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STUDIES OF FERN TYPES, II

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STUDIES OF FERN TYPES, II

C. V. MORTON

This paper is the second and final part of C. V. Morton's general work on fern types. This work was accomplished in large part through grants from the John Guggenheim Memorial Foundation and the National Science Foundation (grants G-4080 and GB-1243). The first part, "Studies of Fern Types, I" (Contr. U.S. Nat. Herb. 38:29-83, 31 Aug. 1967), included an introduction that provides background for this paper as well; readers may wish to refer to it.

At the time of his death, in July 1972, Mr. Morton had all but completed the present paper. The work is entirely his, except for this introduction and some slight editorial changes that I made in assembling the manuscript for publication.—D. B. Lellinger.

1. ACROSTICHUM NEGLECTUM F. M. Bailey, Trans. Linn. Soc. New South Wales 5:32. 1881. = *Bolbitis neglecta* (F. M. Bailey) Morton, comb. nov.
Leptochilus neglectus (F. M. Bailey) C. Chr. Ind. Fil. 14. 1905.
TYPE: Trinity Bay Ranges, Queensland, Australia, May, 1877, *F.M. Bailey* (isotype BM, Morton photograph 7357).

This species is very different in the cutting of the sterile blades from other Australian species of *Bolbitis*. Apparently it is endemic in Queensland, where it is rare.

2. ACROSTICHUM OBDUCTUM Kaulf. ex Spreng. in L. Syst. Veg. ed. 16, 4:34. 1827.
= *Elaphoglossum lancifolium* (Desv.) Morton, Contr. U.S. Nat. Herb. 38:32. 1967.

TYPE: A renaming of *Acrostichum lancifolium* Desv., and thus based on the same type as that.

It is likely that Kaulfuss intended his *A. obductum* to be based on Mauritius, *Sieber*, Syn. Fil. no. 25, and it has been perhaps generally so considered, although never definitely lectotypified. But when Sprengel published the name he did not mention Sieber or indeed cite any specimens, merely citing *Acrostichum lancifolium* Desv. as a synonym. Since the name *A. lancifolium* was a legitimate and available name, there was no need to propose a different name, *A. obductum*. There is nothing in the original description to suggest that *A. lanci-*

folium was cited as a synonym with an implied query, and so by Art. 63 of the Code the name *A. obductum* must be considered superfluous, and by Art. 7 it must be typified on the basis of the type of the name that ought to have been adopted, thus on the type of *A. lancifolium*. For the plant identified as *Elaphoglossum obductum*, see under *Acrostichum tomentosum* Bory.

3. ACROSTICHUM TOMENTOSUM Bory ex Willd. in L. Sp. Pl. ed. 4, 5:101. 1810.
= *Elaphoglossum tomentosum* (Bory) Christ, Farnkr. 37. 1897.

Acrostichum heterolepis Fée. Mém. Foug. 2:56, t. 15, f. 1. 1845. Based on Bourbon [Réunion], Bory and Sieber, Fl. Mix. 281 (probably also from Réunion). I do not choose to lectotypify it at present.

Elaphoglossum heterolepis (Fée) Moore, Ind. Fil. 10. 1857.

Elaphoglossum obductum sensu auctt. (e.g., Tardieu, Notul. Syst. 16:185. 1960), non *Acrostichum obductum* Kaulf. ex Spreng. See under *A. obductum*.

TYPE: Bourbon Island [=Réunion], Bory. In the Willdenow Herbarium in Berlin there is a single sheet (no. 19508) named *A. tomentosum*, this received from Flügge. I do not believe that Flügge ever collected in Réunion, but he is known to have exchanged plants widely; his specimen of *A. tomentosum* may well have come from Bory. The specimen in the Willdenow Herbarium is poor, just a detached frond, but it agrees well enough with Willdenow's description.

In Madame Tardieu's treatment of *Elaphoglossum* in Madagascar and the Mascarene Islands (Notul. Syst. 15:425-443. 1959), the species *Acrostichum tomentosum* Bory ex Willd. is not placed or mentioned except (p. 429) under *E. obductum* (Kaulf.) Moore, where a synonym is "*A. tomentosum* Bory in herb. (non Willd. Spec.)." If *A. tomentosum* Bory ex Willd is different from *obductum*, then it must be the same as one of the other species treated by Tardieu, since it is from Réunion, and it would very likely be the earliest and thus the correct name for one of them. But this does not seem likely, for there is no a priori reason to think that the Bory specimens in Paris labeled *A. tomentosum* are different from the species described by Willdenow. If they are indeed different, then the proper name for the plant called *E. obductum* by Madame Tardieu will be *E. heterolepis* (Fée) Moore.

4. ADIANTUM CUNEATUM VAR. ANGUSTIFOLIUM Mart. & Gal. Mém. Acad. Sci. Brux. 15:70. 1842 [as "*angustifolia*"]. = *Adiantum andicola* Liebm. Dansk. Vid. Selsk. Skrift. V, 1:266. 1849.

SYNTYPES: Mexico, Galeotti 6266 and 6359. Lectotype: Mount Orizaba, Veracruz, Mexico, 9,500 feet, Galeotti 6266 (BR, Morton photograph 5062). Although Martens and Galeotti cite only two numbers they indicate four localities.

Fournier (Mex. Pl. 128. 1872) did not mention var. *angustifolium* by name, but he cited Galeotti 6266 under *A. multiforme* A. Braun var. β and 6539 under *A. amabile* Liebm. *Adiantum multiforme* A. Braun ex Fourn. (Mex. Pl. 128. 1872) is essentially without a description as a species, although the two varieties are distinguished as var. *a*, pinnis

latioribus, inferioribus aliquando suborbicularibus, and var. β , pinnis angustioribus. Under var. α there are several synonyms, all "sensu" names except *A. extensum* Fée. At the places cited by Fournier (Fée, Gen. Fil. 119. 1852 and Mém. Foug. 9:6. 1857) this name is also a nomen nudum based on *Schaffner* 40 and 41, but the species was validly described in Mém. Foug. 8:72. 1857, based on *Schaffner* 40 and 41 from Orizaba and Huatusco, Veracruz. I do not choose one of these as lectotype at the moment, since I have not seen either specimen; however, *A. multiforme* A. Braun can be considered as validly published, a substitute name for *A. extensum* Fée. As such it is a superfluous and consequently illegitimate name which must be typified on the same types as *A. extensum*, namely *Schaffner* 40 and 41. Under var. β Fournier cited *A. mexicanum* Presl, Tent. Pterid. 158. 1836. From the entry in the "Index Filicum" it would appear that this is a validly published name, but apparently it is only a nomen nudum. Presl gave no description, only referring to *A. cuneatum* Schlecht. (non Langds. & Fisch.), by which he seemingly intended *A. cuneatum* sensu Schlecht. & Cham. Linnaea 5:615. 1830, but in Schlechtendal and Chamisso there is no word of description that might validate the name. Fournier cited also Mettenius, but I do not find any use of the name by Mettenius.

5. ADIANTUM TENERUM VAR. DISSECTUM Mart. & Gal. Mém. Acad. Sci. Brux. 15:71. 1842. = *Adiantum andicola* Liebm. Dansk. Vid. Selsk. Skrift. V, 1:266 (seors. 114). 1849.

TYPE: Oaxaca, Mexico, "terre froide," 8,000 ft. alt., *Galeotti* 6361 (holotype BR, Morton photograph 5063).

6. ASPIDIUM BRACHIATUM Zoll. & Moritzi. Natuur Geneesk. Arch. Neerl. Indië 1:399. 1844. = *Tectaria brachiata* (Zoll. & Moritzi) Morton, comb. nov.

Aspidium zollingerianum Kunze. Bot. Zeit. 4:462. 1846. Syntypes: Java, *Zollinger* 655, 655A. The specimens of these numbers in Geneva (Morton photographs 3803 and 3804 respectively) have the names in Kunze's hand, and are undoubtedly the syntypes. No. 655 is here chosen lectotype, since it is the larger and more mature specimen. The labels of the Geneva specimens lack specific locality data, and consequently Kunze did not cite this. A duplicate of no. 655 in Leiden gives the locality as on calcareous rocks on stream banks near Tjikoya, Java, i.e., the same locality as *A. brachiatum*.

Aspidium variolosum Wall. ex Hook. Sp. Fil. 4:51. 1862. Syntypes: Hooker cites seven syntypes, but since the name is adopted from Wallich, Num. List no. 379. 1829 (nom. nud.) and is attributed to Wallich, one of the collections under Wallich Cat. 379 must be the lectotype. Hooker, however, cited three localities for no. 379, namely Amherst, Tavoy, and Penang. Ching (Sinensia 2:21. 1931) indicated Wallich 379 as "type" (i.e., lectotype) and illustrated it in his Plate III, presumably from a specimen in the Kew Herbarium. This plate ought to be matched up with the Kew specimens to determine the type locality.

Tectaria variolosa (Wall. ex Hook.) C. Chr., Contr. U. S. Nat. Herb. 26:289. 1931.

TYPE: "In calcareo-argillosis ad ripas rivulorum prope Tjikoya prov. Batav., raro," Java, *Zollinger*. These data correspond to *Zollinger* 655 and 655A, the same numbers that *A. zollingerianum* Kunze was based on.

Since the publication of *Zollinger* and *Moritz* is rare, at least outside of Dutch libraries, I give below the original description:

Fronde heteromorpha membranacea glabriuscula margine ciliolata ternata, foliolis lateralibus bipartitis cordatis, laciniis acuminatis, medio 3-partito, laciniis lateralibus sessilibus, mediali elongato-acuminata pinnatifida; frondibus fertilibus longe stipitatis frondibus sterilibus similibus sed omnibus partibus elongato-angustatis, soris majusculis subseriatis, stipite glabriusculo.

Filis vix pedalis. Folioli lateralis pars superior inferiore longior subpinnatifida; folioli medii lacinae laterales subfalcatae. Venulae subtus hirsutulae.

Stipes frondis sterilis minus elatus; fertilis folioli breviter petiolati. Sori venularum ramulos superiores terminantes.

It is too bad that the rather well-known name *Tectaria variolosa* must be abandoned, but there seems no help for it.

In publishing *Aspidium variolosum* for Wallich, Hooker completely overlooked the earlier species *A. brachiatum* and *A. zollingerianum*. Moore, who was adept in picking up overlooked names, listed *A. brachiatum* as a doubtful species, with *A. zollingerianum* as a synonym. Christensen in the "Index Filicum" also recognized *brachiatum* as a valid species. Ching in his "A Revision of the Genus *Tectaria* from China and Sikkime-Himalaya" (*Sinensia* 2:9-36. 1931) adopted *T. variolosa* (Wall. ex Hook.) C. Chr. and reduced both *A. brachiatum* and *A. zollingerianum* to synonymy, even though these were earlier names. This is perhaps explained by the fact that he attributes (twice on page 21) the date "1826" to volume 4 of Hooker's "Species Filicum," whereas the correct date is really 1862. Holttum, in his "Ferns of Malaya" (p. 506. 1954), recognized *T. variolosa*, and commented on its occurrence in Java, but also overlooked the earlier names *brachiatum* and *zollingerianum*.

7. *ASPIDIUM IMMERSUM* Blume, Enum. Pl. Jav. 2:156. 1828. = *Thelypteris immersa* (Blume) Morton, comb. nov.

Lastrea immersa Moore, Ind. Fil. LXXXIX. 1857.

Nephrodium immersum Hook. Sp. Fil. 4:112. 1862.

Dryopteris immersa Kuntze, Rev. Gen. Pl. 2:813. 1891.

Dryopteris besukiensis f. *laxiloba* van Alderw. van Rosenb. Bull. Jard. Bot. Buit. II, 1:8. 1911. Type: Besoeki Idjen, Java, *Koorders* 15436 B (isotype or syntype L, Morton photograph 1064).

Dryopteris besukiensis f. *confertiloba* van Alderw. van Rosenb. loc. cit. Type: Besoeki Idjen, Java, *Koorders* 19830 B (isotype or syntype L, Morton photograph 1064).

TYPE: Gaenaeng Parang, Java, *Blume* (holotype L, Morton photograph 1164).

This species has been reported also from Borneo, New Guinea, and the Philippine Islands, but its real range remains to be determined. My

notes on the type are: Veins oblique, bearing yellow glands beneath and no long hairs; indusia flat, glabrous, persistent.

8. *ASPIDIUM MEXICANUM* var. *SERRATUM* Mett. Abhandl. Senckenb. Naturf. Gesell. 2:349. 1858. =*Dryopteris patula* var. *serrata* (Mett.) Morton, comb. nov.

Aspidium chaerophylloides Moritz ex Mett. loc. cit. pro syn.

Dryopteris patula var. *chaerophylloides* C. Chr. Dansk. Vid. Selsk. Skrift. VII, 10:71. 1913.

TYPE: Caracas, Venezuela, *Moritz* 435. The holotype is presumably in the Mettenius Herbarium in Berlin. I have seen a specimen labeled *Aspidium chaerophylloides* Moritz but bearing the number Moritz 434 (Leiden, Morton photographs 1087, 1088). It seems likely that this is an isotype, and that it bears the wrong number "434" or that Mettenius erred in citing the number originally as "435."

Christensen in describing *Dryopteris patula* var. *chaerophylloides* credited the epithet to "Bak. Syn. 276," but this is an error. Baker never used the generic name *Dryopteris*; he had this plant as "*Nephrodium mexicanum* β *A. chaerophylloides* Moritz" (Hook. & Bak. Syn. Fil. 276. 1868), an illegitimate combination, using a binomial for a variety. Moreover, var. *serratum* has a clear priority of ten years. The taxonomic validity of this eglandular variety needs further investigation, as do the forms of this variable species generally.

9. *ASPIDIUM ULIGINOSUM* Kunze, *Linnaea* 20:6. 1847. =*Thelypteris torresiana* (Gaud.) Alston, *Lilloa* 30:111. 1960.

LECTOTYPE: Described from cultivated specimens in the botanical garden in Leipzig, which Kunze had received from the botanical garden in Bonn. Since Kunze's herbarium in Leipzig was destroyed, there is no holotype extant. So far as I know, no lectotype has been designated. There is a specimen (Morton photograph 19739) in the Jardin Botanique National de Belgique, Brussels, from the botanical garden in Leipzig with the notation that the plant was originally from Java; this specimen is identified in Kunze's own hand as "*Aspidium uliginosum* mihi," and is thus fully authentic; I therefore designate it as lectotype.

The above lectotype is quite the same as the species treated by Holttum (*Blumea* 17:27. 1969) as *Macrothelypteris torresiana* (Gaud.) Ching.

10. *Asplenium adiantum-nigrum* var. *capense* Schlecht. *Adumbratio* 31, 32, t. 17. 1825-32.

Sometimes, as in Kuhn's "Filices Africanæ," a "var. *capense* Schlecht." is cited as though validly published, and the name appears also on some herbarium labels. Schlechtendal mentioned that *Asplenium adiantum-nigrum* occurs in two varieties, one with acute segments in the Canary Islands, Italy, and Porto Rico, the other with obtuse segments in the Cape of Good Hope and Germany. He did not actually propose varietal names for these, however, nor did he indi-

cate which, if either, included the type of *A. adiantum-nigrum* L. The name "*capense*" occurring only on the plate and the explanation of the plate merely indicates material drawn from plants collected in the Cape region and is not a formal naming of a variety.

11. *ASPLENIUM CAUDATUM* var. *SECTUM* Hillebr. Fl. Haw. 603. 1888. = *Asplenium polyodon* var. *sectum* (Hillebr.) Morton, comb. nov.

Asplenium sectum (Hillebr.) Copel. Phil. Journ. Sci. 9:439. 1914.

Asplenium falcatum var. *sectum* (Hillebr.) Skotts. Acta. Hort. Gotob. 15:101. 1942.

SYNTYPES: Haleakala, Maui, Hawaii, *Hillebrand* and Oahu, Hawaii, *Hillebrand*. The former collection from Haleakala, right-hand frond, is here designated lectotype (B, Morton photograph 9666).

This is a form with long-attenuate pinnae, these prominently lobed at the base only or nearly throughout. Skottsberg recognized three or four forms.

12. *Asplenium decipiens* Zippel ex Kunze, Bot. Zeit. 6:193. 1848, in adnot.

TYPE: Java, *Kollmann* (not seen).

I am calling attention to this species because the name is overlooked in the "Index Filicum" and its supplements. Although mentioned in a note only, it is accepted as new by Kunze and given sufficient description to validate it, namely that the caudex is flexuous and glabrous and the blade irregularly incised-dentate. Kunze indicates that this might be a *Diplazium*, but this does not of course invalidate the name, which is definitely indicated as *Asplenium decipiens* Zippel. The matter is of some importance because this name antedates *Asplenium decipiens* Mett. (1859) and *A. decipiens* Kuhn (1879). Backer and Posthumus (Varenfl. Java 126. 1939) place *A. decipiens* Zippel as a synonym of *Diplazium subserratum* (Blume) Moore.

13. *ASPLENIUM DENTICULATUM* Blume, Enum. Pl. Jav. 186. 1828. = *Asplenium aethiopicum* (Burm. f.) Becherer, Candollea 6:23. 1935, forma.

TYPE: Java, *Blume* (holotype L, Morton photograph 527). The type is mounted on a sheet with four other Blume types. All the labels, in Blume's own hand, are grouped on the right-hand margin of the sheet, and there is no indication as to which label goes with which plant. The other types are *Asplenium tripartitum* Blume, *A. furcatum* var. *fissulum* Blume, *A. furcatum* var. *fragrans* Blume, and *A. furcatum* var. *depauperatum* Blume. I have compared these plants with Blume's descriptions, and I was able to decide on the various types with some degree of certainty. The large central plant is *A. furcatum* var. *fissulum*. The plant at the lower left is *A. tripartitum*; the plant at the upper right is *A. furcatum* var. *fragrans*. The small fragment at the bottom center is *A. furcatum* var. *depauperatum*. And the plant at the lower right is the type of *A. denticulatum*.

In the "Index Filicum," *Asplenium denticulatum* Blume is listed in italics as a dubious species. In Backer and Posthumus' "Varenflora

voor Java" (1939), it is placed as possibly the same as *Asplenium stereophyllum* Kunze (Bot. Zeit. 6:175. 1848), in which case it would be the prior and correct name. I have seen the type of *A. stereophyllum* (Java, Zollinger 2249, holotype G, Morton photograph 3811; isotype FI-Webb!). The Zollinger collections from Java that Kunze described were evidently lent to Kunze from Geneva, for they have the annotations in Kunze's own hand and the data as published by Kunze; they are thus indeed holotypes, which is fortunate since Kunze's own herbarium was destroyed during World War II. This holotype shows that *A. stereophyllum* has been correctly interpreted in the naming of recent collections. The pinnae are strongly unequal-sided, the lower side being cut away to about the middle of the pinnae and so it has fewer segments than the upper side. *Asplenium denticulatum* Blume is by no means this species but is only a form of the widespread, pantropic *A. aethiopicum*, not unlike some of the American forms that are called *A. praemorsum* Swartz. In fact, all of the types on this sheet (*A. tripartitum* and the varieties of *A. furcatum*) are referable to *A. aethiopicum* in a broad sense, which is evidently just as variable in Java as it is elsewhere.

14. *ASPLENIUM DISTANS* Fée, Gen. Fil. 198. 1852, non D. Don, 1825. = *Diplazium camptocarpon* Fée, Mém. Foug. 8:84. 1857.

TYPE: Oaxaca, Mexico, *Galeotti* 6529 (isotype P, Morton photograph 4165). Fée wrongly gave the number as 6579, which was corrected by Fournier to 6529.

The holotype, with the name in Fée's hand, has not been found, but the isotype seen agrees with the description and is surely authentic. In the "Index Filicum," *Asplenium distans* Fée is considered a dubious species of *Asplenium*; however, the isotype shows that it is not an *Asplenium*, but a large, bipinnate (almost subtripinnate at base) *Diplazium*. It is very likely the same as *D. camptocarpon* Fée, the type of which is from Córdoba, Veracruz, Mexico, *A. Nieto* (*Schaffner* 69, not seen), a species that is similar at least to the more divided forms of *D. franconis* Liebm.

15. *ASPLENIUM FALCATUM* var. *SUBCAUDATUM* Skottsberg, Acta Hort. Gotob. 15:100. 1942. = *Asplenium polyodon* var. *subcaudatum* (Skottsberg.) Morton, comb. nov.

TYPE: Nuuanu-Kalihi Ridge, Koolau Mountains, Oahu, Hawaii, *Skottsberg* 146 (not seen).

This variety includes the plants referred to *A. caudatum* Forst. in Hillebrand's "Flora of the Hawaiian Islands." Skottsberg, after an exhaustive study of the variation in *Asplenium falcatum* Lam. and its allies, excluded *A. caudatum* from the Hawaiian Islands, most of the variations being proposed as varieties of *A. falcatum*. As I indicated

in my earlier paper on fern types (Contr. U.S. Nat. Herb. 38:39-41. 1967), *Asplenium falcatum* Lam. was a superfluous and illegitimate name. The earliest correct name for this species is *A. polyodon* Forst., and consequently the various Hawaiian varieties are here transferred to that species (see also *A. knudsenii*, *A. nitidulum*, and *A. caudatum* var. *sectum*).

16. ASPLENIUM GRACILE. D. Don, Prodr. Fl. Nepal. 8. 1825. = *Athyrium setiferum* C. Chr. Ind. Fil. 146. 1905. Based on *Asplenium tenellum* Hope, non Roxb.¹

Allantodia tenella Wallich, mss. Based on Nepal, Wallich.

Asplenium tenellum Hope, Journ. Bombay Nat. Hist. Soc. 22:529, t. 4. 1899. non Roxb. 1816, nec Fée, 1852. Lectotype: Cori Valley, above Bugdiar, Kumaon, India, 9,000 feet alt., R. W. MacLeon in 1893 (BM, Morton photograph 6980).

TYPE: "Hab. in summis alpibus reg. Himalayae dict. Nepaliae," Wallich (holotype BM, Morton photograph 6986, four right-hand plants; the left-hand plant on this sheet is also Nepal, Wallich, but was probably added later after the time of Don).

Asplenium gracile D. Don is considered in the "Index Filicum" as possibly the same as *Athyrium nigripes* (Blume) Moore (type from Mount Burangrang, Java, Blume, L, Morton photograph 665); there is some resemblance, but I do not believe that they are quite the same. On the other hand, it does seem clear that *A. gracile* is the same as *Athyrium setiferum* C. Chr., which is of course a later name. There is already an *Athyrium gracile* Fourn. (1872), however, and so Don's epithet may not now be transferred to *Athyrium*. Hope did not designate a type and cited many syntypes. He evidently chose the epithet "tenellum" from the cited synonym *Allantodia tenella* Wallich, which is a manuscript name only, not even appearing in Wallich's "Numerical List." It would thus seem that a Wallich specimen ought to be the lectotype, but Hope specifically indicated that the Wallich specimen represented a variant, thus making it ineligible as a lectotype. The specimen chosen above as lectotype seems to be a normal and typical specimen of Hope's concept. I have seen several other syntypes also, not all of which seem identical; in particular, the Mackinnon specimen from Sowarna Nala, Dehra Dun District, is larger and more divided and may not belong here at all, at least so far as the left-hand plant on the sheet in the British Museum (Natural History) is concerned; the specimen on the right may be rather typical (Morton photograph 6982). These *Athyriums* of the *flixa-femina* group in the Himalayas are extremely perplexing and much confused in herbaria. There are probably too many names proposed for them.

¹ Christensen wrongly cites *Allantodia tenella* Wallich as the basionym, but this was a manuscript name only and so cannot be a basionym.

17. *ASPLENIUM GRACILESCENS* Mett. Ann. Sci. Nat. V, 2:237. 1864. = *Diplazium gracilescens* (Mett.) C. Chr. Ind. Fil. 233. 1905.

SYNTYPES: Ocaña, Colombia, *Engel* 250 (isotype BM, Morton photograph 7073A), *Schlim* 69 (isotype L, Morton photograph 931). Since I have not seen the original syntypes in Berlin, I do not choose a lectotype.

In the "Index Filicum," the authority for the name *D. gracilescens* is given as "Moore, Ind. Fil. 329. 1861," but the name was a nomen nudum at this place. Since the species was not described until 1864, a new combination of the epithet under *Diplazium* could not be validly published three years previously in 1861. Therefore, Christensen must be cited as the author.

18. *Asplenium gueinzianum* Mett. ex Kuhn, Fil. Afr. 102. 1868.

Asplenium caespitosum Wallich, Num. List. no. 217. 1829, nom. nud., non Blume, 1828.

Asplenium laciniatum sensu Hook. Sp. Fil. 3:164. 1860, non D. Don.

TYPE: Port Natal, South Africa, *Gueinzius* (holotype B, Morton photograph 9714).

Hieronymus stated (*Hedwigia* 61:34. 1919) that this South African species was not distinct from the Himalayan plant that he called *A. laciniatum*, and he was probably right, for the holotype of *A. gueinzianum* does look indistinguishable from *Wallich* 217, the basis of the unpublished *A. caespitosum* Wallich (non Blume).

19. *ASPLENIUM HAHNII* Fourn. Mex. Pl. 109. 1872. = *Diplazium camptocarpon* Fée, Mém. Foug. 8:24. 1857.

TYPE: Escamela, near Orizaba, Veracruz, Mexico, Aug. 2, 1865, *Hahn* (holotype P, Morton photograph 4087).

Diplazium hahnii (Fourn.) C. Chr. Ind. Fil. 233. 1905.

The type is very similar to that of *A. distans* Fée (non D. Don); it seems to agree with the description of *Diplazium camptocarpon* Fée.

20. *ASPLENIUM JAPONICUM* var. *CHATTAGRAMMICUM* Clarke, Trans. Linn. Soc. II, Bot. 1:499. 1880. = *Diplazium chattagrammicum* (Clarke) Ching, Lingnan Sci. Journ. 15:277. 1936.

TYPE: Clarke cited merely Kasalong, Chittagong, India. Ching indicated the type to be at Kew, but did not designate a specimen. There are four specimens of Clarke's collecting from Kasalong, all much alike and agreeing with Clarke's description, but none of them is named var. *chattagrammicum*. Three are named merely *Asplenium japonicum*, and one *Asplenium japonicum* var. *elongata* (an unpublished name). Since the latter specimen agrees with the original description, it seems that Clarke first intended to call this plant var. *elongata* and changed it ultimately to var. *chattagrammicum*. Therefore, I take this sheet, the first collected, to be the lectotype of var. *chattagrammicum*: Kasalong, Chittagong, Jan. 10, 1869, *Clarke* 8254 (K, Morton photograph 18917). The other specimens that I believe to represent var. *chattagrammicum* also are from the same locality, but with later dates—*Clarke* 19074D, 19740A (this sheet bearing an annotation slip by Ching), and 19818.

Diplazium japonicum has recently been segregated as a distinct genus, *Athyriopsis* Ching (Acta Phytotax. Sinica 9:63. 1964), and as *Lunathyrium* Koidz. sect. *Athyriopsis* (Ching) Ohba (Sci. Rep. Yokosuka City Mus. 11:52. 1965). It is said to differ from *Diplazium* in having the lateral ridges of the rhachis above continuous and not open at the junction of the pinnae, and the prothallia with papillae on the margin and on the surface near the growing point. Rhachis characters are important, but especially for bipinnate or tripinnate plants. Simply pinnate-pinnatifid plants like *D. japonicum* do not show very different rhachis characters. Characters of the prothallia may indeed offer substantiating characters in segregating groups, but they are not useful as key characters, and in any case only a relatively few of the species of *Diplazium* have been studied from this viewpoint. The generic status needs to be investigated further.

21. **ASPLENium** **KNUDSENII** Hillebr. Fl. Haw. 601. 1888. = *Asplenium polyodon* var. *knudsenii* (Hillebr.) Morton, comb. nov.

TYPE: Waimea, Kauai, Hawaii, *Knudsen*. A specimen bearing this name and data is not in the Hillebrand Herbarium in Berlin; however, there are two specimens from Kauai in the Hillebrand numbered 125 and 144 and named *A. knudsenii*. These may well be and probably are the types. The left-hand frond numbered 125 is here designated lectotype (Morton photograph 9677).

This variety represents the least cut form of *A. polyodon* found in the Hawaiian Islands. It is finely doubly serrate, but not at all lobed.

22. **Asplenium laciniatum** D. Don, Prodr. Fl. Nepal. 8. 1825.

Asplenium varians Hook. & Grev. Icon. Fil. 2: t. 178. 1830. Type: Nepal, common name "Dawecow," *Wallich* (holotype K or possibly E, not seen).

TYPE: "In alpebus," Nepal, *Wallich* (holotype BM, Morton photograph 6686).

It is indeed unfortunate that the application of the name *A. laciniatum* D. Don must be changed, but I see no alternative. The name has been applied, following Hooker, to a rather characteristic plant of Nepal and the Himalayas (and elsewhere) that is allied to *A. planicaule* Wallich, but Hooker did not explain how he determined the identity of Don's species. There is in the British Museum (Natural History) a sheet containing a number of plants, indicated as "1," "2," and "3." Those at the top of the sheet (and the one in the right bottom corner) were collected on the banks of the Rapti River by Wallich in 1820; these are not types. The three plants numbered "2" are on the left center and are from Nepal collected by Wallich in December, 1817, and the common name in Nepal is given as "Dawecow"; these data are the same as those given by Hooker and Greville for their *Asplenium varians* except that they give the date as January, 1818; the specimens agree with Hooker and Greville's figure. The three specimens at right

center and the one center bottom are numbered "3," and they quite agree with each other; these are labeled, I think in Don's hand, "*laciniatum*" and "in Nepalia alphiibus, D. Don Prod."; these specimens are indeed clearly the holotype, for they not only have Don's name and data but agree with Don's description, so far as that goes.

Don described his plants as only three to four inches long and the blades thin ("tenerae"), characters that clearly agree with the plants on this sheet labeled *laciniatum*, for these are small plants of thin texture. The plant described by Hooker as *laciniatum* is much larger, the stipes alone being stated by Hooker to be four to six inches, and the blades a span to a foot long, i.e., about nine to twelve inches; the texture is thick, and the species itself belongs to a different section of *Asplenium*, viz. sect. *Sphenopteris*. On the other hand, the true *A. laciniatum* is identical with the plants described as *A. varians* Hook. & Grev., and they probably came from the same Wallich gathering in either December, 1817, or January, 1818. Unfortunately, Hieronymus (Hedwigia 61:33. 1919), in discussing the differences between *A. laciniatum* D. Don and *A. planicaule* Wallich, followed Hooker's concept, apparently without any doubt about the matter, but he must not have looked carefully at Don's description or tried to locate Don's type in the British Museum (Natural History). The plant that has been wrongly called *A. laciniatum* is best called, at least tentatively, *Asplenium gueinzianum* Mett. (see entry No. 18).

23. *Asplenium laserpitiifolium* sensu D. Don, Prodr. Fl. Nepal. 9. 1825, non Lam., 1786.

AUTHENTIC MATERIAL: Chitlong, Nepal, April 11, 1802, *Buchanan-Hamilton* (BM, Morton photograph 6678).

This sheet has been marked by someone (Gepp?) as the type of "*Asplenium laserpitiifolium* (Hamilton) Don," and the label does say "*Asplenium laserpitiifolium* B.," the "B" evidently standing for "Buchanan." When Don published the name in his "Prodromus," however, he attributed the name to Lamarck, and so there is no "*A. laserpitiifolium* Buch.-Ham." even though this name appears in the "Index Filicum" and this sheet is marked as the type. This authentic specimen was first identified as *A. bulbiferum* Forst. f., to which it was attributed in the "Index Filicum," but it can hardly be that, although it does resemble it from my photograph, since the true *A. bulbiferum* grows in New Zealand and perhaps in New Caledonia, but nowhere in Asia. Someone has crossed out *bulbiferum* and written *bullatum* Wallich, which possibly is correct, although I doubt it. The matter is not of importance, however, since this is a "sensu" name only, a misidentification, and it does not have to be placed

at all, although it should be identified correctly in a definitive treatment of the ferns of Nepal.

24. *ASPLENIUM LONGIFOLIUM* D. Don, Prodr. Fl. Nepal. 7. 1825, non Schrad., 1824.
=*Diplazium longifolium* Moore, Ind. Fil. 151. July, 1859.

Asplenium lobulosum Wallich, Num. List. no. 210. 1829, nom. nud.; Mett. Abhandl. Senckenb. Naturf. Gesell. 3:207. Sept. 1859. Type: Nepal, 1821, Wallich (isotype BR, Morton photograph 21170, left-hand plant).

Diplazium lobulosum (Wallich ex Mett.) C. Chr. Ind. Fil. 234. 1905 (wrongly attributed to Presl).

TYPE: Based on Nepal, Wallich. A specimen that is doubtless an isotype is in Brussels (Morton photograph 21170, right-hand plant); this was received from the Lambert Herbarium (where Don was curator) in 1826.

The name *Diplazium lobulosum* has been generally adopted since the publication of the "Index Filicum," since the first name applied to the species, *Asplenium longifolium* D. Don, was an illegitimate later homonym. By the Code (Art. 72, Note), however, Moore's name *Diplazium longifolium* must be considered as a new name for *A. longifolium* D. Don (1825), non Schrader (1824), rather than as a transfer. Since Moore's name dates from July, 1859, it is earlier than the synonymous name *Asplenium lobulosum* Wallich ex Mettenius, which according to Stearn was published in September, 1859. The epithet *longifolium* thus has a priority of two months.

25. *ASPLENIUM NITIDULUM* Hillebr. Fl. Haw. 601. 1888. =*Asplenium polydon* var. *nitidulum* (Hillebr.) Morton, comb. nov.

Asplenium falcatum var. *nitidulum* (Hillebr.) Skottsbo. Acta Hort. Gotob. 15:101. 1942.

SYNTYPES: Kauapali, Maui, Hawaii, Hillebrand (B, Morton photograph 9676); hills near Hilo, Hawaii, Hillebrand. The first of these is the lectotype.

This is a form that is just a little more cut than var. *knudsenii*, the pinnæ being short and broad, mostly with an evident superior basal lobe.

26. *Asplenium normale* D. Don, Prodr. Fl. Nepal. 7. 1825.

Asplenium unilaterale Buch.-Ham. mss. ex D. Don, loc. cit. in syn.

Asplenium multijugum Wallich, Num. List. no. 207. 1829, nom. nud.

Asplenium multijugum Wallich ex Mett. Abhandl. Senckenb. Naturf. Gesell. 3:179. 1859. Syntypes: India orientalis, Wallich 207 (dupl. US) and Ceylon, Gardner 25. The Wallich specimen is here designated lectotype.

TYPE: Narainhetty, Nepal, Buchanan-Hamilton (holotype BM, Morton photograph 6675)

The type is a good specimen, complete with rhizome, representing *Asplenium normale* in its usual sense. *Asplenium multijugum* Wallich is identical; Wallich ignored the name *A. normale* D. Don.

27. *ASPLENIUM OBTUSILOBUM* Desv. Mag. Naturf. Freund. Berlin 5:323. 1811.
 = *Asplenium affine* Swartz. Journ. Bot. Schrad. 1800(2):56. 1802.
 TYPE: Bourbon Island [Réunion], collector unknown (holotype P, Herb. Desvaux, Morton photograph 4161).

In the "Index Filicum," *Asplenium obtusilobum* is referred to the West Indian *A. cuneatum* Lam. (holotype P, Herb. Jessieu Cat. 1255, Morton photograph 3033, the locality and collector unknown). This disposition was accepted by Weatherby in his paper on the Desvaux fern types (Contr. Gray Herb. 114:21. 1936), probably on the basis that someone has written on the type sheet "Habitat in America calidior," although pointing out that it differs somewhat from typical *A. cuneatum*. Actually the type does not match any American material, but it does match specimens from Réunion and Mauritius of *A. affine* Swartz (type not stated in original publication, but given later by Swartz, Syn. Fil. 84, 279. 1806, as Mauritius, *Groendal*; holotype S-PA, Herb. Swartz, Morton photographs 5770, 5771). Therefore, Desvaux' original ascription of the species to Bourbon was correct and the locality of tropical America on the type sheet is wrong. *Asplenium affine* is similar to *A. cuneatum*, but obviously it is different in having the ultimate segments trapezoidal and bluntly toothed or lobed, whereas those of *A. cuneatum* are obovate and sharply toothed. The Old World specimens, mostly from the South Pacific, that have been identified as *A. cuneatum* are probably referable to *A. affine* or other allied species.

28. *ASPLENIUM PLANICAULE* Wallich ex Mett. Abhandl. Senckenb. Naturf. Gesell. 3:201. 1859, non Lowe, 1858. = *Asplenium yoshinagae* var. *planicaule* Morton, nom. nov.
Asplenium planicaule Wallich, Num. List. 8, no. 189. 1829, nom. nud.
Asplenium truncatum D. Don ex K. B. Presl, Tent. Pterid. 107. 1836, nom. nud. A new name for *A. planicaule* Wallich, nom. nud. Authentic material: Nepal, Wallich (BM, Morton photograph 6670; B, Morton photograph 9737).
Tarachia truncata K. B. Presl, Epim. Bot. 78. 1849 [1851], nom. nud.
Asplenium indicum Sledge, Bull. Brit. Mus. (Nat. Hist.) Bot. 3:264. 1965.
 A new name for *Asplenium planicaule* Wallich ex Mett., non Lowe.

TYPE: Based on *A. planicaule* Wallich ex Mett., non Lowe. The syntypes are Himalaya Mountains, Wallich no. 189 and *Fielding*. The name *planicaule* originated with Wallich and so the Wallich specimen no. 189 in Berlin ex Herb. Mettenius is here designated lectotype (Morton photograph 9739, a sheet with a detached frond at the left, and two fronds with a rhizome at the right, and a label saying "Typus"; there are other sheets of Wallich 189 at Berlin, all of them also with the label "Typus").

Sledge noted that the well-known name *Asplenium planicaule* Wallich ex Mett. (1859) was a later homonym of *A. planicaule* Lowe (1858) and so proposed the new name *A. indicum*, remarking that a

variety grew in Japan. He overlooked the fact that the Japanese variety had been originally proposed as a species, *Asplenium yoshinagae* Makino (1900). So long as these are considered as only varietally different, which appears to be best, the name *A. yoshinagae* has priority as a species name for the combined species, and Sledge's name *A. indicum* is unnecessary. The Japanese plant has been called *A. planicaule* var. *yoshinagae* (Makino) Tagawa (Acta Phytotax. Geobot. 14:95. 1951), but now this variety must become the species and the species the variety. Even though *A. planicaule* Wallich ex Mett. is not correct as a species name, the epithet *planicaule* is available as a varietal name and is therefore adopted here. Sledge cited as a synonym *Asplenium falcatum* var. *abbreviatum* Kunze (Linnaea 24:260. 1851), and so it might appear that *abbreviatum* is the earliest varietal epithet, but an examination of Kunze's publication shows that Sledge misinterpreted Kunze's intention, for Kunze clearly indicated that his names at this place were forms. Since epithets have priority only within their category, it is not necessary to raise Kunze's forma *abbreviatum* to varietal status, and I do not do so because I am not absolutely convinced that the name really refers to this plant. Kunze's original type specimens were destroyed in Leipzig and so his plant cannot really be definitely identified; the f. *abbreviatum* was based on plants from the Niligiri Mountains (*Schmid-Koch* 49 and 132; duplicates may exist elsewhere).

29. *ASPLENIUM RIEDELIANUM* Bongard ex Kuhn, Linnaea 36:102. 1869. = *Diplazium riedelianum* (Bongard ex Kuhn) Kuhn ex C. Chr. Ind. Fil. 238. 1905.

TYPE: Brazil, *Riedel* (holotype B, Morton photograph 10449).

The authority for *Diplazium riedelianum* is usually stated as Kuhn, Linnaea 36:102. 1869, but at this place the name appears as a synonym only. I cannot find that anyone properly made a combination under *Diplazium* until Christensen in 1905.

30. *Asplenium tenuifolium* D. Don, Prodr. Fl. Nepal. 8. 1825.

Asplenium concinnum Wallich, Num. List No. 216. 1829, nom. nud. Based on Nepal, *Wallich*, doubtless on a part of the same collection as the type of *A. tenuifolium* D. Don.

TYPE: Nepal, *Wallich*. One would expect a holotype in the British Museum (Natural History), but I was unable to locate one there; a specimen labeled *Asplenium tenuifolium* D. Don is in Brussels, received from Lambert (the employer of D. Don), which is surely an isotype at least and may even be a holotype; it is here designated lectotype until such time as a true holotype may be found in the British Museum (Natural History) or elsewhere (Morton photograph 20949). Isolectotype: Nepal, *Wallich* 216 (US).

Asplenium tenuifolium D. Don is a common species of the Himalayas that has always been correctly understood. So far as I know, there are no validly published synonyms.

31. *ASPLENIUM UNILOBUM* Poir. in Lam. Encycl. Méth. Suppl. 2:505. 1810.
= *Diplazium unilobum* (Poir.) Hieron. Hedwigia 59:332. 1917.

Asplenium semihastatum Kunze ex Mett. Abhandl. Senckenb. Naturforsch. Gesell. 3:206. 1859. Type: Monte Líbano, Oriente, Cuba, *Linden* 1921 (holotype probably B; isotype FI!).

TYPE: Santo Domingo (West Indies), *Nectoux*, FI (holotype, Morton photograph 16116).

The type and type locality of this species has been in doubt. There is no specimen in Paris labeled by Poiret that could be the type. Poiret did not cite a specimen or locality, merely "Amerique meridionale," a term applied vaguely by Poiret, Desvaux, and other early workers to almost any part of tropical America. There is a specimen in the Jussieu Herbarium (Cat. no. 1235) under the name *Asplenium erosum* L. that I formerly thought might be the type (Morton photograph 3017), but this now seems unlikely, for the specimen is from Peru, collected by Joseph de Jussieu, and the species that has been known as *S. unilobum* is known only from the Greater Antilles. In Florence I found a specimen labeled *Asplenium unilobum* Poir. nov. sp., from the Desfontaines Herbarium. Poiret described some new species from the Desfontaines Herbarium (e.g., *Polypodium elegans*) and this is another one, very evidently the holotype. It is from Santo Domingo, collected by Nectoux. The specimen agrees exactly with *Linden* 1921 in Florence, an isotype of *Asplenium semihastatum* Kunze, which agrees with the opinion expressed by Hieronymus.

32. *ATHYRIUM FOSBERGII* Copel. Occas. Papers Bern. P. Bishop Mus. 14:60, t. 13. 1938. = *Diplazium fosbergii* (Copel.) Morton, comb. nov.

TYPE: Nitiperu, Rapa Island, July 18, 1934, *Fosberg* 11577 (isotype US).

This rare species is apparently a Rapa Island endemic. Copeland considered *Diplazium* as a synonym of *Athyrium*, but pteridologists are now generally agreed that the two may be distinguished, although a few species are a little hard to place. One of these is our eastern United States narrow-leaved spleenwort, *Athyrium pycnocarpon*, which has been considered a *Diplazium* by some authors. Since *A. pycnocarpon* has $n=40$ (as always in *Athyrium*), it is an *Athyrium* that is somewhat aberrant rather than a *Diplazium*, in which the chromosome number is $n=41$, so far as known.

33. *ATHYRIUM MATANGENSE* Copel. Sarawak Mus. Journ. 2:377. 1917. = *Diplazium falcinellum* C. Chr. Ind. Fil. Suppl. 3:73. 1934.

Asplenium matangense Hose, Journ. Str. Br. Roy. As. Soc. 32:58. 1899, nom. prov.

SYNTYPES: Matang, Borneo, *Hose* 74 (presumably K), and 287 (K, Morton photograph 18934).

In the "Index Filicum," Christensen overlooked this species, which he apparently noted only in preparing Supplement 3. In the meantime,

he had applied in 1917 the name *Diplazium matangense* C. Chr. to an entirely different species, and therefore renamed the species of Hose *D. falcinellum* C. Chr. Hose listed this plant as merely *Asplenium* (*Diplazium*) sp. in his list of the ferns of Borneo in 1899. He gave a rather elaborate description and ended up by saying that he named the species provisionally *A. matangense*. Since the author himself indicates that he considered his name provisional, we have no option but to consider it a nomen provisorium also, and consequently invalid. Apparently no one discussed the species again until Copeland, who accepted it as a valid species. The epithet *matangense* therefore dates from Copeland. Under *Athyrium*, the name *A. matangense* Copel. is correct; under *Diplazium* the name must be *D. falcinellum* C. Chr.

34. *ATHYRIUM MEGISTOPHYLLUM* Copel. Phil. Journ. Sci. 56:475, t. 7. 1935.
= ***Diplazium megistophyllum*** (Copel.) Morton, comb. nov.

TYPE: Penibuken, Mount Kinabalu, Borneo, 5,000 ft. alt., Oct. 19, 1933, J. & M. S. Clemens 40806 (isotype K, Morton photograph 18948).

This is one of the few *Diplaziums* that has a "spiny" stipe. In this case at least, the "spines" are the knobby persistent and hardened bases of the numerous deciduous stipe scales. This is one of the largest *Diplaziums*, as indicated by the specific epithet, the middle pinnae being almost a meter long. The caudex is unknown, but it may be conjectured that it is elongate and erect, thus making this a little "tree fern."

35. *ATHYRIUM SANCTI-JOHANNIS* Copel. Occas. Papers Bern. P. Bishop Mus. 14:59, t. 10. 1938. = ***Diplazium sancti-johannis*** (Copel.) Morton, comb. nov.

TYPE: Tubuai Island, Austral Islands, Aug. 20, 1934, H. St. John 16440 (isotype US).

This rare endemic of Tubuai is probably known only from the type collection. It is a relative of *Diplazium membranaceum* (Mett. ex. Kuhn) C. Chr., a more widespread Polynesian species. In the "Index Filicum," the authority is given as "Mett. Linn. 36:103. 1869 (syn.)" however, a name published as a synonym is not published at all. Apparently no one else treated this species as a *Diplazium* until Christensen, and so Christensen must be considered the author of the combination *D. membranaceum*.

36. *BLECHNUM SOULEYETIANUM* Gaud. Voy. Bonite Atlas t. 134. f. 1-7. 1845-50.
= ***Sadleria souleyetiana*** (Gaud.) Moore, Ind. Fil. XXVI. 1857 [as "souleytiana"].

TYPE: Sandwich Islands [Hawaii], Gaudichaud.

In the "Index Filicum," *B. souleyetianum* [as "souleytianum"] is cited as "sine descr." and consequently the name *S. souleytiana* is indicated as first published by Hillebrand in 1888. Although there

is no description, Gaudichaud's *t. 134* gives a full illustration with analyses and consequently provides a valid publication by Art. 42 of the Code. The exact date of publication of *t. 134* is still uncertain. Johnston (Journ. Arn. Arb. 25:487. 1944) gives dates for most of the plates in Gaudichaud's work, but leaves *t. 134* only as "1845-50." Further bibliographic work is indicated.

37. *BLECHNUM SQUARROSUM* Gaud. Voy. Bonite Atlas *t. 2, f. 1, t. 6, f. 1-6*, 1841.
= *Sadleria squarrosa* (Gaud.) Moore, Ind. Fil. XXVI. 1857.

Blechnum polystichoides Brack. in Wilkes, U.S. Expl. Exped. 16:134, 1854.

Type: "Saw Mill," Hawaii, Wilkes Exped. (holotype US).

Sadleria polystichoides (Brack.) Heller, Minn. Bot. Stud. 1:788. 1897.

TYPE: Sandwich Islands [Hawaii], *Gaudichaud*. As lectotype I choose the specimen in Firenze, with the name in the hand of Gaudichaud (Morton photograph 16428); an isotype is in Berlin (Morton photograph 10229). There is probably an isotype in Paris also.

In the "Index Filicum" and in the "Revised List of Hawaiian Pteridophyta" (Bern. P. Bishop Mus. Bull. 25:16. 1925), Christensen adopted the name *Sadleria polystichoides*, remarking in the "Index" that *B. squarrosus* Gaud. was "sine descr."; however, although there is no description by Gaudichaud, there is a plate with analyses and so *B. squarrosus* is validly published by Art. 42 of the Code. The illustration is fine and readily identifiable as the same as the later *B. polystichoides* Brack., which is confirmed also by the isotypes that I have seen. I have seen the name given as "*S. squarrosa* (Gaud.) H. Mann" on some herbarium labels, which I do not understand. The combination was validly published by Moore in 1857, although wrongly attributed to Gaudichaud.

38. *BRACHYSORUS WOODWARDIOIDES* K. B. Presl, Epim. Bot. 70. 1849 [1851].
= *Diplazium woodwardioides* (K. B. Presl) Morton, comb. nov.

Allantodia sylvatica Blume, Enum. Pl. Jav. 173. 1828, non *Diplazium silvaticum* (Bory) Swartz. Type: Burangrang, Java, *Blume* (holotype L, Morton photograph 674).

Athyrium basilare Fée, Gen. Fil. 197. 1852. Based on *Brachysorus woodwardioides* K. B. Presl. Since the epithet *woodwardioides* was legitimate and available under *Athyrium*, there was no need to change it to "*basilare*," which is thus an illegitimate, superfluous name.

Asplenium woodwardioides (K. B. Presl) Baker in Hook. & Bak. Syn. Fil. 229. 1867, non Bernh. 1802.

Athyrium woodwardioides (K. B. Presl) Christ, Bull. Herb. Boiss. 6:154. 1898.

TYPE: Luzon, Philippine Islands, *Cuming* 153 (holotype presumably in Prague, not seen; isotypes BM, Morton photograph 6999, and FI, Morton photograph 16203).

Presl distinguished his genus *Brachysorus* from *Diplazium* primarily by the short sori occupying the lower part of the veinlets and

not extending beyond the vein-fork, and by the sori being solitary rather than back to back. He did not mention the genus *Allantodia* R. Brown, although that is the obvious alliance. The sori are mostly in the lower part of the veins, but they do sometimes extend somewhat above the fork. I have not seen young sori, but it is likely that the indusia are somewhat inflated and at least partly covering the young sporangia, as in *Allantodia australis* R. Brown of Australia and *A. umbrosa* (Ait.) Kaulf. of Madeira. The habit of these plants is entirely that of *Diplazium* rather than *Athyrium*, and the cytological evidence is in favor of this, so far as it goes. Brownlie has found $n=123$ in *A. umbrosa* and Sledge indicates that the related *Diplazium muricatum* (Mett.) van Alderw. van Rosenb. of Java, India, and Ceylon is $n=82$, an indication that the base number of *Allantodia* is $x=41$ as in *Diplazium* rather than $x=40$ as in *Athyrium*. Sledge has suggested that this group, *Diplazium* subg. *Pseudallantodia* (C. B. Clarke) Sledge (Bull. Brit. Mus. [Nat. Hist.] 2:312-315. 1962), may ultimately deserve generic status, in which case the name *Allantodia* is available. Pending a thorough study, however, it is better to place it as a subgenus of *Diplazium*.

39. CHEILANTHES DEALBATA D. Don, Prodr. Fl. Nepal. 16. 1825, non Pursh, 1814.
 =**Cheilanthes farinosa** (Forsk.) Kaulf. Enum. Fil. 212. 1824, sens. lat.
Gymnia pectinata Buch.-Ham. ex D. Don, loc. cit. in synonym.
Hemionitis dealbata Wallich, mss. ex D. Don, loc. cit.
Cheilanthes dealbata Wallich, Num. List. no. 71. 1829, nom. nud. There is no mention of Don and so this must be considered as a different name, although a nomen nudum.
Aleuritopteris farinosa (Forsk.) Fée, Gen. Fil. 154, t. 12 B, f. 1. 1852.

SYNTYPES: Narainhetty, Nepal, March 13, 1803, *Buchanan-Hamilton* (BM, Morton photograph 6694, left-hand plant) and Nepal, *Wallich* (BM, Morton photograph 6694, two right-hand plants). The Buchanan-Hamilton specimen is here designated lectotype. There is a duplicate of the Wallich collection in Brussels (Morton photograph 5093, right-hand specimen).

Ching (Hong Kong Nat. 10:201. 1941) places *C. dealbata* D. Don as a synonym of typical *Aleuritopteris farinosa*, but it is doubtful that he saw any types. I must admit that the Himalayan plants do look like those from East Africa, which are presumed to be typical, but there may be some minute differences.

40. COLYSIS HEMIONITIDEA K. B. Presl, Epim. Bot. 147. 1849 [1851]. =**Polypodium hemionitideum** (K. B. Presl) Mett. Abhandl. Senckenb. Naturf. Gesell. 1:112. 1856.
Polypodium hemionitideum Wall. Num. List 10, no. 284. 1829, nom. nud.
Selliguea hemionitidea K. B. Presl, Tent. Pterid. 216, t. 9, f. 17. 1836, nom. nud. The illustration is only an analysis, and not a plate with analyses, as required by the Code for valid publication.

Drynaria hemionitidea J. Smith in Hook. Journ. Bot. 4:61. 1841, nom. nud.

TYPE: Nepal, 1822, Wallich no. 284. There may be a specimen of this number in Presl's herbarium in Prague, which will be the holotype. Duplicates are in the East India Company Herbarium at Kew, and elsewhere, including US.

The authority for this species is usually cited, as in the "Index Filicum," as "Wallich" or "Wallich ex Mett.," but from the citations above it is clear that Presl must be considered as the author of the epithet, since he was the first to give a description. It cannot be "Wall. ex Presl" because Wallich had it under *Polypodium*, whereas Presl described it as a *Colysis*. It is still retained in *Colysis* by those recognizing this genus, such as Ching, even though the sori are not confluent and linear, as they ought to be in this genus.

There is a Wallich specimen of this species in the British Museum (Natural History) (Morton photograph 7616) that is labeled in Don's own hand as "*Polypodium membranaceum* D. Don," but it does not represent that species as usually considered, and it does not agree with Don's description. Don's description calls for a very large frond about four inches wide, very membranous, and with scattered, rotund sori, characters that agree with the common Himalayan species usually identified as *P. membranaceum*. *Polypodium hemionitideum* is a smaller plant of thicker texture, with the often somewhat elongate sori in a single median row.

41. CTENOPTERIS AMYLACEA Copel. Phil. Journ. Sci. 84:469. 1955. =**Grammitis amylacea** (Copel.) Morton, comb. nov.

TYPE: Cargadira, Bolivia, L. Williams 1134 (US 700281).

42. CTENOPTERIS FRAGILLIMA Copel. Phil. Journ. Sci. 84:470. 1955. =**Grammitis fragillima** (Copel.) Morton, comb. nov.

TYPE: Mount Roraima, Steyermark 58882. The holotype is in US, although not so stated by Copeland.

43. CTENOPTERIS HERRERAE Copel. Phil. Journ. Sci. 84:467. 1955. =**Grammitis herrerae** (Copel.) Morton, comb. nov.

TYPE: Copeland cited two collections, Bues 1268 and 1269, but without indicating a type or providing locality data. In the United States National Herbarium, he indicated no. 1269 as the type, and it is here designated lectotype; it is from Huadquiña, Department of Cuzco, Peru, collected November, 1920 (US 1515537). The other collection would not have been a suitable type because it is sterile.

44. CTENOPTERIS RHIZOPHORAE Copel. Phil. Journ. Sci. 84:425. 1955. =**Grammitis rhizophorae** (Copel.) Morton, comb. nov.

TYPE: "Colombia, in mangrove swamp along Rio Dagua, alt. 0 to 5 m." is all that Copeland cited, the rest having somehow been lost in the manuscript or printing. The holotype is in the United States National Herbarium (no. 1140066); the remaining data are: Buenaventura, Dept. El Valle, May 7, 9. 1922, E. P. Killip 5334.

45. CTENOPTERIS SUBCRASSA Copel. Phil. Journ. Sci. 84:468. 1955. =**Grammitis subcrassa** (Copel.) Morton, comb. nov.

TYPE: Copeland's citation of the type is somewhat defective in that he omits the collector's number, omits an indication of the herbarium where the type is deposited, and cites the collector as "L. A. Brade," in which the "L" is not an initial but stands for the Latin word "Legit" (i.e., collected by). The holotype is *A. C. Brade* 5833, collected at Campo Grande, Serra do Mar, São Paulo, Brazil, November, 1913 (US 1198707).

46. CYCLOPHORUS FOVEOLATUS Alston, Journ. Bot. 78:226. 1940. =**Pyrrrosia foveolata** (Alston) Morton, comb. nov.

TYPE: Boridi, Papua, *Carr* 13039 (holotype BM, not seen; isotype L, Morton photograph 826).

This rather common New Guinea species is distinguished by the sori being sunken in pits.

47. DAVALLIA SCABRA D. Don, Prodr. Fl. Nepal. 9. 1825. =**Microlepia marginata** (Houtt.) C. Chr. Ind. Fil. 427. 1906.

Davallia villosa Wallich, Num. List. no. 244. 1829, nom. nud., non *D. villosa* D. Don, 1825. Based on Nepal, *Wallich* in 1821.

Microlepia scabra (D. Don) J. Smith, Journ. Bot. Hook. 1:427. 1842.

Davallia villosa Wallich ex Hook. Sp. Fil. 1:172, t. 48A. 1846. Since Hooker cited *Davallia scabra* D. Don as a synonym and since this name was legitimate, prior, and available, Hooker's *D. villosa* must be considered a superfluous renaming of *D. scabra* and based on the same type. Also, *D. villosa* Wallich ex Hook. is an illegitimate later homonym of the different species *D. villosa* D. Don, 1825.

Microlepia villosa (Wallich ex Hook.) K. B. Presl, Epim. Bot. 95. 1849 [1851].

TYPE: Nepal, Wallich (holotype BM, Morton photograph 6901, a sheet with a full frond with a detached stipe and a single detached pinna in the upper right hand corner; the label in the upper right hand corner may be in Don's hand).

48. DICRANOPTERIS PALMATA Underw. Bull. Torrey Bot. Club 34:259. 1907. =**Gleichenia palmata** (Underw.) C. Chr. Ind. Fil. Suppl. 1:113. 1913.

Mertensia palmata Schaffner ex Fée, Mém. Foug. 9:32. 1857, nom. nud.; Fourn. Mex. Pl. 1:137, 1872, nom. nud.

Gleichenia palmata Moore, Ind. Fil. 380. 1862, nom. nud.

TYPE: Orizaba, Veracruz, Mexico, *Pringle* 6129 (NY; isotypes B, US). Distributed originally as *G. pubescens* H.B.K.

The first valid publication of this species was by Underwood as *Dicranopteris palmata*, who designated the type as *Pringle* 6129. Since this is a different collection from the Schaffner specimen intended as the basis for the nomina nuda *Mertensia palmata* Schaffn. and *Gleichenia palmata* Moore, the species must be considered as wholly Underwood's. The first acceptance of the species under the name *Gleichenia* after Underwood's description was by Christensen in the Corrigenda (1913) to the "Index Filicum," where the species is accepted under the name *Gleichenia palmata* (Schaffner) Moore. These authorities are

not in accordance with the Code, since they refer to nomina nuda and also to a species based on a different type. The proper authority is *Gleichenia palmata* (Underw.) C. Chr. Ind. Fil. Suppl. 1:113. 1913 [incorrectly attributed to "(Schaffn.) Moore"]. Other collections referable to this species in the Berlin herbarium are: Orizaba, Veracruz, Mexico, *Müller*; San Andres, Veracruz, Mexico, *Schiede & Deppe* 727; Jalapa, Veracruz, Mexico, *Ehrenberg* 843; Mexico, *Schaffner*; and Mabess River, Jamaica, *Harris* 7597. All of these are filed as *G. furcata*, following identifications of Hieronymus, but they are not close to the true *furcata* of the Lesser Antilles.

49. *DIPLAZIUM CAUDATUM* J. Smith in Hook. Journ. Bot. 3:408. 1841, nom. nud.; C. Chr. Ind. Fil. Suppl. 3:72. 1934, nom. nud. = ***Diplazium melanopodium*** Fée, Mém. Foug. 8:85. 1857.
Athyrium melanopodium (Fée) Copel. Fern Fl. Phil. 401. 1960 [wrongly attributed to Fée].
 ?*Diplazium meyenianum* K. B. Presl, Epim. Bot. 88. 1849 [1851]. Type: Manila, Philippine Islands, *Meyen* (Herb. Presl, Prague).
 ?*Asplenium aspidioides* Goldm. Nov. Acta Acad. Leop. Caes. Nat. Cur. 19, Suppl. 1:461. 1843, non Schlecht., 1825. Type: Manila, Philippine Islands, *Meyen* (presumably B).

TYPE: Since *D. caudatum* J. Smith is a nomen nudum, it does not strictly speaking have a type, but it was intended to be based on Luzon, Philippine Islands, *Cuming* 158.

Christensen was in error in taking up the same *Diplazium caudatum* J. Smith, for this was a nomen nudum only. As a synonym he cited *Athyrium meyenianum* Copel. (Phil. Journ. Sci. 3C:295. 1908), but this was an error also, for *A. meyenianum* was not a new species of Copeland but merely a new combination based on *Diplazium meyenianum* K. B. Presl, which Christensen specifically excluded from his concept of *D. caudatum*. Doubtless, Christensen intended *Athyrium meyenianum* sensu Copel. excl. synonym., but there was no description by Copeland at the place cited that would serve to validate the name *D. caudatum*. The other synonym cited by Christensen, *D. melanopodium* Fée, was cited only with a query, and so this cannot validate the publication of the name *D. caudatum* J. Smith either. Hieronymus (*Hedwigia* 59:337. 1917) believed that *D. meyenianum* K. B. Presl was identical with the Hawaiian *D. arnottii* Brack., of the Hawaiian Islands, but Holttum, in his recent paper on Presl types, indicates that this is doubtful and that the species needs further study.

50. ***Diplazium crenulans*** Fée ex Baker in Hook. & Bak. Syn. Fil. 232. 1867, in obs.
Diplazium legalloi Proctor, *Rhodora* 68:466. 1966.
Diplazium celtidifolium sensu auctt. as to plants from the Lesser Antilles.
Diplazium callipteris sensu auctt. as to plants from the Lesser Antilles.
 TYPE: Guadeloupe, *L'Herminier* 67 (holotype K, Morton photograph 18581).

Diplazium crenulans is mentioned by Baker only in an observation, but there is enough description to validate the name. This species has usually been called *D. callipteris*, as by Fée himself, who kept that species distinct from *D. celtidifolium* Kunze, which he also attributed to the Antilles. Proctor, however, states that the type of *D. callipteris* came from Venezuela, rather than from Cuba as stated by Fée, and that it represents *D. celtidifolium*. He does not state that he has seen authentic material, but that is the inference. He is very likely right, because no species closely allied has ever been collected since in Cuba.

There are two other specimens at Kew of *D. crenulans*, but they came from the T. Moore Herbarium, which was purchased in March, 1885, and so these were not studied by Baker presumably; they are also from Guadeloupe, collected by L'Herminier, and may be part of the same gathering (Morton photographs 18582, 18582a) although the pinnae are merely crenate-dentate in one (rather than lobulate) and subentire in the other; this species appears to vary in these respects, perhaps according to the size of the plants or the position of the pinnae gathered. It would appear that the lowest and largest pinnae are lobulate, the middle crenate-dentate, and the upper subentire. Another specimen mounted on two sheets is also at Kew, collected in Guadeloupe by L'Herminier (Morton photographs 18583, 18584); it is identified by Fée as *D. callipteris* var. *undulatum*, an unpublished name, probably intended originally to have something to do with *Diplazium undulosum* Swartz, which was based on Plumier, Tract. Fil. t. 107. and which is listed in the "Index Filicum" as a dubious species. Plumier's illustration is one of his more esoteric ones, but it is clear that it cannot possibly represent a *Diplazium*. The illustration and the accompanying description show large sized pinnae and many transverse veinlets. Among the plants known from Martinique it can only represent *Thelypteris* [*Meniscium*] *reticulatum* (L.) Proctor. Fée (Mém. Foug. 11:40. 1866) indicated that *D. undulosum* Swartz was probably a *Meniscium*.

51. **DIPLAZIUM FALCATUM** D Don, Prodr. Fl. Nepal. 13. 1825. = **Coniogramme fraxinea** (D. Don) Diels in Engl. & Prantl, Nat. Pflanzenfam. 1(4):262. 1899.

Hemionitis falcata Buch.-Ham. mss. ex. D. Don. loc. cit.

Gymnogramma falacta (D. Don) J. Smith, Journ. Bot. Hook. 4:51. 1842.

Coniogramme falcata (D. Don) Salomon, Nomencl. 139. 1888.

TYPE: Narainhetty, Nepal, March 1, 1803, *Buchanan-Hamilton* (holotype BM, Morton photograph 6691).

In his monograph of *Coniogramme*, Hieronymus (Hedwigia 57:325. 1916) considered *D. falcatum* as a dubious species, perhaps a synonym of *C. fraxinea*, which appears to be true. It seems odd that Don would

describe the same species twice, but this is explained by the fact that his *D. fraxineum* had the lower pinnae ternate or pinnate and his *D. falcatum* had them simple. It seems that this species varies in this respect, but the matter deserves study in the field. If the form with simple pinnae should be considered different, the name *C. falcata* (D. Don) Salomon is available for it.

52. **DIPLAZIUM PROLIFEROIDES** Bory in Bélanger, *Voy. Bot.* 2:38. 1833. = **Diplazium proliferum** var. **proliferoides** (Bory) Morton, comb. nov.

Athyrium accedens var. *proliferoides* (Bory) Tardieu, *Bull. Mus. Hist. Nat. Paris* II, 29:290. 1957.

TYPE: Mauritius, *Bélanger* (holotype presumably P; isotype FI, Morton photograph 16154).

This is a form of the widespread *Diplazium proliferum* with the pinnae rather deeply lobed; consequently, the venation is simpler, most of the veins being connivent to the sinuses and only occasionally anastomosing. Madame Tardieu, who has seen abundant material from Mauritius and Réunion, however, considers it not specifically distinguishable from typical *D. proliferum*. Whether the Javan *D. accedens* Blume is specifically different remains an open question.

53. **DRYMOGLOSSUM SUBCORDATUM** Fée, *Mém. Foug.* 3:29. 1852. = **Lemmaphyllum microphyllum** K. B. Presl, *Epim. Bot.* 263. 1849 [1851].

SYNTYPES: Coast of China, *Gaudichaud* (FI, with the name in Fée's hand, Morton photograph 16218), and Amboina, *Labillardière* (FI, with the name in Fée's hand, Morton photograph 16219).

Christensen (*Dansk. Bot. Ark.* 6(3):46, 47, 86. 1929) discussed the identity of *D. subcordatum*. He had not seen the syntypes, but decided that Fée's description agreed best with material from China, and so chose the Gaudichaud collection as lectotype. Judging from the locality "Amboina," he believed that the second syntype represented an entirely different species, *Drymoglossum fallax* van Alderw. van Rosenb., and from my photograph of the Labillardière specimen it appears that he is right, although there is only one fertile frond on the sheet and the photograph is not sufficiently detailed to show the arrangement of the sporangia, which is very peculiar in *D. fallax*, the sporangia being arranged in a single row, as Christensen expresses it "like cakes in a tinbox." Christensen thought that Fée's figure (*Gen. Fil.* t 9A, f. 1. 1852) represents the Amboina plant, but it does not seem so to me; judging from the disposition of the sporangia, it seems that the fertile leaf at least is *Lemmaphyllum microphyllum*, and I think that the sterile leaves are also *L. microphyllum*. The stellate hair shown was probably not drawn from material of *D. subcordatum* at all, since it is indicated as representing the hairs of three different species. The sterile fronds of the Labillardière specimen are definitely cuneate at

the base, and therefore Fée's description of these as subcordate is not applicable, nor is the specific epithet *subcordatum*. But sometimes Chinese specimens of *L. microphyllum* from Hong Kong really are subcordate, another point indicating that the Gaudichaud plant is the correct lectotype.

54. *DRYNARIA STENOPHYLLA* Fée, Mém. Foug. 6:18, t. 8, f. 3. 1853, non J. Smith. 1841. = *Polypodium stenophyllum* Blume, Enum. Fil. Jav. 124. 1828.

Drynaria stenophylla (Blume) J. Smith, Journ. Bot. 3:397. 1841. Based on *Polypodium stenophyllum* Blume.

Crypsinus stenophyllus (Blume) Copel. Gen. Fil. 206. 1947.

TYPE: Luzon, Philippine Islands, *Cuming* 122 (isotype FI, Morton photograph 16028).

Drynaria stenophylla Fée (1853) is usually mentioned (if at all) as though it were the same as *D. stenophylla* J. Smith (1841), but it is not. Smith's name was a new combination based on *Polypodium stenophyllum* Blume, and the type is therefore the same as Blume's type from Java. Fée attributed his *D. stenophylla* to J. Smith, but he described it as a new species based on *Cuming* 122 from Luzon, Philippine Islands, and made no mention of Blume. Therefore, *Drynaria stenophylla* Fée must be considered as nomenclaturally a different species since it has a different type; it is thus a legitimate name under *Drynaria*. The Philippine Island plant represented by *Cuming* 122 is considered by Copeland as taxonomically the same as the Javan *P. stenophyllum* Blume (Java, *Blume*, holotype L, Morton photograph 1969), but Copeland did not see the Blume type, which may or may not be the same.

55. *DRYOPTERIS CHEILANTHINA* C. Chr. Kungl. Svensk. Vetensk. Akad. Handl. (Stockholm) III, 16(2):34. March, 1937. = *Ctenitis cheilanthina* (C. Chr.) Morton, comb. nov.

TYPE: Morne Cabaio, near Robergeau, Nouvelle Touraine, Selle, Haiti, *Ekman* 1689 (isotype US).

Collected several times by Ekman but not otherwise.

56. *DRYOPTERIS MERIDIONALIS* (Poir.) C. Chr. var. *SPELUNCAE* C. Chr. Dansk. Vid. Selsk. Skrift. VIII, 6:47. 1920. = *Ctenitis meridionalis* var. *speluncae* (C. Chr.) Morton, comb. nov.

TYPE: Six collections were cited, all from Bermuda, none of which was designated as the type. As lectotype I choose: Sink hole, Paynter's Vale, Bermuda, Aug. 3–Sep. 20, 1905, *S. Brown & N. L. Britton* 266 (US 524898). This is a good specimen, identified by Christensen.

57. *DRYOPTERIS SANCTA* var. *PORTORICENSIS* C. Chr. Smiths. Misc. Coll. 52, no. 1867:380. 1909. = *Thelypteris sancta* var. *portoricensis* (C. Chr.) Morton, comb. nov.

Aspidium sanctum var. *portoricense* Kuhn, Bot. Jahrb. Engler 24:115. 1897, nom. nud.

Thelypteris sancta var. *portoricensis* (Kuhn) Morton, Amer. Fern Journ. 53:64. 1963, nom. nud.

TYPE: There were three syntypes cited, but no lectotype has been designated. As lectotype I choose the second syntype: Utuado, Puerto Rico, *Sintenis* 5956 (US, with the name in Christensen's hand). The third syntype, *Underwood & Griggs* 60 is also in US, as is a duplicate of the first syntype, *Sintenis* 403, the latter, however, without the name in Christensen's hand.

It has been pointed out to me that when, in 1963, I attempted to publish a new combination for this variety under *Thelypteris* that I wrongly cited a nomen nudum as the basionym. Although the epithet *portoricense* originated with Kuhn the variety was really first described later by Christensen.

58. DRYOPTERIS STEGNOGRAMMA VAR. ASPLENIOIDES C. Chr. Acta Hort. Gotob. 1:56. 1924. =*Thelypteris dasypoda* Morton, nom. nov.

Stegnogramma asplenioides (C. Chr.) Ching, Sinensia 7:94. 1936, non *Thelypteris asplenioides* (Swartz) Proctor.

SYNTYPES: Christensen cited Szechuwan, China, *H. Smith* 2116, and Khasia, India, collector not stated. Ching chose Khasia, *Griffith* as lectotype.

Christensen indicated the author of his var. *asplenioides* as "(J.Sm.) C. Chr.," as though it were a new combination of some validly published name, but I cannot find that Smith ever published any name that could be a basionym, and therefore the variety must be attributed to Christensen only. Similarly, Ching in transferring this variety to *Stegnogramma* attributed the name *Stegnogramma asplenioides* to "J. Sm. mss.," but since the first describer was Christensen, the proper authority must be "(C. Chr.) Ching." As to the distinctness of *Stegnogramma* as a genus, see my remarks in Amer. Fern Journ. 56:177-179. 1966. Since the epithet "*asplenioides*" has already been used in *Thelypteris*, a new name is necessary for this species.

59. *Elaphoglossum alatum* Gaud. in Vaillant, Voyage Autour du Monde Bonite, Bot. Atlas t. 135. 1845-50.

In my previous paper on fern types (Contr. U. S. Nat. Herb. 38:44. 1967) I stated that *Elaphoglossum alatum* Gaud. was a synonym of *E. gorgoneum* (Kaulf.) Brack. When this was written I had not seen the paper "A Revision of the Hawaiian Species of *Elaphoglossum*," by W. R. Anderson and M. R. Crosby (Brittonia 18:380-397. 1966), in which it is indicated that a study of the type specimen has shown that *Acrostichum gorgoneum* Kaulf. does not represent *E. gorgoneum* as usually named but is a synonym of *Acrostichum aemulum* Kaulf. [= *Elaphoglossum aemulum* (Kaulf.) Brack]. Anderson and Crosby were probably the first to unite these two species, and therefore their choice of the epithet *aemulum* must be followed; this is the best anyway for avoiding confusion, since the epithet *gorgoneum* has been so

widely used for the different species *E. alatum* Gaud., which is the correct name for this species. *Aconiopteris obtusa* Fée (1845) is perhaps earlier, but the epithet *obtusa* may not now be transferred to *Elaphoglossum* because of the different *E. obtusum* A. Peter (1929).

60. EPIDRYOPTERIS LYCOPODIOMUS Rojas, Bull. Acad. Géogr. Bot. [Le Mans] 28:156. 1918. = **Polypodium vacciniifolium** Langsd. & Fisch. Icon. Fil. 8, t. 7. 1810.

In a paper entitled "Addenda ad Floram regionis Chaco Australis," N. Rojas Acosta published a new genus and species called peculiarly enough *Epidryopteris lycopodiumus*, based on material from Paraguay, presumably collected by himself. In 1958, I wrote asking about this plant to the Jardin Botánico in Asunción, where the Rojas herbarium is presumably preserved, but I never received a reply. Although Christensen in the "Index Filicum," Supplement III, referred the genus to *Polypodium* with a query, the species has never been definitely placed. The original description is as follows:

Scandens, filiformis, ramosa, setoso-paleacea vel albida, 20–60 cm. longa, frondibus alternis, glabris, rotundo-ellipticis, supra nitidis, fertilibus linearibus, soris solitariis.

Oct. Nov. Voisin du *Polypodium lycopodioideum* de Mexico.

Croît dans les forêts humides et ombreuses sur les troncs et les rameaux des arbres, surtout aux bords du Paraná et du Rio Bermejo.

There are not many epiphytic ferns in Paraguay, and the only one that agrees with the description in having an elongate, scandent, epiphytic, whitish-scaly rhizome, rotund-elliptic and shining sterile blades, and linear fertile blades is *Polypodium vacciniifolium* Langsd. & Fisch. The identification can be considered certain, even in the absence of type material.

61. GLEICHENIA BIFURCATA Blume, Enum. Pl. Jav. 250. 1828. = **Gleichenia truncata** (Willd.) Spreng. in L. Syst. Veg. ed. 16, 4:25. 1827.

TYPE: Boerengrang, Java, *Blume* (holotype L, with the name in Blume's hand, Morton photograph 1421).

This species was overlooked in Holttums' account of *Gleichenia* in the "Flora Malesiana" (II, 1(1):4–27. 1959), but the type was annotated by Holttum in 1957 as *G. truncata*.

62. GLEICHENIA LAEVIGATA var. BRACTEATA Rosenst. Repert. Sp. Nov. Fedde 5:370. 1908. = **Gleichenia truncata** var. **bracteata** (Rosenst.) Holttum, Reinwardtia 4:271. 1957.

TYPE: Rosenstock gave no description, but his varietal name is validated by his reference to Hooker and Baker's characterization of *G. bracteata* Blume (Syn. Fil. 14. 1865); the Hooker and Baker description was based on Java, *Blume in Herb. Hook.*, and the holotype is therefore at Kew.

Holttum considered the species *Gleichenia bracteata* Blume ex Hook. & Bak. validly published, and consequently cited "Blume ex Hook. &

Bak." as the parenthetical author. However, even though Hooker and Baker did mention a few of the characters of Blume's *G. bracteata*, they did not accept the species; since it was published as a synonym only it cannot be valid. Holttum indicated that the holotype of *G. bracteata* is in Leiden, but the description by Hooker and Baker was of a Blume plant in the Hooker Herbarium at Kew, and this must therefore be the holotype.

63. *GLEICHENIA LANIGERA* D. Don. Prodr. Fl. Nepal. 17. 1825. =? *Dicranopteris linearis* (Burm. f.) Underw. Bull. Torr. Bot. Club 34:250. 1907.

TYPE: Sirinagur, India, *Kamroop* (not seen).

There is in the British Museum (Natural History) a sheet annotated *Gleichenia lanigera* Don but this is from "in alpihus Nepaliae," not Sirinagur. It was probably collected by Wallich and is a part of his no. 157, i.e., *Gleichenia gigantea* Wallich. Not only is the locality different but the plant is also different, apparently, for this sheet is one of the pinnate type like *G. glauca* (Thunb.) Hook., whereas Don described his species as variously dichotomous. Don's species is considered to be *Dicranopteris linearis* (Burm. f.) Underw., according to J. Smith (quoted by Hooker, Sp. Fil. 1:5. 1844, under *Gleichenia dichotoma*).

64. *GLEICHENIA LINEARIS* var. *BIDENTATA* van Alderw. van. Rosenb. Bull. Jard. Bot. Buitenzorg III, 5:204. 1922. = *Dicranopteris linearis* (Burm. f.) Underw. var. *linearis*.

TYPE: Several syntypes were cited; of these I have seen Bunnemeijer 7881, from Mount Djantan, Poeloe Karimon Island, Riouw Archipelago (L, Morton photograph 1425).

This variety was overlooked in Holttum's revision of *Gleichenia* in the "Flora Malesiana." From the photograph of the syntype cited above it appears that the variety can be safely referred to var. *linearis*.

65. *GLEICHENIA LINEARIS* var. *CRASSIFRONS* van Alderw. van Rosenb. Bull. Jard. Bot. Buitenzorg III, 5:204. 1922. = *Dicranopteris linearis* (Burm. f.) (Blume) Holttum, Reinwardtia 4:277. 1957.

TYPE: Foramadiahi, Ternate Island, Mar. 11, 1921, *Beguin* 1501 (holotype L, Morton photograph 1426).

This variety was overlooked in Holttum's revision of *Gleichenia* in the "Flora Malesiana." The occurrence of var. *rigida* in Ternate is not mentioned either, but it was to be expected since it occurs in Tidore and the Celebes. Another variety that was overlooked is *Gleichenia linearis* var. *irregularis* van Alderw. van Rosenb. (Malay. Ferns Suppl. 84. 1917); no collections were cited for this variety and so the type (or a lectotype) can be determined only by consultation with van Alderwerelt's material so named in Bogor and Leiden; the variety appar-

ently can be referred to *Dicranopteris linearis* var. *alternans* (Mett.) Holttum going on description and probability.

66. *Gleichenia longissima* var. *nivea* Blume, Enum. Pl. Jav. 251. 1828.

TYPE: Java, *Blume* (holotype L, with the name in Blume's hand, Morton photograph 1441).

This is apparently a form in which the segments are even more strongly glaucous beneath than usual. The varietal name was overlooked by Holttum in the "Flora Malesiana."

67. GRAMMITIS SCOLOPENDRIOIDES Gaud. in Freycinet, Voy. Monde Uranie 310.

Aug. 1828. = *Loxogramme scolopendrioides* (Gaud.) Morton, comb. nov.

Grammitis scolopendrina Bory in Duperrey, Voy. Monde Coquille, Crypt. 267, t. 30, f. 1, Nov. 1829. Type: New Ireland, *d'Urville* (holotype P, Morton photograph 21514). The locality was originally stated as "New Zealand," but this was surely a slip, for the species is not known from New Zealand, and the holotype clearly came from New Ireland, in the New Hebrides.

Loxogramme scolopendrina (Bory) K. B. Presl, Tent. Pterid. 215. 1836.

TYPE: Rawak [=Lawak] Island, near New Guinea, *Gaudichaud* (holotype P, with the name in Gaudichaud's hand, Morton photograph 21512).

In the "Index Filicum," Christensen indicated that *Grammitis scolopendrioides* Gaud. was probably the same as *G. scolopendrinum* Bory, but apparently no one has ever studied the type and confirmed this. These two species were published at about the same time, but Stafleu's "Taxonomic Literature" shows that Gaudichaud's name clearly has priority by over a year. The species is close to *Loxogramme involuta* (D. Don) K. B. Presl but is kept distinct by Copeland in his "Grammitidaceae of New Guinea" (Phil. Journ. Sci. 81:117. 1952).

68. GYMNOGRAMMA EGGERSII Christ, Bull. Soc. Roy. Bot. Belgique 32(2):92. 1894

[June 27, 1895]. = *Asplenium monteverdense* Hook. Second Cent. t. 41. 1860.

Anogramma eggersii Christ in C. Chr. Ind. Fil. 58. 1905.

Asplenium mortonii Duek, Adansonia 11:718. 1971. Based on *Anogramma eggersii* Christ, non *Asplenium eggersii* Sodiro.

TYPES: Jagüey, Oriente, Cuba, alt. 500 m., March, 1889, *Eggers* 4882a (holotype P, Morton photograph 3593).

Christ failed to see the indusia and so referred this plant to *Gymnogramma*; however, the indusia are quite obvious, and the specimen differs in no way from the type of *Asplenium monteverdense* (*Wright* 1029), which came from Monteverde, Oriente, Cuba, not very far from Jagüey, which was misread by Christ as "Jaqueij." In its rather elongate ultimate segments *A. monteverdense* Hook. is only slightly different from *Asplenium myriophyllum* (Swartz) Presl, to which it has been referred as a synonym; however, it may tentatively be maintained as a species, pending cytological study.

69. *HEMIONITIS DEALBATA* Willd. Hort. Berol. 1:t. 40. 1805. =*Pityrogramma tartarea* (Cav.) Maxon, Contr. U.S. Nat. Herb. 17:173. 1913.

In his paper on *Pityrogramma* (Contr. Gray Herb. 189:65. 1962), Tryon stated that *Hemionitis dealbata* Willd. is a superfluous and illegitimate name, a renaming of *Acrostichum tartareum* Cav., but this is an error, due to Tryon's having cited the wrong place of publication. *Hemionitis dealbata* was not first published in Willdenow's edition of the "Species Plantarum" in 1810, but was published in 1805, with a detailed description. In this 1805 publication, *Acrostichum tartareum* Cav. is not mentioned. *Acrostichum ebum* L. is cited as a synonym, but only with a query, showing that the species was based on a specimen. The locality is cited as "in America australi ad fluvium nigrum."

The description and plate of Willdenow were based on material cultivated in the botanical garden in Berlin. No cultivated material collected by Willdenow is known. In the Willdenow Herbarium in Berlin there are three sheets determined as *H. dealbata* under the number 19568, two of them collected by Humboldt and one by Swartz. I translate Willdenow's locality "ad fluvium nigrum" as referring to the Rio Negro in Brazil. Swartz never collected in South America, and so the cultivated material could not have been obtained from his collection. According to the account of *H. dealbata* in Humboldt, Bonpland, and Kunth's "Nova Genera," Humboldt collected this species near Guanaquato, Mexico, and so the Humboldt collection cannot have been the original source of the material either. Therefore, there is no herbarium specimen available as a holotype or lectotype, and the species must be typified on the original description and plate, which are fortunately rather good and complete. These show that Tryon was right in considering this species a synonym of *Pityrogramma tartarea* (Cav.) Maxon. The plant described and depicted was, however, a very small one of this species, probably due to its being unhappy under cultivation.

70. *Hymenophyllum capillare* Desvaux, Mém. Soc. Linn. Paris 6:333. 1827.

In my first paper on fern types (Contr. U.S. Nat. Herb. 38:76. 1967), I placed *H. capillare* Desv. as a synonym of *Hymenophyllum aeruginosum* (Poir.) Carm., going on the locality Tristan d'Acunha, since that is the only species of this alliance on that island. Dr. E. A. C. L. E. Schelpe kindly drew my attention to a note by Christensen in his paper "The Pteridophytes of Tristan da Cunha" (1940), in which it is indicated that the holotype in Paris has the locality corrected from Tristan d'Acunha to Bourbon. I have photographed this holotype (Morton photograph 4548). It is identical with *H. pendulum* Bory (1833) and

is the correct oldest name for that species of the Mascarene Islands. It is thus to be excluded from the flora of Tristan d'Acunha.

71. *Hymenophyllum fusugasugense* Karst. ex Sturm, Bot. Zeit. 1859:297. 1859.

A specimen in the Hamburg herbarium collected at Fusugasuga, Bogotá, Colombia, 2,700 m. alt. by H. Karsten is probably the type. It agrees with the illustration by Karsten (Fl. Col. 2:t. 155, f. 1-8. 1862-69) and with my delimitation (Contr. U.S. Nat. Herb. 29:186. 1947), but as I have shown (Amer. Fern Journ. 43:175. 1953), this species should be called *H. tomentosum* Kunze var. *fusugasugense* (Karsten) Morton.

72. *Hymenophyllum interruptum* Kunze, Linnaea 9:107. 1834.

TYPE: Pampayacu, Peru, Poeppig 1104.

A specimen in the Hamburg herbarium merely indicated as collected in Peru by Poeppig is probably an isotype. It is a detached and somewhat depauperate frond that matches closely a frond on the collection Schunke 183, from Chanchamayo Valley, Junín, Peru, as cited by me (Contr. U.S. Nat. Herb. 29:178. 1947). It will not key out very well, however, because the rhachis is, exceptionally, alate to the base, and even the stipe is a little alate at the apex. Still, there is no doubt as to the correctness of the usual concept of this species.

73. *Hymenophyllum molle* Morton. Contr. U.S. Nat. Herb. 29:149. 1947.

A specimen in Hamburg collected at Agapata, Peru, by Lechler is typical of this local Peruvian species. It bears the name *Hymenophyllum myriocarpum* Hook. and is doubtless Lechler 2250a, listed by Mettenius as "*H. myriocarpum* Hooker?" (Filices Lechlerianæ 1:26. 1856). It is, however, by no means *H. myriocarpum*, which is a glabrous species belonging to a different subgenus. Someone, probably C. Müller, has written "*H. myriocarpoides* C. Müll. n. sp.," but this name is unpublished.

74. HYMENOPHYLLUM NITENS Wercklé ex Christ, Bull. Herb. Boiss. II, 4:946. 1904, non R. Brown, 1810. = *Hymenophyllum crispum* H. B. K. Nov. Gen. Sp. 1:26. 1816.

Hymenophyllum micans Christ, Bull. Herb. Boiss. II, 5:260. 1905. Based on *H. nitens* Wercklé, non R. Brown.

TYPE: Costa Rica, without specific locality, Wercklé 249 and 252. Syntypes presumably P; two apparent isosyntypes BR, Morton photographs 19866, 19867.

The two apparently authentic collections that I have seen in Brussels agree with the brief original description. They are clearly typical *H. crispum* as it grows in Costa Rica. In my revision of the section

Sphaerocionium I omitted this species, believing at the time that it belonged in section *Mecodium*.

75. *Hymenophyllum tenellum* D. Don, Prodr. Fl. Nepal. 12. 1825.

Hymenophyllum exsertum Wallich, Num. List. no. 170. 1829, nom. nud. Based on Nepal, Wallich in 1821.

Hymenophyllum exsertum Wallich ex Hook. Sp. Fil. 1:109, t. 38A. 1844. Syntypes: *H. exsertum* Wallich Cat. no. 171, Nepal, Wallich, and *H. densum* Wallich Cat. no. 170, Nepal, Wallich. Hooker here has the names reversed from those in Wallich's "Numerical List," where *H. exsertum* is no. 170 and *H. densum* no. 171. This is surely a slip of the pen, and the species should be considered based on the plant called *exsertum* by Wallich, namely no. 170; the specimen of this number in Kew is here designated lectotype. An isolectotype is in US. Another reason for not choosing no. 171 is that this number perhaps does not represent the species described. At least the specimen in US of this number, which bears the name *Hymenophyllum densum* Wallich, is not a *Hymenophyllum*, but is *Trichomanes bipunctatum* Poir.; our specimen is so annotated by Copeland. I do not know what the Kew material of this number may be. *Trichomanes bipunctatum* does resemble this species of *Hymenophyllum* a little, and so it could be that both Wallich and Hooker were mistaken in referring their plants to *Hymenophyllum*; the *Trichomanes* can be distinguished at once by the thicker rhizome, which is densely covered by short, black trichomes.

Mecodium exsertum (Wallich ex Hook.) Copel. Phil. Journ. Sci. 67:23. 1938.

LECTOTYPE: Nepal, Buchanan-Hamilton (BM, Morton photograph 6592). The other syntype is Nepal, Wallich, which I have not seen. Presumably it is a part of the same collection that was the basis of Wallich List no. 170, i.e., *H. exsertum* Wallich.

In the "Index Filicum," *Hymenophyllum tenellum* D. Don is listed as a dubious species. Copeland in his revision of the Old World *Hymenophyllum* listed it as a synonym of *H. polyanthos* (Swartz) Swartz; he had not seen the type but merely says: "Wallich 172 must be discussed, because, as it is recognized as *H. polyanthos* by Hooker, Sp. Fil. 1:102, I see no reason to doubt that it is *H. tenellum* Don, which Hooker listed, page 112, as a 'dubious species.'" This is a non sequitur, for the fact that Hooker listed *H. tenellum* as a dubious species is no reason for associating it with the plant called *H. polyanthos* by Hooker. Apparently it did not occur to Copeland that there are other species in Nepal to which Don's name might apply, in particular *H. exsertum*. This species is somewhat similar to *H. polyanthos*, but the division of the blade is a little different, and a distinguishing character is the presence of hairs on the rhachis; the rhachis of *H. polyanthos* in all its many forms is entirely glabrous.

76. *LASTREA ACUMINATA* Houlston, Gard. Mag. Bot. Hort. Floricult. Nat. Sci. 1851:317. 1851. = *Lastreopsis acuminata* (Houlston) Morton, comb. nov.

Aspidium shepherdii Kunze ex Mett. Fil. Hort. Lips. 94. 1854. Mettenius was the first to give a description of *Aspidium shepherdii* Kunze, a nomen

nudum when first published (Linnaea 23:230. 1850). Kunze's plants were cultivated at Kew in 1822, Berlin in 1842, and Leipzig in 1843. The syntypes were destroyed in Leipzig during the war, but there are probably some isosyntypes in Berlin that will provide a suitable lectotype, presumably one in the Mettenius Herbarium. Dr. Tindale indicates that the holotype is in the Christensen Herbarium in the British Museum (Natural History), but this is impossible. As indicated above there was no holotype, only three syntypes, and none of these could be in the Christensen Herbarium (unless Christensen stole one from Leipzig before the war, which is not likely).

Lastrea atrovirens J. Smith, Cat. Cult. Ferns 59. 1857. Type: Cultivated at Kew (holotype J. Smith Herbarium, BM 2 sheets, Morton photographs 6463, 6464).

Dryopteris shepherdii (Kunze) C. Chr. Vict. Nat. 60:155. 1944.

Lastreopsis shepherdii (Kunze) Tindale, Vict. Nat. 73:182. 1957.

TYPE: A plant cultivated by Loddiges in 1842 (holotype Herb. Houlston, BM, 2 sheets, Morton photographs 6771, 6772).

In her fine "A Monograph of the Genus *Lastreopsis* Ching" (Contr. New South Wales Nat. Herb. 3:249-339. 1965), Dr. Tindale has overlooked *Lastrea acuminata* Houlston, perhaps because in Supplement 3 of the "Index Filicum" (p. 117. 1934) the locality is given as "Nepal." Houlston's plant, however, was cultivated from some unknown source and he only guessed that it might be from Nepal. His type, now in the British Museum (Natural History), is identical with the type of *L. atrovirens* J. Smith, and their plants probably came from the same source. It is indeed quite likely that the original cultivated plants of *Aspidium shepherdii* Kunze also came from the same source at Kew, where it was said by Kunze to be in cultivation as early as 1822. Houlston described his *L. acuminata* as a new species, with no reference or suggestion that it might be the same as *Aspidium acuminatum* Willd. The confusion with Willdenow's *A. acuminatum* was due to Lowe, who later illustrated Houlston's species (Ferns Brit. & For. 6:t. 11. 1857) but attributed the name to Willdenow, for what reason cannot be imagined, because *Aspidium acuminatum* Willd. is an utterly different plant, considered to be a synonym of *Nephrolepis biserrata*.

Inasmuch as the original description was published in a rather rare journal, rare at least outside of England, I give below a transcript of it:

L. acuminata J. H.—An evergreen warm greenhouse Fern, the native country of which is doubtful; prob. from Nepal. Frond glabrous, triangularly elongate, bipinnate, a foot or more long, dull green; pinnae triangularly elongate-acuminate; pinnules oblong-ovate, lower ones entire, and slightly pinnatifid, upper ones decurrent at the base, and rather rigidly toothed. Sori medial. Stipes scaly at the base, terminal, adherent to a somewhat tufted rhizome.

77. *LASTREA SPINESCENS* Houlston, Gard. Mag. Bot. Hort. Floricult. Nat. Sci. 1851:318. 1851. = *Lastreopsis decomposita* (R. Brown) Tindale, Vict. Nat. 73:183. 1957.

TYPE: Cultivated by S. Rucker, Wandsworth, England, 1850 (holotype BM, ex Herb. Houlston, Morton photograph 6769).

This species is omitted in Dr. Tindale's monograph of *Lastreopsis*, but she wrote me some years ago that *L. spinescens* was probably a synonym of *L. decomposita*. An examination of the type shows that this is indeed the case. Houlston believed that his species was from the "East Indies" but it was surely from Australia. Since the original journal is rare, I give below a transcript of the original description:

L. spinescens J. H.—An ornamental, evergreen stove Fern, from the East Indies. Fronds pubescent, deltoid, one and a half to two feet long, dull green, tripinnate; pinnules linear-lanceolate, pinnatifid, decurrent at the base, with rather ovate slightly dentate segments, terminating in a long spinous mucro. Sori submarginal. Stipes scaly. Fronds lateral, adherent to a scaly creeping rhizome. This species is also rare in cultivation, although introduced ten years ago, among some orchids, by S. Rucker, Esq., of Wandsworth.

78. LEPTOSTEGIA LUCIDA D. Don, Prodr. Fl. Nepal. 14. 1825. = *Onychium japonicum* var. *lucidum* (D. Don) Christ, Bull. Soc. Bot. France 52, Mém. 1:60. 1905.

Cheilanthes lucida Wallich, Num. List. no. 69. 1829, nom. nud.

TYPE: Narainhetty, Nepal, Feb. 22, 1803, *Buchanan-Hamilton* (holotype BM, Morton photograph 6697, right-hand plant; the left-hand plant is Kumaun [Kamaoun], *Duthie* 3675).

There has been some doubt about the identity of this species, the type and only species of the genus *Leptostegia* D. Don. For a long time it was considered a synonym of *Onychium japonicum*. In 1934, Christensen and Ching, working entirely independently, came to opposed conclusions. Christensen in the third supplement of the "Index Filicum" took up the name *O. lucidum* (D. Don) Spreng as a valid species, with *Onychium contiguum* (Wall.) Hope as a synonym. Ching on the other hand, recognized *O. contiguum* as a valid species and placed *L. lucida* as a variety of *O. japonicum*. Apparently neither Christensen nor Ching ever saw the type of *Leptostegia lucida*, but Ching was right in his placement. Don's type is not at all like the type of *Cheilanthes contigua* Wall., judging by two sheets of *Wallich* 72 in the U.S. National Herbarium. They represent a species with the blade very finely cut, with the ultimate segments linear, and the sori short. The type of *L. lucida* is like *Wallich* 69, which has broader segments and large sori, these mostly 5 mm. long or more. Ching is very likely right in considering this as merely a variety of *O. japonicum*, although further study may show that it is specifically distinct from the Japanese plants. The matter is complicated by numerous Chinese specimens, some of which resemble typical *O. japonicum* and some *O. lucidum*.

79. LOMARIA BIFORMIS Baker, Journ. Linn. Soc. London 15:415. Oct. 23, 1876.
= *Blechnum biforme* (Baker) Christ, Farnkr. Erde 180. 1897.

Blechnum microbasis (Baker) C. Chr. var. *biforme* (Baker) Tardieu in Humbert, Fl. Madag. Fam. 5, 2:14. 1960.

TYPE: Antananarivo, Madagascar, April, 1876, *Pool* s.n. (holotype K, 2 sheets, Morton photographs 11422, 11423).

Lomaria biformis Baker has priority by four years over *L. microbasis* Baker (1880), and so Madame Tardieu has the names backward, since *biformis* should be the species and *microbasis* the variety. It seems somewhat doubtful if these species represent more than forms of each other, however, and so the following combination seems preferable: *Blechnum biforme* (Baker) Christ f. **microbasis** (Baker) Morton, comb. nov. (*Lomaria microbasis* Baker, Journ. Bot. Brit. & For. 18:328. 1880. Type: between Tamatave and Antananarivo, Madagascar, May, 1880, *L. Kitching* (holotype K, Morton photograph 11382; isotype B, Morton photograph 10193).

80. LOMARIA DECOMPSITA D. Don, Prodr. Fl. Nepal. 14. 1825. = *Onychium siliculosum* (Desv.) C. Chr. Ind. Fil. 468. 1906.

Pteris siliculosa Desv. Naturforsch. Freund. Berlin Mag. 5:324. 1811. Type said by Desvaux to be from South America, but Weatherby confirms (Contr. Gray Herb. 124:18. 1939) that it represents the Asiatic species known since the time of the "Index Filicum" as *Onychium siliculosum*, which had been generally called *Onychium auratum* Kaulf.

Pteris chrysocarpa Hook. & Grev. Icon. Fil. 1: t. 107. 1828. Syntypes: Nepal, *Buchanan-Hamilton*, and Katmandu, Nepal, *Wallich* (presumably K but possibly E). These two collections are doubtless duplicates of the same two collections that served as the syntypes of *Lomaria decomposita* D. Don. Hooker and Greville noted the similarity of their species to that of Don, but remarked that so careful an observer as Don would not have failed to describe the yellow coloration (but Don was not all that careful and, furthermore, his descriptions were very brief).

SYNTYPES: Narainhetty, Nepal, *Buchanan-Hamilton* (BM, Morton photograph 6696); Nepal, *Wallich* (not seen). The *Buchanan-Hamilton* specimen is here designated lectotype.

In the "Index Filicum," *Lomaria decomposita* D. Don is left as a dubious species, perhaps a synonym of *Onychium japonicum* (Thunb.) Kunze. It was correctly placed by Ching (Lingnan Sci. Journ. 13:495. 1934) as a synonym of *O. siliculosum*; however, Ching did not designate a lectotype.

81. LOMARIA MARGINATA Schrad. Goett. Gel. Anz. 1824:871. 1824. = *Lomariopsis marginata* (Schrad.) Kuhn in von Decken, Reise Ost-Afr. Bot. 3(3):22. 1879.

Acrostichum erythrodes Kunze, Flora 22(1): Beibl. 46. 1839. Type: Ilheos, Bahia, Brazil, *Martius* 366 (holotype presumably M; isotypes BR, Morton photographs 5077, 5078, and L, Morton photographs 2259, 2260).

Lomariopsis erythrodes (Kunze) Fée. Mém. Foug. 2:67. 1845.

Stenochlaena marginata (Schrad.) C. Chr. Ind. Fil. 624. 1906.

TYPE: Brazil, *Prince Neuwied* (holotype BR, Morton photograph 19838).

In the "Index Filicum," Christensen correctly placed *Lomaria marginata* Schrad. under *Stenochlaena*, and indicated *Acrostichum japurense* Mart. and *A. erythrodes* Kunze as synonyms, but for some unexplained reason in the first supplement he indicated that *L. marginata* was a *Blechnum*, and in the third supplement he equated it with *Blechnum regnellianum* Kunze with a query. It must be that a specimen in Copenhagen or Stockholm named *L. marginata* is really a *Blechnum*. But the holotype in Brussels is a *Stenochlaena*, or a *Lomariopsis* as Holttum now delimits these genera. The type itself is annotated by Kunze as equaling his own *A. erythrodes*, and Kuhn in his transfer of *L. marginata* to *Lomariopsis* also indicates that he has seen the type and that it is the same as *A. erythrodes*, which I can now confirm. In his brief synopsis of American *Lomariopsis* (Kew Bull. 1939:618. 1939), Holttum adopts the name *L. erythrodes*, presumably not having inquired further into the identity of *L. marginata* Schrad.² *Lomariopsis marginata* is confined to southern Brazil. The closely allied *L. japurensis* (Mart.) J. Smith of northern Brazil and the Guianas differs in having more numerous and closer veins in the sterile pinnae.

82. **LOMARIA PYROPHILA** Blume, Enum. Pl. Jav. 202. 1828. = **Blechnum pyrophilum** (Blume) Morton, comb. nov.

TYPE: Summit of the volcano, Ternate, August, 1821, *Reinwardt 1712* (holotype L, Morton photograph 731).

This species was considered as possibly the same as *Lomaria vestita* Blume in the "Index Filicum," and also in Backer and Posthumus, but the type shows that it is different in its fewer pinnae, these rounded at the apex and not long acuminate, in its thicker texture, and in its dark rhachis, this only sparingly scaly. The type of *L. vestita* is also in Leiden (Java, *Blume*, Morton photograph 732); it shows a much larger plant of thin texture, the pinnae being elongate and long-acuminate, and the rhachis pale and densely scaly. *Lomaria vestita* Blume var. β (Blume. Enum. 203) from Mount Tjerimai, Java, *Blume* (Morton photograph 733) is less scaly and has the veins not raised beneath, but it is doubtless a form of the same species. The proper status of *L. vestita* remains to be determined; it is close to *Blechnum procerum* (Forst. f.) Swartz, of which it may be a geo-

² Although I have not seen the types, it seems likely that *Lomariopsis speciosa* Holttum (loc. cit. Type: Bahia, *Luschnath*) is the same as *L. elongata* Fée (Mém. Foug. 2:67. 1845, also described from Bahia, *Luschnath*), which Holttum does not compare it with. At least, from the description I cannot distinguish them.

graphical race. It is rather unfortunate that the name *Blechnum pyrophilum* is so much like *B. pyrophyllum* Blume, but I think that they must be considered different names, because they have different derivations and meanings and because they differ in spelling by two letters. The epithet "*pyrophila*" was evidently chosen because of the plant having been found growing by the crater of the volcano on Ternate Island.

83. **LOMARIA XIPHOPHYLLA** Baker, Journ. Bot. Brit. & For. 22:142. 1884. = **Blechnum biforme** var. **xiphophyllum** (Baker) Morton, comb. nov.

Blechnum xiphophyllum (Baker) C. Chr. Ind. Fil. 161. 1905.

Blechnum simillimum var. *xiphophyllum* (Baker) Tardieu in Humbert, Fl. Madag. Fam. 5, 2:11. 1960.

SYNTYPES: Madagascar, *Humboldt* 257 and 442 (K, Morton photographs 11391, 11392, 11393).

Following Madame Tardieu, it seems best to consider this plant as only varietally distinct from *B. biforme*, which Madame Tardieu calls *B. simillimum*.

84. **LYCOPodium CRASSINERVIUM** Desv. Ann. Soc. Linn. Paris 6:190. 1827. = **Selaginella crassinervia** (Desv.) Spring. in Mart. Fl. Bras. 1(2):120. 1840.

Lycopodium brasiliense Raddi, Pl. Nov. Bras. Nov. Gen. 82, t. 1, f. 1. 1825.

Lycopodium pallidum Beyrich ex Gaud. in Freyc. Voy. Bot. 1:285. 1827. Not definitely accepted by the publishing author, Gaudichaud, and therefore not validly published.

Selaginella muscosa Spring in Mart. Fl. Bras. 1(2):120. 1840. Type: Macahé, Sebastianopolis, Brazil, *Luschnath* (presumably BR or M, not seen).

Selaginella brasiliensis (Raddi) A. Braun, Ann. Sci. Nat. Paris V, 3:290. 1863, non Spring, 1838.

TYPE: "Habitat in Brasilia."

In Alston's "The Brazilian species of *Selaginella*" (Repert. Sp. Nov. Fedde 40:313. 1936) the earliest available epithet *crassinervia* was rejected, apparently on the ground that the type specimen is infected with a fungus. This is true and was even noted in the original description by Desvaux, but this does not mean that the name is based on a "monstrosity" and so must be rejected. Many plants are affected more or less by fungi, but if this does not cause so much distortion that the plant is unidentifiable (as in a "witches' broom"), the names are legitimate. Therefore the name *S. crassinervia* should be restored for the common south Brazilian species and the name *S. muscosa* considered a synonym. For additional synonymy, see Alston.

85. **Meniscium puncta lunulatum** L. C. Rich. Act. Soc. Hist. Nat. [Paris] 1:114. 1792.

In the "Index Filicum" this is indicated as a validly published but dubious species, but there is no such thing. The words "*puncta lunula-*

tum” are merely the first words of Richard’s generic description of *Meniscium*.

86. *MENISCIMUM SCREBERI* L. C. Rich., Act. Soc. Hist. Nat. [Paris] 1:114. 1792.
= *Thelypteris reticulata* (L.) Proctor, Bull. Inst. Jamaica, Sci. Ser. 5:63.
1953.

In the “Index Filicum” this is indicated as a nomen nudum, but it is not. The genus *Meniscium* Schreber dates from 1791 and Richard must have known of it even though he does not cite a reference to it, for he is unlikely to have invented the generic name independently. In fact, it is quite evident that he did know of Schreber’s work, for he names the species after him, misspelling the specific name as “screberi.” Schreber himself did not name a species, and Richard was providing a name. He cites for *M. screberi* “Plumier Fil. t. 110,” and since Plumier had both a plate and a full description the species *screberi* is validly published by reference to this “pre-Linnaean” description, which refers to the plant described later as *Polypodium reticulatum* L.

87. *MICROLEPIA INCISA* Fée, Gen. Fil. 328. 1852. = *Dennstaedtia obtusifolia*
(Willd.) Moore, Ind. Fil. 306. 1861.

TYPE: Gmadeloupe, *L’Herminier* (Herb Mougeot).

In the “Index Filicum” *Microlepia incisa* Fée is regarded as a dubious and unplaced species. The present location of the Mougeot fern herbarium has not been ascertained, although Dr. Lellinger has followed several leads. There is in Paris a *L’Herminier* specimen from Guadeloupe (Morton photograph 21327) that has a label in Fée’s own hand with the name *Microlepia incisa* Fée. It came from the Houillet Herbarium. I do not know anything about B. Houillet (1815–1890), whose herbarium is now partly in Paris and partly in Brussels, but it seems possible that the specimen of this species from the Mougeot Herbarium (or the whole Mougeot Herbarium?) came to Houillet, and that this specimen is actually the holotype of *M. incisa*. In any case it can be considered the lectotype until another specimen is discovered. It represents the same species as that later described (in 1866) by Fée as *Dicksonia incisa* Fée, Fée having apparently chosen the epithet “*incisa*” independently for both the *Microlepia* and the *Dicksonia*. The latter is *Dennstaedtia incisa* (Fée) Kuhn, which Tryon considers to be synonymous with *D. obtusifolia*; it is perhaps not quite identical and it may be that the material from the Lesser Antilles deserves some taxonomic recognition.

88. *MICROSORIUM LONGISSIMUM* Fée, Gen. Fil. 268, t. 20B, f. 2. 1852. = *Polypodium myriocarpum* Mett. Abhandl. Senckenb. Naturforsch. Gesell. 2:105. 1856.
Phymatodes myriocarpa Presl, Tent. Pterid. 198, t. 8, f. 12. 1836, nom. nud.
Drynaria longissima J. Smith. Journ. Bot. 3:397. 1841, nom. nud.

TYPE: Luzon, *Cuming* 66 (isotype FI Morton photograph 16016).

Under the genus *Microsorium*, the name *M. longissimum* Fée is correct, but the epithet *longissimum* is not available under *Polypodium* because of *P. longissimum* Blume (1828). The basis of Presl's *Phymatodes myriocarpa* is unknown, but very likely it was a Haenke collection from the Philippine Islands; there is no description, and the figure given is an analysis only rather than the figure with analyses which would be required for valid publication. *Polypodium myriocarpum* Mett. was validly published with a description; it was based partly on *Cuming* 66 and partly on a Mérat collection from Cochin China. In the "Fern Flora of the Philippines," Copeland placed *Drynaria rubida* J. Smith as a synonym of *Microsorium longissimum* Fée, but this is wrong, a confusion with the quite different *Polypodium longissimum* Blume, of which *D. rubida* has been considered a synonym. The true identity of *D. rubida* remains to be established; it was originally a nomen nudum but was validly published as *Polypodium rubidum* Kunze, later, although Kunze included in his species material from Java collected by Zollinger as well as the original *Cuming* material of *D. rubida* J. Smith. A second sheet of *Cuming* 66 at Firenze (Morton photograph 16015) shows a form with deeply lobed blades; it is just a monstrosity or possibly is a hybrid with one of the regularly pinnatifid species.

89. NEPHRODIUM SPARSUM D. Don, Prodr. Fl. Nepal. 6. 1825. = **Dryopteris sparsa** (D. Don) Kuntze, Rev. Gen. Pl. 2:813. 1891.

Polypodium sparsum Buch.-Ham. mss. ex D. Don, loc. cit.

Aspidium sparsum (D. Don) Spreng. in L. Syst. Veg. ed 16, 4:106. 1827.

Aspidium densum Wallich, Num. List no. 390. 1829, nom. nud. Based on Nepal, Wallich in 1821 (presumably E. Ind. Co. Herb., K).

Lastrea sparsa (D. Don) Moore, Ind. Fil. 104. 1858.

Aspidium densum Wallich ex Mett. Abhandl. Senckenb. Naturf. Gesell. 2:349. 1858, pro parte, at least as to Wallich no. 390. Mettenius cited as synonyms *Aspidium catophoron* Kunze (1848) and *Aspidium weigleanum* Kunze (1851), both of which were legitimate and available names. *Aspidium densum* Wallich was therefore an unnecessary name, superfluous and illegitimate by Art. 63 of the Code. *Aspidium densum* Wallich ex Mett. is therefore to be typified as a renaming of the oldest available name that ought to have been adopted, namely *Aspidium catophoron* Kunze and based on the same type as that. *Nephrodium densum* D. Don was cited not as a straight synonym but as a variant or perhaps possible synonym, according to Mettenius' usual way of disposing of names that were doubtful or unknown to him.

TYPE: Suambu, Nepal, May 15, 1802, *Buchanan-Hamilton* (holotype BM, Morton photograph 6448).

This species has generally been understood correctly, as by Ching in his treatment of Sikkim-Himalaya *Dryopteris* (Bull. Fan. Mem.

Inst. Biol. Bot. 8:470. 1938), at least as to plants from Nepal and the Himalayas. The species is variable and possibly an aggregate in the wide range stated by Ching—India, Japan, Formosa, China, Indo-China, Philippine Islands, Malesia, and Polynesia.

90. *NEPHRODIUM SUBFUSCUM* Baker in Hook. & Bak. Syn. 267. 1867. =*Thelypteris leprieurii* (Hook.) Tryon, Rhodora 69:6. 1967.

Dryopteris subfusca (Baker) Kuntze, Rev. Gen. Pl. 2:813. 1891.

TYPE: Cayenne [French Guiana], *Leprieur* 23 bis (holotype K!).

In his monograph of *Dryopteris* (p. 167), Christensen remarked on this species and indicated that the type could not be located at Kew; it is there, however, with the name on a label at the side of the sheet where it could be easily overlooked. The name *Nephrodium leprieurii* Hook. var. *a* is also on the sheet in Hooker's hand, and it is indeed possible that this same sheet is also the type of Hooker's species, although I think not. Hooker says that his plant was collected in marshy woods of central French Guiana by Leprieur, but there is no information of this sort on this sheet. Moreover, Hooker comments especially on the false vein recurrent from the sinus [typical of this section *Steiropteris*], but this vein is not evident on this specimen.

Baker's *N. subfuscum* may indeed be a different species from *T. leprieurii*, for it differs not only in the absence of the recurrent false vein, but in having a rhachis that is only slightly pubescent (rather than densely short villous as in *leprieurii*), and fewer pairs of veinlets (about 8 pairs in *subfuscum* and about 12 pairs in *leprieurii*, according to Baker, Syn. Fil. 266). Still, *T. leprieurii* appears to be a variable species, at least as treated by Christensen, and Hooker's var. *β* from Peru appears even more different than *subfuscum*.

91. *NEPHROLEPIS TRICHOMANOIDES* J. Smith ex Presl, Epim. Bot. 44. 1849 [1851]. =*Arthropteris palisotii* var. *trichomanoides* (J. Smith ex Presl) Morton, comb. nov.

SYNTYPES: Luzon, *Cuming* 101 and Java, *Zollinger* 2812. Since the name was attributed to J. Smith, the Cuming specimen is the suitable lectotype, for it was named by Smith. This specimen is presumably in the Presl Herbarium in Prague, but it is not mentioned in Holttum's recent paper on the Presl types that he found. There are two isoelectotypes in Paris (Morton photographs 3613, 3614).

The proper citation for this species is omitted in the "Index Filicum" and its supplements; at the reference cited there, "J. Smith in Hook. Journ. Bot. 3:413. 1841," the name is a nomen nudum. In Copeland's "Fern Flora of the Philippines," *N. trichomanoides* is placed as a synonym of *Arthropteris obliterated* (R. Brown) J. Smith, but the basis of that (*Nephrodium obliterated* R. Brown) is actually a *Nephrolepis*, the identity of which is being studied by Dr. Jarrett. The

Philippine specimens in general have the pinnae smaller and narrower (often only 4–7 mm. wide) than in the typical African specimens of *A. palisotii*, and they are often obviously crenate rather than entire or subentire. They can conveniently be recognized as a variety. The holotype of *Aspidium palisotii* Desv., from Oware, Nigeria, Africa, *Palisot de Beauvois*, is in the Desvaux Herbarium in Paris (Morton photograph 3620); it consists of a piece of rhizome with one frond attached and a broken part of another frond; it is likely that this was removed from the holotype sheet of *Aspidium ramosum* Palisot de Beauvois (Fl. d'Oware 2:54, t. 91, f. 1. 1818), which is a better specimen with six fronds attached to a rhizome, one of these broken in a way that suggests that the broken fragmentary frond on the Desvaux type was removed from this sheet (Morton photograph 3619). There is a good isotype of *A. palisotii* in the Jussieu Herbarium (Cat. 1106, Morton photograph 2955).

92. *PHEGOPTERIS ATROVIRIDIS* van Alderw. van Rosenb. Bull. Jard. Bot. Buitenzorg II, 16:26. 1914. = *Diplazium atroviride* (van Alderw. van Rosenb.) Morton, comb. nov.

Dryopteris atroviridis (van Alderw. van Rosenb.) C. Chr. Ind. Fil. Suppl. 2:13. 1917. At this place, Christensen attributes this combination to v. A. v. R., but van Alderwerelt published it only as a synonym and did not accept it; therefore as an accepted combination it must be attributed to Christensen himself.

TYPE: Gunong Tanditat, Sumatra, in a damp ravine at 6,000 feet elevation, Jan. 21, 1913, *C. G. Mathew* 678 (holotype presumably BOG; isotype K, Morton photographs 18912, 18913, 18914).

From the isotype at Kew, this is clearly not a *Phegopteris* or *Dryopteris* but a *Diplazium*, one of the compound-leaved types. The middle pinnae closely resemble those of *D. polypodioides* Blume, but the lower are quite unlike, being tripinnate, with the ultimate segments elongate and strongly lobed. It is a distinct species thus far known only from the type collection.

93. *PITYROGRAMMA TARTAREA* var. *FALLAX* Domin. Věstn. Král. České Spol. Nauk, Tř. Mat. 1941(15):8. 1942. = *Pityrogramma* × *distans* (Link) Domin, Rozpr. České Akad. II, 38(4):49. 1929.

TYPE: "Mexico: San Marcos, *M. E. Jones* 21. VI. 1892, no. 513a (H. Dom. ex Nat. H. Wash.)."

I have received on loan from Pomona College, through the kindness of Dr. Lyman Benson, the specimens of *Jones* 513 and 513a, both of which bear the same data. *Jones* 513 is small and juvenile but rather typical *P. tartarea* (Cav.) Maxon. *Jones* 513a, the isotype of var. *fallax*, is a large, mature specimen that agrees with Domin's description and comments. This specimen is designated lectotype. There is in

the U.S. National Herbarium a specimen with the same data and with the number 513; this does not agree with *Jones* 513 in Pomona College but rather with 513a, and it is thus an isotype of var. *fallax*, and an "isolectotype."

Domin's var. *fallax* is not typical *P. tartarea*, for the specimen differs in aspect, in the more oblique pinnae and segments, the more acuminate pinnae, and the softer texture. It appears to represent a hybrid between *P. calomelanos* and *P. tartarea*, which is known as *Pityrogramma* × *distans* (Link) Domin. The original *Gymnogramma distans* Link was not considered by Link as a hybrid; it was based on cultivated material in the botanical garden in Berlin of unknown origin. From the illustration of an isotype of *G. distans* given by Domin in his paper on hybrid *Pityrogramma*, it appears that he is right in considering this taxon as representing the hybrid *P. calomelanos* × *tartarea*. This photograph agrees quite well with var. *fallax*, which probably represents a naturally occurring hybrid. The two species *P. calomelanos* and *P. tartarea* are both common and frequently grow in the same areas, and so natural crosses are to be expected.

94. POLYPODIUM ARGYRATUM Bory ex Willd. in L. Sp. Pl. ed. 4, 5:175. 1810.
=Grammitis argyrata (Bory) Morton, comb. nov.

Ctenopteris argyrata (Bory) Tardieu, Notul. Syst. 15:445. 1959.

TYPE: Bourbon Island [Réunion], Bory (holotype B, Herb. Willd. no. 19660, microfiche photograph US).

The holotype is a poor specimen, a single detached frond lacking a rhizome. It agrees with a topotype collected in Bourbon by Commerson (P, Herb. Jussieu cat. 1091, right-hand plant, Morton photograph 2946). In their white-ceraceous blades and spongy texture, this species and two others of the Mascarene Islands and Madagascar show a clear and unexpected relationship to several tropical American species such as *Grammitis curvata* (Swartz) Ching, and the following allied species: *G. amylacea* (Copel.) Morton, *G. fragillima* (Copel.) Morton, *G. herrerae* (Copel.) Morton, and *G. subcrassa* (Copel.) Morton.

95. POLYPODIUM ATHYRIOIDES Hook. Sp. Fil. 4:224, t. 277 B. 1862. =Grammitis athyrioides (Hook.) Morton, comb. nov.

Ctenopteris athyrioides (Hook.) Copel. Phil. Journ. Sci. 84:406. 1955.

TYPE: Pangoa, Peru, Mathews 1103 (K).

This distinctive species has been known only from the type and two other collections: Río Lachac, Valle de Lares, Cuzco, Peru, Bües 1822 (US), and Cerros Calla Calla, 26 km. above Leimebamba, on the road to Balsas, Province of Chachapoyas, Department of Amazonas, Peru, 3360 m., Hutchison & Wright 6988 (UC). Superficially, this species rather resembles *Polypodium chochetangense* Rosenst., but this is an

instance of a parallel evolution apparently, for the latter belongs in *Polypodium* subg. *Polypodium* in the group of *P. pectinatum* L. The rhizome of *Grammitis athyrioides* has been unknown until the recent collection of Hutchison and Wright. It is short-creeping and about 2 mm. in diameter. The rhizome scales are abundant. They are castaneous, 3–4 mm. long, 0.5–0.6 mm. broad near the base, narrow-lanceate, acuminate, clathrate, the cells in about 8 rows near the base, the cells toward the apex of the scales with thickened walls and obscure lumina, and the scale margins with several conspicuous, brown, stiff, one-celled setae 0.3–0.4 mm. long.

96. POLYPODIUM BINERVE Hook. Sp. Fil. 4:175, t. 273 B. 1862. = *Blechnum binerve* (Hook.) C. Chr. Cat. Pl. Madag. Pterid. 44. 1932.

Lomaria simillima Baker, Journ. Bot. Brit. & For. 22:141. 1884.

Type: Madagascar, *Humblot* 307 (K).

Lomaria stenophylla Baker, Journ. Bot. Brit. & For. 22:142. 1884. Type: Madagascar, *Humblot* 305 (K, Morton photograph 11302).

Blechnum simillimum (Baker) Diels in Engl. & Prantl, Nat. Pflanzenfam. 1(4):248. 1899.

Blechnum humblotii C. Chr. Ind. Fil. 155. 1905. Based on *Lomaria stenophylla* Baker, 1884, non Klotzsch, 1847.

Blechnum simillimum f. *binerve* (Hook.) Tardieu in Humbert, Fl. Madag. Fam. 5, 2:11. 1960.

TYPE: Madagascar, *Lyall* (holotype K, Morton Photograph 11303).

Madame Tardieu reduced *Blechnum binerve* to a form of *B. simillimum*, but that may not be, for the basionym *Polypodium binerve* Hook. dates from 1862, whereas the basionym of the other, *Lomaria simillima* Baker, dates from 1884. Doubtless she was influenced not by the dates of publication of the species but because *P. binerve* Hook. was based on juvenile plants. The fact that the type of a species is juvenile, however, does not mean that the species loses its priority. It is rather unfortunate perhaps that the type of the species should be an atypical, juvenile plant, but that cannot be helped. Since the juvenile and mature forms of the same species cannot be recognized as different forms, it follows that *Lomaria simillima* is a synonym of *B. binerve*. *Lomaria stenophylla* Baker was based also on a juvenile plant of this species.

97. POLYPODIUM CONJUNCTISORUM Baker, Ann. Bot. 8:129. 1894. = *Grammitis conjunctisora* (Baker) Morton, comb. nov.

?*Polypodium roemerianum* Rosenst. Nova Guinea 8:725. 1912. Lectotype: Hellwig Mountains, Dutch New Guinea, 1600–2300 m., November 1909, *von Roemer* 1227. The other syntype in Leiden, *von Roemer* 741 (Morton photograph 1969) is a poor specimen bearing the same data as the lectotype; this sheet is annotated by Rosenstock and it is thus truly the syntype, the published number "744" being a typographical error. The

true 744 is a quite different plant, cited by Rosenstock (op. cit. p. 727) as *Polypodium rupestre* Blume var. *leucolepis* Rosenst.

Xiphopteris conjunctisora (Baker) Copel. Phil. Journ. Sci. 81:94. 1952.

Type: Mount Suckling, New Guinea, *Macgregor* (holotype K, not seen).

98. *POLYPODIUM FLOCCULOSUM* D. Don, Prodr. Fl. Nepal. 1. 1825. =*Pyrrrosia flocculosa* (D. Don) Ching, Bull. Chin. Bot. Soc. 1:66. 1935.

Polypodium acrostichoides Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 1. 1825, in synon., non Forst. f., 1786.

Niphobolus flocculosus (D. Don) Spreng. in L. Syst. Veg. ed. 16, 4:45. 1827.

Cyclophorus flocculosus (D. Don) C. Chr. Ind. Fil. 199. 1905.

TYPE: Narainhetty, Nepal, Nov. 13, 1803, *Buchanan-Hamilton* (holotype BM, Morton photograph 6738).

This species has been generally understood. It was well described by Giesenhagen (Die Farngattung *Niphobolus* 125. 1901).

99. *POLYPODIUM HIRSUTISSIMUM* var. *SERICCEUM* Mart. & Gal. Mém. Acad. Brux. 15:42. 1842. =*Polypodium rosei* Maxon, Contr. U.S. Nat. Herb. 17:594. 1916.

TYPE: Near Morelia, Michoacán, Mexico, *Galeotti* 6432 (holotype BR, Morton photograph 5024, left-hand plant and right-hand label).

In Maxon's revision of the group of *Polypodium squamatum*, this variety was overlooked. There is only one sheet at Brussels that could be the holotype. It contains two specimens—a large plant at the right that is *Polypodium pyrrolepis* (Fée) Maxon and a smaller plant that represents *P. rosei* Maxon. This smaller plant agrees with the brief diagnosis of Martens and Galeotti. The sheet bears two labels, which are mounted in such a way that they seem to refer to the wrong plants. The label for *Galeotti* 6432, from Morelia, is the one at the right, whereas the one at the left is *Galeotti* 6276 from Mirador, Veracruz, referring to the large plant of *P. pyrrolepis*. The labels must go this way because *P. rosei* does occur near Morelia, where the type of var. *sericeum* came from, and *P. pyrrolepis* does occur at Mirador, in Veracruz, but not near Morelia in western Mexico. Another sheet of *P. pyrrolepis* in Brussels from Mirador bears the number *Galeotti* 6432, evidently an error for *Galeotti* 6276.

100. *POLYPODIUM INCANUM* var. *FIMBRIATUM* Mart. & Gal., Mém. Acad. Brux. 15:36. 1842. =*Polypodium thyssanolepis* A. Braun ex Klotzsch, Linnaea 20:392. 1847.

SYNTYPES: Barranca, Guadalajara, Jalisco, Mexico, *Galeotti* 6438 and 6443. Weatherby stated (Contr. Gray Herb. 124:34. 1939) that he could not find either of these two numbers in the Galeotti Herbarium in Brussels, and he therefore indicated *Galeotti* 6443 in Paris as the suitable type (i.e., lectotype). But there is a collection of no. 6438 in Brussels from the Martens Herbarium. This agrees with the original description and is here designated lectotype, on the reasoning that a lectotype ought to be chosen from among the original syntypes rather than

from an isosytype. It appears that no. 6438 is a mixture, for Weatherby states that the specimens under this number in Kew and Paris are different, being *P. polypodioides* var. *aciculare* Weatherby.

101. POLYPODIUM IRVINGII Kuhn, Fil. Afr. 147. 1868. = **Polypodium glaucophyllum** var. *irvingii* (Kuhn) Ballard, Kew Bull. Misc. Inf. 1937 :348. 1937.

Polypodium glaucophyllum var. β Hook. Sp. Fil. 5:18. 1864. Based on *Irving* 41 from Abbeokuta, Nigeria, Africa.

TYPE: Abbeokuta, southern Nigeria, *Irving* 41 (K, holotype, Morton photograph 13895.)

In the "Index Filicum," *P. irvingii* Kuhn is indicated as a "nomen." Kuhn, however, cited *P. glaucophyllum* var. β Hook. as the basis of the species, and since Hooker did give a description of his var. β , the name *P. irvingii* Kuhn must be considered as validly published by a reference to this description and not as a nomen nudum. In proposing var. *irvingii*, Ballard indicated this as a new variety with himself as author; but since he cites *P. irvingii* Kuhn as a synonym, this must be considered as a transfer rather than a new variety, and the authority should be "(Kuhn) Ballard."

102. POLYPODIUM LIGUSTIFOLIUM Poir. in Lam. Encycl. Méth. 5:553. 1804. = **Rumohra adiantiformis** (Forst.) Ching, Sinensia 5:70. 1934.

TYPE: Buenos Aires, Argentina, *Commerson* (holotype P, Herb. Lam., Morton photograph 17237).

In the "Index Filicum," *Polypodium ligustifolium* Poir. was referred to the synonymy of *Polystichum denticulatum* (Swartz) J. Smith, which is now generally known as *Arachniodes denticulata* (Swartz) Ching (Acta Bot. Sinica 10:260. 1962). Christensen in his monograph of American *Dryopteris* (Dansk. Vid. Selsk. Skrift. VIII, 6:126. 1920) listed *P. ligustifolium* among the "Species Inquirendae," with the remark that it was probably *Polystichum adiantiforme* sens. lat. The type in the Lamarck Herbarium shows that this is right, for it is identical with specimens of *Rumohra adiantiformis* collected near Buenos Aires by others. This variable species is widespread throughout the world; possibly someone may be able to distinguish segregates sometime. In that case, *P. ligustifolium* will not be the earliest name for the Argentine plant, for it is antedated by *Tectaria calaguala* Cav. (Descr. 252. 1802), described two years previously also on material from Buenos Aires. In the Jussieu Herbarium (Cat. no. 1197B, Morton photograph 2996) is another specimen labeled *P. ligustifolium*, but not by Poiret. It is a sterile specimen from Montevideo, Uruguay, also collected by Commerson, and represents the same species as the Buenos Aires collection; it is, however, not a type. There are in Firenze two specimens determined as *P. ligustifolium* that appear to be authentic; they are labeled as having been collected by Commerson in the

Ile de France, i.e., Mauritius, but doubtless they were also really collected either near Buenos Aires or Montevideo (Morton photographs 16476-78).

103. *POLYPODIUM MEDICINALE* Rojas, Bull. Acad. Géogr. Bot. [Le Mans] 28:156. 1918. = *Polypodium phyllitidis* L.

In the "Index Filicum," Supplement III, the species is left as dubious. The original description is as follows:

Radice fibrosa, gracili, tereti; fronde simplici, subcoriacea, angustato, elongato, integro, glabro, acuminato, basi attenuato, subtus reticulatovenoso, bipedali et ultra; soris sparsis.

Forêts et sur les vieux troncs, près de Cangayam Quitilipi. Intermédiaire entre *P. taeniosum* H. B. et *P. crassifolium* de la Jamaïque et du Venezuela.

Remède populaire aux missions du Corrientes du temps de Bonpland.

An inquiry to the Jardin Botánico in Asunción, where the type is doubtless conserved, was without response. The species, however, is identifiable from the description by the process of elimination, for *Polypodium phyllitidis* L. is the only epiphytic species in Paraguay with scattered sori and elongate, simple, entire, glabrous blades two feet long and more. N. Rojas Acosta gave the common name as "Cala-guala," a name commonly applied to *P. phyllitidis* and other species of *Polypodium* with simple blades, as well as apparently to various glabrate species of *Elaphoglossum* also, the blades of which resemble *Polypodium* casually.

104. *Polypodium normale* D. Don, Prodr. Fl. Nepal. 1. 1825.

Phymatodes normalis (D. Don) K. B. Presl, Tent. Pterid. 196. 1836.

Polypodium longifrons Wallich, Num. List. no. 274. 1829, nom. nud.

Polypodium longifrons Wallich ex Hook. & Grev. Icon. Fil. 1:t. 65. 1829.

Syntypes: "India orientalis," Wallich; Nepal, Buchanan-Hamilton. Since the specific epithet was adopted from Wallich, I designate the Wallich specimen (K) as lectotype.

Drynaria longifrons (Wallich ex Hook. & Grev.) J. Smith, Journ. Bot. Hook. 3:397. 1841.

Drynaria normalis (D. Don) J. Smith, Journ. Bot. Hook. 4:61. 1841.

Pleopeltis normalis (D. Don) Moore, Ind. Fil. 347. 1862.

Pleopeltis longifrons (Wallich ex Hook. & Grev.) Moore, Ind. Fil. 346. 1862.

Colysis normalis (D. Don) J. Smith, Hist. Fil. 100. 1875.

Microsorium normale (D. Don) Ching, Bull. Fan. Mem. Inst. Biol. Bot. 4:299. 1933.

Neolepisorus normalis (D. Don) Ching, Bull. Fan. Mem. Inst. Biol. Bot. 10:13. 1940.

Neocheiropteris normalis (D. Don) Tagawa, Journ. Jap. Bot. 27:217. 1952.

TYPE: Nepal: Buchanan-Hamilton (holotype BM, a single frond mounted at left on same sheet as the holotype of *Polypodium scolopendrium* Buch.-Ham. ex D. Don, Morton photograph 7612).

From the fact that this species has been referred to so many different segregate genera—*Phymatodes*, *Pleopeltis*, *Colysis*, *Microsorium*, *Neolepisorus*, and *Neocheiropteris*—one might assume that this is very strange species of uncertain relationships, but actually it is rather nondescript without any very distinctive characters. I would suppose that the latest combination proposed, under *Neocheiropteris*, is probably right if one accepts all the microgenera suggested. Two species may be passing as *P. normale*; the type has the sori irregularly scattered in two or three rows, but there are some plants referred to *P. normale* in which the sori are strictly in a single row.

105. *Polypodium oxylobum* Wall. ex Kunze, *Linnaea* 24:255. 1851.

Polypodium oxylobum Wallich, Num. List. no. 294. 1829, nom. nud.

Phymatodes oxyloba K. B. Presl, Tent. Pterid. 196. 1836, nom. nud. Although no description had been published of *Polypodium oxylobum* Wallich or *Phymatodes oxyloba* K. B. Presl, Ching adopted the name as validly published by Presl in 1836.

Pleopeltis oxyloba (Wallich ex Kunze) Beddome, Ferns So. Ind. t. 175. 1863–65.

Pleuridium oxylobum (Wallich ex Kunze) J. Smith, Ferns Brit. & For. 96. 1866.

Polypodium hastatum Thunb. var. *oxylobum* (Wallich ex Kunze) Clarke, Trans. Linn. Soc. II, Bot. 1:563. 1880.

Phymatodes oxyloba (Wallich ex Kunze) Ching, Contr. Bot. Inst. Nat. Acad. Peiping 2:67. 1933. Wrongly attributed to Presl.

Crypsinus oxylobus (Wallich ex Kunze) Sledge, Bull. Brit. Mus. (Nat. Hist.) Bot. 2:145. 1960.

SYNTYPES: Nepal, Wallich 294; Emodo, near Mossuri, Hügel; Nilgiris, Schmid-Koch 5 and 151; Nilgiris, Kurr. The valid publication of *P. oxylobum* has generally been attributed to Mettenius, but Sledge pointed out that the species was published previously by Kunze. Sledge remarked that the species was based on collections by Wallich and Hügel and that Kunze also reported it from the Nilgiris, but this is a little misleading. Kunze adopted the name from Wallich, but he did not indicate a type and he referred the Schmid-Koch and Kurr specimens from the Nilgiris to the species without any question, and so they are as much a part of the protologue as the Wallich and Hügel specimens. Sledge removed these Nilgiris specimens to his new species *Crypsinus montanus*, thus leaving the Wallich and Hügel specimens to typify *P. oxylobum*. Since no lectotype has been formally designated, I choose Nepal, Wallich no. 294 in the East India Company Herbarium, Kew. Kunze's own original specimen was destroyed in Leipzig. Isolectotype, US.

The proper disposition of this species is a little doubtful to me. Sledge transferred it to *Crypsinus* without any question. But it seems to me that if *Crypsinus* can be maintained as a group it can only be on the character of the notched margins of the blades, as it is keyed out in Copeland's key to Polypodiaceae in his "Genera Filicum" and as is required by Copeland's description of *Crypsinus*. Copeland did include two species with entire margins in his *Crypsinus*, noting them as aber-

rant, but their inclusion was not justified by any arguments. Copeland did not mention *P. oxylobum*, and he presumably included it in *Microsorium*, which in his opinion included *Phymatodes*. The supposed relationship between *P. oxylobum* and *P. hastatum* Thunb., a true *Crypsinus*, is not obvious, even though Clarke had the former as a variety of the latter. There is perhaps sufficient likeness in a general way to *Polypodium scolopendrium* Burm. f. to indicate that that might indeed be the relationship.

106. *POLYPODIUM PARVULUM* Bory ex Willd. in L. Sp. Pl. ed. 4, 5:182. 1810.

=*Grammitis parvula* (Bory) Morton, comb. nov.

Ctenopteris parvula (Bory) J. Smith, Hist. Fil. 185. 1875.

TYPE: Bourbon [Réunion], Bory (B, not seen; isotype FI, Morton photograph 16017).

This species belongs in *Grammitis* sect. *Cryptosorus* (Fée) Fourn. (cf. Morton, Contr. U.S. Nat. Herb. 38:90. 1967) but is less deeply pinnatifid than most species of the section. It is probably confined to the Mascarene Islands, although it has been reported from Africa. It is given the wrong citation of "*Ctenopteris parvula* (Willd.) Tardieu, Notul. Syst. 15:445. 1959" in the fourth supplement of "Index Filicum"; this combination was validly published by J. Smith in 1875.

107. *POLYPODIUM PLATYNOTUS* Kunze ex Zollinger, Syst. Verz. Ind. Arch. 1842-48:37. 1854. =*Prosaptia alata* (Blume) Christ, Ann. Jard. Buitenzorg II, 5:127. 1905.

In the "Index Filicum" this is listed as though it were a validly published but dubious species, and in Backer and Posthumus' "Varenflora voor Java" (p. 210. 1939) it is given as a synonym of *Polypodium obliquatum* Blume. This was, however, originally a nomen nudum only, based on Zollinger 3012, from Mount Salak, Java. A specimen in Brussels (Morton photograph 20966) is authentic, for it has the right data and the name is in Kunze's own hand. This specimen shows that the plant is not at all a synonym of *P. obliquatum* Blume, but rather is identical with *Prosaptia alata* (Blume) Christ.

108. *POLYPODIUM PROPINQUUM* Wallich ex Mett. Abhandl. Senckenb. Naturf. Gesell. 2:120. 1856. =*Drynaria propinqua* (Wallich ex Mett.) J. Smith, Cat. Cult. Ferns 13. 1857.

Polypodium propinquum Wallich, Num. List. no. 293. 1829, nom. nud.

Phymatodes propinqua K. B. Presl, Tent. Pterid. 198. 1836, nom. nud.

Drynaria propinqua J. Smith, Journ. Bot. Hook. 4:61. 1841, nom. nud.

TYPE: Nepal, Wallich List no. 293 (presumably holotype B; isotype US)

In the "Index Filicum," the combination *Drynaria propinqua* is attributed to J. Smith in 1841, but obviously it is impossible to have a valid combination published in 1841 prior to the valid publication of

the basionym in 1856. J. Smith republished the combination in 1857 shortly after Mettenius had provided a description. He did not refer to Mettenius, but the basis of his new combination is obvious.

109. *POLYPODIUM PRUINATUM* Baker in Hook. & Bak. Syn. Fil. ed. 2, 508. 1874, non Swartz, 1802. = **Grammitis pruinosa** (Maxon) Morton, comb. nov.
Polypodium pruinatum Maxon, Proc. Biol. Soc. Wash. 52:117. 1939. New name for *P. pruinatum* Baker, non Swartz.
Otenopteris pruinosa (Maxon) Copel. Phil. Journ. Sci. 84:470. 1955.

TYPE: Chontales, Nicaragua, 1867-68, *Tate* 44 (holotype K, Morton photograph 15430). There is a fragment of the type collection in US, kindly sent by the Director of Kew to Dr. Maxon.

This apparently distinct species is still known only from the type collection. It is a small plant; the fronds are only 1-2 inches long, rather broad, and broadly round-lobed, each lobe having two sori. The blades have minute, white hairs on the upper surface, and the margins are obviously ciliate.

110. *POLYPODIUM RADICANS* Poir. in Lamarck, Encycl. Méth. 5:530. 1804, non Burm. f., 1768. = **Thelypteris reptans** (Gmel.) Morton in Steyerl. Flediana Bot. 28:12. 1951.

TYPE: From "Caroline merid." in Herb. Lamarck, Paris (Morton photograph 2691). The locality "Caroline merid.," i.e., South Carolina, is an error, and the specimen undoubtedly came from the West Indies.

The small stellate hairs present on the surfaces of the pinnae, both above and beneath, show that this species is a synonym of *Thelypteris reptans*, as it is currently recognized, although that may be an aggregate, since it is so highly variable. The present plant belongs to the form with elongate leaves radicans at the apex but with the upper pinnae (segments) all fully adnate. The more typical form has the upper pinnae all sessile or even short-petiolulate. Poiret cites *Polypodium rhizophyllum* Swartz as a synonym, but the species *P. radicans* Poiret may not be considered as based on that species, for in his comments Poiret says that he merely suspects that his species is the same as that of Swartz. The Poiret name is illegitimate, being a later homonym of *P. radicans* Burm. f., i.e., *Nephrolepis radicans* (Burm. f.) Kuhn.

111. *POLYPODIUM SAFFORDII* Maxon, Amer. Fern Journ. 2:19, fig. 1912. = **Grammitis saffordii** (Maxon) Morton, comb. nov.
Polypodium minimum Brack. U.S. Expl. Exped. 16:5, t. 1, f. 3. 1854, non Aublet, 1775.

TYPE: Mountains behind Honolulu, Oahu, Hawaiian Islands, *Wilkes Exped.* (holotype US).

This is a species of the sect. *Xiphopteris* endemic to the Hawaiian Islands, where, apparently, it is not uncommon.

112. *POLYPODIUM SCANDENS* Lévillé & Rojas, Bull. Acad. Géogr. Bot. [Le Mans] 28:156. 1918. = *Polypodium lycopodioides* L. Sp. Pl. 1082. 1753.

This species has been omitted from the supplements of the "Index Filicum," but I think it must be considered validly published. The entire publication is as follows: "Le Dr. Plukenet l'avait nommé *Dryopteris scandens jamaicensis*. It serait plutôt à rattacher au genre *Polypodium*: *P. scandens* Lév. et Roj." This is thus a new species based on a reference to a pre-Linnaean publication of Plukenet.

The Plukenet reference is obviously to the *Almagestum Botanicum* 156, 1696, t. 290, f. 3. 1694, where the plant appears as *Filix sarmentosa bifrons s. Bryopteris [sic! = Dryopteris] scandens jamaicensis inter filicem et Lycopodium media*." Plukenet also quotes as a synonym *Phyllitis scandens cauliculis squamosis* Plumier t. 42, a reference to Plumier, Descr. Plant. Amér. 29, t. 42, 1693. Plukenet has no description, but the reference to Plumier's long description [reprinted and enlarged in Plumier, Tract. Fil. 104., t. 119. 1705] serves to validate the name *P. scandens* Lév. & Rojas, which is a later homonym of *P. scandens* Forst. f. (1786).

The Plukenet figure and the Plumier plate both represent the species *Polypodium lycopodioides* L., and in fact both references were cited by Linnaeus in publishing this species in 1753. Since Linnaeus had additional material and cited additional references, however, *P. scandens* must be considered as a segregate rather than a simple renaming of the Linnaean species. The rather quaint and naive remark of Plukenet that the plant is intermediate between a fern and *Lycopodium* is due to the numerous spreading scales on the elongate rhizome; when the fronds have fallen, the rhizome thus resembles slightly the leaves and stem of a *Lycopodium*.

113. *POLYPODIUM SCOLOPENDRIUM* Buch.-Ham. ex D. Don. Prodr. Fl. Nepal. 1. 1825, non Burm, f., 1768 [as "scolopendria"]. = *Polypodium leiopteris* Kunze, Linnaea 23:279, 319. 1850. Syntypes: Cultivated from the East Indies (Hort. Van Houtte, 1848, and Hort. Lips., 1849, not seen).

Lepisorus excavatus (Bory) Ching var. *scolopendrium* (Buch.-Ham.) Ching, Bull. Fan. Mem. Inst. Biol. Bot. 4:69. 1933.

Pleopeltis scolopendrium (Buch.-Ham.) Alston & Bonner, Candollea 15:207. 1956.

Lepisorus scolopendrium (Buch.-Ham.) Tagawa ex Hara, Fl. East. Himal. 494. 1966.

TYPE: Nepal, *Buchanan-Hamilton* (holotype BM, Morton photograph 7612, right-hand plant; the left-hand plant is the holotype of *Polypodium normale* D. Don).

Polypodium scolopendrium was for a long time considered to be only a variety of the African *Polypodium excavatum* Bory, but recent authors Alston and Bonner, and Tagawa have considered it specifically

different. The epithet "*scolopendrium*" has been used, but to me it seems too close to the earlier *P. scolopendria* Burm. f., a conclusion with which Dr. Stafleu and Dr. Rickett agree. In my opinion *P. scolopendria* Burm. f., although validly published, is incorrect orthographically. It must have been proposed because of the similarity of the simple-bladed fronds to the European Hart's-tongue, *Scolopendrium vulgare*, but if so then the specific epithet ought to have been "*scolopendrium*," the old generic name unchanged. "*Scolopendria*" would be the same name in the plural; but specific epithets must be in the nominative singular, and so in my opinion the Burmann species ought to be corrected to *Polypodium scolopendrium* Burm. f., in which case Buchanan-Hamilton's later *P. scolopendrium* would be identical with it. But whether corrected or not the earlier *P. scolopendria* must make the later *P. scolopendrium* illegitimate. I have considered *P. leiopteris* Kunze the same on the authority of Ching; I have not seen any authentic material myself. The syntypes were doubtless destroyed in Leipzig.

114. *Polypodium trichodes* Houlston & Moore, Gard. Mag. Bot. Hort. Flor. Nat. Sci. 3:18. 1851.

Since the original publication of this species is in a rather uncommon periodical, I reproduce the description below:

An ornamental evergreen stove species from the East Indies. Fronds three to five feet high, hairy, terminal, adherent to a thick, creeping rhizome, bi-tripinnate, fragile, pale green, with linear-lanceolate pinnae, the pinnules pinnatifid, with somewhat ovate, bluntly lobed segments. Sori round, medial. Stipes and rachis covered with a fine powder; stipes scaly, especially near the rhizome. This fern is in cultivation under the name *Lastrea paludosa*.

The name is attributed to Reinwardt, but there is no real reason to do so. *Polypodium trichodes* Reinw. ex J. Smith, Journ. Bot. Hook. 3:394. 1841, was a nomen nudum, and there is reason to think that perhaps J. Smith interpreted Reinwardt's herbarium name wrongly. Apparently no one has ever really examined Reinwardt's original specimen to which he applied the name *trichodes*; it is presumably in Leiden, but it was not the basis for Smith's use of the name or Houlston and Moore's use either. The latter authors do not give the origin of their material, other than that it was cultivated, but Lowe (Ferns: Brit. & Exot. 2:t.2. 1872), who also describes the species and attributes it to Reinwardt, says that it appeared spontaneously at Kew in 1848.

Holttum (Blumea 17:28. 1969) states that the epithet *trichodes* was always a nomen nudum until used by Rosenstock as *Dryopteris trichodes* in 1917, but as shown above the epithet was validly published in 1851. The identity of Houlston and Moore's species, however, is not quite certain. I could not find any possible type at Kew, but there may

be one in Moore's own herbarium, also at Kew, which I did not consult, or there may be one at the British Museum (Natural History), which also has many plants from Moore's herbarium. Very likely, however, the species is a synonym of *Thelypteris torresiana* (Gaud.) Alston. *Dryopteris trichodes* Rosenst. was based on entirely different material. According to Holttum, the material was mixed, partly *T. torresiana* and partly a related species that he calls *Macrothelypteris polypodioides* (Hook.) Holttum. Holttum did not select a lectotype. Since Rosenstock stresses the soft hairs and the nonasperous rhachises, his name should apply to the *torresiana* element. Therefore, I designate Java, Zollinger 354 (L) as lectotype, which fixes *D. trichodes* as a taxonomic synonym of *T. torresiana*.

115. **POLYPODIUM TRIFIDUM** D. Don, Prodr. Fl. Nepal. 3. 1825, non Hoffm., 1790.
= **Polypodium oxylobum** Wall. ex Kunze, Linnaea 24 :255. 1851.

TYPE: Nepal, Wallich (holotype BM, with the name in the hand of Don, Morton photograph 7618). The type is the two small plants, trifid and bifid, in the lower left-hand corner; the other large, pinnatifid plants on the type sheet are also Nepal, Wallich, and are doubtless duplicates of the original specimens of *Polypodium oxylobum* Wallich.

116. **POLYPODIUM UMBILICATUM** Poir. in Lam. Encycl. Méth. 5 :528. 1804. =? **Dryopteris filix-mas** (L.) Schott, Gen. Fil. ad t. 9. 1834, var.

TYPE: Ile de France [i.e., Mauritius], 1774, Commerson 131 (holotype Herb. Lamarck, P. Morton photographs 2680, 2681).

This species is mentioned here merely to point out the need for further study. In the "Index Filicum" it is referred to *Dryopteris filix-mas* (L.) Schott, but this species is not reported from Mauritius by Baker in his "Flora of Mauritius and the Seychelles" nor by Madame Tardieu in her list of the ferns of the Mascarene Islands. The type specimen shows that *P. umbilicatum* is indeed a close ally of the European *D. filix-mas*. It is perhaps the same as *D. paleacea* (Swartz) C. Chr. var. *madagascariensis* C. Chr. The proper name for the latter is doubtful, since *D. paleacea* (Swartz) C. Chr. (1911) is an illegitimate later homonym of *D. paleacea* (D. Don) Hand.-Mazzet. (1908).

117. **Pteris amoena** Blume, Enum. Pl. Jav. 210. 1828.

TYPE: Java, Blume (holotype L, with name in Blume's hand, Morton photograph 2158).

In the "Index Filicum" and in Backer and Posthumus' "Varenflora voor Java" (p. 179. 1939), *Pteris amoena* Blume is listed as a synonym of *P. biaurita* L., following Agardh (Rec. Gen. Pterid. 27. 1839), but Agardh placed it there only with a query, for he had not seen any material. The holotype in Leiden shows that *P. amoena* is not the same as *P. biaurita*, for the veins are free and not joined to form

costal areoles as they are in *P. biaurita*. In its broad pinnae with cuneate bases and rather broad costal wings (the pinnae not being cut to the base), venation, and other characters it agrees with *P. longipinnula* Wall. ex Agardh var. b of Holttum's "Ferns of Malaya" (p. 405. 1954), which differs from typical *longipinnula* in having the lowest pinnae basally forked. The typical *P. longipinnula*, with unforked basal pinnae, may be known as *Pteris amoena* var. **longipinnula** (Wall. ex Agardh) Morton, comb. nov. (*Pteris longipinnula* Wall. ex Agardh, Rec. Gen. Pterid. 19. 1839. Type: Penang, Wallich Cat. 108. Agardh saw two specimens of Wallich 108, one in the Hooker Herbarium and one in the East India Company Herbarium, both now at Kew. I designate the one in the Hooker Herbarium as the lectotype, the sheet bearing the indication "Wallich 1829," which is the date of receipt of the specimen and not the date of collection, which was 1822).

118. ***Pteris aspericaulis*** Wallich ex Agardh, Rec. Sp. Gen. Pter. 22. 1839.

Pteris aspericaulis Wallich, Cat. 107. 1828, nom. nud.

Pteris quadriaurita var. *aspericaulis* (Wallich ex Agardh) Bedd. Handb. Ferns Br. Ind. 111. 1883.

LECTOTYPE: The specimen of Wallich 107 in the general herbarium at Kew (Morton photograph 14805) is here designated lectotype. Agardh saw this sheet and also the sheet of Wallich 107 in the herbarium in the Linnean Society in London, which is now in the East India Company Herbarium at Kew. In the "Index Filicum" no description of *P. aspericaulis* is indicated until that of Hieronymus (*Hedwigia* 55:348. 1914), but Agardh accepted the species and gave a description in 1839.

119. ***Pteris deltea*** Agardh, Rec. Sp. Gen. Pter. 33. 1839.

The holotype is in the Hooker Herbarium at Kew, collected in Tahiti ("Otaheite") by Menzies (Morton photograph 14810). Agardh erroneously stated that it was collected by "Mathews."

120. **PTERIS ENDLICHERIANA** Agardh, Rec. Pterid. 66. 1839. = ***Pteris comans*** Forst. Prodr. Fl. Ins. Austr. 79. 1786.

TYPE: Agardh cited merely "Hab. in sylvaticis umbrosis Insulae Norfolk (Hb. Hookeri!)." The only specimens in the Hooker Herbarium at Kew that could be the types are two collections from shady woods ["sylvaticis umbrosis"], Norfolk Island, A. Cunningham 39 and 60 (Morton photographs 14922, 14923). These are surely both syntypes, no. 39 being a blade apex (Agardh describes the upper pinnae from this sheet) and no. 60 being four lower pinnae (and Agardh describes these). Dr. Tindale has marked no. 39 as the "holotype," but it is clear that there is no holotype but two syntypes. I choose no. 60 as lectotype, because it is more identifiable, consisting of fully grown lower pinnae, and especially because it has the name *endlicheriana* in the hand of Agardi; no. 39 does not have the name *endlicheriana* on it, only *Pteris comans*. Cunningham did not think his two collections the same species, for he wrote on no. 60 "Habit of no. 39 but distinct" and he may possibly be right. Agardh did not compare his new species with *comans* but with *berteroana*.

121. *PTERIS INDICA* Poir. (var. A) in Lam. Encycl. Méth. 5:712. 1804. =*Pteris vittata* L.

TYPE: Molucca Islands, *Labillardière* (holotype FI-Webb, Morton photograph 16404).

In the "Index Filicum," *P. indica* Poir. is considered dubious, a synonym of either *P. longifolia* L. or *P. moluccana* Blume. It was based on two specimens collected by *Labillardière*, and the other from the Moluccas; the latter is indicated and described as "variety A," without a varietal epithet. Both specimens must be considered as syntypes of *P. indica*, since they were included within the circumscription, but the one indicated as a variety cannot be the lectotype. The Java specimen that must be the lectotype of *P. indica* was cited by *Poiret* as being in the *Desfontaines Herbarium*, which is now incorporated in the *Webb Herbarium* in Florence, but I did not find it when I was there in 1967. It is doubtless there, however, but some doubt still remains whether it is properly *P. vittata* (*P. longifolia* in part of the "Index Filicum") or *P. moluccana*. One indication that it may be *P. moluccana* is provided by a specimen of *P. moluccana* collected on *Didang Island*, Indonesia, by *Gaudichaud*, and identified by him as *P. indica* Poir. (cf. Morton photograph 16408).

122. *PTERIS NEVILLEI* Baker, Ann. Bot. 5:219. 1891. =*Pteris pseudolonchitis* Bory ex Willd. in L. Sp. Pl. ed. 4, 5:389. 1810. Type: Bourbon Island [=Réunion], *Bory* (isotype L, Morton photograph 2219).

TYPE: Bourbon Island [=Réunion], *G. Neville* (holotype K, Morton photograph 14920).

This rather characteristic bipinnate-pinnatifid species of the section *Litobrochia* is confined to the Mascarene Islands. *Pteris nevillei* was recognized as a valid species in the "Index Filicum." It was overlooked in *Madame Tardieu's* list of the ferns of the Mascarene Islands (Notul. Syst. 16:162-164. 1960).

123. *PTERIS PECTINATA* D. Don, Prodr. Fl. Nepal. 15. 1825, non Cav., 1802. =*Pteris biaurita* L. Sp. Pl. 1076. 1753, sens. lat.

HOLOTYPE: Nepal, *Wallich* (BM, Morton photograph 6710). A specimen (US) of *Wallich* 106 from Nepal, originally identified as *P. nemoralis* Willd. by *Wallich*, agrees with Don's holotype and is in all probability an isotype. However, *Wallich* 106 at Kew is free-veined and is *P. quadriaurita* Retz., sens. lat.). *Wallich* ignored *P. pectinata* Don in his List.

There has been confusion about the identity of *Pteris pectinata* D. Don. *Agardh* placed it as a synonym of his *Pteris aspericaulis* *Wallich*,³ not adopting Don's name because of its being a later homonym of

³ *Pteris aspericaulis* *Wallich* ex *Agardh*, Rec. Pterid. 22. 1839, is a validly published name that has never yet appeared in the "Index Filicum" or its supplements with its correct earliest citation. In the original "Index Filicum," the only

P. pectinata Cav.⁴ Agardh stated that he had seen an authentic specimen of *P. pectinata* in the herbarium of the Linnean Society of London, now the East India Company Herbarium at Kew. This specimen, however, is apparently not authentic, for *P. aspericaulis*, as described by Agardh, has free veins. The specimen in the British Museum (Natural History) with the name *P. pectinata* in Don's own hand is by no means the same thing; Don's description does not mention the venation, but this holotype shows that the venation is of the *Campteria* type, i.e., with a single transverse costal areole between the adjacent lateral midribs of the segments. Thus, *P. pectinata* D. Don is a synonym of *P. biaurita* L. in a broad sense, as it applies to specimens from Nepal and the Himalayas generally. This species is characterized also by having the lowest pair of pinnæ with a pectinate basal segment, by having raised veinlets beneath, and by entire segments. The holotype sheet bears also the identification *P. wallichiana* Agardh, but this is an error; the true *P. wallichiana* also has the venation of *Campteria*, but the blades are very large and pedately divided, the basal pinnæ being twice-parted. The veins are not raised beneath and the segments are toothed at the apex. The type of *P. wallichiana* is *P. umbrosa* Wall. List. no. 109. 1829, nom. nud., from Kumaon, India, *Wallich* in Herb. Hook. (K) and East India Company Herbarium (K). *Wallich* 109, however, is evidently a mixture, for the specimen distributed by the British Museum (Natural History) to the United States National Herbarium does not represent this species, but is *P. aspericaulis*; it is from Kumaon, collected by R. Blinkworth, and thus evidently mis-numbered; it ought to be no. 106-6. A specimen in Leiden (Morton photograph 2171) distributed as *P. umbrosa* Wall. no. 109 is also free-veined; however, it is from Penang and represents the species called *P. asperula* J. Smith in Holttum's "Ferns of Malaya"; this sheet

(Continued)

reference is to Wallich "List," no. 107. 1829, where it is a nomen nudum; in Supplement II, there is a reference to the later description of Hieronymus in 1914. *Pteris aspericaulis* cannot be considered as a renaming of *P. pectinata* D. Don, for as indicated Agardh misunderstood Don's species; the type must be a specimen that agrees with Agardh's description, namely Nepal, *Wallich* in Herb. Hooker (K) and Herb. Linn. Soc., i.e., East India Company Herbarium (K); the specimen in the Hooker Herbarium is here designated lectotype.

⁴ *Pteris pectinata* Cav. is not a dubious species from the Mascarene Islands, as indicated in the "Index Filicum," but represents a species that occurs only in the Andes of South America, namely *Blechnum loxense* (H.B.K.) Hieron., the original locality being thus an error. (Cavanilles, however, did not indicate "Mascarene Islands" but "Marianna Islands," a very different place indeed.) (cf. C. Christensen, Ark. för Bot. 9(11):43. 1910, and Dansk. Bot. Ark. 9(3):22. 1937). Fortunately, the epithet *pectinata* cannot now be transferred to *Blechnum* because of the existence of *B. pectinatum* K. B. Presl (1825).

doubtless represents *Wallich* 106-2, which was identified by Wallich as *P. nemoralis* Willd., which is doubtless the alliance.

124. *Pteris subquinata* Wallich ex Agardh, Rec. Sp. Pter. 21. 1839.

Pteris subquinata Wallich, Cat. 104. 1828, nom. nud.

Pteris quadriaurita var. *subquinata* (Wallich ex Agardh) Bedd. Handb. Ferns Br. Ind. Suppl. 23, 1892.

Agardh accepted and described this species, but in the "Index Filicum" no description is indicated until that of Hope in 1901. Agardh saw specimens of *Wallich* 104 in the Hooker Herbarium and in the herbarium of the East India Company; the better of these two specimens should be designated lectotype.

125. PTERIS TRIPARTITA Swartz var. MILNEANA Hook. Sp. Fil. 2:226, t. 138B. 1858.

=*Pteris milneana* (Hooker) Baker in Hook. & Bak. Syn. Fil. 170. 1867.

SYNTYPES: "The same collectors [i.e., *MacGillivray* and *Milne*] and by Dr. *Harvey*. Society Islands, *Nightingale*." There are at Kew collections named var. γ [i.e., *milneana*] by Hooker from Maala, Fiji, *Milne* (Morton photograph 14910) and Fiji, *Harvey* (Morton photographs 14911, 14912), from woods above Makerie Harbour, San Cristoval Island, Solomon Islands, *Milne* 511 (Morton photograph 14909), and Society Islands, *Nightingale* (Morton photograph 14913). On page 227 Hooker indicated his variety γ as from the Feejee [Fiji] Islands, and this would eliminate the San Cristoval Island specimen from being the lectotype (although it was doubtless included in the concept by Hooker). Also on page 227 Hooker commented on the *Nightingale* specimen as being peculiar and somewhat different, and this also eliminates it as lectotype. One might think that the *Milne* specimen from Fiji would be the logical choice of lectotype, since the variety was named for *Milne*. Hooker's drawing of the variety (t. 138B), however, shows the lower pinnae forked, and this *Milne* specimen has no lower pinnae. The illustration must have been drawn from the *Harvey* specimen that does have forked lower pinnae, and this specimen is here designated lectotype.

In the above discussion I have termed the lower pinnae "forked" for convenience, but they are really not forked; the lowest inferior segment is elongate and again pinnatifid, in the manner of *P. biaurita* and *P. quadriaurita*. The venation is, however, not like these species but is of the fully areolate *Litobrochia* type.

126. PTERIS VILLOSA Baker, Ann. Bot. 5:218. 1891, non Swartz, 1802, nec Fée 1852. =*Pteris decurrens* K. B. Presl, Del. Prag. 2:183. 1822. Type: Brazil, *Pohl* (not seen).

SYNTYPES: Hort. Linden, 1859 and 1861. Lectotype: Hort. Linden, 1859 (K, Morton photograph 14919).

Pteris villosa Baker (in the "Index Filicum" erroneously as "Linden") has never been placed, being listed as dubious in the "Index Filicum." It was said to have been introduced from Assam, India, but no similar species is known from India. In its cutting and pubescence the type matches *Pteris decurrens* K. B. Presl, a rather common

Brazilian species distinguished among other things by having the costae sparsely (or sometimes densely) villosulous beneath.

127. *SAGENIA HETEROCARPA* Bedd. Ferns Brit. Ind. t. 47. 1866. =***Tectaria heterocarpa*** (Bedd.) Morton, comb. nov.

Nephrodium heterosorum Baker in Hook. & Bak. Syn. Fil. ed. 2. 504. 1874.

Based on *Sagenia heterocarpa* Bedd., non *Nephrodium heterocarpum* (Blume) Moore, 1858.

Aspidium heterocarpum (Bedd.) Bedd. Ferns Brit. Ind. Suppl. 16. 1876, non *A. heterocarpon* Blume, 1828.

Asidium heterosorum (Baker) Bedd. Handb. Ferns Brit. Ind. Suppl. 46. 1892.

Tectaria heterosora (Baker) Ching, Sinensia 2:29. 1931.

TYPE: Khasya Hills, India, Thomson (Holotype K).

In transferring this species to *Nephrodium*, Baker was quite right to rename it *N. heterosorum*, because the epithet *heterocarpum* was not available under *Nephrodium*. When Ching transferred the species to *Tectaria* in 1931, however, he ought to have used the earlier epithet *heterocarpa*, which was available under the generic name *Tectaria*, and which must now be restored.

128. *SALVINIA LAEVIGATA* Humb. & Bonpl. ex Willd. in L. Sp. Pl. ed. 4, 5:537. 1810. =***Limnobium laevigatum*** (Humb. & Bonpl.) Morton, comb. nov.

Trianca bogotensis Karst. Linnaea 24:424. 1856.

TYPE: Santa Fé de Bogotá, Colombia, Humboldt & Bonpland (holotype not seen; isotype P-Humb. Herb., Morton photograph 3351).

It has been known, for instance in the "Index Filicum" and Reed's "Index Marsileata et Salviniata," that *Salvinia laevigata* Humb. & Bonpl. was not a *Salvinia* but an aquatic flowering plant of the family Hydrocharitaceae. The fact that this plant was wrongly ascribed to the ferns does not make the epithet *laevigata* illegitimate and unavailable; since it has priority, it must replace *bogotensis* as the correct name. It is possible that *L. laevigatum* is the same as *Hydromystria stolonifera* G. F. W. Meyer (Prim. Fl. Esseq. 152. 1818), which is *Limnobium stoloniferum* (G. F. W. Meyer) Griseb (Fl. Brit. W. Ind. 506. 1862), but the epithet *laevigatum* is older than *stoloniferum* also.

129. *SYNAPHLEBIUM PULCHRUM* Brack. U.S. Expl. Exped. 16:223. 1854. =***Lindsaea pulchra*** (Brack.) Mett. Ann. Sci. Nat. IV, 15.65. 1861.

SYNTYPES: Tutuila, Samoa, and Sandalwood Bay, Fiji, Wilkes Expedition (US).

In the "Index Filicum," Christensen had an entry "*Lindsaea pulchra* var." of Mettenius in 1861 and gave the author of *L. pulchra* as a species as "Carr. in Seem. Fl. Vit. 337. 1873." It is obviously impossible nomenclaturally to have a variety published 12 years prior to a specific combination. In point of fact, the entry of Mettenius' is "27. *L[indsaea]*

pulchra var.? (Synaphlebium Brach. [sic!] expl. 223). 'Balade' (1553)." This is in Mettenius' paper on the ferns collected by Vieillard in New Caledonia, and the locality "Balade" and the number "1553" refer to Vieillard's collecting locality and collection number. The "var.?" refers to Mettenius thinking that this Vieillard collection was a doubtful variety of *L. pulchra*; it does not mean that Mettenius considered *L. pulchra* itself as a possible variety of something else, for it is given a species number and accepted as a valid species the same as the preceding "26. *L. lanceolata* Billard." and "27. *L. vieillardii* n. sp." Therefore, Mettenius is the author of the specific combination and not Carruthers.

130. **Trichomanes collariatum** van den Bosch. Nederl. Kruid. Arch. 4:368. 1859.
Trichomanes martinezii Roviroso, Pterid. Sur Mex. 106, t. 7A, figs. 1-3. 1909.
 Type: Rocky banks of the Río Lacanja, Chiapas, Mexico, *Leandro Martinez* 1103 (not seen).

TYPE: Tabasco, Mexico, 300 ft., *Linden*. Van den Bosch cited no number or specific locality in Tabasco. I have seen a specimen from Teapa, Tabasco, *Linden* 1508 (K, Morton photograph 19047); it is very likely an isotype, for it agrees with the description, and also with the description of *T. martinezii* Roviroso, which seems surely a synonym.

This species has been little known, most specimens probably having been identified as *T. radicans* Swartz, from which it differs in having a definitely two-lipped flaring involucre instead of a truncate one. The fronds are usually short-stipitate, whereas those of *T. radicans* usually are long-stipitate, but there is some variation. *Trichomanes collariatum* occurs from Tabasco and Chiapas in Mexico south to Colombia, and is not at all rare in Central America.

131. **Trichomanes crenatum** van den Bosch, Ned. Kruid. Arch. 5(3):205. 1863.
Trichomanes crispiforme Alston in Exell, Cat. Vasc. Pl. Sao Tomé 57. 1944,
 nom. superfl. Based on *T. crenatum* van den Bosch 1863, non Gilibert,
 Exerc. Phyt. 2:556. 1792.

LECTOTYPE: Niger, West Africa, *Barter* 1918 (K, Morton photograph 19067).
 The other syntype is Niger, West Africa, *Barter* 1917 (K).

Alston renamed *T. crenatum* van den Bosch believing that it was an illegitimate later homonym of *T. crenatum* Gilibert. McVaugh, however, has convincingly shown that names published in Gilibert's "Exercitia Phytologica" are not validly published by Art. 23 of the Code, because Gilibert did not consistently employ the Linnaean system of binary nomenclature. On the contrary, as McVaugh shows, Gilibert changed some Linnaean binomials into polynomials, such as renaming *Anthericum lithago* L. as "*Anthericum non ramosum*" and *Lythrum salicaria* L. as "*Lythrum salicis folio*." Gilibert also described species with names like "*Agaricus totus luteus*," "*Samolus beccabungae facie*,"

"*Jasione scabiosae capitulo*," and so forth. This being so, the name *T. crenatum* van den Bosch is correct and the name *T. crispiforme* Alston is superfluous.

132. *TRICHOMANES DEBILE* van den Bosch, Nederl. Kruid. Arch. 5(2):154. 1861.

=*Trichomanes diaphanum* H. B. K. Nov. Gen. Sp. 1:25. 1816.

TYPE: Carabobo, Venezuela, *Funck & Schlim* 596 (not seen).

In the "Index Filicum" this is recognized as a distinct species. I have not seen the type, but there is a sheet at Kew identified by van den Bosch; it contains two collections, one from Ecuador, *Jameson*, and one from Venezuela, *Fendler* 459. These plants are similar and both can be matched with rather small, less divided, exiguous forms of *T. diaphanum* H. B. K., as it is currently recognized.

133. *Trichomanes idoneum* Morton, nom. nov.

Trichomanes gemmatum J. Smith, Journ. Bot. Hook, 3:417. 1841, nom. nud.

Based on Mount Ophir, Malacca, *Cuming* 400.

Trichomanes bifidum Presl, Hymen. 43. 1843, non Vent. ex Willd., 1810.

TYPE: Mount Ophir, Malacca, *Cuming* 400 (holotype presumably PR).

Trichomanes gemmatum sensu Copel. Phil. Journ. Sci. 51:269. 1933, non Baker, 1867.

The name *T. gemmatum* J. Smith was never validated by anyone until, for some reason not readily understandable, Baker took it up (in Hooker & Baker, Syn. Fil. 87. 1867), citing as synonyms *T. cellululosum* Sturm, *T. filiforme* Sturm, *T. longisetum* Brack., *T. asae-grayi* v.d. Bosch, and *T. foeniculaceum* Hook. (p.p.). Of these, *T. longisetum* is merely a misidentification by Brackenridge (a "sensu" name) and *T. foeniculaceum* sensu Hooker was only "pro parte," but the other three species cited as synonyms were all validly published and legitimate, and there was no reason to displace them by accepting a nomen nudum in their place. Thus *T. gemmatum* Baker is a nomen abortivum, a superfluous name. Baker's description was based probably in part on *Cuming* 400, the plant assigned the name *gemmatum* by Smith, but it was based also on varied plants from Venezuela, Brazil, Polynesia, Java, and the Philippines, and so it cannot be said that all these synonyms were cited by Baker in error. Copeland ignored all this and adopted the name *gemmatum* for a local species native to Malaya and Borneo, saying merely "As Baker takes up the name of J. Smith, the type is the only specimen cited by Smith, *Cuming* 400, from Malacca." In fact, Baker did not cite Smith's publication of 1841, nor did he mention *Cuming* 400. Since *T. gemmatum* Baker is a superfluous name, it must be lectotypified on the basis of the earliest name that ought to have been adopted, *T. cellululosum*, which Baker cites as "Sturm, Hk. 2nd Cent. Ferns, t. 63." But a check of this reference shows that the

plant described and figured by Hooker is *T. cellulorum* Klotzsch, *Linnaea* 18:531. 1844, a species which had been adopted by Sturm in Martius' "Flora Brasiliensis." The type of *T. cellulorum* Klotzsch is *Schomburgk* 1186, from the Kanuku Mountains, British Guiana, and this must therefore be the lectotype of *T. gemmatum* Baker. Holttum in his "Ferns of Malaya" adopted Copeland's concept of "*T. gemmatum*," apparently without looking into the nomenclature carefully. One further important point to be mentioned is that Presl described *Cuming* 400 as a new species, *T. bifidum* Presl, a name which has been overlooked in the "Index Filicum," presumably because it was described only in a footnote; Presl's name is a later homonym of *T. bifidum* Ventenat ex Willd. (1810). Presl's description, though brief, is fully adequate to validate his name.

134. TRICHOMANES LONGIFOLIUM Desv. *Mag. Naturf. Freund.* Berlin 5:328. 1811.
= *Trichomanes pinnatum* Hedw. *Fil. Gen. Sp. t. 4, f. 1.* 1799.

TYPE: "In America calidior" (holotype P ex Herb. Desvaux, Morton photograph 22053).

In the "Index Filicum," *T. longifolium* Desv. is indicated as a synonym of *T. crispum* L., possibly on the basis of Desvaux's comparison of his species with *T. crispum*. An examination of the types, however, shows that the species is clearly a synonym of the common and widespread *T. pinnatum* Hedw.

135. TRICHOMANES STRIATUM D. Don, *Prodr. Fl. Nepal.* 11. 1825. =? *Trichomanes giganteum* Bory ex Willd. *in L. Sp. Pl. ed. 4, 5:514.* 1810. Type: Bourbon [Réunion], *Bory* (Herb. Willdenow 20216, B, not seen).

TYPE: Nepal, *Buchanan-Hamilton* (holotype BM, Morton photograph 6578).

In the "Index Filicum," *Trichomanes striatum* is considered dubious but is referred with a query to *T. bipunctatum* Poir., which is a wild guess, for the type as well as the original description shows a plant widely different from *T. bipunctatum*.

The type sheet has an annotation indicating that the plant on the right-hand side is the type of *T. striatum* (which it is) and that the plant at the left is probably the type of *Hymenophyllum ramosissimum* D. Don. This it clearly is not, for it does not bear the name in Don's hand, does not have the locality data, and quite disagrees with the original description; this plant is sterile, whereas Don described the sori and indusia of *H. ramosissimum*. This left-hand plant is in fact the sterile part of the holotype of *T. striatum*. Don indicated that he saw both sterile and fertile fronds, for he commented: "fructiferae sunt opaciores et tenuius sectae," which is true. The holotype shows that *T. striatum* belongs to the group of *T. radicans* Swartz. From the nonalate stipe and rhachis and the somewhat greater division of

the blade, I take it to be the plant called *T. giganteum* Bory by Copeland (Phil. Journ. Sci. 51:220. 1933) in his revision of Old World *Trichomanes*. This may well be correct, but neither Copeland nor I have seen the type of that species or any material from the type locality. The holotype agrees with a specimen (US) from Mongpo, Sikkim, 5,500 ft. alt., Oct. 7, 1884, *Clarke* 36382A, originally distributed as *T. radicans* Swartz, and identified by Copeland as "*T. giganteum* Bory?."

136. **TRICHOMANES TENELLUM** Hedw. Fil. Gen. Sp. ad t. [6], text & f. 1, 1a, 1b. 1799. = **Trichomanes capillaceum** L. Sp. Pl. 1099. 1753.
Trichomanes trichoideum Swartz, Journ. Bot. Schrad. 1800(2):98. 1802; Syn. Fil. 144. 1806. Illegitimate renaming of *T. tenellum* Hedwig.
Trichomanes trichodes Swartz, Fl. Ind. Occ. 3:174. 1806. Renaming of *T. trichoideum*.

Trichomanes trichoideum Swartz was a renaming of *T. tenellum* Hedw., seemingly due to a misunderstanding. In the unnumbered Hedwig plate the habit illustration of *T. tenellum* is so placed that it might seem to belong with the name *T. pusillum* rather than with *T. tenellum*. Since this does not by any means represent *T. pusillum* Swartz (1788), Swartz renamed this plant *T. trichoideum* in 1802, citing *T. pusillum* Hedw. as a synonym. In Hedwig's plate, however, *T. pusillum* is represented by figs. 5, 5g, and 5h, an entirely different plant of the sect. *Didymoglossum*. Swartz evidently realized his error later and corrected it in his "Synopsis Filicum" by citing *T. tenellum* Hedw. as a synonym of his own *T. trichoideum* and omitting the "*T. pusillum*" Hedwig. Since *T. tenellum* was validly published and had priority, however, Swartz ought to have adopted that name and reduced his own *T. trichoideum* to synonymy. The matter is not of importance, since both names are presumably synonyms of the older *T. capillaceum* L.

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