ON TWO NEW SPECIES AND ONE NEW VARIETY OF DICRANOSTYLES (CONVOLVULACEAE) COLLECTED IN THE GUIANAS AND AMAZONIA

BY

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Summary

In the genus *Dicranostyles* two new species (*D. guianensis* and *D. solimoesensis*) and one new variety (*D. villosa* Ducke var. *lasiocalyx*) are described.

Introduction

Lately, while inspecting some unidentified material belonging to different collections, I was struck by the resemblance between the leaf characters of a vine collected in the basin of Rio Solimoes, Brazil (Krukoff n. 8793) and those of a fruiting specimen, also a vine, collected in Suriname in 1948 by Lanjouw and Lindeman, of which at that time we could not identify the family. The Krukoff material had a few flowers left which enabled me to identify it as a *Dicranostyles*.

Moreover in a set of plants from French Guiana which for the greater part had been collected in the course of the last century and which was sent to us for identification by Dr. Alicia Lourteig of the Muséum d'Histoire Naturelle in Paris, several species of *Dicranostyles* proved to be represented. By earlier students of the material those specimens had tentatively been assigned to a rather astonishing variety of genera, comprising *Aspidosperma, Cordia, Salacia* and *Strychnos*.

Species of *Dicranostyles* are apparently difficult to recognize, particularly in the fruiting and in the sterile state, but even when flowers are present, these do not immediately suggest a convolvulaceous relationship. For a reliable identification they have to be dissected. In the genus the leaves are very variable in size and form, and, moreover, sometimes nearly alike in different species. Common features of all types of leaves are the midrib, which is sulcate above and prominent beneath, and the presence of balance- or T-shaped hairs. The fruits are as yet poorly known, but seem to be generally of the same kind (cf. fig. and the remarks made under *D. villosa* var. *lasiocalyx*). The flowers may differ in their indumentum, in the length and shape of the corolla lobes, in the length of the filaments

of which the base, moreover, is sometimes dilated and sometimes provided with glandular hairs, and particularly in the degree of bifurcation of the style and in the presence of one or two stigmas. Furthermore the wood of the stem is characterized by abnormal secondary growth, viz. by the presence of concentric rings of included phloem. This will be described in another paper.

The genus was established by BENTHAM (1846) to accommodate *Dicranostyles scandens*, a species from Br. Guiana with a style divided at the top only. Afterwards some more species were described, mainly by Ducke, but also by other botanists, the total number being 12 at present, all from tropical America (not 2 in N. Siam.! as erroneously stated in Engler's Syllabus II, 1964). Among these species there are several which do not possess the divided style nor the two stigmas mentioned in the original description. In 1946 L. BARROSO published a new genus *Kuhlmanniella* based on a specimen collected near Manaus. This genus resembles in all respects *Dicranostyles* except for the simple style provided with an emarginate, at the base sagittate stigma. Later (1947) he transferred *D. holostyla* Ducke, *D. laxa* Ducke, *D. mildbreadiana* Pilger, all of them species with a simple style and a capitate stigma, to this new genus. DUCKE (1950) did not agree with Barroso, considering that variations in the condition of the style and stigma are not sufficiently important in flowers otherwise so strikingly alike to warrant the recognition of two genera, particularly because there are species with a style divided to the base (*D. ampla*), with a shortly or deeply divided style (*D. scandens*) and with a hardly incised style (*D. densa*, *D. villosa*). In this paper Ducke does not mention *D. sericea* Gleason, which belongs in the group of *D. densa*, nor *D. boliviana*, which has the same type of style as *D. scandens*. Another argument in favour of Ducke's delimitation of the genus and of the relatively slight importance that is to be attached to the condition of the style is found in a remark made by HALLIER (1893). In his treatment of the Convolvulaceae he mentions on p. 527 (footnote) that he has seen in *Prevostea spectabilis* [a synonym of *Bonamia maripoides* Hall. f. (1897)] flowers with a simple, a more or less distinctly cleft or even a completely split style. The same statement is made by VAN OOSTSTROOM in the Flora of Suriname (1932). On account of these considerations I do not hesitate to refer in this paper one of my new species which has a simple style and one stigma to the genus *Dicranostyles* (*D. guianensis*).

The genus was hitherto not known from Suriname.

Dicranostyles villosa Ducke var. **lasiocalyx** A. Mennega n. var.
Plate I, fig. 1; plate II.

Type: Mélinon 114, Guyane Française, R. Maroni, 1864 (P. holotype).

Ducke in Arch. Jard. Bot. Rio d. Jan. 1922: 3. 250; 1925: 4. 169.

A var. villosa pedicello et calyce pilosis distinguenda.

French Guiana: Mélinon 114, 216, 229 (fl.) R. Maroni (P.); Suriname: Lanjouw et Lindeman no. 2667 (fr.), Nassau Mts. in xeromorphic forest on ferrobauxite, alt. 550 m (U); (wood spec. Uw 1874).

Ducke described the leaves of his specimen (Ducke 14770, collected near Obidos, Rio Branco) as being 6–10 cm long and 2½–3½ cm broad. However, in type material present in the Utrecht herbarium the leaves are slightly smaller, viz. 4–6 cm long and 2–3 cm broad. In size as well as in the other characters the leaves of the specimen cited above agree extremely well with those of Ducke's type. The same is true for the inflorescences and the flowers, at least when we leave the long yellowish sericeous hairs on the pedicels and the indumentum of the calyx lobes out of consideration.

In Ducke's original publication (1922) his description of the flower is restricted to the following remarks: "Calix pedicellis brevior vulgo 2 mm longus, campanulatus, glaber, lobis apice rotundatis et ciliatulis. Corolla alba, ca. 3½ mm longa lobis extus villoso-pubescentibus". In 1925 he added "le style est courtement bifide, comme chez le D. scandens du dessin mentionné de la Flora Brasil". This still leaves the stamens and stigmas out of consideration; therefore they will be described here.

The stamens are inserted high in the corolla tube; the filaments are short, ca 0.2–0.4 mm long, glabrous, not broadened at the base; the anthers are 0.3 mm high and nearly as wide. The style is 1.2 mm long, but slightly incised at the top and provided with two large, flattened stigmas.

Fruits of *D. villosa* have not yet been described. They are in this variety dark green, in the dried condition black, ovoid, slightly stipitate and shortly mucronate, 21–25 mm long, not dehiscing; the pericarp is thin leathery, the solitary seed has a fleshy outer layer, and the embryo has large, folded cotyledons. This is in accordance with Ducke's description (1934) of the only fruit of a Dicranostyles known to him (*D. scandens*). Others before him, e.g. HALLIER (1893) described the fruits as a two-valved capsule, though he stated that he did not see them himself.

Ducke 14770 is described as a large shrub with long, somewhat pendulous branches. According to the label the type specimen of the variety, Mélinon 114, is a tree; the life form of Mélinon 216 and 229 was not indicated. The fruiting specimen from Suriname, Lanj. et Lind. 2667, is a liana. It is with some hesitation that I assigned the latter specimen to this taxon. It is well known that it is generally impossible to identify sterile material of Convolvulaceae (VAN OOSTSTROOM, 1954). Especially in view of the remarkably strong agreement in the vegetative characters shown by *D. villosa*, *D. villosa* var. *lasiocalyx*, *D. boliviana* and the new species *D. solimoesensis*, it might seem hardly admissible to identify a sterile (or fruiting) specimen with one of them. I did this on geographical grounds, presuming that it is more likely that a specimen gathered in the Nassau Mts. of Suriname, i.e. close to the Marowijne R. (Maroni) will belong to

PLATE I

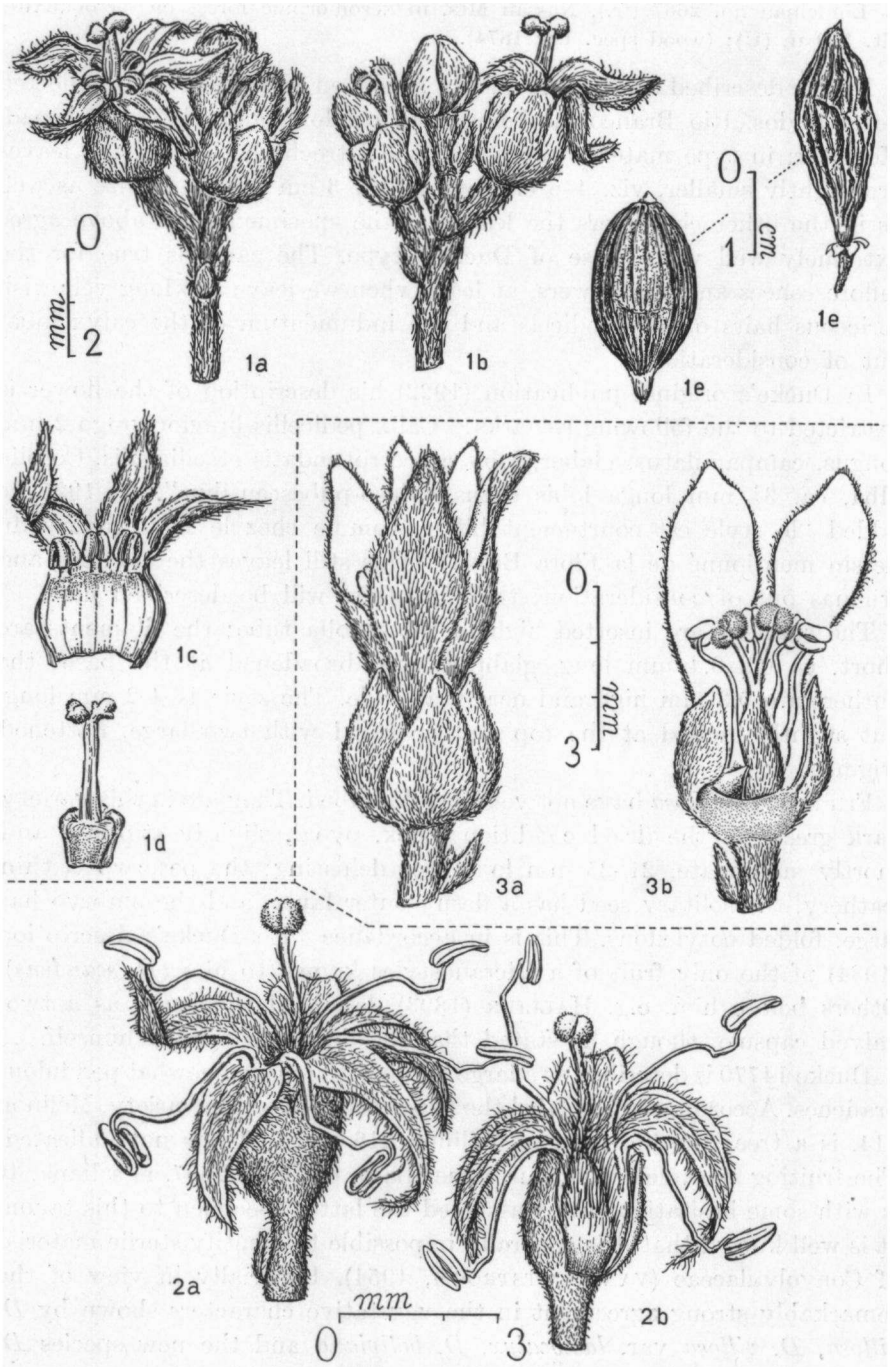


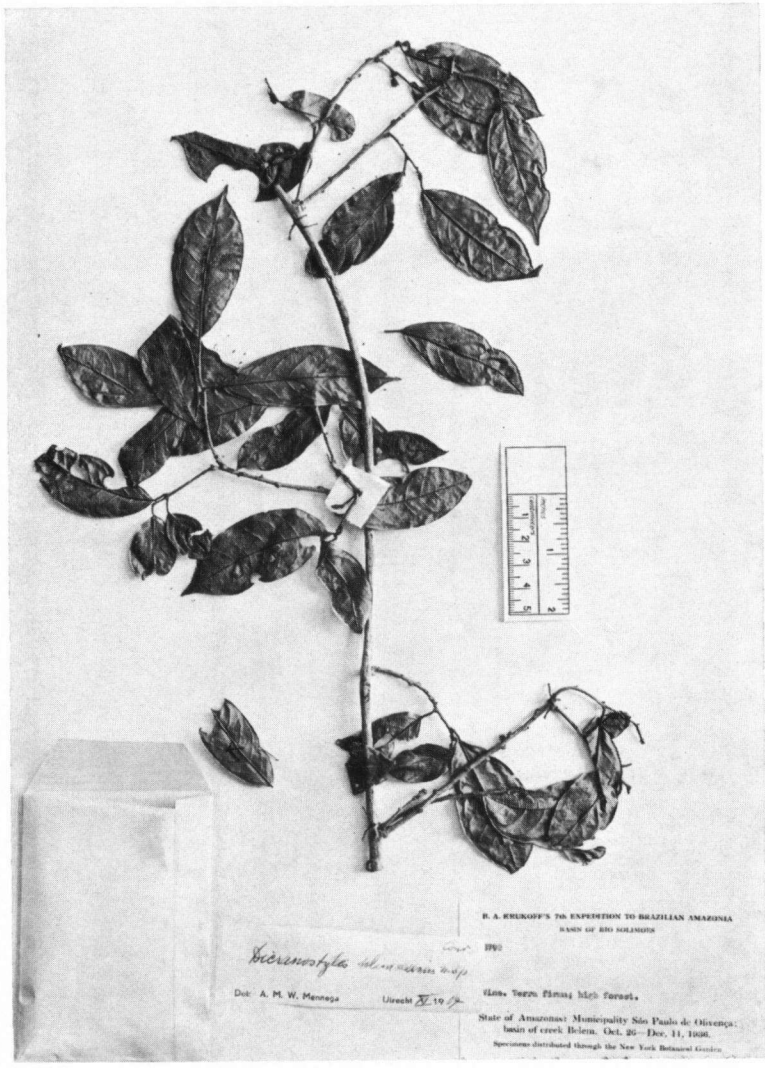
Fig. 1: *Dicranostyles villosa* var. *lasiocalyx* **a., b.** portions of inflorescences; **c.** part of a flower; **d.** ovary; **e.** fruits. **Fig. 2:** *D. guianensis* **a.** flower; **b.** flower with corolla partly removed. **Fig. 3:** *D. solimoesensis* **a.** flower; **b.** flower with corolla partly removed.

PLATE II

Dicranostyles villosa Ducke var. *lasiocalyx* A. Mennega
Mélinon 114, French Guiana.

PLATE III

Dicranostyles guianensis A. Mennega. Mélinon s.n., French Guiana.



Dicranostyles solimoesensis A. Mennega. Krukoff 8793, Brazil.

a species known from the other side of this frontier river than to one known only from the R. Solimoes in Brazil or to one from Bolivia.

Dicranostyles guianensis A. Mennega spec. nov.
Plate I, fig. 2; plate III.

Type: Mélinon s.n., Fr. Guiana, Maroni, 1864 (P, holotype).

Frutex scandens interdum altitudinem considerabilem attingens, ligno secundario abnormi instructus. Rami glabri, medulla rubeolo-brunnea muniti. Folia petiolo rubro-tomentello, 10–15 mm longo et 1.5 mm diam. instructa: lamina varians inter formam ellipticam et formam ovatam, 4–9 cm longa et 2–5 cm lata, apicem acutum vel obtusum versus breviter acuminata, basi subcordata et leviter conduplicata, margine integra, papyracea, opaca vel nitidula, sicc. supra saturate purpuraceo-brunnea, subtus rubeolo-brunnea, supra glabra, subtus pilis brevibus, apice divaricato-bicuspidatis, ramis 175 μ longis dense villosa, pinnati-nervia, costa supra sulcata, subtus prominente, nervis secundariis utroque latere costae 9 vel 10 etiam subtus prominentibus, nervis tertiariis subtus solum distinguendis, plus minusve parallelis. Inflorescentiae cymae laterales breves et densae, multiflorae, indumento rubeolo-brunneo dense vestitae, plerumque 10–12 mm longae et 8–10 mm diam., pedunculo brevissimo instructae, raro ad flores paucos vel ad florem singulum redactae. Flores bractea squamiformi suffulti, pedicellati; pedicellus circ. 2 mm longus, tomentosus. Calyx ampulliformis, circ. 2 mm altus, ferrugineo-tomentosus; lobi 5, deltoidei, imbricati, circ. 1 mm longi, apice acuti. Corolla tubo glabro et tenui, calycis tubo aequilongo instructa, 5-partita; lobi 2–3 mm longi, acuti, utrimque tomentosi, ad anthesin patentes. Stamina ad apicem tubi corollini inserta; filamenta glabra, gracilia, 2 mm longa, basi vix notabile dilatata; antherae versatiles, 1 mm longae et 0.4 mm latae, fissuris lateralibus dehiscentes. Ovarium villosum, circ. 1.5 mm altum, 1-vel incomplete 2-loculare, 4-ovulatum; stylus gracilis, 2–2.5 mm longius, dimidio inferiore villosus; stigma singulum, capitatum, crassum, leviter sulcatum. Fructus ovoideus, 12 mm altus et 9 mm diam. sed 1 fructus examinatus probabiliter nondum maturus, glaber, griseolus, basi calyce persistente circumdatus.

French Guiana: Mélinon, s.n., Maroni; Sagot, s.n., Acarouany, fr.; R. Benoist, nr. 496, Charvein, fl. (P); Suriname: van Donselaar, nr. 2457, Brokopondo district, ster. (U); (wood specimen Uw 11866).

This new species resembles in several respects *D. longifolia* Ducke, both having flowers provided with a simple pubescent style, stamens with long and slender glabrous filaments and corolla lobes which are at anthesis outwardly curved. The reddish-brown indumentum of the leaves and inflorescences is another character which both species have in common. In *D. longifolia*, however, the leaves are larger and of a different form

and the secondary nerves, moreover, are far more numerous. Other species with a simple style (*D. falconiana* (L. Barroso) Ducke, *D. holostyla* Ducke, *D. integra* Ducke, *D. laxa* Ducke, *D. mildbreadeana* Pilger) show but little resemblance with *D. guianensis*.

Sterile or fruiting material too will not easily be confused with that of other species of *Dicranostyles*, but it might be placed erroneously in the closely related genus *Lysiostyles*, of which two species are known from Br. Guiana; viz. *L. scandens* Benth. and *L. pubescens* Gleason. According to GLEASON's description in Bull. Torr. Bot. Cl. 54, 616, 1927, *L. pubescens* has elliptic-oblong, 10–14 cm long and 5–8 cm wide leaf blades, which are closely subtomentose beneath with brown hairs. Though the form of these leaves is in agreement with that of *D. guianensis*, their size is much larger. In *L. scandens* some leaves are very similar to those of *D. guianensis* in shape and size; the indumentum, however, is dense, and of an orange-brown colour. On account of very good agreement in the leaf characters shown by the specimens Sagot s.n. (with fruits) and van Donselaar 2457 (ster.) with the flowering material from French Guiana I decided to refer these also to this new species.

Dicranostyles solimoesensis A. Mennega n. spec.

Plate I, fig. 3; plate IV.

Type: Krukoff 8793, a vine, terra firma in high forest, Brazil, Amazonas, Rio Solimoes, basin of creek Belem near Sao Paulo de Olivença (holotype, U.).

Planta scandens; rami teretes, griseolo-brunnei, primum tomentelli, mox glabrescentes. Folia petiolo gracili, 6–8 mm longo, saturate brunneo, piloso instructa; lamina elliptica, 5.0–8.5 cm longa et 2.0–2.5 (3.0) mm lata, in apicem angustum et obtusum breviter acuminata, basi attenuata vel rotundata, margine integra, subcoriacea, sicc. saturate purpuraceo-brunnea, subtus remisse brunneola, supra glabra, subtus pilis brevibus apice divaricatis-bicuspidatis, ramis 175 μ longis in costa densius, alibi sparse obtecta, costa supra impressa, subtus prominente, nervis secundariis utroque latere costae 7 vel 8 etiam supra impressis et subtus prominentibus, nervis ceteris vix conspicuis. Inflorescentiae laterales, probabiliter cymae breves vel fasciculi sed adhuc imperfecte notae; pedunculus pilis T-formibus rubeolo-brunneis dense vestitus. Flores pedicellati, a bractea deltoidea 1 mm longa et ut pedunculus et pedicellus pilis T-formibus rubeolo-brunneis dense vestita suffulti; pedicelli etiam 1 mm longi. Calyx 2.5 mm altus, ferrugineo-tomentosus; lobi acuti, ad basin solum connati. Corolla tubo brevi instructa; lobi erecti, 4.5 mm longi et 1.5 mm lati, acuti, intus glabri, extus ut calyx ferrugineo-tomentosi. Stamina ad basin loborum corollinorum adnata; filamenta gracilia, 3 mm longa, basi dilatata, glabra; antherae ellipticae 0.5 mm longae, fissuris lateralibus dehiscentes. Ovarium 2 mm altum et 1 mm diam., tomentosum, incomplete 2-loculare,

quoque loculo ovultis 2 instructo; stylus 1 mm longus, fere usque ad basin bipartitus, glaber; stigmata 0.2 mm alta et 0.4 mm diam., sulcata.

In its vegetative characters this species is remarkably similar to *D. boliviana* Ducke, *D. villosa* Ducke and *D. villosa* var. *lasiocalyx* A. Mennega, as stated on page 552. From the *villosa*-complex it is, however, clearly distinguishable by the features of the flowers (plate I fig. 3). Undoubtedly its nearest relation is with *D. boliviana* Ducke. However, *D. solimoesensis* differs from *D. boliviana* by the following characters: flowers 6 mm long instead of 4 mm, calyx 2.5 mm long with nearly free, acute lobes, corolla lobes erect and not spreading at anthesis, the stamens not exserted and with a glabrous base. The specimen superficially resembles *D. scandens* Benth. but in that species the petioles are twice as long, the leaves larger, the filaments are provided with glandular hairs at their base, and the ovary is glabrous.

Acknowledgment

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LITERATURE

Barroso, L. J., Rodriguesia 9, 36 (1946). Rodriguesia 10, 21 (1947).

Bentham, G., Hook. Lond. J. Bot. 5, 355 (1846).

Ducke, A., Notizbl. Bot. Gart. Berl. 11, 589 (1934). Bol. Tecn. Inst. Agr. Norte 19, 50 (1950).

Hallier, H., Engl. Bot. Jhb. 16, 453 (1893). Bull. Herb. Boiss. 5, 1006 (1897).

Meissner, C. F., in Flor. Bras. VII, 327 (1866).

Ooststroom, S. J. van, in Flora of Suriname IV, 1, 66 (1932), in Flora Malesiana I-4, 388 (1954).

Peter, A., in Engl. Natürl. Pfl. Fam. IV, 3a, 1 (1897).