STUDIES IN THE GESNERIACEAE OF THE OLD WORLD XXIII: RHYNCHOGLOSSUM AND KLUGIA

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The very close affinity between *Rhynchoglossum* Bl. and *Klugia* Schlechtd. has long been well known. C. B. Clarke said under *Rhynchoglossum klugioides* (in DC., Mon. Phan. v, 163: 1883)* that this species was very like a *Klugia*, but, having only 2 perfect stamens, seemed to belong to *Rhynchoglossum*, unless *Klugia* was to be merged under *Rhynchoglossum*. At that time Clarke was finding the number of fertile stamens a very valuable character in classifying the genera and he remarked (p. 8) ". . . I have been able to make every genus of Cyrtandreae (without any exception) either diandrous or 4– (very rarely 5–) androus." In general Clarke was perfectly right, the number of fertile stamens is most useful; but there are perhaps three or four places in the family where reliance on mere number results in an artificial classification, and this is one of them.

The additional information, not available to Clarke, which justifies the inclusion of *Klugia* within *Rhynchoglossum* is the discovery of a species in Borneo, *R. medusothrix* described below, which has the large corollas characteristic of *Klugia*, and found also in *Rhynchoglossum klugioides*, and four fertile stamens which are markedly didynamous and of which the shorter pair have much smaller anthers. A similar condition is also found in *R. borneense* if my assignment of *Kostermans* 5347 & 5414 and *Endert* 5225 to this species is correct. (Merrill himself did not describe the stamens). It has been observed that the pollen in the smaller anthers is fully developed.

Thus we have four stages: large corollas and four equal anthers all coherent (typical *Klugia*, now *Rhynchoglossum azureum*, *R. notonianum* &c.); large corollas and four fertile stamens, anthers coherent in pairs, one pair larger the other smaller (*Rhynchoglossum borneense* and *R. medusothrix*); large corollas and 2 fertile stamens (*Rhynchoglossum klugioides*); small corollas and 2 fertile stamens (typical *Rhynchoglossum*, *R. obliquum* &c.). There is no logical point in this series at which to make a division into two genera. Correlated with this series of flower forms there is a transition from *Rhynchoglossum notonianum* with a perennial forest-loving habit to *R. obliquum* with an annual and, in some forms, weedy habit. One is tempted to think there may also be a transition from cross-pollination to self-pollination, but of this we have as yet no evidence and *R. notonianum* certainly pollinates itself in cultivation.

The union of *Rhynchoglossum* and *Klugia* brings sense into the distribution of these genera. *Klugia* has been known from Ceylon, S. India and Burma, and again from Mexico, Venezuela and Colombia. *Rhynchoglossum* is spread from India and China south-eastwards to New Guinea. The disjunction in the composite genus is from New Guinea to Central America: in itself remarkable enough, but less perplexing than the apparent jump of *Klugia* from Burma to Central America.

* In the remainder of the paper this reference is abbreviated to C.B.Cl. Mon.

In the distribution of the enlarged *Rhynchoglossum* the species which retain some presumably primitive characters (large flowers, 4 fertile stamens, perennial habit) are isolated at the two extremities of the range.

There is a good undescribed tetrandrous species on Mt. Omei in Szechwan, China, which extends the known range of the genus. As the material available to me (*Fang* 2591, *Chow* 8117) is in bud only I leave its description until it has been collected again. The affinity is with *R. ampliatum* from Assam and *R. borneense*.

In the following summary of the genus no attempt has been made to give complete references, and a number of *nomina nuda* have been wholly omitted.

Rhynchoglossum Blume, Bijdr. 741 (1826–*Rhinchoglossum*); DC., Prodr. ix, 274 (1845); Benth. in Benth. & Hook. f., Gen. Pl. ii, 1019 (1876); C.B. Cl., Mon. 161 (1883); K. Fritsch in Engl. & Prantl, Natürl. Pflanzenfam. iv (3B), 156 (1895).

Syn.: *Antonia* R. Br. in Wall., Pl. As. Rar. iii, 65 (1832), non Pohl.

Klugia Schlechtd. in Linnaea, viii, 248 (1833); G. Don, Gen. Syst. iv, 653 (1838); DC., Prodr. ix. 275 (1845); Benth. in Benth. & Hook. f., Gen. Pl. ii, 1019 (1876); C. B. Cl., Mon. 158 (1883); K. Fritsch in Engl. & Prantl, Natürl. Pflanzenfam. iv (3B), 155 (1895).

Loxotis [R. Br. in Wall., Pl. As. Rar. iii, 65 (1832), in syn., ex] Benth., Scroph. Ind. 57 (1835); G. Don, Gen. Syst. iv, 664 (1838); R. Br. in Horsfield, Pl. Javan. Rar. 102 (1838), 115 (1840); Endlicher, Gen. Pl. 717 (1839).

Glossanthus [Klein ex] Benth., Scroph. Ind. 57 (1835); G. Don, Gen. Syst. iv, 664 (1838); Endlicher, Gen. Pl. 717 (1839).

Type: *R. obliquum* Bl.

No. of species: about 12.

R. ampliatum (C.B.Cl.) B. L. Burtt, **comb. nov.**

Syn.: *Klugia ampliata* C.B.Cl., Mon. 160 (1883), et in Hook. f., Fl. Brit. Ind. iv, 367 (1884).

ASSAM. Mishmee Hills, near Yen, *Griffith* 3846 (K); s.n. (iso.? C).

R. azureum (Schlechtd.) B. L. Burtt, **comb. nov.**

Syn.: *Klugia azurea* Schlechtd. in Linnaea, viii, 248 (1833); G. Don, Gen. Syst. iv, 654 (1838); DC., Prodr. vii, 543 (1839); A. DC. in DC., Prodr. ix, 275 (1845); C.B.Cl., Mon. 161 (1883).

Glossanthus mexicanus R. Br. in Horsfield, Pl. Jav. Rar. 121 (1840).

MEXICO

R. blumei A.DC. in DC., Prodr. ix, 274 (1845) = *R. obliquum* Bl.

R. borneense Merrill in Univ. Calif. Publ. Bot. xv, 269 (1929).

BRITISH NORTH BORNEO. Tawao, *Elmer* 21467 (iso. K).

INDONESIAN BORNEO. E. Kutei, Gunong Tepian Lobang on Menubar R., moist cracks of coral limestone rocks, 150 m., *Kostermans* 5347 (L), 5414 (L). W. Koetai, Kombang, 40 m., limestone rocks forest, *Endert* 5225 (L).

R. grandiflorum (K. Fritsch) B. L. Burtt, **comb. nov.**
Syn.: *Klugia grandiflora* K. Fritsch in Sitz. Akad. Wiss. Wien, Math.-Nat. cxxxv, Abth. i, 287 (1926).
MEXICO

R. hologlossum Hayata, Ic. Pl. Formos. v, 131 (1915); T. Ito, Taiwan Shokubutu Dzusetu (Ill. Formosan Pl.), t. 138 (1927—not seen).
TAIWAN

R. klugioides C.B.Cl., Mon. 163 (1883); Merrill, Enum. Philipp. Pl. iii, 455 (1923).
PHILIPPINE ISLANDS. *Cuming* 824 (holo. K); *Elmer* 14615, 15369, 11570, 17941 &c.

R. merrilliae Kränzlin in Philipp. Journ. Sc., Bot. viii, 168 (1913); Merrill, Enum. Philipp. Pl. iii, 455 (1923).
PHILIPPINE ISLANDS. Mindanao, distr. Zamboanga, Sax River, *Merrill* 8187 (iso. K).

Rhynchoglossum medusothrix B. L. Burtt, **species nova** *R. borneensi* Merr. staminibus fertilibus 4 antheris inaequalibus maxime affinis, a quo et ab omnibus ceteris fauce corollae linea media pilorum medusoideorum praedito distinguenda.
Herba 40 cm. alta, caulibus glabris. *Folia* alterna petiolo 5 cm. longo glabro suffulta; lamina oblique late elliptica, ad 19 cm. longa et 9 cm. lata, apice breviter acuminata, basi conspicue inaequilateralis, altero latere subcordata altero abrupte angustata, ad margines minutissime scaberula; nervi laterales numerosi in media lamina 5–7 mm. inter se distantes, tertiariis siccitate conspicuis. *Inflorescentiae* et terminales et laterales, c. 10–20 cm. longae, multiflorae, puberulae; bracteae et bracteolae irregulares minutae lineares; pedicelli ad 1 cm. longi. *Calyx* 1 cm. longus, infundibuliformis, glaber, haud alatus, lobis 5 3·5 mm. longis basi 2·25 mm. latis praeditus. *Corolla* bilabiata, personata, tubo 2 cm. longo intus c. 5–8 mm. supra basin area medusoideo-pilosa notato; labium inferius oblongum c. 12 mm. longum et 5 mm. latum, palato 8 mm. longo limine alato notato praeditum; linea media pilorum medusoideorum stipite multicellulari 1 mm. longo apice piloso-comoso per palatum et faucem corollae percurrens; labium superius 5 mm. longum, palato limine alato etiam praeditum, leviter bilobum. *Discus* cupularis, 1 mm. altus. *Stamina* 4, didynama; superiora breviora, 1·5 cm. supra corollae basi orientia, filamentis glabris 3·5 mm. longis, antheris 1·5 mm. diametro; inferiora longiora, 1·6 cm. supra corollae basi orientia, filamentis glabris 1 cm. longis, antheris 2 mm. diametro. *Ovarium* ovoideum, 2·5 mm. longum, glabrum, in stylum 2 cm. longum glabrum abrupte angustatum; stigma capitatum.
EAST BORNEO. Berouw, flatland at base of Mt. Ilas Mapulu, 200 m.; sandstone, near moist cave; herb 40 cm., calyx almost white, corolla bluish-white with blue stripes, inside tube white; 21 Sept. 1957; *Kostermans* 13994 (holo. L, iso. BM).
NORTH BORNEO. A specimen in herb. Kew, obviously bearing the wrong label (For. Dept. A. 2086).

The description of the flower given above is from the herbarium specimen and is certainly unsatisfactory. It will be worth a more extended

treatment when living material is available for study. The ridges that I describe as the boundary of the palate on upper and lower lips undoubtedly meet in the living corolla, which is closed like that of an *Antirrhinum* or *Linaria*.

R. notonianum (Wall.) B. L. Burtt, **comb. nov.**

Syn.: *Wulfenia notoniana* Wall., Tent. Fl. Nepal. 46 (1826).

Glossanthus malabaricus [Klein ex] Benth., Scroph. Ind. 57 (1835); G. Don, Gen. Syst. iv, 664 (1838); R. Br. in Horsfield, Pl. Jav. Rar. 121 (1840).

Glossanthus notonianus (Wall.) R. Br. in Horsfield, Pl. Jav. Rar. 121 (1840).

Klugia notoniana (Wall.) A.DC. in DC., Prodr. ix, 276 (1845); Wight, Ic. Pl. Ind. Or. iv, t. 1353 (1848); Bot. Mag. t. 4620 (1851); C.B. Cl., Mon. 159 (1883) et in Hook. f., Fl. Brit. Ind. iv, 466 (1884); Trimen, Hand. Fl. Ceylon, ii, 277 (1895); Gamble, Fl. Madras, ii, 990 (1924).

Klugia ceylanica Gardn. in Calc. J. Nat. Hist. vi, 490 (1846); C.B. Cl., Mon. 160 (1883) et in Hook. f., Fl. Brit. Ind. iv, 367 (1884); Trimen, Handb. Fl. Ceylon, ii, 278 (1895)—"zeylanica".

Klugia glabra Gardn. in Calc. J. Nat. Hist. vi, 489 (1846).

Rhynchoglossum scabrum Dalz. in Hook. Journ. Bot. & Kew Misc. ii, 140 (1850).

Klugia scabra (Dalz.) Dalz. in Dalz. & Gibs., Bomb. Fl. 134 (1861).

Klugia notoniana var. *glabra* (Gardn.) C.B. Cl., Mon. 159 (1883) et in Hook. f., Fl. Brit. Ind. iv, 466 (1884); Trimen, Handb. Fl. Ceylon, ii, 278 (1895).

Klugia notoniana var. *scabra* (Dalz.) C. B. Cl., Mon. 160 (1883) et in Hook. f., Fl. Brit. Ind. iv, 467 (1884).

DISTRIBUTION. Southern India and Ceylon.

Klugia notoniana and *K. ceylanica* (usually written *K. zeylanica*) have been kept as distinct species by most authors. The question needs further study and I am at present unwilling to make a new name for *K. ceylanica* in *Rhynchoglossum*, more especially as the epithet *ceylanica* (*zeylanica*) is preoccupied in that genus. Seed of these plants from recorded localities would be most welcome and, as the species is not difficult to cultivate, would give a fine opportunity of sorting out the species problem involved.

R. obliquum Bl., Bijdr. 741 (1826); C.B. Cl., Mon. 161 (1883) et in Hook. f., Fl. Brit. Ind. iv, 367 (1884); Ridley, Fl. Mal. Pen. ii, 539 (1923); Gamble, Fl. Madras, ii, 990 (1924); Pellegrin in Lecomte, Fl. Gen. Ind. Chin. iv, 558 (1930).

Syn.: *Wulfenia obliqua* Wall., Tent. Fl. Nep. 45, t. 35 (1826).

Loxotis obliqua (Wall.) Benth., Scroph. Ind. 57 (1835); G. Don, Gen. Syst. iv, 664 (1838); R. Br. in Benn., Pl. Jav. Rar. 102, t. 24, (1838); Miquel, Fl. Ned. Ind. ii, 731, t. 35 (1856).

Loxotis intermedia Benth., Scroph. Ind. 57 (1835); G. Don, Gen. Syst. iv, 664 (1838).

Rhynchoglossum obliquum (Wall.) DC., Prodr. ix, 275 (1845),

non Blume; Wight, Ill. Ind. Bot. ii, t. 159 bis (1850); C.B. Cl., Comm. & Cyrt. Beng. 144, t. 88 (1874).
R. blumei DC., Prodr. ix, 274 (1845).
R. rheedei DC., Prodr. ix, 274 (1845).
R. obliquum (Wall.) DC. var. *intermedium* (Benth.) DC., Prodr. ix, 275 (1845).
R. zeylanicum Hook. in Bot. Mag. t. 4198 (1845).
R. obliquum Bl. var. *parviflorum* C.B. Cl., Mon. 162 (1883) et in Hook. f., Fl. Brit. Ind. iv, 367 (1884).

DISTRIBUTION. India and southern China (and Formosa?) to the Malay Archipelago and perhaps New Guinea.

Critical studies on the limits and intraspecific classification of *Rhynchoglossum obliquum* have not yet been undertaken. It is hoped to obtain a variety of stocks in cultivation for this purpose before long. The synonymy of the species is, however, given in some detail (though a number of *nomina nuda* are omitted), in case others should attempt a field investigation. The apparent complexity of the nomenclature is due to the fact that Blume and Wallich independently used the same epithet, *obliquum*. The named entities concerned are: *R. obliquum* Bl. (type from Mt. Seribu, Java); *R. obliquum* (Wall.) DC. (type *Wallich* 407 from Nepal—which may also be taken as the type of *R. obliquum* Bl. var. *parviflorum* C.B. Cl.) and *R. obliquum* (Wall.) DC. var. *intermedium* (Benth.) DC. (type *Wallich* 408 from Nepal). For this last element there is no valid name in *Rhynchoglossum*; Clarke treats it as strictly synonymous with *R. obliquum* Bl. *R.*? *rheedei* DC. (based on Rheede, Hort. Malabar. ix, t. 80) is also validly published, it has never been used since De Candolle's original publication; so is *R. zeylanicum* Hook.

R. papuae Schlechter in Engl. Bot. Jahrb. lviii, 299 (1923).
NEW GUINEA

R. rheedei A.DC. in DC., Prodr. ix, 274 (1845) = *R. obliquum* Bl.

R. sasakii Hayata, Ic. Pl. Formos. vi, 34 (1916) = *Whytockia sasakii* (Hayata) B. L. Burtt in Kew Bull. 1941, 31.

R. scabrum Dalz. in Hook. Journ. Bot. & Kew Misc. ii, 140 (1850) = *R. notonianum* (Wall.) B. L. Burtt.

R. spumosum Elmer, Leafl. Philipp. Bot. ii, 564 (1908); Merrill, Enum. Philipp. Pl. iii, 455 (1923).
PHILIPPINE ISLANDS

R. violaceum (K. Fritsch) B. L. Burtt, **comb. nov.**
Syn.: *Klugia violacea* K. Fritsch in Sitz. Akad. Wiss. Wien Math.-Nat. cxxxv, Abt. 1, 287 (1926).
COLOMBIA

R. zeylanicum Hook. in Bot. Mag. t. 4198 (1845); Walp., Rep. vi, 522 (1847) = *R. obliquum* Bl.

The existence of this species name, although now reduced to *R. obliquum*, prevents the use of the epithet in *Rhynchoglossum* for *Klugia ceylanica* (see under *R. notonianum* above).