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Mosses of Upolu, Western Samoa

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Between 1953 and 1955 Mr. M. G. Irwin, temporarily residing in Apia, made extensive collections of mosses from numerous localities on the island of Upolu.¹ This series, aggregating more than 400 numbers, represents 121 species distributed among 65 genera. It provides a comprehensive idea of the local moss flora and should afford a reasonable basis for any future study of the Samoan flora.

Included in the following list is one new species and numerous additions to the local flora some of which were previously known only from distant areas. As might be expected, the Fijian elements are broadly represented and emphasize again the close relationship of these two island groups. Another small but instructive series including *Syrrhopodon ciliatus*, *Calymperes Bescherellei*, *Distichophyllum Mitlenii*, and *Stereodontopsis flagellifera* shows a definite bond with the regions far to the west.

A complete series is in my herbarium, and Mr. Irwin plans to provide a representative collection for the herbarium of Bernice P. Bishop Museum.

FISSIDENTACEAE

Fissidens dealbatus J. D. Hooker and Wilson.

Valley of upper Vaisingano River, earth bank, 350 meters, nos. 324, 348.

New to Samoa. Known previously from Fiji and New Zealand.

¹ One species in this report is recorded as collected on the island of Savaii.

The occurrence of this unique species in Samoa and Fiji shows a broad leap in geographical distribution of a supposed New Zealand endemic, but it may turn up in the intervening regions.

Fissidens daltoniaefolius C. Müller.

Valley of upper Vaisingano River, earth bank, 350 meters, *no. 349* ;
Apia, Leififi, education compound, concrete step, 10 meters, *no. 364*.

Fissidens Zollingeri Montagne.

Apia, Leififi, education compound, 10 meters, tree root, *no. 286*.
New to Samoa. Known previously from Tahiti, Fiji, the Philip-
pines, Java, Sumatra, Hongkong, and the Andaman Islands.

Fissidens mangarivensis Montagne.

Bank of Vargafa [Vaigaga?] Stream, south side of Mafa Pass,
rock, 280 meters, *no. 240*.

Fissidens sylvaticus Griffith.

Near top of Mafa Pass, earth bank, 250 meters, *no. 66*. Upper
Vaisingano River, wet stone, 300 meters, *no. 101*. Afiamalu, rock, 730
meters, *no. 166*. Mount Vaea, trail to Robert Louis Stevenson's tomb,
decaying rock, 320 meters, *no. 306*.

Fissidens vitiensis Dixon.

Near top of Mafa Pass, earth bank, 250 meters, *no. 65*.

Fissidens Nadeaudii Bescherelle.

Afiamalu, wet rocks, 720-730 meters, *nos. 36, 172*.

DICRANACEAE

Trematodon longicollis Michaux.

Vailili Plantation, clay cliff, 10 meters, *no. 11*. Mafa Pass, clay
bank, 100 meters, *no. 83*. Upper Vaisingano River, clay bank, 300
meters, *no. 105*.

Dicranella pycnoglossa (Brotherus) Brotherus.

East of Apia, clay bank, 10 meters, *no. 12*. Mafa Pass, clay bank,
100 meters, *no. 82*.

Campylopodium euphorocladum (C. Müller) Bescherelle.

One mile from Falevao Bridge, clay bank, 40 meters, *nos. 9, 10*.
Near top of Mafa Pass, clay bank, 250 meters, *no. 67*. Valley of upper
Vaisingano River, clay bank, 300 meters, *no. 347*.

Wilsoniella Jardinii (Schimper) Bescherelle.

Near top of Mafa Pass, clay bank, 250 meters, *nos. 61, 81*. Upper Vaisingano River, clay bank, 300 meters, *nos. 104, 343*. Roadside west of Lalomanu, earth bank, *no. 434*.

Campylopus flexipilis Dixon.

Afiamalu, branch of tree, 720 meters, *no. 195*.

New to Samoa. Previously known only from Fiji.

Campylopus samoanus Brotherus.

Afiamalu, rock in stream bed, 700 meters, *no. 289*.

Known only from Samoa and Fiji.

Leucoloma tenuifolium Mitten.

Afiamalu, tree trunk, 720 meters, *no. 164*.

Dicranoloma Braunii (C. Müller) Paris.

Afiamalu, tree trunk, 720 meters, *no. 140*.

LEUCOBRYACEAE

Octoblepharum albidum Hedwig.

Fagalii Village, decaying log, 220 meters, *no. 73*. Malololelei, rubber tree, 600 meters, *no. 332*.

Leucobryum samoanum Fleischer.

Afiamalu, rotting log, 700 meters, *no. 356*; tree trunk in clearing, 720 meters, *no. 313*.

Leucobryum Teysmannianum Dozy and Molkenboer.

Afiamalu, tree trunk, 720 meters, *no. 330*.

Leucophanes pungens Fleischer.

Afiamalu, tree trunk, 720 meters, *no. 33*. Near top of Mafa Pass, earth bank, 250 meters, *no. 71*. Fagalii Village, decaying log, 220 meters, *no. 77*. Valley of upper Vaisingano River, tree trunks, 300 meters, *nos. 86, 107, 108, 109*. Coast west of Lalomanu, coconut trunk, *no. 430*.

Leucophanes candidum (Hornschuch) Lindberg.

Valley of upper Vaisingano River, tree trunks, 300 meters, *nos. 84, 85-94*. Afiamalu, tree trunks, 720 meters, *nos. 145, 202*.

Leucophanes smaradginum (Mitten) Paris.

One and one-half kilometers east of Matautu Village, Lefaga Bay, coconut tree, sea level, *no. 248*. Near Fahlatai [Falelatai?] tidal swamp, sea level, *no. 293*.

Exodictyon scabrum (Mitten) Cardot.

Top of cross island road, base of tree, 320 meters, *no. 13*. Fagalii Village, decaying log, 220 meters, *no. 76*. Afiamalu, tree trunks, 700-720 meters, *nos. 146, 329*.

Exodictyon dentatum (Mitten) Cardot.

Near Vargafa [Vaigaga] Stream, south of Mafa Pass, tree trunk, 300 meters, *no. 225*. Near top of Mafa Pass, tree trunk, 270 meters, *no. 261*. Mafa Pass, tree trunk, 300 meters, *no. 337*. Afiamalu, tree trunk, 720 meters, *no. 314*.

CALYMPERACEAE

Syrrhopodon Banksii C. Müller.

At bottom of extinct crater, south of Afiamalu, tree trunk, 760 meters, *no. 422*.

Syrrhopodon glaucovirens Mitten.

Tidal swamp near Falelatai Village, sea level, on mangrove tree, *no. 292*.

Syrrhopodon ciliatus Schwaegrichen form **pseudopodianus** Fleischer.

Fagalii Village, decaying log, 220 meters, *no. 74*. Afiamalu, humus at base of bamboo, 720 meters, *no. 176*. Mafa Pass, decaying log, 300 meters, *no. 336*.

Fleischer originally described this form from Buitenzorg and the Botanical Garden in Singapore where it had probably been introduced. Its occurrence in Upolu in native habitats indicates that Samoa may be the actual source of this characteristic form.

Syrrhopodon croceus Mitten.

Matautu Village, Lefaga Bay, coconut tree, sea level, *no. 6*. Muli-vai Village, coconut tree, sea level, *no. 19*. Afiamalu, tree trunk, 720 meters, *nos. 196, 269*. Mafa Pass, tree trunk, 300 meters, *no. 335*. Near Fahlatai [Falelatai], tidal swamp, mangrove tree, sea level, *no. 294*.

Syrrhopodon Mulleri (Dozy and Molkenboer) Lacoste.

Near top of Mafa Pass, tree trunk, 270 meters, *no.* 262.

Thyridium constrictum (Sullivant) Mitten.

Tidal swamp near Falelatai Village, mangrove tree, sea level, *no.* 296. Fagalii Village, decaying log, 220 meters, *no.* 75. Mulivai Village, coconut tree, sea level, *no.* 20. Matautu Village, Lefaga Bay, coconut tree, sea level, *no.* 4.

Thyridium fasciculatum Hooker and Greville.

Afiamalu, on twig, 720 meters, *no.* 198. Upper Vaisingano River, tree trunk, 230 meters, *no.* 339. Matautu Village, Lefaga Bay, coconut tree, sea level, *no.* 125. South side of Mafa Pass, tree trunk, 250 meters, *no.* 425.

Calymperes tenerum C. Müller.

Mulivai Village, coconut tree, sea level, *no.* 23. Apia, Leififi, education compound, tree trunk, 10 meters, *no.* 223. One and one-half kilometers east of Matautu Village, Lefaga Bay, rock, sea level, *nos.* 244, 246. Saluafata Village, coconut tree, sea level, *no.* 80.

Calymperes Aongstroemii Bescherele.

Matautu Village, Lefaga Bay, coconut tree, sea level, *no.* 122.

Calymperes Bescherelei Fleischer.

One and one-half kilometers east of Matautu Village, coconut tree, sea level, *nos.* 120, 245, 247. Apia, coconut tree, 10 meters, *no.* 283. Tidal lagoon near Falelatai, on mangrove tree, sea level, *no.* 295. Near Samatau Village, coconut tree, sea level, *no.* 298. Lefaga Bay, coconut tree, sea level, *no.* 282.

Savaii: Aopo District, rock, *no.* 212.

New to Samoa. Previously known from Java and Sumatra.

Numerous collections suggest a rather frequent distribution on Upolu. The material is identical with that of Fleischer (Musci Frond. Archipelagi Indici No. 65) and again brings into focus the easterly trend of the southwestern Pacific moss flora.

Calymperes chamaeleontum C. Müller.

Tidal swamp near Falelatai Village, on mangrove tree, sea level, *no.* 291.

Calymperes moluccense Schwaegrichen.

Saluafata Village, coconut tree, sea level, *no. 79*. Mulivai, coconut tree, sea level, *no. 57*.

Calymperes tahitense (Sullivant) Mitten.

Malololelei, decayed rock, 600 meters, *no. 192*. Matauta Village, Lefaga Bay, damp rock, sea level, *nos. 126, 253*. Near top of Mafa Pass, tree trunk, 270 meters, *no. 259*.

POTTIACEAE

Anoetangium tapes Bescherville.

Upper Vaisingano River, rock cliff, 180 meters, *no. 342*.

Hymenostomum edentulum (Mitten) Brotherus ? (sterile).

Upper Vaisingano River, rock cliff, 180 meters, *no. 341*.

Hyophila involuta (Hooker) Jaeger.

Near Samatau Village, rock wall, *no. 299*. Lufilufi Village, Piula College compound, rock wall, 10 meters, *no. 258*. West of Solosolo, concrete bridge foundation, sea level, *no. 256*. Apia, Motootua, concrete block, 15 meters, *no. 222*. Apia, Malifa, education compound, damp earth, *no. 149*. Mount Vaea, track to Robert Louis Stevenson's tomb, 300 meters, rock, *no. 305*. Tomb of Stevenson on top of Mount Vaea, 400 meters, *no. 310*.

Barbula leucobasis Dixon, form.

Upper Vaisingano River Valley, earth bank, *no. 322*.

New to Samoa. Previously known only from Fiji.

In the Samoan plants the leaves are 2 to 3 mm. long, but otherwise there seems to be no substantial difference.

BRYACEAE

Brachymerium melanothecium (C. Müller) Jaeger.

Upper Vaisingano Bridge, Apia, stone retaining wall, 12 meters, *no. 220*. West of Solosolo Village, on concrete bridge, sea level, *no. 257*.

I doubt that this is anything more than a synonym of *B. indicum* (Dozy and Molkenboer) in *Bryologia Javanica*.

Bryum nitens J. D. Hooker.

Mulivai, base of coconut tree, sea level, *no. 59*. Bank of Vaigafa [Vaigaga] Stream, south side of Mafa, rock, 280 meters, *no. 241*.

Afiamalu, on stone steps, 720 meters, *no. 46*. Apia, Leifiifi, education compound, damp earth, 10 meters, *no. 152*; Malifa, education compound, damp earth, 10 meters, *no. 148*. Mount Vaea, tomb of Stevenson, base of concrete, 400 meters, *no. 311*.

Bryum chryseuron C. Müller.

Afiamalu, wet rock, 730 meters, *no. 174*. Upper Vaisingano River Valley, earth bank, 350 meters, *no. 321*. Sinfaga Village, rocks, 6 meters, *no. 301*.

New to Samoa. Unrecorded in the regions between Fiji and Samoa and New Zealand and Australia.

Bryum pachythea C. Müller.

Pata Village near Fablatai [Falelatai?], rock in sand, 2 meters, *no. 297*.

Bryum ramosum (Hooker) Mitten.

Afiamalu, rocks, 720 meters, *nos. 27, 35*.

DREPANOPHYLLACEAE

Mniomalia semilimbata (Mitten) C. Müller.

Near top of Mafa Pass, earth bank and tree, 250-270 meters, *nos. 70, 156*. Mulivai Village, coconut tree, sea level, *no. 22*. Matautu Village, Lefaga Bay, coconut tree, sea level, *no. 118*.

CALOMNIACEAE

Calomnium denticulatum Mitten.

Afiamalu, trunk of tree fern, 730 meters, *nos. 175, 315*.

RHIZOGONIACEAE

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

Afiamalu, tree roots and fallen tree trunk, 720 meters, *nos. 31, 319*.

Rhizogonium setosum (Mitten) Mitten.

Valley of upper Vaisingano River, rotting log, 300 meters, *no. 87*. South side of Mafa Pass, tree trunk, 300 meters, *no. 232*. Afiamalu, tree trunk, 720 meters, *no. 32*.

Rhizogonium Graeffeanum C. Müller.

At bottom of extinct crater south of Afiamalu, underside of leaning tree trunk, 760 meters, *no. 423*.

HYPNODENDRACEAE

Hypnodendron samoanum Mitten.

Afiamalu, earth bank and tree root, 700-720 meters, nos. 268, 288.

Hypnodendron subspiniervium (C. Müller) Jaeger.

Mafa Pass, tree trunks and tree roots, 275-300 meters, nos. 7, 226, 338. Afiamalu, decaying log, 720 meters, no. 139.

BARTRAMIACEAE

Philonotis laxissima (C. Müller) Bryologia Javanica.

Apia, Leififi, education compound, damp earth, 10 meters, no. 151.

Philonotis Etessei Brotherus and Paris.

Afiamalu, on stone steps, no. 47. Near top of Mafa Pass, wet rocks and wet clay bank, 230-270 meters, nos. 68, 154. West of Lalomanu, earth bank, sea level, no. 433.

New to Samoa. Known previously from Fiji and New Caledonia.

Philonotis pilifera Dixon.

Afiamalu, wet rocks, 720 meters, nos. 163, 173, 316. Mafa Pass, rocks, no. 242.

New to Samoa. Known previously from Fiji.

Philonotis Vescoana (Bescherelle) Brotherus.

Afiamalu, damp earth and rocks, 720 meters, no. 26.

SPIRIDENTACEAE

Spiridens aristifolius Mitten.

Afiamalu, tree trunks, 720 meters, no. 30.

ORTHOTRICHACEAE

Macromitrium angulatum Mitten.

Afiamalu, tree trunks, 720 meters, nos. 40, 182.

Macromitrium semipellucidum Dozy and Molkenboer.

Siufaga Village, coconut tree, 3 meters, no. 354.

Macromitrium subtile Schwaegrichen.

South side of Mafa Pass, tree trunk, 300 meters, no. 233. Matautui

Village, Lefaga Bay, coconut tree, sea level, nos. 5, 116. Upper Vaisingano River, on fallen twig, 300 meters, no. 95. Afiamalu, tree trunk, 720 meters, no. 129.

Macromitrium incurvifolium (Hooker and Greville) Schwaegrichen.
Afiamalu, tree trunk, 720 meters, nos. 43, 144.

RHACOPILACEAE

Rhacopilum cuspidigerum Schwaegrichen.

In forest about 1.5 kilometers east of Matautu Village, Lefaga Bay, rock, sea level, no. 255. Afiamalu, rock, 730 meters, no. 272. Malololei, decayed rock, 600 meters, no. 191.

Powellia involutifolia Mitten.

Samatau Village, rocks, 6 meters, no. 300.

PTEROBRYACEAE

Endotrichella Irwinii, new species.

Dioica; sat robusta, lutescenti-viridis, inferne fusciscentibus, nitida; caules secundarii usque ad 8 cm. longi, flexuosi, densissime foliosi, complanati, simplices; folia sicca erecto-patentia, humida late patentia, distincte plicata, oblongo-lanceolata, circa 5 mm. longa, 1-1.2 mm. lata, sensim subulato-acuminata, marginibus inferne anguste recurvis, superne distanter et leniter serratis; costa bina, brevissima, indistincta; cellulis angustissime linearibus, basilaribus infimis laxis, luteis, alaribus vix diversis; folia perichaetia interna e basi ovata subulato-acuminata, integra vel superne parce serrata; seta circa 2 mm. longa, laevis, theca suberecta, oblonga, paulum asymmetrica, fuscidula.

Afiamalu, on branch of tree, 720 meters, no. 199, type. South side of Mafa Pass, tree trunk, 300 meters, no. 230.

This species differs from *E. samoana* in the flattened stems with narrower, oblong-lanceolate (not ovate), erect-spreading leaves. *E. Graeffeana* C. Müller of Fiji has the leaves more coarsely serrate above and the upper leaf cells shorter.

Endotrichella samoana (Mitten) C. Müller.

Near top of Mafa Pass, tree trunk, 270 meters, no. 264. South side of Mafa Pass, tree trunks, 250-300 meters, nos. 229, 427. Between Siumu and Poutasi, tree trunks, 50 meters, no. 206.

Garovaglia tahitense Bescherelle.

Afiamalu, tree trunk, 720 meters, no. 53.

Symphysodontella cylindrica (Montagne) Fleischer.

Near top of Mafa Pass, tree trunk, 270 meters, *no. 260*.

Symphysodon vitianus (Sullivant) Brotherus.

Afiamalu, tree trunk, 720 meters, *no. 49*.

METEORACEAE

Papillaria crocea (Hampe) Jaeger.

Afiamalu, tree trunk, 720 meters, *no. 331*.

New to Samoa. Known previously from India, Ceylon, Java, the Philippines, Australia, New Zealand, the Kermadecs, and Fiji.

Papillaria intricata (Mitten) Jaeger.

Fagalii Village, tree trunk, 220 meters, *no. 72*. Afiamalu, tree trunk, 720 meters, *no. 42*; rock wall, *no. 185*.

Aerobryopsis vitiana (Sullivant) Fleischer.

Upper Vaisingano River, tree trunk, 300 meters, *no. 93*.

Aerobryopsis longissima (Dozy and Molkenboer) Fleischer.

Upper Vaisingano River, tree trunk, 300 meters, *no. 92*. Between top of Mafa Pass and crossing of Vaigaga Stream, tree trunk, 300 meters, *no. 243*. Afiamalu, tree trunks, 720-730 meters, *nos. 50, 52, 193, 320*; rock wall, 720 meters, *no. 184*.

Floribundaria aeruginosa (Mitten) Fleischer.

South side of Mafa Pass, tree trunks, 1.5 kilometers, *nos. 224, 236*. East of Matautu Village, Lefaga Bay, tree trunk, sea level, *no. 250*. Afiamalu, tree trunk, 720 meters, *no. 183*. Near top of Mafa Pass, tree trunk, 270 meters, *no. 157*. Upper Vaisingano River, tree trunk, 300 meters, *no. 328*. Top of cross island road, tree trunk, 320 meters, *nos. 358, 362*.

NECKERACEAE

Calyptothecium Urvilleanum (C. Müller) Brotherus.

Upper Vaisingano River, tree trunk, 300 meters, *no. 327*. On hills above eastern branch of Vaisingano River, on way to Fale-o-le-fee, tree trunk, 300 meters, *no. 276*.

Neckeropsis Lepineana (Montagne) Fleischer.

At Fale-o-le-fee in bed of eastern branch of Vaisingano River, tree trunk, 200 meters, *no. 279*. In forest about 1.5 kilometers east

of Matautu Village, Lefaga Bay, tree trunk, sea level, *no.* 249. Near top of Mafa Pass, tree trunk, 270 meters, *no.* 162.

Homaliodendron flabellatum (Smith) Fleischer.

Afiamalu, tree trunks, 720-730 meters, *nos.* 190, 273.

Himantocladium implanum (Mitten) Fleischer.

South side of Mafa Pass, tree trunks, 300 meters, *no.* 227, 231. On hills above eastern branch of Vaisingano River, on trail to Fale-o-le-fee, 300 meters, *no.* 275.

Himantocladium cyclophyllum (C. Müller) Fleischer ?

South side of Mafa Pass, tree trunk, 300 meters, *no.* 235.

Pinnatella mucronata (Lacoste) Fleischer.

Fale-o-le-fee, tree trunk, 200 meters, *no.* 278.

Pinnatella Kuhliana (Bryologia Javanica) Fleischer.

In forest 1.5 kilometers east of Matautu Village, Lefaga Bay, rock, sea level, *no.* 254. Top of cross island road, trunk and roots of tree, 320 meters, *no.* 359. Trail to Fale-o-le-fee, on log, 350 meters, *no.* 281. Bed of eastern branch of Vaisingano River on way to Fale-o-le-fee, tree trunk, 200 meters, *no.* 280.

PHYLLOGONIACEAE

Orthorrhynchium cylindricum (Lindberg) Brotherus.

Top of cross island road, branches of tree, 320 meters, *no.* 360. In forest, 1.5 kilometers east of Matautu Village, Lefaga Bay, tree trunk, sea level, *no.* 251.

HOOKERIAACEAE

Distichophyllum vitianum (Sullivant) Bescherville.

Top of cross island road, rotting log, 320 meters, *no.* 363. Near top of Mafa Pass, damp, shaded bank, 250 meters, *no.* 160. South side of Mafa Pass, tree trunk, 250 meters, *no.* 428. Between Siumu and Poutasi, decaying branch, 50 meters, *no.* 207.

Distichophyllum Mittenii Bryologia Javanica.

Afiamalu, on decaying log and tree branch at ground level, 720 meters, *nos.* 168, 265.

New to Samoa. Known previously from Ceylon, Malay Peninsula, Java, Aneityum, the Philippines, New Caledonia, and Formosa.

Eriopus subremotifolius Brotherus.

Afiamalu, tree trunks and tree branches, 720 meters, nos. 134, 169, 201.

Callicostella papillata (Montagne) Jaeger.

Afiamalu, rotting log, 700-720 meters, nos. 38, 54, 170, 357. Top of cross island road, rotting log, 320 meters, no. 16. Near top of Mafa Pass, decaying log, 250 meters, no. 69. Forest between Siumu and Poutasi, decaying branch, 50 meters, no. 204.

Callicostella vesiculata C. Müller.

Valley of Vaisingano River, decaying logs and branches, 150-300 meters, nos. 60, 90, 99. About 1.5 kilometers from top of Mafa Pass, decaying rock, 270 meters, no. 153.

HYPOPTERYGIACEAE

Hypopterygium debile Reichart.

Afiamalu, rock in forest, 720 meters, no. 267. Upper Vaisingano River bed, rock wall of pool, no. 326.

LEUCOMIACEAE

Leucomium aneurodictyon (C. Müller) Jaeger.

Afiamalu, rotting logs and branches, 720 meters, nos. 25, 56. South side of Mafa Pass, tree trunk, 250 meters, no. 429. Upper Vaisingano River, earth bank, 350 meters, no. 323; wet rock, no. 325. Top of cross island road, rotting log, 320 meters, no. 15; base of tree, no. 14. Near top of Mafa Pass, decaying log, 250 meters, no. 63; tree trunk, 270 meters, no. 158. Forest between Siumu and Poutasi, rock, 50 meters, no. 205.

THUIDIACEAE

Pelekium velatum Mitten.

Apia, Malifa, education compound, bare soil, 10 meters, no. 355. Upper Vaisingano River Valley, wet rocks, 300 meters, no. 111. Matutu Village, Lefaga Bay, coconut tree, sea level, no. 123. Mount Vaea track to Stevenson's tomb, decayed rock, 320 meters, no. 307.

Thuidium samoanum Mitten.

Afiamalu, logs and rocks, 720 meters, nos. 44, 274. Near top of Mafa Pass, tree trunk, 270 meters, no. 159. South side of Mafa Pass,

rocky stream bank, 280 meters, *no.* 237; tree trunk, 300 meters, *no.* 228.

Thuidium cymbifolium (Dozy and Molkenboer) Bryologia Javanica.
Afiamalu, rocks, 720 meters, *no.* 39.

BRACHYTHECIACEAE

Rhynchostegium vitianum Bartram and Dixon.

Upper Vaisingano River, tree branch, log, and stone, 200-300 meters, *nos.* 97, 100, 102. Afiamalu, rock and stream bank, 700-720 meters, *nos.* 290, 317.

Rhynchostegium nigrescens Bescherville ? (scrap).

Near top of Mafa Pass, damp earth, 250 meters, *no.* 161.

ENTODONTACEAE

Entodon Solanderi (Aongstroem) Jaeger.

Rocks beside bathing pool, Vailima, 200 meters, *no.* 303.

SEMATOPHYLLACEAE

Meiothecium Rechingeri Brotherus.

Afiamalu, tree trunk, 720 meters, *no.* 180.

Meiothecium microcarpum (Harvey) Mitten.

Apia, Motootua, Government Hospital, tree trunk, *no.* 221. Malololelei, tree trunk, 600 meters, *no.* 334. Siufaga Village, coconut tree, 3 meters, *no.* 352. Afiamalu, tree trunk, 720 meters, *no.* 179.

Meiothecium intextum Mitten.

Near top of Mafa Pass, branch of tree, 270 meters, *no.* 263. Matautu Village, Lefaga Bay, base of coconut tree, sea level, *no.* 121. North coast, 8 miles east of Apia, tree trunk, sea level, *no.* 437.

Sematophyllum microcladiellum Fleischer.

Mulivai, base of coconut tree, sea level, *no.* 58.

New to Samoa. Has also been recorded from Borneo, Celebes, and New Guinea.

Although sterile, hence questionable, the short, pointed leaves agree well with herbarium material from Siam and Micronesia.

Acroporium subulatum (Hampe) Fleischer ? (sterile).

Afiamalu, tree trunk, 720 meters, *no. 197*.

Acroporium lamprophyllum Mitten.

Afiamalu, tree trunks, 720 meters, *nos. 135, 143*. South side of Mafa Pass, tree trunk, 250 meters, *no. 426*.

Acroporium Lepinei (Bescherelle) Fleischer.

Afiamalu, tree trunks, 720-730 meters, *nos. 34, 133, 270, 318*. Malololelei, tree trunk, 600 meters, *no. 333*.

Acroporium brevisetulum (C. Müller) Jaeger.

Afiamalu, tree trunks, 720-730 meters, *nos. 141, 181, 188, 271*.

Acroporium brevicuspidatum Mitten.

Afiamalu, tree trunks, 720-730 meters, *nos. 57, 186, 189, 194, 203*. At bottom of extinct crater south of Afiamalu, root of tree, 760 meters, *no. 424*.

Trichosteleum hamatum (Dozy and Molkenboer) Jaeger.

Afiamalu, tree trunks, 720 meters, *nos. 136, 137, 142*.

Acanthorrhynchium stigmatum (Mitten) Fleischer.

South side of Mafa Pass, on rock and roots, 300 meters, *no. 234*.

Taxithelium tenuisetum (Sullivant) Mitten ? (scrap).

Matautu Village, damp rock, sea level, *no. 128*.

HYPNACEAE

Stereodontopsis flagellifera Williams.

Upper Vaisingano River Valley, tree trunk, 300 meters, *no. 147*.

The occurrence of this species in Samoa is a remarkable range extension of what has been considered to be a rare Philippine endemic known from only two previous collections. Curiously enough, it has also recently turned up in Papua, New Guinea; so it should be looked for in the intervening regions.

Ectropothecium molle Dixon.

Afiamalu, stream bed, 730 meters, *no. 167*. Bank of Vaigaga Stream, south side of Mafa Pass, rocky bank, 280 meters, *no. 238*. Upper Vaisingano River Valley, wet rock, 300 meters, *no. 115*.

Ectropothecium percomplanatum Brotherus.

Apia, Leifiifi, education compound, shaded ground, 10 meters, *no.* 1. West of Lalomanu, shaded rock, 3 meters, *no.* 432.

Ectropothecium sodale (Sullivant) Mitten.

Afiamalu, rotting logs and tree trunks, 720 meters, *nos.* 24, 28, 41, 48. Upper Vaisingano River, tree trunk, 230 meters, *no.* 340. Top of cross island road, rotting log, 320 meters, *no.* 361. Mulivai Village, base of coconut tree, sea level, *no.* 21. Matautu Village, Lefaga Bay, base of coconut tree, sea level, *no.* 117.

Ectropothecium malacoblastum (C. Müller) Paris.

Upper Vaisingano River Valley, fallen twig, rotting branch and log, wet stone, 300 meters, *nos.* 89, 96, 98, 103. Top of cross island road, earth bank, 320 meters, *no.* 18. Near top of Mafa Pass, rock in spray of waterfall, 250 meters, *no.* 64.

Ectropothecium cyathothecium (C. Müller) Jaeger.

Upper Vaisingano River, tree branch and wet rock, 300 meters, *nos.* 88, 114. Siufaga Village, base of coconut tree, 3 meters, *no.* 353. Near top of Mafa Pass, damp rock, 270 meters, *no.* 155. Afiamalu, decaying log, 720 meters, *no.* 266.

Isopterygium albescens (Schwaegrichen) Jaeger.

Afiamalu, decaying log, 730 meters, *no.* 165.

Isopterygium minutirameum (C. Müller) Jaeger.

Fagalii Village, decaying log, 220 meters, *no.* 78. Apia, Malifa, education compound, damp earth, 10 meters, *no.* 150. Afiamalu, base of bamboo, 720 meters, *no.* 177.

Vesicularia reticulata (Dozy and Molkenboer) Brotherus.

Afiamalu, rotting log, 720 meters, *no.* 37. West of Lalomanu, shaded rock, 3 meters, *no.* 431.

Vesicularia calodictyon (C. Müller) C. Müller.

Top of cross island road, rotting log, 320 meters, *no.* 17.

Vesicularia inflectens (Bridel) C. Müller.

Upper Vaisingano River Valley, wet rocks, 300 meters, *nos.* 110, 112, 113. Vaisingano Valley, rotting log, 150 meters, *no.* 2. One and one-half kilometers east of Matautu Village, Lefaga Bay, sea level, *no.* 252. Afiamalu, damp earth, 720 meters, *no.* 29. Between Siumu and

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Poutasi, rock, 50 meters, *no. 208*. Near top of Mafa Pass, rock at edge of stream, 250 meters, *no. 62*. Matautu Village, Lefaga Bay, damp rock, sea level, *no. 127*. Bank of Vaigaga Stream south of Mafa Pass, rock, 280 meters, *no. 239*.

Taxiphyllum taxirameum (Mitten) Fleischer.

Near eastern branch of Upper Vaisingano River, on way to Faleo-le-fee, on log, 200 meters, *no. 277*.

DIPHYSCIACEAE

Diphyscium submarginatum Mitten.

Afiamalu, rocky bank, 730 meters, *no. 171*.

New to Samoa. This species is a highly local one recorded previously only from the summit of Mount Victoria, Viti Levu, Fiji, where it grows on stones and rocks.

This is a noteworthy addition to the Samoan moss flora.

POLYTRICHACEAE

Pogonatum Graeffeanum (C. Müller) Jaeger.

Afiamalu, decaying rock, 700 meters, *no. 287*; earth bank, 700 meters, *no. 178*. Falevao, 1 mile south, clay bank, 40 meters, *no. 8*. Upper Vaisingano River, clay bank, 300 meters, *nos. 344, 345, 346*. Upper Vaisingano River Valley, clay bank, 300 meters, *no. 106*.