

A Remarkable New Species of *Anastrophyllum* (SPRUCE)
STEPH. (Hepaticae) from Mt. Roraima, Guyana¹⁾

By

Hiroshi INOUE

Department of Botany, National Science Museum, Tokyo

and

S. Rob GRADSTEIN

Institute of Systematic Botany, Heidelberglaan 2, Utrecht, The Netherlands

Abstract *Anastrophyllum plagiochiloides* INOUE & GRADST. is newly described and illustrated. This species is characterized by 1) the flat or more or less convex leaves, 2) the strongly oblique leaf-insertion line on the dorsal side, and 3) the narrowly oblong leaf-shape with a narrowly rounded or subtruncate and sometimes bidentate apex. As these characters sharply isolate the species from any other known species of *Anastrophyllum*, the new subgenus *Vanaea* INOUE & GRADST. is established for this remarkable species.

Peculiarities of the bryophyte flora of Mt. Roraima, Guyana Highlands were noted by GRADSTEIN (1986), and several extremely interesting hepatics have already been detected among the collections made during an international botanical expedition to Guyana in 1985 organized by the Institute of Systematic Botany, Utrecht (cf. GROLLE and GRADSTEIN, 1988). A species of *Anastrophyllum* described in this paper also shows the highly peculiar nature of Mt. Roraima.

The junior author encountered this peculiar *Anastrophyllum* species on the north ridge of Mt. Roraima at an altitude of 1900-2000 m, hanging from twigs. The habit of this hepatic was so similar to that of *Plagiochila* species except for its deep or dark reddish color that the senior author preliminary thought it to be a species of the *Plagiochila* complex. However, after careful searching in the material we found several gynoecia of the *Anastrophyllum* type. The species is well characterized by 1) the flat or more or less convex leaves, with strongly oblique insertion-lines, and 2) the narrowly oblong leaf shape with a narrowly rounded or subtruncate apex. These two criteria sharply isolate this species from any other known species of *Anastrophyllum* and we would like to propose a new subgenus for this remarkable species. The new subgeneric name is dedicated to Dr. Jirí VÁŇA (Praha, Czechoslovakia) who has been working on the species of *Anastrophyllum* in Latin America for a long time and gave us several suggestions about status of the present new species.

1) Studies on the flora of the Guianas no. 37.

Anastrophyllum (SPRUCE) STEPH. subgen. *Vanaea* INOUE et GRADST., subgen. nov.

Planta magna, rubella; caulis rigidus, pendulus, subsimplex, ramis posticis intercalaribus, caule simillimis, cellulis corticalibus simillis interioribus, valde incrassatis; folia patentissima, leniter vel moderate convexa, oblique inserta, margine nudis; cellulae foliorum subquadrata, parietibus tenuibus sed trigonis valde incrassatis et confluentibus; gynoeceium terminale, sub flore postale innovatum; perianthium semiexsertum, oblongo-ovatum, apice leniter plicatum, ore moderate ciliato-dentato; folia floralia minor, 1/2 bifida, marginibus pauci dentatis; Androecia mediana, bracteis 3–5 jugis, imbricatis, inflatoconduplicatis, subacutis vel bidentatis. Type: *Anastrophyllum plagiophiloides* INOUE et GRADST.

Anastrophyllum (subgen. *Vanaea*) *plagiophiloides* INOUE et GRADST., sp. nov.

Planta rubella, longissima, 3–8 cm longa et 3–4.5 mm lata; caulis nigricans, in sectione transversa rotundata, 8–10 cellulas crassus in diametro, cellulis valde incrassatis, brunneis; folia in plano oblonga, (440–)600–750 μ longa, 1500–2000 μ lata ad basim et 120–150(–180) μ lata ad apicem, margine nuda, apice rotundata vel subtruncata, bidentata, dentibus minor; cellulae foliorum medianae 30–40 \times 48–60 μ , trigonis majusculis, confluentibus, cuticula laevis. Amphigastia nulla. Gynoeceia terminalia; folia floralia caulinis valde minora, ca. 600 μ lata et 900 μ longa, 1/2 biloba, margine pauci dentatis, bacteola minora, lanceolata, ca. 200 μ lata et 800 μ longa; perianthia oblongo-ovata, 2–2.1 mm longa et 0.8 mm lata, leviter plicata, ore pauci-dentatis; androecia mediana, bracteis 3–5 jugis, imbricata.

Plants long and slender, epiphytic and pendent from bushes, reddish to pale brownish purple, 3–8 cm long and 3–4.5 mm wide. Stem rather broadly exposed both dorsally and ventrally, blackish to deep brown (around shoot apex bright brown to yellowish brown), 200–230 μ thick, in cross section 8–10 cells across, the cortical cells not differentiated from the interior, cells from the outermost layer with deeper brownish pigmentation and smaller-sized cell-cavities than those from the interior where the cell-walls are bright brown in color, cell-walls uniformly and very strongly thickened; vegetative branches quite rare, if present always of the ventral-intercalary type, as vigorous as the leading shoot. Leaves broadly patent, never ventrally secund, more or less convex, with an oblique insertion line, dorsal base extending to around the dorsal stem midline but leaving a leaf-free stripe of 3–4 cell-rows, not becoming transverse (but rarely becoming slightly transversal at the anterior portion of androecia), not decurrent, dorsal margin not revolute nor recurved, ventral margin plane, extending to near the ventral stem-midline but leaving 2–3 cell-rows of ventral merophyte (where the color of the stem is sometimes paler than in the lateral merophyte), not decurrent; when flat leaves narrowly oblong, with the widest portion just above the base, (440–)600–750 μ wide at base and 120–150(–180) μ wide at apex, 1500–2000 μ long (2.5–3.4 times as long as wide), both dorsal and ventral margins nearly straight to arched, entire, apex narrowly rounded to subtruncate, with 2 small teeth (tooth at the ventral side frequently more or less reduced, the apex then appearing subacute). Cells 30–40 \times 48–60 μ at leaf-middle, with large, subtruncate trigones which are often contiguous with neighbouring trigones [thus, cell-cavities much smaller than the cell-size, being 25–33(–50) μ , and connected merely by pits], cell walls thin, cuticle smooth. Underleaves not developed. Asexual reproduction not seen.

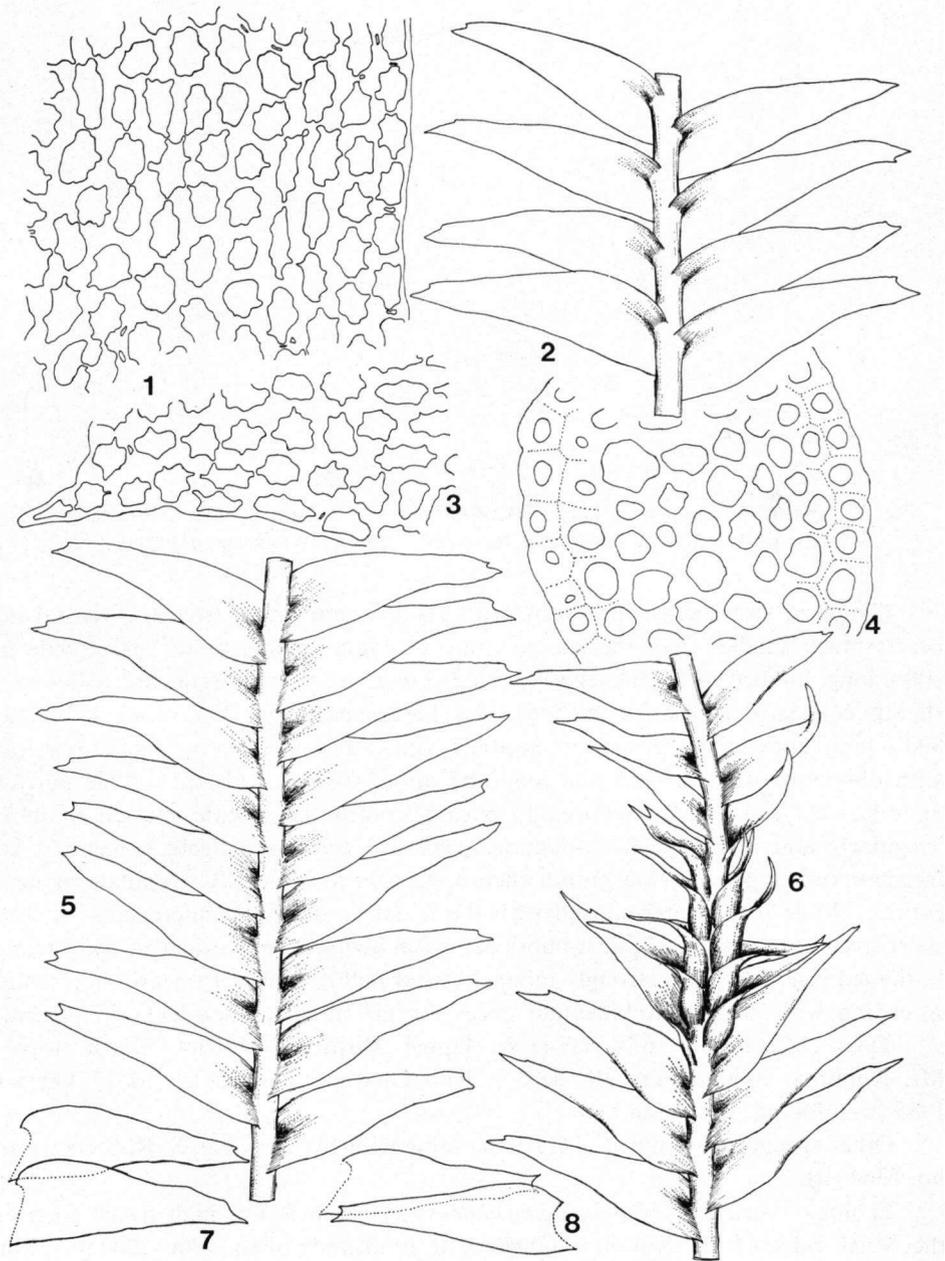


Fig. 1. *Anastrophyllum plagiophiloides* INOUE et GRADST. 1. Cells from leaf-middle, $\times 166$. 2. Part of shoot, ventral view, $\times 13$. 3. Cells from leaf-apex, $\times 166$. 4. Part of cross section of stem, $\times 200$. 5. Part of shoot, dorsal view, $\times 16$. 6. Part of shoot with androecium, dorsal view, $\times 16$. 7, 8. Leaves, $\times 16$. All figs. based on type.

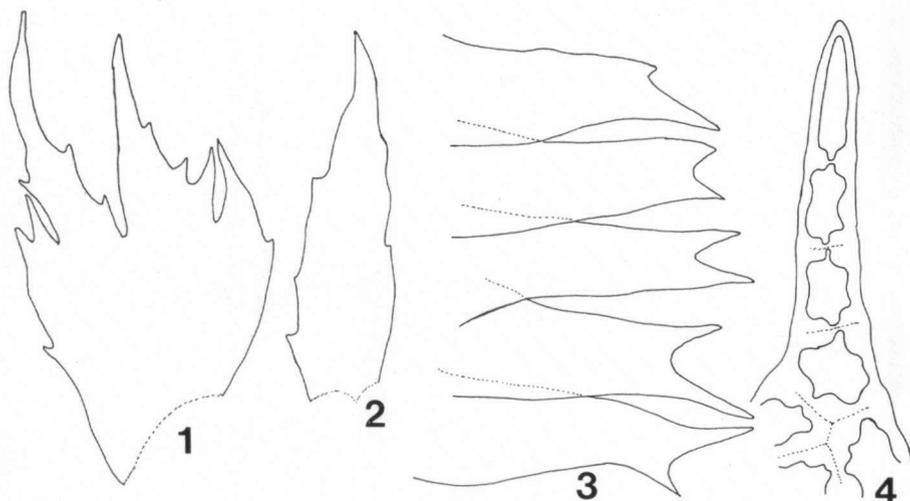


Fig. 2. *Anastrophyllum plagiochiloides* INOUE et GRADST. 1. Bract, $\times 31$. 2. Bracteole, $\times 31$. 3. Leaf-apices, $\times 31$. 4. Tooth from leaf-apex, $\times 256$. All figs. based on type.

Gynoecea terminal on the shoot, with a single innovation from the ventral side; bracts much smaller than the leaves, ovate to ovate-oblong, about $600\ \mu$ wide and $900\ \mu$ long, bilobed to $1/2$ the length, with 2–3 large teeth on margin; bracteoles small, slightly connected with bracts at both sides, lanceolate, about $200\ \mu$ wide at base and $800\ \mu$ long, apex subacute, margin entire or with 1–2 small teeth or angulations; perianth oblong-obovate, 2.0–2.1 mm long and about 0.8 mm wide (at middle portion), more or less constricted and weakly plicate toward the mouth, margin of mouth irregularly and remotely ciliate-dentate, teeth 2–3 cells long (teeth sometimes very fragile and dropped off, the mouth then appearing to be weakly crenulate or nearly entire). Male plants intermingled with the females; androecia intercalary on shoot, short spicate; bracts in 3–5 pairs, imbricate, basal half vertically oriented, with strongly U-shaped insertion-lines, strongly inflated, distal half obliquely to nearly horizontally spreading, with subacute to bidentate apices, margin entire; antheridia (1–) 2 per bract.

Type. Guyana: $5^{\circ}16'N$, $60^{\circ}43'W$, Upper Mazaruni District, North slope of Mt. Roraima, 1900–2000 m alt., leg. S. Rob GRADSTEIN no. 5363, 14–17 February 1985 (U-holotype; isotype in TNS).

Other specimen examined. Guyana; same with the type, leg. S. Rob GRADSTEIN no. 5364 (U).

Ecology. *Anastrophyllum plagiochiloides* occurs in 3–4 m high dwarf forest on the North ridge of Mt. Roraima, Guyana, at an altitude of ca. 1900–2000 m. For a general description of this area we may refer to GRADSTEIN (1986). The new species grows as a conspicuous, dark reddish epiphyte pendent on the branches of shrubs, usually in very exposed sites. Associated liverwort species are *Syzygiella perfoliata*, *Leptoscyphus ovatus*, *Pleurozia heterophylla*, *Colura lyrata* and an unidentified pendulous

Ceratolejeunea. *Anastrophyllum plagiochiloides* is quite common in this habitat but usually the plants grow rather scattered, not in great masses. A reason for its scattered occurrence seems to be the presence of huge masses of algae or fungi in this habitat, which cover most of the branches and twigs of the shrubs and seem to outcompete the epiphytic bryophytes. The two collections of *A. plagiochiloides* contain many male plants but only a few female shoots were found, intermingled among the males.

The senior author is very much indebted to the Netherlands Organization for the Advancement of Pure Research (ZWO) for financial support, which enabled him to carry out joint work with the junior author at Institute of Systematic Botany, Utrecht on neotropical liverworts.

Literature Cited

- GROLLE, R. & S. R. GRADSTEIN, 1988. *Haesselia*, a new genus of Cephaloziaceae (Hepaticae) from Mt. Roraima, Guyana. *Journ. Hattori Bot. Lab.*, **64**: 327-334.
- GRADSTEIN, S. R., 1986. Return to the lost world, Mount Roraima (Guyana). *Bryol. Times*, **40**: 1-3.