Pale, shining, straw-coloured, growing in loose tufts, the branches about 2 inches long. This fine species differs from *C. speciosum*, *Sull. Amer. Expl. Exped.* p. 23, t. 23, in its elongate pinnate branches and setose fruit-stalk.



**C. DEPRESSUM**, sp. n. Caulis repens, ramis brevibus dense insertis pinnatus, depresso cæspitosus; folia patentia, anguste ovato-lanceolata, acuta, parum concava, margine inferne anguste reflexo serrulato; ramea lineari-lanceolata, excavata, marginibus recurvis serrulatis, apice plana, cellulis angustis finibus prominulis papillosa, nervis brevibus; perichætialia majora, erecta, lanceolata, sensim acuta, profunde plicata, marginibus creberrime denticulatis; theca in pedunculo breviusculo rubro papilloso scabro, ovalis, inclinata, collo elongato, ore inæquali, operculo longe subulato; peristomium internum processibus angustis perforatis fuscis in membrana ad tertiam partem dentium longitudinis exserta insidentibus; calyptra apice setosa, basi ramentis barbata.

*Hab.* Tutuila, trees in low shady woods. No. 81. Very rare, only once found.

Near to *C. rugifolium*, Sull. Amer. Expl. Exped. 1859, p. 23, t. 22 (*Holoblepharum*); but the seta is not hispid, and the habit appears to be more depressed.

**CALLICOSTELLA PAPILLATA**, *Mont. Ann. des Sc. Nat.* 1845, p. 93 (Hookeria).—Hookeria oblongifolia, *Sull. in Proceed. Amer. Acad. of Arts and Sc.* 1854.

*Hab.* Tutuila, on trees by the ascent to Matafao (1500–2000 ft.). No. 69.

#### CALYPTOTHECIUM, gen. nov.

Caulis primarius repens, ramos elongatos liberos basi substipitados inde ramulis breviusculis bipinnatos ex apicibus productis proliferos prodens. Folia lata, plus minus compressa undulataque, cellulis angustis areolata, nervo debili evanescente. Fructus e partibus ulterioribus ramorum ramulorumque oriens. Theca æqualis, fere sessilis, perichætio immersa, peristomio processibus angustis in membrana brevi insidentibus apices dentium superantibus. Calyptra parva, basi integra.

**C. PRÆLONGUM**, sp. n. Dioicum; rami rubri, basi simplices, superne in frondem elongatam plumæformiter sensim decrescenter pinnatam divisi; folia subbifaria, compressa, transverse undulata, lateralia, patula, e basi cordata, auriculis circinatis undulatis caulem amplectentibus, ovato-ligulata, apice acuta subacuminatave, plus minus complicata, in ramulis excavata, omnia nervo angusto tenui ad medium producto vel abbreviato fere obsoleto, marginibus apicem versus serrulatis, cellulis superioribus elongatis, basi paucis latioribus, parietibus hic illic interruptis; perichætialia interna erecta, a basi ovali convoluta, subulata, nervata, apicibus subintegerrimis; theca ovalis, immersa, peristomio dentibus angustis, processibus filiformibus æquilongis, in membrana brevissima impositis.

*Hab.* Upolu, on trees. No. 102. Also in the Society Islands, *Bidwell in herb. Hooker.*

Branches a foot long; sometimes they are even a foot and a half, the lateral branchlets rarely exceeding an inch in length. Leaves green and shining.

This fine moss comes near to the *Hypnum duplicatum*, Schw. t. 279; but its leaves are more widely auriculate, and the perichæatial leaves more closely convolute; with a few other species found in India and the Indian archipelago, it forms a small group having at first sight so much the appearance of the larger species of *Neckera* as to be easily confounded with them.

*PTEROBRYUM CYLINDRACEUM*, *Mont. Ann. des Sc. Nat.* 1848, p. 109.  
*Hab.* Tutuila, near Letaumata (1000 ft.). No. 72.

*DISCOPHYLLUM*, gen. nov.

Caulis procumbens repensve, ramos in cæspitem depressum congestos emittens. Folia diversiformia, nervo singulo evanescente, cellulis rotundo-hexagonis areolata. Fructus e caule oriens. Theca in pedunculo elongato, ovalis, horizontalis pendulave, operculo acuminato rostrato, peristomio dentibus externis stratu cellularum exteriori inferne per lineam mediam divisio, processibus internis carinatis in membrana insidentibus. Calyptra basi multifida.

*D. FLAVESCENS*, sp. n. Pusilla, cæspitosa; folia fere omnia magnitudine et forma similia, subcompressa, obovata, apiculata, marginibus flexuosis, limbo tenui circumductis, nervo angusto ad  $\frac{1}{4}$  folii longitudinis producto, cellulis hexagonis pellucidis.

*Hab.* Upolu, on trees. No. 93.

In size similar to *D. adnatum*, H. f. et W., of New Zealand, but less compressed and of a yellow colour. The leaves are not perceptibly different in size and form on the upperside, as is so generally the case in the allied species. In habit it appears to correspond with *D. Dicksoni*, H. f. et W. (*Hookeria*).

*DISTICHOPHYLLUM*, Dozy et Molck.

*D. VITIANUM*, *Sull. in Proceed. Amer. Acad. of Arts and Sciences*, 1854.

*Hab.* Tutuila and Upolu, on stones and roots of trees (1000 ft.). No. 94.

*LEUCOBRYUM*, Hampe.

Sect. *Pegophyllum*.

Fructus in ramulo brevi, lateralis.

*L. SANCTUM*, *Hampe, Bryol. Javan.* t. 12.

*Hab.* Upolu, on trees (1200 ft.). No. 82.

*L. RUGOSUM*, sp. n. Folia dense inserta, pentasticha, a basi erectiore excavata, lanceolata, sensim longe angustata, marginibus incurvis canaliculata, acuta, patentia, dorso parietibus cellularum prominentibus subdentata, cellulis basi in parte erectiore ad margines in seriebus circiter 9-10 dispositis (folii lamina), in parte superiore obsoletis.

*Hab.* Manua, on trees. No. 101.

Like *L. sanctum* in size and habit, but a little more rigid, and with its leaves tinged with a pale yellowish green. From *L. pentastichum*, Dozy et Molk. Bryol. Javan. t. 15, it differs in its leaves being narrowed above and below, with a more evident border of the lamina.

*LEUCOLOMA TENUIFOLIUM*, sp. n. Folia sensim a basi elliptico-lanceolata longe angustata, attenuata, nervo pallido usque ad apicem minute denticulatum a folii lamina distincto, cellulis in folii medio minutissimis rotundatis obscuris, dorso minute papillois, latitudinis folii  $\frac{2}{4}$  occupantibus, cellulis ad folii margines elongatis angustis, limbo hyalino usque ad folii longitudinis medium producto, cæterum *L. molli* simile.

*Hab.* Tutuila and Upolu, on trees. No. 98.

This species appears to have longer leaves than *L. molle*, C. Müller, Bryol. Javan. t. 53 (*Dicranum*), and the cells next the nerve in the middle of the leaf about half as large as in that species, and less evidently papillose on the back.

*CALOMNION DENTICULATUM*, sp. n. Folia lateralìa, omnia superficialibus superioribus ad idem latus spectantia, patentia, oblonga, nervo in mucronem excurrente, marginibus a medio ad apicem usque denticulatis; folia media appressa, dimidio breviora, suborbiculata, superne dentata; folia omnia cellulis parvis rotundatis interstitiisque pellucidis; perichætialia longiora, spathulata lineari-lanceolataque; theca in pedunculo gracili, ovalis, erecta, operculo subulato. Planta mascula flore apicali gemmiformi.

*Hab.* Upolu, on trees. No. 103.

Corresponding in size, habit, and appearance with *C. lætum*, Hook. f. et Wils. Fl. New Zealand, pl. 87. f. 5, but with denticulate leaves, and the capsule appears to have a smaller mouth. Both species of this curious genus are remarkable for their elegant form and the firmness of their foliage.

*HYPNODENDRON SAMOANUM*, sp. n. Folia compressa, quinquieseriata, seriebus duabus inferioribus majoribus, superioribus tribus minoribus, omnia ovato-lanceolata, acuta, planiuscula, nervo superne dorso denticulato percurrente, marginibus denticulis brevibus duplicatis serratis, cellulis elongatis finibus dorso prominulis punctulato-papillatis.

*Hab.* Tutuila, on trees and rocks in the beds of gullies (100-2000 ft.). No. 107.