Vol. 36, pp. 169–178 May 1, 1923

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

OCCASIONAL NOTES ON OLD WORLD FERNS,—I.[1]

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Among the collections of ferns received for identification at the National Herbarium there are occasional lots of Old World specimens, among which are noted a few that are of more than ordinary interest. Except when a generic or group revision seemed to require extended treatment, these have usually not been dealt with, the writer's studies having been confined almost wholly to tropical American species. In future, however, minor notes relating to Old World ferns—such as the transfer of species to their proper genus, the occasional description of others as new, the restoration of valid species from synonymy, notable extensions of range for little known species, and inevitable changes of name—will be brought together under the title above. There will be included, also, the publication of new or transferred names made necessary by the rearrangement of material in the Herbarium, especially in a few groups in which the generic nomenclature followed is at variance with that employed in Christensen's *Index Filicum*.

OPHIOGLOSSACEAE.

Ophioglossum angustatum Maxon, nom. nov.

Ophioglossum japonicum Prantl, Ber. Deutsch. Bot. Ges. **1**: 353. 1883; Jahrb. Bot. Gart. Berlin **3**: 327. *pl. 8, f. 29*. 1884. Not *Ophioglossum japonicum* Thunb. 1784, which is *Lygodium japonicum* (Thunb.) Swartz, 1801.

Founded on two collections from Japan, and since discovered in Central China. A recent specimen received at the National Herbarium is from Peitaiho, growing with *Ibidium* sp. in a low situation in sand flats, *Cowdry* 274.

The assignment of a new name is necessary, even under the Vienna Code.

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SCHIZAEACEAE.

Lophidium dichotomum (L.) Maxon.

Acrostichum dichotomum L. Sp. Pl. 1068. 1753.

Schizaea dichotoma J. E. Sm. Mem. Acad. Turin **5**: 422. 1793.

Schizaea cristata Willd. Sp. Pl. **5**: 88. 1810.

In describing the North American Schizaeaceae several years ago[1] the writer restored Richard's genus *Lophidium* (1792), a small group of species that had been reduced to subgeneric rank under *Schizaea* J. E. Sm. (1793). This paleotropic species was there omitted, since only American members of the genus were treated.

POLYPODIACEAE.

Dryopteris transversaria (Brack.) Maxon.

Nephrodium transversarium Brack. in Wilkes, U. S. Expl. Exped. **16**: 187. 1854.

The type of this species, in the U. S. National Herbarium, consists of two sheets, representing a nearly complete frond from Tutuila, Samoan Islands, collected by the Wilkes Expedition. Two additional collections are at hand from Upolu, viz. *C. G. Lloyd* 34 and *Safford* 19. In Christensen's Index Filicum this species is referred doubtfully to *D. pennigera* (Forst.) C. Chr. It bears no very close resemblance to that widely distributed plant, however, though listed by Luerssen among the numerous synonyms of *Aspidium pennigerum.*

Dryopteris setigera (Blume) Kuntze, Rev. Gen. Pl. **2**: 813. 1891.

Cheilanthes setigera Blume, Enum. Pl. Jav. 138. 1828.

Lastrea setigera Bedd. Ferns Br. Ind. Correct. II. 1870. Not *L. setigera* Moore, 1858.

Nephrodium setigerum Baker in Hook. & Baker, Syn. Fil. 284, in part. 1867. Not *N. setigerum* Presl, 1825.

Aspidium uliginosum Kunze, Linnaea **20**: 6. 1847.

Polypodium tenericaule Wall.; Hook. Journ. Bot. Kew Misc. **9**: 353, in part. 1857.

Nephrodium tenericaule Hook. Sp. Fil. **4**: 142, in part. 1862.

Polypodium nemorale Brack. in Wilkes, U. S. Expl. Exped. **16**: 16. 1854.

In a recent large collection of Tahiti ferns by Setchell and Parks there were three specimens belonging to the group of *Dryopteris setigera.* One of these (no. 277) was found to represent *D. setigera* in its strict sense and two (nos. 19 and 237) to belong to the collective species known recently as *D. ornata* (Wall.) C. Chr. The taxonomic history of the group is too involved to be discussed profitably in great detail; yet the main results, including the restoration of a well-marked species founded on Philippine material by Presl, should be recorded.

Dryopteris setigera is here regarded in its usual sense as applying to plants (first described from Java) with smooth shining rachises throughout, these neither muricate nor scaly, and a tuft of lustrous, dark brown, short-ciliate

[1] N. Amer. Fl. **16**: 31–52. 1909.

scales at the base of the stipe. No scales, however reduced, occur upon the rachises or costae. The hairy covering of the pinnules and segments beneath consists of the long, spreading, white hairs common to the group. The indusium is minute and is usually evanescent, either by early shrivelling or by falling away altogether; it is commonly beset with capitate glands at the margin and with few to many fragile white cilia. The indusial characters are variable and difficult to make out, owing largely to age of the specimens; but the distinction of smooth, non-scaly rachises is readily observed at all stages, and plants agreeing thus and in other general characters are at hand from a wide area, as follows:

Java, *Buysman* 73, 175; *Palmer & Bryant* 1325. Sumatra, *Winkler* (Rosenstock 86); *Schild.* British North Borneo, *Topping* 1762. Palawan, *Bermejos* (Bur. Sci. 282). Mindanao, *DeVore & Hoover* 360. Batanes Islands, *Fenix* (Bur. Sci. 3649). Negros, *Elmer* 9893. Luzon, *Cuming* 1; *Merrill* 2266; *Topping* 636, 698, 890, 959. Norfolk Island, *Metcalfe.* Sunday Island, *Cheeseman.* Kakeah Island, *Wright.* Samoan Islands, *McMullin* 29; *Wilkes Exped.* 27 (type of *Polypodium nemorale*). Tahiti, *Setchell & Parks* 277. Oahu, *Hapeman* 6. Formosa, *Nakahara* 51. Japan, *Savatier* 2579. China, *Bailey* 2, 6, 9; *Faber* 680. Ceylon, *Ferguson* 134. India, Pulnies, alt. 1,590 meters, *Levinge.* Assam, *Mann.* Sikkim, *Thomson.* Malay Peninsula, *Norris.* Brazil, *Lüderwaldt* 1862; *Rose & Russell* 19618, 21277; *Haerchen* (Rosenstock 205). Florida, escaped near Oviedo, *A. A. Eaton.*

Thus delimited, *D. setigera* includes *Polypodium nemorale* Brack., of which the Samoan type specimen is at hand; *Aspidium uliginosum* Kunze, described from plants raised from spores received from Java; and a part of the specimens listed by Hooker in describing *Polypodium tenericaule* Wall.[1] and again cited by him under *Nephrodium tenericaule* Hook.

In distinction from *D. setigera* there is a large series of specimens in which the rachises, or at least the secondary and tertiary ones, are at first erinaceo-paleaceous and at all stages are distinctly tuberculate or muricate. These are found to pertain to two well-marked species, *D. ornata* and *D. leucolepis*, which have been greatly confused.[2]

Dryopteris ornata (Wall.) C. Chr. Ind. Fil. 281. 1905.

Polypodium ornatum Wall.; Hook. Journ. Bot. Kew Misc. **9**: 354. 1857.

Nephrodium tenericaule Hook. Sp. Fil. **4**: 142, in part. 1862.

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[1] *Polypodium tenericaule* is actually founded on a specimen from China, collected by Alexander. Through the courtesy of the Director of the Royal Gardens, Kew, it has been possible to examine a portion of this, as also of a Wallich specimen from the "mountains of Sylhet," cited by Hooker. Both are minutely indusiate and pertain undoubtedly to *D. setigera*, of which *P. tenericaule* thus becomes a synonym. The Philippine plants cited by Hooker are discussed hereafter, under *D. leucolepis*.

[2] Another name to be considered in this connection is *Cheilanthes stenophylla* Kunze (Bot. Zeit. **6**: 212. 1848), founded on *Zollinger* 2675, from Java. This is cited as a synonym of *D. setigera* by Christensen, a disposition which from the description of the rough subaculeate rachis is obviously incorrect. Several details, especially the coriaceous texture, indicate that it is not *D. leucolepis*, and it may not even be a species of *Dryopteris*. Kunze regarded it as allied to *Cheilanthes pallida* Blume, which is now referred to *Hypolepis tenuifolia*.

Though included in Wallich's list (1828) as a *nomen nudum*, *Polypodium ornatum* appears to have been actually described first by Hooker, in 1857, Wallich's no. 327, from Nepal, being the first specimen cited. It was later described and illustrated by Beddome.[1] The descriptions agree, and special attention should be called to the character of *muricate or aculeolate* rachises, stated by both. This at once sets the species apart from *D. setigera*. Beddome's plate is excellent. But in 1862 Hooker merged *P. tenericaule* and *P. ornatum* with the Philippine plant described by Presl as *Lastrea leucolepis*, assigning to this aggregate the name *Nephrodium tenericaule;* his description actually includes three species, *D. leucolepis*, *D. ornata*, and *D. setigera*[2], but his illustration (*pl. 269*) represents *D. ornata* or *D. leucolepis*, probably the latter.

Of *D. ornata* four specimens are at hand, three collected in Sikkim, at 600 to 1,500 meters elevation by Sir Joseph Hooker, distributed as *Polypodium ornatum;* the fourth from the Khasi Hills, Assam, alt. 1,200 meters, August, 1885 (*G. Mann*, collector), distributed as *Phegopteris ornata*.

From *D. leucolepis* this species differs not only in its horizontally spreading pinnae, pinnules, and segments, but in the complete suppression of indusia and in the nearly or quite non-ciliate scales of the secondary rachises, costae, and costules. The scale character is discussed under the next species.

Dryopteris leucolepis (Presl) Maxon.

Lastrea leucolepis Presl, Epim. Bot. 39. 1851.

Polypodium tenericaule Wall.; Hook. Journ. Bot. Kew Misc. **9**: 353, in part. 1857.

Nephrodium tenericaule Hook. Sp. Fil. **4**: 142, in part. 1862.

Polypodium pallidum Brack. in Wilkes, U. S. Expl. Exped. **16**: 18. 1854.

In describing for the first time (1857) *Polypodium tenericaule*, listed by Wallich as a *nomen nudum*, Hooker based his description on a Chinese plant collected by Alexander, now called *D. setigera* (at that time not known to him through specimens under its original name, *Cheilanthes setigera*). Strangely enough, he included also many very different specimens with muricate rachises. Thus, of Cuming's Philippine plants he cites nos. 1, 75, 114, 212, 355, and 412. All but one of these are in the U. S. National Herbarium. No. 1 is clearly *D. setigera*; nos. 75, 114, 355, and 412 are the plant described by Presl as *Lastrea leucolepis*, founded on no. 114 (the only number cited), with muricate rachises bearing minute, linear, true scales nearly throughout. It is very improbable that all these numbers were mixed in the sets distributed, yet Hooker's failure to note the actual distinctions is otherwise hard to explain. The ample Philippine material at hand indicates a plant much stouter in every way than *D. setigera*, the dimensions being similar to those of *D. ornata*. The rhizome scales are not

[1] Ferns Southern India 56. *pl. 171.* 1863–65.

[2] *Dryopteris setigera* was taken up by Hooker as *Hypolepis setigera* (Sp. Fil. **2**: 62. 1852), the description being merely a quoted translation of Blume's diagnosis of *Cheilanthes setigera*. Specimens bearing this name were evidently not available to him and none were cited.

bright brown (as in *D. setigera*), but dirty-white or dull flesh-colored, and similar scales extend upward along the main rachis and even to the minor rachises, all the scales being pale, narrow, and very copiously long-ciliate. In this last character of strikingly long-ciliate scales, as in the presence of small indusia and in the somewhat oblique, narrower, and spaced pinnules, *D. leucolepis* differs constantly from *D. ornata*. The long patent hairs of the under surface are much more numerous, and the plant is more freely hairy above, also. The indusium of *D. leucolepis* is fairly well developed, and though membraneous, and rather completely obscured by the numerous sporangia, is usually evident even at maturity, upon careful dissection; it is provided with numerous long-stalked, capitate, marginal glands, and is without cilia.

The following specimens of *D. leucolepis* are in the National Herbarium: Luzon, *Cuming* 75, 114, 355, 412; *Loher* 1130; *Williams* 558 (5 sheets); *Topping* 171, 178, 441, 757, 964; *Foxworthy* (Bur. Sci. 2580); *Mangubat* (Bur. Sci. 1355). Mindanao, *Copeland* 611; *Williams* 2280. Negros, *Elmer* 9889, 9941. Java, *Buysman* 47, in part. Ternate Island, *Curtis* (2 sheets). Tahiti, *Wilkes Exped.* 32 (type of *Polypodium pallidum* Brack.); *Anderson* in 1852; *Setchell & Parks* 19, 237.

Of these numbers, *Cuming* 75 and 412 were cited by John Smith[1] as *Polypodium trichodes* Reinw., a *nomen nudum*; but *Cuming* 1, also so cited by him, is *D. setigera*, as above stated. Another Luzon plant (*Topping* 171) was mistakenly cited by Christ[2] as *D. flaccida* (Blume) Kuntze, a much smaller species, which wholly lacks scales on the rachises.

Egenolfia sinensis (Baker) Maxon.

Acrostichum sinense Baker, Kew Bull. **1906:** 14. 1906.

Polybotrya sinensis C. Chr. Ind. Fil. Suppl. 57. 1913.

Founded upon *Henry* 12494, from Szemao, Yunnan, of which two specimens are at hand. It is not related closely to *Polybotrya*, but falls readily under *Egenolfia*, being nearest an Assam species that is included in the complex of *E. appendiculata*.

Tectaria gaudichaudii (Mett.) Maxon.

Aspidium sinuatum Gaud. Freyc. Voy. Bot. 343. 1827. Not *A. sinuatum* Labill. 1824.

Aspidium gaudichaudii Mett.; Kuhn, Linnaea **36:** 123. 1869.

The manuscript name *Aspidium gaudichaudii* Mett. was definitely published by Kuhn in the Reliquiae Mettenianae, as above indicated, in comparison with a new species from Tahiti, *Aspidium tenuifolium* Mett. It is primarily a change of name for *A. sinuatum* Gaud., Gaudichaud having wrongly listed Hawaiian plants as *A. sinuatum* Labill., a species of New Caledonia. Under *A. gaudichaudii* Mett. are cited the Hawaiian collections of Brackenridge and of Andersson and, additionally, a single specimen from India. So far as the writer has examined material, *A. gaudichaudii* is confined to the Hawaiian Islands, although Mettenius[3] later cited it from

[1] Journ. Bot. Hook. **3:** 394. 1841.

[2] Philippine Journ. Sci. C. Bot. **2:** 210. 1907.

[3] Novara Exped. Bot. **1:** 219. 1870.

Tahiti. The Hawaiian material at hand was collected by Brackenridge, Copeland, Lichtenthaler, Baldwin, Bartsch (56, 66, 76), and Safford (914, 915, 916).

Tectaria gaudichaudii has usually been listed, under one genus name or another, as *cicutaria* or *apiifolia*. *Tectaria cicutaria* (L.) Copel. and *T. apiifolia* (Schkuhr) Copel. are, however, confined to the West Indies, and offer only a superficial resemblance to the Hawaiian plant under discussion.

Tectaria tenuifolia (Mett.) Maxon.

Aspidium tenuifolium Mett.; Kuhn, Linnaea **36:** 122. 1869.

Described from Tahiti and compared by Mettenius and Kuhn with *Aspidium apiifolium* Schkuhr and *A. gaudichaudii* Mett., that is to say, *Tectaria apiifolia* and *T. gaudichaudii*. From description it appears to be well founded.

Tectaria setchellii Maxon, sp. nov.

Fronds several, recurved-ascending, 70 to 105 cm. long; rhizome woody, decumbent, densely paleaceous at the end, the scales tufted, 10 to 18 mm. long, lance-acicular, hair-pointed, pale brown, membranous, distantly and obscurely fibrillose-denticulate; stipes as long as the blades, dull cinnamon-brown from a darker, lightly crinite base, deeply sulcate on all sides; blades 35 to 50 cm. long, 20 to 45 cm. broad, deltoid-ovate to broadly ovate-oblong, acuminate, once pinnate, the basal and sometimes the second pair of pinnae fully pinnate at base; pinnae 2 to 5 pairs, spreading, the basal pair largest, 15 to 25 cm. long, 10 to 18 cm. broad, deltoid, long-acuminate, inequilateral, petiolate (up to 3 cm.), the basal pair of pinnules petiolate (up to 1 cm.), pinnately lobed or lacerate, the other pinnules or lobes (1 to 3 in number) broadly joined, oblique, subfalcate, sinuate, long-acuminate, often caudate; second pair of pinnae much smaller, sometimes with a pair of free basal pinnules, but usually only pinnately cleft or lobed; upper pinnae lance-attenuate, sinuately lobed to subentire, the uppermost semiadnate to adnate, the apex itself pinnately lobed; midveins elevated; ultimate veins prominulous, the areoles irregularly polygonal, variable in size, the larger ones with included veins; sori usually few, irregularly disposed, round or oblong, the receptacles large; indusia and paraphyses wanting. Leaf tissue membrano-herbaceous, translucent, dull green, paler beneath, glabrous.

Type in the U. S. National Herbarium, nos. 1,051,426 and 1,051,427, a single frond collected beyond Blunt's Point, Tutuila Island, on cliff, July 15, 1920, by W. A. Setchell (no. 360). Other material referable to this species is as follows:

Tutuila: Near village of Niuili, at base of cliff, June 15, 1920, *Setchell* 119. Near Pago Pago, March, 1914, *Stearns;* April, 1915, *McMullin*. Observatory Point, in rich moist soil, May 6, 1914, *McMullin* 27.

Upolu: Precise locality and collector's name not stated, the specimen collected in January, 1885; distributed as "*Bathmium grande* Rchb."

Tectaria setchellii belongs to the subgenus *Arcypteris*, though having little in common with *T. irregularis* (Presl) Copeland, which is the typical

species of that small group, marked by exindusiate sori. Habitally and in its venation it strongly suggests the Polynesian *T. latifolia* (Forst.) Copeland, described by Kunze as *Aspidium forsteri* and redescribed under the latter name by Mettenius. From *T. latifolia* it differs in its fuscous-stramineous or dull cinnamomeous stipes, rachises, and midveins, its fewer pinnules (only the basal ones of the first one or two pairs of pinnae being free), and its non-indusiate and non-paraphysate sori, these large and not infrequently borne two or three together. *T. latifolia* is distinguished by its polished ebeneous vascular parts, its regularly crenate, numerous free pinnules, and its strongly pulvinate-paraphysate sori, to which the minute indusia usually remain attached. Notwithstanding these pronounced differences it is not improbable that some of the material reported from Upolu by Luerssen, Christ, and Rechinger as *Aspidium latifolium* pertains to this species.

In the foregoing it is assumed, perhaps wrongly, that the plant described by Kunze as *Aspidium forsteri* is the same as the original of *Polypodium latifolium* Forst. This is disputed by Presl, who refers Forster's plant to *Phymatodes*. The complicated taxonomic history of this group is discussed at some length by Fournier,[1] following his description of *Bathmium seemanni*, a new species from New Caledonia and Fiji, which is listed by Christensen as a doubtful synonym of *Aspidium latifolium* (*Tectaria latifolia*).

Tectaria stearnsii Maxon, sp. nov.

Fronds several, 70 to 110 cm. long, ascending; rhizome woody, decumbent, densely paleaceous, the scales linear-attenuate, up to 2 cm. long, brown, firm, lustrous, deciduously glandular-ciliate and beset with a few distant, mainly retrorse, linear teeth; stipe a little shorter than the blade, up to 6 mm. thick, dark brown, lustrous, deeply channeled on the anterior face, paleaceous at base, clothed with short spreading septate hairs, these extending to the rachises throughout; blades deltoid-ovate to deltoid-oblong, acuminate, 50 to 80 cm. long; 30 to 60 cm. broad, subtripinnate at base, bipinnate above; main pinnae 7 to 9 pairs, slightly oblique, the basal pair largest, petiolate (1.5 to 2.5 cm.), deltoid, inequilateral, basiscopic, 20 to 30 cm. long, 16 to 25 cm. broad, with 10 or more pairs of pinnules, the basal pair of these petiolate, ovate-oblong, fully pinnate at base, deeply and obliquely pinnatifid beyond, the segments (9 to 14 pairs) broadly joined by an increasing wing, obliquely crenate or crenately lobed; pinnules in general oblong or linear-oblong, acuminate, deeply and obliquely pinnatifid, the segments oblong, rounded at the apex or distally acutish, broadly joined, the proximal basal ones usually reduced, catadromous, usually adnate to the secondary rachis or decurrent; costae densely glandular-puberulent above with septate hairs, a few similar but longer hairs borne on the leaf tissue of the upper surface, along the costules beneath, and upon the margins, especially in the sinuses; leaf tissue membranous; venation prominulous, a single row of elongate areoles borne along the costae of the pinnules and an incomplete row along the costules of the segments; excur-

[1] Ann. Sci. Nat. V. Bot. **18**: 301. 1873.

rent veinlets mostly free; included veinlets none; sori 3 to 7 pairs per segment, nearly medial, dorsal or terminal on the unconnected vein-branches, or terminal on short spurs from the areoles, small, non-indusiate; paraphyses wanting; receptacle small.

Type in the U. S. National Herbarium, nos. 654231 and 654232, comprising a nearly complete frond collected at Fagalu, Tutuila, in rich moist soil, May 10, 1914, by D. J. McMullin (no. 30). Other material at hand is as follows:

Tutuila: Fagasa Trail, June 24, 1920, *Setchell* 227. Trail from Ana to Aafono, June 24, 1920, *Setchell* 208. "Lower level," June, 1920, *Setchell* 40. Near Pago Pago, March, 1914, *Stearns* (4 sheets); April 30, 1914, *McMullin* 11 (2 sheets). Without special locality, *Wilkes Exped.* (as *Sagenia varia* Presl?).

Upolu: Fagaloa Bay, in forest, February 28, 1888, *Safford* 22 (927).

The present species, which appears to be not uncommon in the Samoan Islands, is nearest related to **Tectaria kanakorum** (Fourn.) Maxon,[1] of New Caledonia, a somewhat smaller plant which differs in its dull pale brown stipes and rachises (these densely hairy and bearing numerous linear brown scales), coarser lobation, more hairy under surfaces, and conspicuously indusiate sori. The name is given in honor of Captain Clark D. Stearns, formerly Commandant of the American Naval Station of Tutuila and Governor of American Samoa, through whose personal interest several lots of ferns were sent to the U. S. National Herbarium from Tutuila in 1914 and 1915.

Tectaria stearnsii is one of the forms hitherto included by writers on Samoan ferns under *Aspidium membranifolium* (Presl) Kunze and *Aspidium dissectum* (Forst). Thus, Luerssen,[2] in listing as *A. membranifolium* ten Samoan specimens collected mainly by Graeffe, assumed a species of very wide distribution (Madagascar, the East Indies, Ceylon, the Philippine Islands, and a large part of Oceanica) and included therein plants ranging in venation from free to strongly areolate. This concept is erroneous in several respects, certainly so in its treatment of the Samoan elements.

In the first place, *Nephrodium membranifolium* Presl[3] was described and figured upon a free-veined indusiate plant from Luzon, with which ample Luzon material at hand agrees perfectly (*e. g. Cuming* 249; *Copeland* 1994, 1994a; *Bur. Sci.* 1311, 3655; *Topping* 615, 616, 617, 626, 641, 652, 669, 960, 976, 995). It is regarded by Copeland[4] as synonymous with *Dryopteris dissecta* (Forst.) Kuntze, a disposition which is followed by Christensen and is probably correct. This material is all free-veined, and in most respects is quite unlike Samoan material with either free or anastomosing veins.

Subsequently Christ[5] listed a free-veined Samoan specimen as *Aspidium dissectum,* adding a note upon the "nearly related *Aspidium membrani-*

[1] *Bathmium kanakorum* Fourn. Ann. Sci. Nat. V. Bot. **18**: 301. 1873.
[2] Fil. Graeff. 183. 1874.
[3] Rel. Haenk. **1**: 36. *pl. 5, f. 3.* 1825.
[4] Philippine Journ. Sci. C. Bot. **2**: 418. 1907.
[5] Bot. Jahrb. Engler **23**: 353. 1897.

folium, distinguished by its sinuously joined veins," but citing no Samoan specimen of the latter. He thus followed Beddome in wrongly fixing upon a plant with *Pleocnemia* venation as representing Presl's species. The specimen which he listed as *Aspidium dissectum* is probably like the free-veined element of Luerssen's "*membranifolium.*"

There is at hand a single Graeffe specimen from Upolu, received as *A. membranifolium*. This bears little resemblance to *D. dissecta* (*Aspidium membranifolium*) of the Philippines, except in its free venation. In cutting, it is almost identical with *Tectaria stearnsii;* but it is persistently though minutely indusiate, has the vascular parts more densely and closely puberulent, and differs in other particulars, aside from having wholly free venation. It appears to be a perfect connecting-link between *Dryopteris* and *Tectaria*. Whether it should be taken up as a new species of *Dryopteris*, or as a new species of *Tectaria*, or a free-veined variety of *Tectaria stearnsii* is not clear from the incomplete material available. At any rate, the settlement of this point does not affect the status of *Tectaria stearnsii* as a valid species—the common, typical plant of Samoa, with areolate venation. This has never before been described under a name of its own.

The Wilkes Expedition specimen above cited was discussed briefly by Brackenridge, and listed by Hooker doubtfully under *Polypodium cumingianum* (Presl) Hook., which is *Tectaria irregularis* (Presl) Copeland. It has no relationship with that species, however.