

6. New Burmanniaceae of Papuasias.

by

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With 1 figure in the text.

During my recent expeditions in New Guinea, I have paid particular attention to the Burmanniaceae. It is probably due to these circumstances that I am now able to publish here a comparatively large number of new species.

The species described here, which are to be counted partly with *Burmannia* L., partly with *Gymnosiphon* Bl., all belong to the tribus *Euburmannia*. I had also hoped to find species of thismieae, of which BECCARI has made such remarkable and interesting forms known from Dutch New Guinea, but it seems as if the group is almost absent in the parts I have visited, or at least very sparsely represented. As I have paid particular attention to the saprophytes and eagerly looked for them at suitable sites, it is unlikely that I have escaped the conspicuous thismies.

The Burmanniaceae grow with preference at the foot of old trees, under which a particularly deep humus layer has formed. Usually they are not found alone, but almost always in the community of other saprophytes, especially *Epirhizanthus*, *Cotylanthera* and *Sciaphila*. Often I have been able to discover Burmanniaceae in this way, especially by looking around in places where those saprophytes grew.

Gymnosiphon Bl.

So far, only three species of the genus *Gymnosiphon* Bl. have been described from the Malay-Papuan floral region. I have here not less than six other species to announce, which I had occasion to gather during my recent travels in Celebes and New Guinea. Through these discoveries, the number of Papuan species swells to four, of which so far only one, *G. papuanum* Becc., was known from Dutch New Guinea.

Gymnosiphon grows under completely similar conditions as the *Burmannia* species of the section *Gonyanthes* and as the Triuridaceae. They are almost always found in association with them as well as with *Epirhixanthus*, *Cotylanthera* and saprophytic *Ophioglossum*. Often I have had to even thank their discovery on these companion plants, some of which were easier to find in the jungle humus than the mostly unimpressive *Gymnosiphon* species, which after the first hours of flowering in the morning, have already thrown off the upper, usually bluish-colored part of their perigone.

G. torricellense Schltr. n. sp. - Herba saprophytica, pusilla. Caulis simplex vel parum ramosus, teres, gracilis, glaber, squamulis paucis distantibus obsessus. Cymus secundus, subdense 3-6-florus, erectus, haud ramosus, bracteis oblongis obtusis, pedicello brevi aequilongis. Flores erecti albidii,

glaberrimi. Perigonium tubulosum, tubo cylindrico fauce et medio fere paululo constricto, segmentis 3 exterioribus suborbicularibus cum apiculo parvulo, margine leviter undulatis, tubo fere duplo brevioribus, segmentis 3 interioribus oblongo-ligulatis, apice truncato breviter trilobulatis, quam segmenta exteriora multoties minoribus. Antherae subsessiles circuitu quadratae, loculis dimidio inferiore incrassato-ampliatis, connectivo triangulo, subacuto cum glandula minuta terminali, locula breviter superante. Stylus cylindricus, apice tripartitus, stigmatibus amplis reniformi-triangularibus, excavatis.

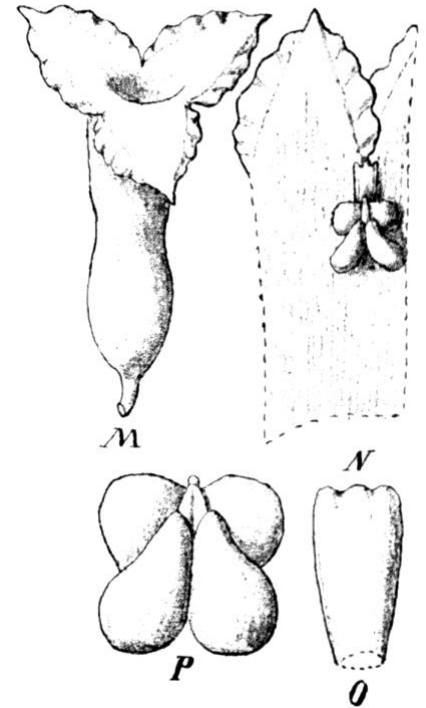
[From Latin] – Herb saprophytic, small. Stems simple or little branched, terete, thin, glabrous, scale leaves few, scattered. Secondary cyme, somewhat densely 3-6-flowered, erect, not branched, bracts oblong obtuse, as long as the short pedicels. Flowers erect, whitish, glabrous. Perigone tubular, a cylindrical tube slightly constricted at the throat and the middle region, the exterior segments 3, suborbicular, slightly apiculate, margin slightly undulate, tube almost twice shorter, interior segments 3, oblong-ligulate, the apex shortly trilobulate, many times smaller than the outer segments. Anthers subsessile, square in outline, locules in the lower half thickened and enlarged, connective triangular, subacute with a terminal with a small, terminal gland, overtopping the shorter locules. Style cylindrical, apex tripartite, stigmas broadly reniform-triangular, hollow.

[From German] A tender, small, pale little plant of 7-13 cm in height. Stems simple or sparse, round, glabrous, with few scattered scales. The inflorescence is unbranched, 3-6-flowered, with small, upright bracts that are the length of the short pedicel. Flowers white, similar to those of *G. aphyllum* BI., about 6 mm long. Perigone tube cylindrical, little constricted at the throat and in the middle; the outer edges almost circular, with a little point, slightly undulate at the margin; the inner very small, oblong, truncate at the top and slightly three-lobed. Anthers closely approaching the inner segments, square in outline, thickened at the lower part, with a small, triangular connective, which carries a small gland at the tip. Style cylindrical, with a short tripartite tip, with large, almost kidney-shaped, hollow stigmas reaching the anthers.

Northeastern New Guinea: In the humus of the forests of the Torricelli Mountains, about 600 m above sea level. (Schlechter n. 20042. - Flowering in September 1909).

Of all the species hitherto known from the monsoon area, the present one is well differentiated by the broad petals, slightly three-lobed petals, and by the anthers.

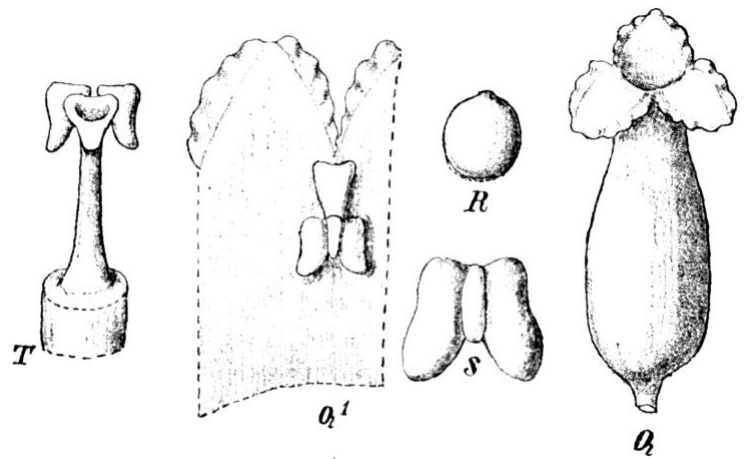
Fig. 1 M- P. M flower, N part of the perigone, spread, from inside, O inner perigone segment, P anther.



G. oliganthum Schltr. n. sp. - Herba pusilla, gracillima, erecta. Caulis tenuissimus, teres, squamis paucis dissitis obsessus, glaber, apice 1-3 -florus. Bracteae oblongae obtusiusculae, pedicellum brevem vulgo paulo excedentes. Flores erecti pallide albido-violascentes, glabris. Perigonii tubus cylindricus fauce constrictus; segmentis 3 exterioribus suborbicularibus obtusis, margine undulatis; segmentis 3 interioribus minutis obcuneatis, obtusissimo-truncatis, quam segmenta exteriora multoties minoria. Antherae subsessiles circuitu subquadratae loculis basi paulo ampliatis, connectivo oblongoideo,

obtusum, loculis brevioribus. Stylus graciliter cylindricus, basi amplius, apice breviter tripartitus, stigmatibus late obovatis, concavis, antheras attingentibus. Semina minime subglobosa.

[From Latin] - Herb small, very slender, erect. Stem very thin, terete, scales few, remotely spaced, glabrous, apex 1-3-flowered. Bracts oblong-obtuse, generally exceeding the short pedicel. Flowers erect, pale whitish-violet, glabrous. Perigone tube cylindrical, constricted at the throat; exterior 3 segments subcircular, obtuse, margins undulate; interior 3 segments minute obcuneate, obtuse-truncate, many times smaller than the outer segments. Anthers subsessile, subquadrate in outline, locules enlarged at the base, connective oblong, obtuse, shorter than the locules. Style slenderly cylindrical, base enlarged, apex shortly tripartite, stigma widely obovate, hollow, reaching the anthers. Seeds small, subglobose.



Q—T *G. oliganthum* Schltr.,

[From German] A small, diminutive plant, 5-9 cm high. Stems very slender and thin, terete, glabrous, studded with scattered small scales, at the apex 1-2-flowered. Bracts oblong-dull, slightly longer than the 1-1.75 mm long pedicels. Flowers erect, whitish, with violet blue outer segments, 0.5 cm long. Perigone tube cylindrical, constricted at the throat; outer segments rounded, obtuse, wavy at the margin, about 2.5 times shorter than the tube. Inner segments cuneate-spatulate, truncate at the tip, much smaller than the outer ones. Anther square in outline, locules broadened below, with oblong, short connective, the inner perigone segments very close to apex of the short, three-parted style, with large, obovate, hollow stigmas reaching the anthers. Seeds almost spherical.

Northeastern New Guinea: In the humus of the forests of Gomadjidji at Waria, ca. 4-50 m above sea level (Schlechter n. 19355. – flowering in May 1909)

Also different in the broad petals and anthers compared with the different relatives.

Fig. 1. Q-T. Q flower, Q1 perigone segment, laid out, from the inside, R seed, S anther, T style.

G. pauciflorum Schltr. n. sp. - Herba saprophytica, gracilis, pusilla. Caulis gracilis, simplex, plus minus flexuosus, teres, glaber, vaginulis paucis dissitis squamiformibus obsessus, apice 1-3-florus. Bractea oblongae obtusae, flori pluries breviores. Flores erecti, pallide segmentis violascentibus, glaberrimi. Perigonii tubus cylindricus, medio vix leviter constrictus; segmentis exterioribus late ovatis, obtusiuscule apiculatis, tubo subtriplo brevioribus, segmentis interioribus minutis linearibus. Antherae subsessiles circuitu quadratae, apice bifidae, loculis se[se] tingentibus. Stylus cylindricus, glaber, apice tripartitus, stigmatibus obovato-triangularis, obtusis, excavatis. Semina ellipsoidea.

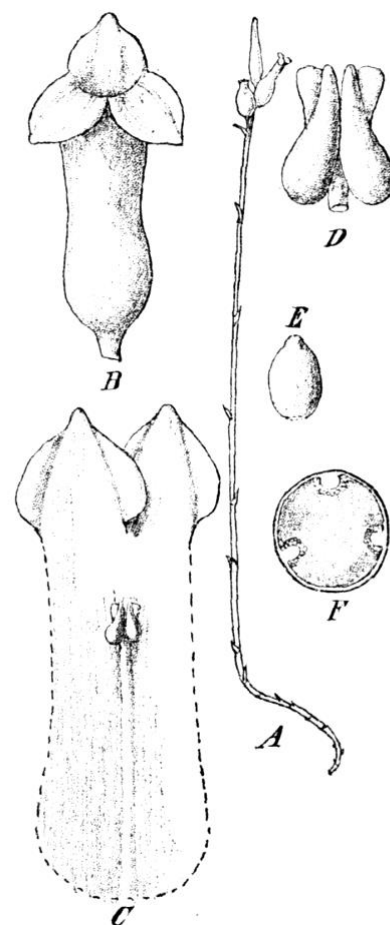
[From Latin] – Herb saprophytic, slender, small. Stem thin, simple, more or less flexuous, terete, glabrous, scale leaves few, squamiform, remotely distributed, apex 1-3-flowered. Bracts oblong obtuse, often dropping upon flowering. Flowers erect, segments pale violet, glabrous. Perigone tube cylindrical, slightly constricted in the middle; exterior segments broadly ovate, apex obtuse, tube less than three times shorter, interior segments minute, linear. Anthers subsessile, square in outline, apex

bifid, locules tinged. Style cylindrical, glabrous, apex tripartite, stigma obovate-triangular, obtuse, hollow. Seeds ellipsoid.

[From German] A petite, small, pale little plant, 5-9 cm high. Stem unbranched, terete, glabrous, covered with small scales, rather dense 1-3-flowered at the tip. Bracts oblong, obtuse, several times shorter than the almost sessile flowers. Perigone about 0.9 cm long, tube cylindrical, hardly noticeably constricted in the middle; outer segments about three times shorter than the tube, broadly ovate with a obtuse tip; inner segments linear, obtuse, very small. Anthers almost sessile, square, bifid at the apex, inserted remotely from the inner segments. Style at the apex in three parts with obovate, almost triangular, hollow stigmas. Seed ellipsoid.

Northeastern New Guinea: In the humus of the forests of the Kani mountains, approx. 800 m above sea level. (Schlechter n. 16653 - Flowering in October 1909).

Fig. 1 A-F. A Habit, B Flower, C Perigone part, opened, from the inside, D Anther, E Seed, F cross section through the ovary.



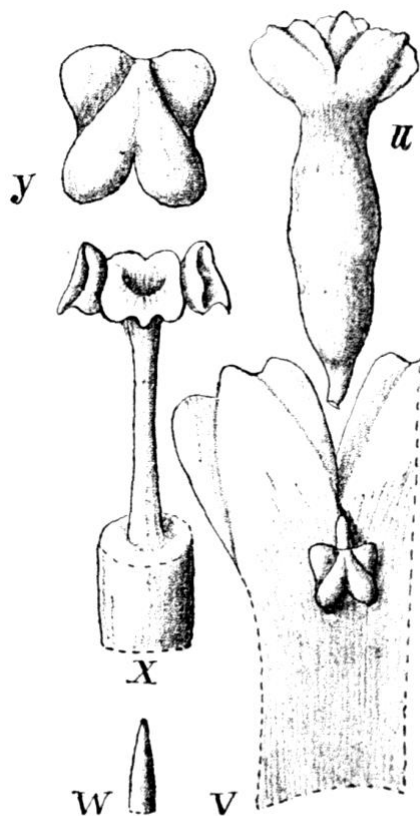
A-F *Gymnosiphon pauciflorum*

G. Minahassae Schltr. n. sp. - Herba saprophytica, pusilla, simplex, pallida. Caulis gracilis, plus minus flexuosus, teres, glaber, vaginulis paucis squamiformibus obsessus, apice densius 3-5-florus. Bracteae

oblongae obtusae, pedicello vulgo paulo breviores. Flores erecti, glabri. Perigonii tubus cylindraceus fauce et infra medium paululo constrictus, segmentis 3

exterioribus quadratis, trilobulatis, tubo fere 3-plo brevioribus, segmentis 3 interioribus lanceolatis, obtusiusculis, minutis. Antherae subsessiles, circuitu quadratae sub-4-lobatae basi incrassatae excisae, apice subretusae, petalis bene approximatae, loculis se tingentibus. Stylus cylindricus apice tripartitus, stigmatibus circuitu quadratis, apice excisis, basi apiculatis, excavatis, antheras attingentibus.

[From Latin] - Herb saprophytic, small, simple, pale. Stem thin, more or less flexuous, terete, glabrous, occupied with a few sheathing scale leaves, apex densely 3-5-flowered. Bracts oblong, obtuse, commonly a little shorter than the pedicel. Flowers erect, glabrous. Perigone tube cylindrical, slightly constricted in the middle at the throat, the three exterior segments square, trilobed, tube about 3-times shorter, interior segments three, somewhat obtusely lanceolate, minute. Anthers subsessile, square in outline, cut out into a somewhat 4-lobed thickened base, apex subretuse, approximate well the petals, locules tinged. Style cylindrical with tripartite apex, stigma square in outline, apex excised, base apiculate, hollow, reaching the anthers.



U-Y *G. Minahassae* Schltr.,

[From German] A diminutive, pale little plant, 7-12 cm high. Stem slightly tortuous, terete, glabrous, occupied with scattered small sheathing scales, at the top rather dense 3-5-flowered. Bracts oblong, obtuse, shorter than the approximately 2 mm long pedicels.

Flowers erect, glabrous, whitish, with blue outer segments, about 7 cm long. Perigone tube cylindrical, slightly constricted at the throat and below the middle; outer segments square, obtuse trilobed above, about three times shorter than the tube; inner segments lanceolate, obtuse, many times smaller than the outer ones. Anther sessile, four lobed, with touching locules, thickened below, very close to the petals. Style cylindrical, tripartite at the apex, stigmas square, hollow, indented along the upper edge, pointed on the lower .

Celebes: In the humus of the forests of Gunong Klabat, about 800 m above sea level. (Schlechter n. 20531. - Flowering in December 1909).

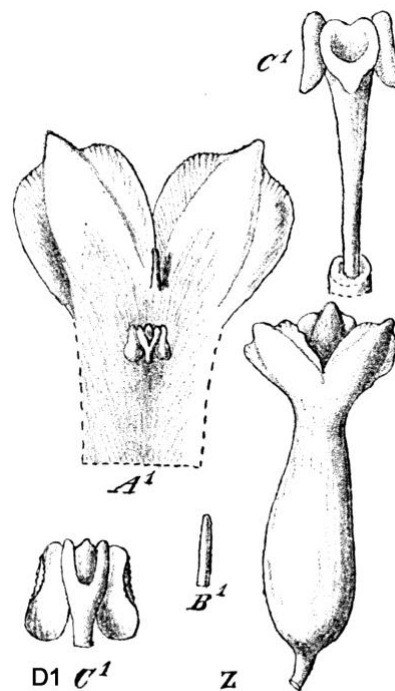
The species is most closely related to *G. papuanum* Becc., but differs in shorter inner segments and the very different shaped anthers.

Fig. 1 U-Y. U Flower, V Perigone part, opened, from the inside, W an inner segment, X Style, Y anther.

G. celebicum Schltr. n. sp. - Herba pusilla, saprophytica, pallida. Caulis simplex vel e basi parum ramosus, teres, glaber, vaginulis paucis, squamiformibus obsessus. Cymus bicurris, laxe 7-17-florus, erectus; bracteis oblongis obtusiusculis, flori subsessili plus 3-plo brevioribus. Flores erecti vel suberecti, glabri. Perigonii tubus cylindraceus, fauce paululo constrictus, segmentis 3 exterioribus suborbicularibus cum apice lobuliformi-producto, segmentis interioribus lineari-subulatis, minutis. Antherae brevissime stipitatae Ioculis basi ampliatis, connectivo **incrassatione bicurri donato**, apice minute trilobulato, loculos vix excedente. Stylus cylindricus apice tripartitus, stigmatibus rotundatis margine superiore retusis, margine inferiore paululo productis, concavis, antheras fere attingentibus.

[From Latin] – Herb small, saprophytic, pale. Stem simple or at least a little branched at the base, terete, glabrous, scale leaves sparingly few, squamiform. Cyme bicincinate, loosely 7-17-flowered, erect; bracts oblong obtuse, flowers subsessile, more than 3 times shorter. Flowers erect or suberect, glabrous. Perigone tube cylindrical, slightly constricted at the throat, exterior segments subcircular with a 3-lobed tip, inner segments linear-subulate, minute. Anthers shortly stipitate at the enlarged basal locules, connective endowed with two thickened segments [legs], apex minutely trilobed, scarcely exceeding the locules. Style cylindrical, apex tripartite, stigma rounded, retuse [shallowly notched] on the upper margin, lower margin a little drawn out, hollow, almost reaching the anthers.

[From German] A small, pale little plant, 9-14 cm high. Stems usually simple, glabrous, terete, slender, occupied with a few scattered scales. Cyme two shanked, fairly loosely 7-17-flowered. Bracts oblong, obtuse, 3-4 times shorter than the almost sessile flowers. Flowers upright, glabrous, whitish-purple, about 6 mm long. Perigone tube cylindrical, slightly constricted at the throat; outer segments almost circular with almost flap-like extended tip, about 2.5 times shorter than the tube; inner segments linear-subulate, very much smaller than the outer ones. Anthers are inserted quite far below the inner segments, very short stalked, with widened areas below. Connective with two-shanked thickening, at the apex very shortly 3-lobed. Style cylindrical and three-parted at the apex, with large, rounded, hollowed-out stigmas, which are slightly repand at the upper margin, at the lower part moved out a little and reaching the height of the anthers.



Z-D¹ *G. celebicum* Schltr.

Celebes: In the humus of the forests at the upper Lampasioe, about 180 111 ü. (Schlechter n. 20671. – Flowering in January 1910).

The species is with the following easily distinguished from the one described above by the inflorescences. It is excellently characterized by the anthers.

Fig. 1 Z-D1. Z flower, A1 perigone part, opened, from the inside, B1 an inner perigone segment, C1 anther, D1 style.

G. pedicellatum Schlechter n. sp. - Herba saprophytica, gracilis, pusilla. Caulis simplex, teres, glaber, vaginulis paucis, dissitis, squamiformibus obsessus. Cymus bicurris, laxe 8-15-florus, cruribus erecto-patentibus. Bractee oblongae, obtusae, pedicello subduplo breviores. Flores erecti vel suberecti, violascenti-albidi, glabri. Perigonii tubus cylindricus, fauce vix attenuatus, segmentis exterioribus subquadratis, margine leviter undulatis, apice sublobulato-productis, tubo fere 3-plo brevioribus, segmentis interioribus ovalibus, obtusis, minutis, exterioribus multoties brevioribus. Antherae sessiles, quadratae, basi excisae, connectivo elliptico, incrassato. Stylus cylindricus, apice tripartitus, stigmatibus late ovato-cordatis, excavatis.

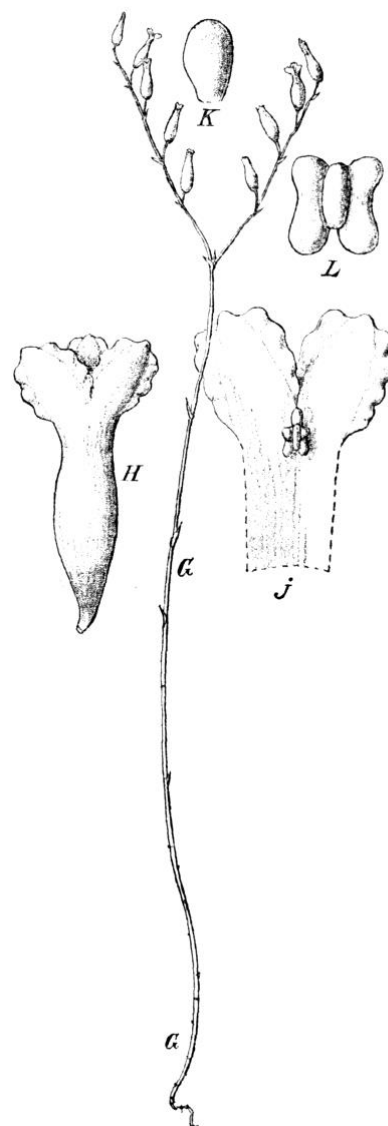
[From Latin] – Herb saprophytic, thin, small. Stem simple, terete, glabrous, occupied with a few, remote sheathing scale leaves. Cymes bicincinate, laxly 8-15-flowered, segments erect-patent (very widely spreading). Bracts oblong, obtuse as long pedicel almost twice shorter. Flowers erect or suberect, violet-whitish, glabrous. Perigone tube cylindrical throat barely attenuated, exterior segments almost square, margin slightly undulate, apex with sublobes extended, , tube nearly 3-times shorter, interior segments oval, obtuse, minute, many times shorter than the exterior. Anthers sessile, square, base cut out [with sinuses], connective elliptical, thickened. Style cylindrical, apex tripartite, stigma broadly ovate-cordate, hollow.

[From German] A small, pale little plant, 9-15 cm high. Stem glabrous, terete, covered with a few scattered scales. Cyme two-shanked, loosely 8-15-flowered. Bracts oblong, obtuse, about half as long as the 4 mm long pedicels. Flowers upright, violet-white, about 0.8 cm long. Perigone tube cylindrical, scarcely constricted at the throat; outer segments square, margin wavy, with an almost flap-like extension, tip obtuse; inner segments oval, obtuse, many times smaller than the outer ones. Anthers almost sessile, square, deeply cleft at the base, connective elliptic, thickened, style cylindrical, three-parted at the apex, stigma obovate-oblong-ovate, at the upper cordate margin cut out, reaching the height of the anthers.

Celebes: In the humus of the forests at the upper Lampasioe, about 180 m above sea level. (Schlechter n. 20657. - Flowering in January 1910).

Among all related species this one is distinguished by its relatively long pedicels. In the flower characters it is next to *G. oliganthum* Schltr.

Fig. 1 G--L. G habit, H flower, J perigone part, opened, from inside, K an inner perigone segment, L anther.



G—L. *G. pedicellatum* Schltr.