

lations. Careful search of the surrounding soil may then yield an entire ontogenetic series of the subterranean gametophytes.

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## A Peculiar Species of Grammitis

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*Polypodium mathewsii* Kunze ex Mett. was described from Peruvian specimens collected by Mathews; the locality was not specified but was given by Hooker (Sp. Fil. **5**: 20. 1864) as Chachapoyas, and the numbers as *Mathews 1811* and *3281*. However, it is evident that Mathews collected this species at least three times, all at Chachapoyas, for the specimen in the British Museum is no. 1837. The holotype in Kunze's herbarium has been destroyed. A specimen of one of these numbers in the Mettenius herbarium in Berlin should be designated as lectotype, if one exists, other-

wise one of the Kew specimens should be the lectotype. Hooker stated that the specimens had long been preserved in his herbarium as a new species.

This peculiar and distinctive species was placed by Mettenius and by Hooker among the *Goniophlebiums* because of its venation, but it is quite different in its general aspect—thick texture, long-decurrent segments with the lowest veinlet arising from the costa, and especially by the setiform hairs, which are exactly like those typical of many species of *Grammitis*. An examination of the spores shows that they are trilete, and that therefore this is truly a species of *Grammitis* sect. *Cryptosorus*. It is the only known species of this section with more or less completely goniophlebioid venation. The segments have a single, incomplete row of costal areoles, with one included veinlet. However, unlike the true *Goniophlebiums*, the sorus is dorsal on the included veinlet and not terminal. This venation pattern is an extension and complication of the type of venation found in *Grammitis kalbreyeri* (Baker) Morton, comb. nov. (*Polypodium kalbreyeri* Baker, Trans. Linn. Soc. II, Bot. 2: 291. 1887) and some other large species of *Grammitis*. It is to be expected that when segments become broad that anastomoses can occur, a phenomenon well known within *Polypodium* sect. *Polypodium* (including *Goniophlebium*) and *Polypodium* sect. *Marginaria*. This is not the only instance of anastomosing veins in *Grammitis* sect. *Cryptosorus*, either, for anastomoses are occasionally found in *G. eminens* Morton and *G. trifurcata*, and rather uniformly in *G. crispata* (J. Smith) Morton. However, none of these species seem at all allied to *Polypodium mathewsii*, which should be known as *Grammitis mathewsii* (Kunze ex Mett.) Morton, comb. nov. (*Polypodium mathewsii* Kunze ex Mett. Abhandl. Senckenb. Naturf. Gesell. 2: 74. 1856). The relationship of this species must remain undetermined at present; very likely it is an isolated type that might constitute a section by itself.

There may be some relationship to such species as *Grammitis albidula* (Baker) Morton, comb. nov. (*Polypodium albidulum* Baker in Mart. Fl. Bras. 1(2): 598. 1870) and *Grammitis discolor*

(Hook.) Morton, comb. nov. (*Polypodium discolor* Hook. Icon. Pl. 4: t. 386. 1841), which differ in having the blades ceraceous beneath, and the veins forked but not anastomosing. In *G. mathewsii* the blades are green beneath and not white-waxy.

*Grammitis mathewsii* is widespread; it has been known from Colombia to Peru, and may now be reported from Bolivia also. According to Hooker, *Goniophlebium villemianum* Fée (Mém. Foug. 7: 63, t. 27, f. 3. 1857) is a synonym, and from Fée's figure this would seem to be correct. However, Fée described and illustrated some clathrate scales that are said to occur on the lower surface, and I have not found such scales in the material I have studied, nor indeed are they to be expected in this genus. Fée's statement may have been an error of observation. His species came from páramos above Ocaña, Norte de Santander, Columbia, at 3400–3700 m. elevation, where it had been collected by Schlim. I have seen a specimen from the Páramo del Hatico, Norte de Santander, which must not be very far away, and this agrees well with Fée's description and figure.

#### SPECIMENS EXAMINED:

COLOMBIA: Páramo del Hatico, Norte de Santander, alt. 290 m, *Killip & Smith 20686*. Near Facatativa, Cundinamarca, under rocks, *Ariste-Joseph A405*. Páramo de Guasca, above Bogotá, Cundinamarca, *Ariste-Joseph A344, A477*. Bogotá, alt. 3,200 m, *Lindig 178* (BM). Without locality, *Mutis 3228*.

ECUADOR: Near the laguna, Páramo del Castillo, crest of the eastern cordillera on the trail between Sevilla de Oro and Mendez, Azuay, epiphyte, alt. 2,700–3,300 m, *Camp E5108*.

PERU: Pendent from tree branches or rocks, frequent, moist ravine head on middle eastern Calla-Calla slopes, 3–5 km. SE of km 422 on the Leimebamba—Balsas road, Prov. Chachapoyas, Amazonas, alt. 3,000–3,200 m, *Wurdack 1765*; same, near km 415–418, alt. 2,900–3,150 m, *Wurdack 1743* (these two collections from somewhere near the type locality). Alturas de Sucre, Cuzco, alt. 3,000 m, *Bues 1538*. Montaña de Calea, Valle de Nares, Cuzco, alt. 2,250 m, *Bues 1924*. Chachapoyas, *Mathews 1837* (BM).

BOLIVIA: Valle de Corani, Cochabamba, alt. 800 m, epiphyte, July 6, 1968, *Adolfo 103*.

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