REMARKS ON THE GENERA STAHELIA AND TAPEINOSTEMON (GENTIANACEAE)

by

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In 1937 the present author decribed a presumably new *Gentianacea* from the Wilhelmina Mountains in Suriname. It seemed to belong to a new genus, and was named by him *Stahelia surinamensis* Jonk. (Tribe *Swertieae*). It is characterized by its more or less Melastomaceous appearance.

In the beginning of 1940, Mr. N. Y. SANDWITH, in going through the *Gentianaceae* of the Kew herbarium, was struck by the close resemblance between the figures and description of *Stahelia surinamensis* and BENTHAM's *Tapeinostemon spenneroides* (Tribe *Chironieae*), a species known so far from Amazonian Brazil only, where it was collected once only by SPRUCE. In a letter dated Jan. 23 1940, Mr SANDWITH suggested that the present author should compare the two plants. The international circumstances did not allow to study the Kew material; the author, however, was in a position to borrow the duplicate of the SPRUCE collection from Brussels. The examination of this specimen proved that Mr SANDWITH's supposition was quite right and that *Stahelia surinamensis* Jonk. and *Tapeinostemon spenneroides* Benth. indeed are conspecific.

Apart from the plant just mentioned BENTHAM referred to his genus *Tapeinostemon* an other species, which he called *T. capitatum.* As Mr SANDWITH remarked in the letter mentioned above, the two species are remarkably different both in their inflorescence and in general appearance and one wonders whether they should be included in the same genus. Whereas *T. spenneroides* shows a Melastomaceous appearance, *T. capitatum* is more or less Rubiaceous in habit. The leaves of the former are herbaceous and provided with three strong nerves connected by transverse veins, and two weak marginal ones; the stamens moreover are inserted in the basal part of the corolla tube. The other species has thicker, in the living plant perhaps fleshy leaves provided with a single strong nerve accompanied with two weak, often hardly conspicuous, marginal ones;

and the stamens are not inserted in the basal, but in the apical part of the corolla tube. The flowers of *T. spenneroides* are borne in rather large panicles, whereas *T. capitatum* has capitate inflorescences. As it is in the author's opinion undesirable that species differing in such important points, should be referred to the same genus, he proposes to split up *Tapeinostemon* into two genera. When this decision is adopted, the problem presents itself which of the two species should be taken as the "standard species" of the genus *Tapeinostemon*. The generic description gives us no clue since it covers both types. Both KNOBLAUCH in Bot. Centralblatt and GILG in the Pflanzenfamilien mention a third species, *T. borrerioides*, which, however, is not found in the *Index Kewensis*, and has never been described. The material, which I was in a position to examine, was labelled with this name by BENTHAM, but the specimens appear to be conspecific with *T. capitatum*. No doubt, after the labelled duplicates had been distributed, BENTHAM himself realized this and the species, therefore, was not described. The label of *T. spenneroides* is inscribed in BENTHAM's handwriting: 2480 *Tapeinostemon spenneroides* Benth., the labels of the two collections of *T. capitatum* respectively: 2492 *Tapeinostemon capitatum gen. nov.* and 3293 *Tapeinostemon borrerioides Sp.n.* On account of the indication: *genus novum*, on the label of *T. capitatum*, the author feels himself entitled to consider the latter as the type species of the genus; this species therefore should retain the generic name *Tapeinostemon*. For the other part of the divided genus the valid name consequently is *Stahelia*; the species, however, must be renamed *Stahelia spenneroides* (Benth.) Jonk., the older name being *Tapeinostemon spenneroides* Benth.; *Stahelia surinamensis* Jonk. being a synonym.

The two genera are closely related. In the paper dealing with *Stahelia*, the author referred the genus on account of its very short persistent style and the nearly free sepals to GRISEBACH's tribe *Swertieae*; it differs, however, from the other genera of this tribe in the imbricate aestivation of the calyx lobes. BAILLON, BENTHAM et HOOKER, and KNOBLAUCH include the genus *Tapeinostemon* in the tribe *Chironieae*, which chiefly differs from the *Swertieae* by the always easily distinguishable, deciduous style, which usually bears a capitate stigma. As both *Tapeinostemon* and *Stahelia* have a very short, almost indistinguishable, persistent style provided with two stigma lobes, the author abides by his original opinion and refers both genera to the tribe *Swertieae*. PROGEL included the genus *Tapeinostemon* in the tribe *Gentianeae*, subtribe *Chloreae*, but as the latter is characterized by nearly the same features as

GRISEBACH's *Chironieae*, this opinion needs no further comment.

If classified according to the shape of the pollen grains, the feature on which GILG's classification was based, the two genera should fall in *Gentianoideae - Gentianeae - Gentianineae*, which correspond with GRISEBACH's *Swertieae*. GILG himself, however, included the genus *Tapeinostemon* in *Gentianoideae - Gentianeae - Erythraeineae*. According to GILG the characters are:

Erythraeineae: „Einzelpollen mittelgrosz, kugelig oder oval. Exine glatt oder sehr selten auszerordentlich fein gekörnelt. Die 3 Keimspalten tief und deutlich ausgebildet. Meist kleinblütige, niedrige oder winzige, einjährige, selten ausdauernde Kräuter".

Gentianineae: „Einzelpollen grosz, kugelig bis länglich. Exine feinhöckerig, die Höcker meist deutlich in Reihen oder unregelmäszigen Netzen liegend".

The pollen grains of both *Stahelia* and *Tapeinostemon* possess an easily distinguishable extine and intine, the former being finely punctate. The grains are more or less 3-lobed and occasionally provided with two or three blunt, short processes. In their 3-lobed appearance they correspond fairly well with GILG's *Erythraeineae*, the punctation of the extine, however, matches exactly that of his *Gentianineae*. This, more again, shows the unsatisfactory nature of this rather artificial classification.

1. TAPEINOSTEMON Benth.

Small, erect, annual herb. Stem terete, glabrous. Leaves opposite, shortly petiolate; blade thickly-membranaceous to fleshy, 1-nerved. Inflorescences pedunculate, terminal and axillary, densely capitate. Flowers small, usually 5-merous. Between the flowers small, setaceous bracts. Calyx deeply 5-partite, persistent; lobes imbricate. Corolla infundibuliform; tube slightly shorter than the calyx. Stamens 5 (seldom 4), inserted in the upper part of the corolla tube. Filaments very short; anthers sagittate, the rather large connective protruding in a blunt tip. Pollen grains single, more or less 3-lobed; extine densely punctate. Ovary 1-celled, ellipsoid; style very short, crowned by two stigma lobes. Placentas large; ovules numerous. Capsule ellipsoid to ovoid, protruding beyond the calyx. Seeds many, rugose. 1 Species: *T. capitatum* Benth.

Tapeinostemon capitatum Benth. in Hook., Journ. of Bot. VI (1854), p. 194; Mueller in Walp., Ann. Bot. Syst. V (1858), p. 509; Progel in Mart., Flor. Bras. VI.I (1865), p. 214 and tab. 58, fig. 4; Knoblauch in Bot. Centr. bl. LX (1894), p. 355; Gilg in Engl.-Prantl, Nat. Pfl. Fam. IV.2 (1895), p. 70; — *Tapeinostemon*

borrerioides Benth. in sched.; Knoblauch in Bot. Centr. bl. LX (1894), p. 355; Gilg in Engl.-Prantl, Nat. Pfl. Fam. IV. 2 (1895), p. 70.

Plant about 5 - 15 cm high. Stem simple or in the upper part branched. Leaves about 4 - 8 cm long; blades about 3,5 - 6,5 cm long and 9 - 16 mm wide; petioles 0,5 - 1,5 cm long. Leaf blades thickly membranaceous to fleshy, elliptical to ovate, provided with a strong midnerve and two weak lateral nerves, obtuse to obtusely acuminate, towards the base gradually narrowed into the petiole; margin entire and in dried material slightly revolute. Inflorescences dense, capitate; plant either with a single terminal inflorescence or with one terminal with two lateral ones; the latter inserted in the axils of the uppermost leaf pair; peduncles 5 - 14 mm long. Flowers mostly 5-merous, rarely totally or partly 4-merous. Calyx about 2,5 mm long; lobes about 2 mm long, lanceolate, acuminate to subulate at the apex, cristate on the back. Corolla white, about 4 mm long. Limb about 2 mm long; lobes ovate, acutely acuminate to apiculate. Stamens inserted in the upper part of the corolla tube, included; filaments thickly filiform, slightly shorter than the anthers; anthers sagittate to cordate, obtusely acuminate; connective broad, longer than the thecae. Ovary about 2 mm long; style very short, thinly cylindrical; stigma lobes lanceolate; style and stigmas about 1,5 mm long. Capsule up to 4 mm long, ellipsoid to ovoid, bisulcate, much longer than the calyx. Seeds brownish, diameter about 0,3 - 0,5 mm.

Type: Spruce 2493, in herb. K.

BRAZIL, Amazonas, Rio Uaupès, near Panuré (Spruce 2493, fl. and fr. Oct. 1852 [B; BR; K]); id., Rio Casiquiari, Vasiva and Pacimoni (Spruce 3293, d.d. 1853 - 1854 [B; BR; GOET; K], named bij KNOBLAUCH l.c. and GILG l.c.: *T. borrerioides* Benth.).

2. STAHELIA Jonk.

Rather large, erect, annual herb. Stem terete, glabrous. Leaves opposite; blades petiolate, membranaceous, 3-nerved. Flowers small, 5-merous, borne in lax, dichasial panicles. Calyx deeply 5-partite, persistent. Corolla infundibuliform, tube slightly shorter than the calyx. Stamens 5, inserted in the basal part of the corolla tube. Anthers sagittate, bluntly acuminate; connective rather large, protruding. Pollen grains single, more or less 3-lobed; extine densely punctate. Ovary ellipsoid; 1-celled, crowned by two persistent, subsessile stigma lobes. Placentas large; ovules numerous. Capsule ellipsoid to ovoid, longer than the calyx. Seeds many, small, more or less rugose. — 1 Species: *S. spenneroides* (Benth.) Jonk.

Stahelia spenneroides (Benth.) Jonk., *nov. comb.*; — *Tapeinostemon spenneroides* Benth. in Hook., Journ. of Bot. VI (1854), p. 194; Mueller in Walp., Ann. Bot. Syst. V (1858), p. 509; Progel in Mart., Flor. Bras. VI. I (1865), p. 214 and tab. 59, fig 1; Knoblauch in Bot. Centr. bl. LX (1894), p. 355; — *Stahelia surinamensis* Jonk. in Rec. Trav. Bot. Néerl. XXXIV (1937), p. 494 and fig. 7; also in Med. Bot. Mus. en Herb. Utr. n. 41 (1937), p. 494 and fig. 7.

Plant about 50 cm high. Stem slightly woody at the base, simple or in the upper part branched. Leaves up to 13 cm long; blade 3-10 cm long and 1,5 - 4,5 cm wide; petiole 0,5 - 3,5 cm long; leaf blade membranaceous, elliptical to ovate, provided with a midnerve and two prominent lateral nerves, sometimes, moreover, with two weak marginal ones; the main nerves connected by transverse veins, in the basal part of the blade sometimes blended into a thick midnerve; leaf blade acute to acuminate and at the base more or less contracted and decurrent into the 0,5 - 3 cm long petiole; margin entire to erose. Panicles large, 6 - 10 cm long; terminal and axillary branches opposite, ending in dichasia. Bracts small, linear, up to 3 mm long. Calyx lobes membranaceous, about 2 mm long, acute-acuminate, 3-nerved; nerves in the upper part blended into one. Corolla white, about 3,5 mm long. Limb about 1,5 mm long; lobes ovate, acute. Filaments filiform, in the basal part slightly dilated. Anthers sagittate at the base, acuminate and slightly bidentate at the apex; connective protruding. Ovary ellipsoid; about 1,5 mm long, crowned by two subsessile, thick, erect, ovate and rotundate, persistent stigma lobes. Seeds black, diameter about 0,25 mm.

Type: Spruce 2480, in herb. K.

BRAZIL, Amazonas, Panuré, in the forest (Spruce 2480, fl. and fr. Sept. 1852 [BR; K]).

SURINAME, Wilhelmina Mountains, Top 1280, alt. 1100 m (Stahel, Forestry Bureau 7157, fl. and fr. Jun. 1926 [U], type of *Stahelia surinamensis* Jonk.).

Herbarium abbreviations: B = Berlin-Dahlem; BR = Brussels; GOET = Göttingen; K = Kew; U = Utrecht.