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IDENTIFICATION OF CERTAIN CANDOLLEAN TYPES OF SOUTH-AMERICAN BIGNONIACEAE

BY

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K. Schumann's failure to examine de Candolle's *Prodromus herbarium* inevitably mars his admirable account of the South American *Bignoniaceae* in Martius' *Flora Brasiliensis*. The defective collaboration in this work with Bureau, a collaboration which was really only in name, may have had something to do with this failure. Bureau had apparently examined the *Bignoniaceae* of several of the larger herbaria, notably those of Paris, Berlin, Munich, Brussels, Stockholm, the de Candolle Herbarium and the Herbarium Delessert at Geneva, and Miers' Herbarium; while Schumann had studied those of Berlin and other German herbaria, Vienna, Copenhagen, Brussels, and — curiously enough, and perhaps subsequent to the publication of his work — the Herbarium Boissier at Geneva. No doubt Schumann at first exchanged notes with Bureau and received information from him, but it is obvious that he remained in complete ignorance of the characters and affinities of many historic types at Paris and Geneva. The *Bignoniaceae* of the general herbarium at Paris are to-day arranged according to the unpublished views of Bureau which frequently differ widely from those adopted by Schumann in the *Flora Brasiliensis*.

The object of this paper is to attempt to identify, according to modern generic and specific concepts, those new species of South American *Bignoniaceae* which were described by Augustin Pyramus de Candolle in the ninth volume of the *Prodromus*, and which were either not mentioned at all by Schumann, or were placed among « species incertae sedis » at the end of various genera, or were incorrectly interpreted by him. Some of the type specimens of these species are uniques in the *Candollea* VII. Juin 1936.

Prodromus Herbarium, while duplicates of some of them are to be found in the Delessert Herbarium, or in Paris or London. Others are from collections, such as those of Blanchet, Poeppig, Manso and Lund, which were actually represented in herbaria examined by Schumann but which he could not relate to de Candolle's descriptions in the absence of citation of numbers. This was unfortunate, especially as in some instances de Candolle could have cited the collector's number but omitted to do so; it may be recalled here that the account of the *Bignoniaceae* in the *Prodromus* was completed and edited by Alphonse de Candolle after his father's death.

It has been found convenient to adopt the following abbreviations in these notes; the reference to de Candolle is always to the ninth volume of the *Prodromus*, published in 1845; while «*Fl. Bras.*» indicates Bureau and K. Schumann in Martius, *Flora Brasiliensis*, viii. pars 2 (1896-7). The species of *Bignonia* are numbered according to de Candolle's own sequence.

The study of these long-neglected types was made possible in January last by a visit to the Conservatoire Botanique at Geneva, and the writer wishes to express his gratitude to the authorities of the Conservatoire for the great kindness shown to him during his stay.

21. ***Bignonia umbellulata*** DC. p. 148; *Fl. Bras.* p. 285; is ***Clytostoma binatum*** (Thunb.) Sandwith in *Rec. Trav. bot. néerl.* XXXIV, 231 (1937) (*C. noterophilum* (DC.) Bur. et K. Schum.), and falls into synonymy.

51. ***B. hispida*** DC. p. 152; *Fl. Bras.* p. 51 in syn.; is probably a form of ***Arrabidaea arthrerion*** (DC.) Bur. ex K. Schum., as surmised in *Fl. Bras.* The calyx is less hispid than that of the type of *Distictis arthrerion* DC., being glabrescent and lepidote, and the corolla is a little shorter. The capsule is woolly, with spreading, brownish, jointed hairs.

53. ***B. Balbisiana*** DC. p. 153; *Fl. Bras.* p. 49 in syn. = *B. villosa* Vahl sec. Spreng. *Syst. Veg.* ii, 830 (1825), non Vahl.

This species, based on specimens collected by Bertero near Santa Marta, Colombia, was reduced by Bureau and Schumann to *Arrabidaea rotundata* (DC.) Bur. ex K. Schum. (*Bignonia rotundata* DC.), a species

founded on a Blanchet collection from Brazil, although Schumann (see Obs. ii sub *A. rotundata* in *Fl. Bras.*, l.c.) admitted the possibility of error. The type of *A. rotundata*, Blanchet n. 2757, differs widely from that of *B. Balbisia* in the shape and indumentum of the leaflets, the indumentum of the narrow inflorescence, in the calyx which is more broadly campanulate, more denticulate, and clothed with long hairs, and in the much stronger indumentum of the corolla. It appears to be a distinct species of rare occurrence in Brazil. On the other hand, *B. Balbisia* does agree well with the types of the Venezuelan *B. glabrata* H.B.K. and *B. obliqua* H.B.K. at Paris. Manuscript notes of Bureau in the Paris Herbarium show that Bureau suspected that these two species were conspecific and a recent examination has led to the conclusion that they may be united with confidence and receive the combination given by Bureau, **Arrabidaea obliqua** (H.B.K.) Bur. in *Kjoeb. Vidensk. Meddel.* 99 (1894). This species, of which *Bignonia Balbisia* DC., *Arrabidaea Spraguei* Pittier, and probably other names, are synonyms, is evidently widely spread in Northern Colombia and Venezuela and has a very distinctive appearance owing to the smooth coriaceous old leaflets in which the ultimate veinlets are often impressed, the barbate axils of the main nerves of the lower surface, the very lax and showy panicle, and the capsule which is copiously hollowed-punctate and minutely lepidote between the dots.

59. **B. Priourei** DC. p. 154, from French Guiana, coll. *Leprieur*; *Baill. Hist. Plantes*, X, 32, in obs., is **Mussatia Priourei** (DC.) Bur. ex K. Schum. = *Anemopaegma brachycalyx* Bur. et K. Schum. in *Fl. Bras.* p. 145.

80. **B. Parkeri** DC. p. 175, from British Guiana, is **Distictella Parkeri** (DC.) Sprague et Sandwith in *Kew Bull.* (1932) p. 90. = *Distictella guianensis* (Bur. et K. Schum.) Urb. in *Fedde Rep. Sp. Nov.* XIV, 310 (1916) = *Distictis guianensis* Bur. et K. Schum. in *Fl. Bras.* p. 177.

86. **B. hymenaea** DC. p. 158; *Fl. Bras.* p. 286. Type: Blanchet n. 1434 in Herb. DC., dupl. in Herb. Deless., also in Herb. Paris., not seen by Schumann. This agrees perfectly with the very distinct *Adeno-*

calymma (*Hanburyophyton*) *laevigatum* Bur. et K. Schum. in *Fl. Bras.* p. 113, which is the basis of the new genus *Pseudocalymma* Sampaio et Kuhlmann. The following combination is therefore necessary: ***Pseudocalymma hymenaeum*** (DC.) Sandwith, comb. nov. = *P. laevigatum* (Bur. et K. Schum.) Sampaio et Kuhlmann in *Bol. Mus. Nac. Rio de Janeiro*, X, sub tab. opp. p. 100 (1934); et in *Ann. Acad. Bras. Sci.* vii, p. 125 (1935).

97. **B. nitidissima** DC. p. 160, from Caracas, Venezuela (1830) coll. Vargas n. 244, is a form of ***Cydista aequinoctialis*** (L.) Miers. The leaflets are shining and have dried greenish-brown; the inflorescence is very floriferous, large and lax; the calyx is sinuate-sublobate and distinctly denticulate. These characters are not typical of common forms of the species, but are all found within its range; cf. H. H. Smith n. 738 and n. 2515 (distributed as a new species of *Adenocalymma*), Pittier n. 12454, Funck et Schlim n. 711, etc.

125. **B. ? lanceolata** DC. p. 163; *Fl. Bras.* p. 216, in syn. sub *Cremastus sceptrum*.

The type specimen in the Prodromus Herbarium is Blanchet n. 2904 from the Rio São Francisco, Brazil, duplicates of this collection being also at Paris, Kew and elsewhere. This specimen, which is a branch with leaves and flowers, agrees with de Candolle's description, if we except the part which deals with the fruit and seeds. The latter was evidently taken from the material in Martius' herbarium of *Alsocytia glandulosa* Mart. Herb. var. β (*angustifolia*), a name cited as a synonym by de Candolle. This material was seen by Schumann who referred it to *Cremastus sceptrum* (Cham.) Bur. et K. Schum., and on the strength of this evidence placed *Bignonia lanceolata* as a synonym of that species. But the Blanchet type of *Bignonia lanceolata* is not *Cremastus sceptrum* at all, but is ***Anemopaegma velutinum*** Mart. ex DC., as Schumann would have realised if de Candolle had cited Blanchet's collecting number. Since both *B. lanceolata* and *A. velutinum* were published at the same time, it will be preferable to treat the former as a synonym of the latter species which was given its full rank in the account of *Anemopaegma* in the *Flora Brasiliensis*.

126. **B. cinnamomea** DC. p. 164; *Fl. Bras.* p. 285; becomes **Arrabidaea** (Sect. *Macrocarpaea*) **cinnamomea** (DC.) Sandwith, comb. nov. Type collection, Serra da Cuyabá, Matto Grosso, Brazil, coll. : Silva Manso.

Remarkable for the brown tomentum of all its parts, the hairs being branched. Gland-fields present at the nodes. Inflorescence terminal, pyramidal, dense-flowered. Calyx 8-11 mm. long, strongly ribbed in the upper half, toothed, one tooth usually somewhat exceeding the others in length. Fruit unknown. No collections nearly agreeing with this very distinct plant have been seen with the exception of Burchell n. 8617 (Kew) from Porto Real, Goyaz (flowers pale rose), and Klug n. 2871 (Kew, Cons. Geneva) from Balsapuerto, Dept. Loreto, Amazonian Peru, which was a liane with pale lilac flowers; these have the leaflets more glabrate beneath, but are closely allied or even conspecific.

129. **B. cujabana** DC. p. 164; *Fl. Bras.* p. 286; is certainly **Cremastus sceptrum** (Cham.) Bur. et K. Schum., sens. lat., as suspected by Schumann. There are several sheets, and the material shows considerable variation in the size and indumentum of the calyx.

153. **B. albiflora** Salzm ex DC. p. 167 = *Memora albiflora* (Salzm. ex DC.) Miers in *Proc. Roy. Hort. Soc.* iii, 185 (1863); *Fl. Bras.* p. 273.

The type, Salzmann n. 346 (dupl. in Herb. Paris), was collected in the province of Bahia, Brazil, in 1830. Schumann placed the species among those « minus cognitae » at the end of *Memora*. Examination proves this very distinct plant to be conspecific with **Memora obtusifoliolata** Bur. et K. Schum. in *Fl. Bras.* p. 261, the type of which was also collected in Bahia. *M. obtusifoliolata* was made the basis of the new genus *Nestoria* by Urban in *Ber. Deutsch. Bot. Ges.* XXXIV, 751-752 (1916). It is strange that Urban compared *Nestoria* with *Anemopaegma* and *Memora* rather than with *Pleonotoma*, of which it has not only the biternate leaves with strongly reticulate leaflets and the white corolla but also such salient characters as those of the tendrils and pollen grains. The present writer is by no means certain that *Nestoria* is distinguishable as a genus from *Pleonotoma*, but for the

present, mainly on account of the many-ribbed (not tetragonous) branchlets and the remarkable inflorescence, he prefers to maintain it, and the following new combination is accordingly made: **Nestoria albiflora** (Salzm. ex DC.) Sandwith, comb. nov. = *Memora obtusifoliolata* Bur. et K. Schum. = *Nestoria obtusifoliolata* (Bur. et K. Schum.) Urb.

Pachyptera puberula DC. p. 175 is **Macfadyena uncata** (Andr.) Sprague et Sandwith in *Rec. Trav. bot. néerl.* XXXIV, 215 (1937). The type collection, *Silva Manso* n. 10, is cited under *M. uncinata* by Schumann in *Fl. Bras.* p. 291.

Pachyptera striata DC. p. 176 and **P. Perrottetii** DC. p. 176 are both additional synonyms of **Paragonia pyramidata** (L. C. Rich.) Bur., as are *P. umbelliformis* DC. and *P. dasyantha* DC. In *Kew Bull.* (1932) p. 84, reasons were given for the choice of *Pachyptera joveolata* DC. = *P. Kerere* (Aubl. emend. Splitg.) Sandwith in *Rec. Trav. bot. néerl.* XXXIV, 219 (1937), as the type-species of *Pachyptera*, and it now appears that the genus consists of this species alone.

Arrabidaea virescens DC., p. 184, cum var. *farinosa* DC., is **Arrabidaea conjugata** (Vell.) Mart. ex DC., proving that Wawra's identification of de Candolle's species was correct; see *Maximil. Reise*, 76, t. 11 (1866), and *Fl. Bras.* p. 35, in syn.

Anemopaegma ? Poeppigii DC. p. 190; *Fl. Bras.* p. 147; is **Petastoma Poeppigii** (DC.) Sandwith, comb. nov. = *P. reticulatum* Bur. et K. Schum. in *Fl. Bras.* p. 82.

The type specimen is Poeppig n. 1683, ann. 1832, from Peru, and this collection is the type number of *Petastoma reticulatum* Bur. et K. Schum. Duplicates have been seen in the Paris Herbarium and in the Herbarium Boissier, Geneva. It was unfortunate that de Candolle frequently did not cite the collector's number; in this instance citation would have enabled Schumann to fix the identity of de Candolle's species and would have prevented him from creating a new and unnecessary name.

Anemopaegma Vargasianum DC., p. 190, from Venezuela = *Cydista Vargasiana* (DC.) Miers in *Proc. Roy. Hort. Soc.* iii, 192

(1863); is the well-known **Cydista diversifolia** (H.B.K.) Miers = *Pleonotoma diversifolia* (H.B.K.) Bur. et K. Schum.

The corolla of the type is tomentose outside, not glabrescent as described by de Candolle; it is true, however, that the older corollas of many collections of this species are merely pubescent and appear glabrescent to the naked eye.

Haplolophium Lundii DC. p. 192 is **Haplolophium bracteatum** Cham.; *Fl. Bras.* p. 173.

The Lund specimen from Taubaté which was cited by Schumann under *H. bracteatum* is no doubt part of the type collection of *H. Lundii*.

Pithecoctenium Lundii DC. p. 196 is doubtfully distinguishable from **Pithecoctenium echinatum** (Jacq.) K. Schum.

Pithecoctenium ? frutescens DC. p. 196 is **Pithecoctenium stipulare** Mart. ex DC.

Adenocalymma Guilleminii DC. p. 202; *Fl. Bras.* p. 116 is conspecific with and antedates **Adenocalymma pleiadenium** Bur. et K. Schum. in *Fl. Bras.* p. 107, from the same locality (Serra dos Orgãos, Brazil). Gardner n. 542 (Kew) is yet another collection from the Serra dos Orgãos of this very distinct plant.

Spathodea hispida DC. p. 205; *Fl. Bras.* p. 345; is **Macfadyena hispida** (DC.) Seem. *Journ. Bot.* i, 227 (1863).

Seemann's transference of this species to its right position in *Macfadyena* was missed by Schumann who placed it at the end of the doubtful species of *Tecoma*. *M. hispida* is very doubtfully distinct from *M. mollis* (Sonder) Seem., based on *Spathodea mollis* Sonder in *Linnaea*, xxii, 561 (1849) a name which is four years later than de Candolle's.

Spathodea Schomburgkii DC. p. 207 is **Memora Schomburgkii** (DC.) Miers in *Proc. Roy. Hort. Soc.* iii, 185 (1863); *Fl. Bras.* p. 273.

The basis of Miers' name was obscured by Schumann who omitted all mention of de Candolle's species, the type of which was from a collection of Schomburgk which is represented in several herbaria. The

present writer considers that both *Memora consanguinea* Bur. et K. Schum. and *Tanaecium ovatum* Bur. et K. Schum. (= *Memora ovata* (Bur. et K. Schum.) Sprague et Sandwith) are synonyms of *M. Schomburgkii*, having been described from the upper parts of branchlets, whereas the type material of *M. Schomburgkii* shows lower and older parts with larger and more compound leaves.

Spathodea ? bracteosa DC. p. 208 (type collected in French Guiana by Patris) has been correctly interpreted and redescribed by Bureau and Schumann under the name **Memora bracteosa** (DC.) Bur. et K. Schum., but Sagot n. 1091, which was referred to this species in *Fl. Bras.* p. 271, belongs to the very different *M. flaviflora* (Miq.) Pulle. The name *Bignonia alba* Aubl. *Hist. Pl. Guiane*, 653, t. 266 (1775), which de Candolle mentioned as a possible synonym of his species, is to be regarded as a *nomen dublum* and must certainly not be identified with *Memora bracteosa* on account of the white corolla and the woody, ovate-oblong, capsule with rugose, furrowed, valves which were mentioned by Aublet.

Tabebuia latifolia DC. p. 213, cum obs. ab Alph. DC. script., is **Martinella obovata** (H.B.K.) Bur. et K. Schum., from the evidence both of the description and of the type specimen. In spite of Alphonse de Candolle's note, explaining that his father was mistaken in associating his species with *Bignonia latifolia* Rich., Schumann placed *Tabebuia latifolia* DC. in synonymy under *Callichlamys latifolia* (Rich.) K. Schum.

Tabebuia citrifolia DC. p. 213; *Fl. Bras.* p. 132, in syn.; is to be treated as a synonym of **Anemopaegma Chamberlaynii** (Sims) Bur. et K. Schum., and not of *A. lanceolatum* (DC.) Bur. ex K. Schum. to which it was referred with some doubt by Bureau and Schumann. The specimen of the type collection (Blanchet n. 2351) in the Herbar Boissier at Geneva has been correctly determined as *A. Chamberlaynii* by Schumann.

Tabebuia ? Mansoana DC. p. 214, unknown to Schumann, is to be referred to **Callichlamys** and appears to represent an extreme form of **C. latifolia** (Rich.) K. Schum. as understood by Schumann.

The type specimen is a very distinct looking plant with coriaceous leaflets, not densely but conspicuously woolly beneath with whitish branched hairs, the veins impressed on the upper surface; inflorescence up to 8 cm. long, finely woolly-tomentellous with rufous-brown branched hairs; pedicels short and thick, up to 1 cm. long, often much shorter; and calyx finely tomentellous and rufous-brown, thick, inflated, veinless. *C. latifolia* is a variable plant, in spite of Schumann's observation I in *Fl. Bras.* p. 227, particularly in the presence, absence and quantity of furfuraceous branched hairs on the leaflets, inflorescence and calyx. Typical material from Guiana is more or less glabrous, but among Brazilian specimens one may cite Glaziou n. 7872 as a fair match with *Tabebuia Mansoana*, although the indumentum is deciduous on the larger leaflets, while Glaziou n. 8814 and n. 12085 (intermediate) and *Mexia* n. 4196 a and n. 5075 a (both remarkably woolly-tomentose) afford interesting comparisons. Although the variability of the species is considerable, it is believed that no attempt should be made to distinguish varieties on the basis of indumentum.

Tecoma hypodictyon DC. p. 217; *Fl. Bras.* p. 344 (species incertae sedis) = *Tabebuia hypodictyon* (DC.) Standley in *Field Mus. Publ. Bot.* xi, 176 (1936).

Examination of the type of this species leaves no doubt that it is conspecific with **Tabebuia ochracea** (Cham.) Standley, of which it becomes a synonym.

Tecoma Salzmanni DC. p. 219; *Fl. Bras.* p. 345, is, as suggested by Schumann, **Sparattosperma vernicosum** (Cham.) Bur. et K. Schum.

Tecoma heterotricha DC. p. 219 is **Tabebuia heterotricha** (DC.) Hemsl. *Biol. Centr.-Am.* ii, 495 (1881-2), quoad nomen.

The type of this species was presumed by de Candolle to have been collected near Caracas by Vargas. The branchlets, petioles, petiolules and calyx are golden stellate-woolly. The leaflets are in a young condition, thin and almost membranous, large, more or less sinuous-dentate in the upper half, drying dark, lepidote and with both simple and stellate adpressed hairs above, paler and more densely stellate beneath

and woolly along the main nerves, nerves impressed above, prominent beneath, main lateral nerves about 12 on each side of the midrib. Calyx with long simple hairs and with a much shorter stellate tomentum, densely woolly, about 1,2 cm. long. Corollas umbellate-clustered, glabrous outside, about 5 cm. long.

Venezuelan material which appears to agree with the above is Pittier n. 12357, from between El Becerro and Orituco River, Guárico, fl. April 1927, a medium-sized tree with crowded umbellate flowers and golden-woolly calyces, flowering without the leaves; and Pittier n. 12513, from between El Sombrero and Pítara Bridge, Guárico. Both these collections, the former distributed as *Tecoma spectabilis* Planch. et Linden, the latter as an unpublished new species, are represented at Geneva in the Herbarium of the Conservatoire Botanique.

T. heterotricha is closely allied to *Tabebuia chrysantha* (Jacq.) Nichols., which is well known in the same region, and may possibly represent a form of that species with young leaflets, but a similar indumentum has not been found on any leaflets of material of *T. chrysantha*, and the same is true of *T. spectabilis* (Planch. et Linden) Nichols.

The leafless material referred by Hemsley to *T. heterotricha*, viz. Sutton Hayes n. 457 and Cuming n. 1261, appears to belong to *T. chrysantha*.

Tecoma ? atrovirens DC. p. 220; *Fl. Bras.* p. 344; = *Tabebuia atrovirens* (DC.) Standley in *Field Mus. Publ. Bot.* xi. 176 (1936); is to be referred in the writer's opinion to ***Tabebuia elliptica*** (DC.) Sandwith, comb. nov. = *Bignonia elliptica* Cham. in *Linnaea*, vii, 686 (1832), non Thunb. = *Tecoma elliptica* DC. *Prodr.* ix, 220. = *Sparatosperra psammophilum* Mart. ex DC. l. c. 203. = *S. ellipticum* (DC.) Bur. et K. Schum. in *Fl. Bras.* p. 362. De Candolle's type, collected by Blanchet in Bahia, Brazil, was unknown to Schumann, who suggested (*Fl. Bras.* p. 326, in obs.) that it might be conspecific with *Tecoma eximia* Miq. Apart from the lack of simple hairs on the lower surface of the leaflets it agrees well with Chamisso's description of *Bignonia elliptica* and with Sellow material so named in the Kew Herbarium. Blanchet n. 1905 in Herb. Delessert belongs to the same species.

Tecoma Patrisiana DC. p. 221, from French Guiana; *Fl. Bras.* p. 342, in syn.; proves to be ***Tabebuia serratifolia*** (Vahl) Nichols.,

and falls into the synonymy of that species. Unknown to Schumann who placed it, with doubt, under *Tecoma Leucoxylon* (L.) Mart. ex DC.

Jacaranda hebephora DC. p. 231; *Fl. Bras.* p. 393.

Placed by Schumann among the « species incertae sedis » at the end of *Jacaranda*, with the comment that it was certainly related to *J. macrantha* Cham. and allied species. The type is Lhotsky n. 86, collected in Sept. 1831, according to the writing on the sheet. Very closely related to *J. micrantha* Cham. and *J. macrantha* Cham., and especially to the latter, but identification is difficult in the absence of fruit. The leaflets are merely acute or more or less obtuse, not conspicuously acuminate as in authentic specimens of *J. micrantha*. The thyrses are pyramidal with ascending branches, pubescent, lenticellate. The bracts are persistent, densely pubescent, up to 5 mm. long, narrowly linear-lanceolate, scarcely 1.2 mm. wide. The calyx is 8-10 mm. long, irregularly lobed, densely pubescent, not glabrate as in both *J. micrantha* and *J. macrantha*. The corolla is about 4 cm. long, pubescent outside. For the present *J. hebephora* is best treated as an independent species, closely related to *J. macrantha*.
