NOTES ON UNIDENTIFIED TROPICAL SOUTH AMERICAN «BIGNONIACEAE» OF HUMBOLDT AND BONPLAND

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RESUMEN

Notas sobre las Bignoniáceas de Humboldt y Bonpland no indentificadas procedentes de Sudamérica tropical. — El autor realiza el estudio de algunas Bignoniáceas, recogidas por Humboldt y Bonpland en la América del Sur, existentes en el Museo de París, que no han sido revisadas por los monógrafos De Candolle y K. Schumann.

Estas especies son :

Anemopaegma salicifolium (H. B. K.) Sandwith (*Bignonia salicifolia* H. B. K.).

Anemopaegma chrysoleucum (H. B. K.) Sandwith (*Bignonia chrysoleuca* H. B. K.).

Bignonia obliqua H. B. K. (*Bignonia glabrata* H. B. K.).

Bignonia picta H. B. K.

Distictella magnoliaefolia (H. B. K.) Sandwith (*Bignonia magnoliaefolia* H. B. K.).

Bignonia tiliaefolia H. B. K. (= *Pithecoctenium echinatum*).

Bignonia verrucosa H. B. K.

Adenocalymna apurense (H. B. K.) Sandwith (*Bignonia apurensis* H. B. K.).

Stizophyllum riparium (H. B. K.) Sandwith (*Bignonia riparia* H. B. K.).

Lundia corymbifera (Vahl) Sandwith (*Bignonia umbrosa* H. B. K.)

Tabebuia barbata (E. Mey) Sandwith (*Bignonia fluviatilis* H. B. K.).

Bignonia Clematis H. B. K.

Jacaranda obtusifolia Humb. et Bonpl.

Spathodea orinocensis H. B. K.

After their return to Europe from tropical America Humboldt and Bonpland described and figured a large number of selected species in the two splendid volumes, entitled *Plantae*

Aequinoctiales, which were published at Paris in 1805 and 1813. Among these were four *Bignoniaceae, Jacaranda acutifolia, J. obtusifolia, Bignonia chica* (famous for its red dye) and *Eccremocarpus longiflorus,* which all appeared in the first volume. Many years later, in 1819, a full account of the *Bignoniaceae* collected by Humboldt and Bonpland, comprising descriptions of more than fifty species, was completed by Kunth for the third volume of the *Nova Genera et Species Plantarum* (pp. 132 159). The types of the Bonpland (first) set at Paris were available to De Candolle when he prepared his account of the family for the ninth volume of the *Prodromus,* but he did not see all of them. Again, when K. Schumann monographed the Brazilian species of *Bignoniaceae* for Martius' *Flora bras.*, he relied on the Humboldt set in the Willdenow Herbarium and on the duplicates in Kunth's Herbarium at Berlin, although no doubt he exchanged information with his collaborator at Paris, Edouard Bureau. Now the Berlin sets being inferior to that of Bonpland at Paris, Schumann apparently failed altogether to examine and interpret a large number of types of tropical species of *Bignoniaceae* which might well have had a bearing on his Brazilian work; and he omitted all mention of these species from the *Flora,* no doubt justifying himself on the ground that they occurred only outside the limits of the area with which he was concernerd. It has therefore happened that many tropical American *Bignoniaceae* collected by Humboldt and Bonpland, some of them quite probably — considering the nature of this family — of wide distribution, have remained uninterpreted in botanical literature since the day of their description. This would not have been so if Bureau had been able to complete his monographic studies of the *Bignoniaceae.* As it is, his excellent manuscript notes on the generic and specific relationships are to be seen on many of the sheets of the Bonpland types, a number of which were found removed from the special herbarium of Humboldt and Bonpland and incorporated here and there in the general collections according to Bureau's views. During a visit to the Paris Herbarium in January 1937 the writer discovered and examined most of the types of Humboldt and Bonpland's *Bignoniaceae,* and the object of these notes is to

attempt to throw further light on such tropical South American species as were merely listed by De Candolle or were quite unknown both to himself and Schumann. In several cases the relationships of a species with its congeners can only be decided by a revision of the genus, but in the meantime it is both safe and advisable to make such new combinations as are required. One or two notes are included on species which were actually seen by Schumann. The order of species follows that of the *Nova Genera et Species Plantarum*, while the abbreviated references are to Humboldt, Bonpland et Kunth, *Nova Genera et Species Plantarum,* iii (1819); A. P. De Candolle, *Prodromus.* ix (1845); and Bureau et K. Schumann in Martius, *Flora Brasiliensis*, viii, pars 2 (1896-7).

The writer wishes to express his thanks to the authorities of the Paris Herbarium for the great kindness and consideration which were shown to him during his visit.

Bignonia n° 3, *B. salicifolia* H. B. K. p. 133; DC. *Prod.* IX. 151; is **Anemopaegma salicifolium** (H. B. K.) Sandwith comb. nov.

The material has not been sufficiently studied for an opinion to be formed of the specific relationship of this very distinct-looking plant. The type specimen, *Bonpland* 1027 from Carichana, was not seen by De Candolle or Schumann. It is very fragant, like many species of *Anemopaegma.* The leaflets have dried a brownish-red as in *A. floridum* Mart. ex DC.; they are strongly reticulate, shining and sometimes hollowed-punctate above, and reticulate and punctate beneath. The calyx is campanulate, truncate and glabrous, about 5,5 mm. long. The corolla is rather thick, and glabrous. Apparently a local species of limited distribution, which requires to be re-collected.

Bignonia n° 6, *B. chrysoleuca* H. B. K. p. 134; DC. *Prod.* IX. 151; is **Anemopaegma chrysoleucum** (H. B. K.) Sandwith comb. nov.

The type specimen at Paris, Bonpland 1576 from the Magdalena River (Patico), was seen by neither De Candolle nor Schumann. It is a typical *Anemopaegma*, and has been placed

by Bureau with sheets of Funck and Schlim 707 and 709 from Caracas to which he gave the manuscript name of a new species. The relationships of this plant have not yet been determined, but the specific epithet antedates those of other species of the genus which ard likely to be allied.

Bignonia n° 7, *B. obliqua* H. B. K. p. 135, and n° 8, *B. glabrata* H. B. K. p. 135; DC. *Prod.* IX. 150, 161; *Fl. Bras.* p. 49, in syn. et obs.

The Paris types (Bonpland 782, Laguna de Valencia; 53, Cumaná) of these species were unknown to Schumann, and only that of *B. obliqua* was examined by De Candolle. The authors themselves admitted that the two differed only in the shape of the leaflets. As pointed out elsewhere (Candollea, vii. 246 (1937)), the two species are evidently conspecific and should be known by the name *Arrabidaea obliqua* (H. B. K.) Bur., *Bignonia Balbisiana* DC. is a synonym, but *Arrabidaea rotundata* (DC.) Bur. ex K. Schum. is a quite different species of Eastern Brazil., *A. Spraguei* Pittier is also a synonym of this very distinct plant, which is probably not uncommon in North-western South America.

Bignonia n° 10, *B. picta* H. B. K. p. 136; DC. *Prod.* IX. 155.

The Bonpland specimen, n° 1078 from Angostura, is extremely poor but is evidently to be compared with forms of *Cydista aequinoctialis* (L.) Miers.

Bignonia n° 11, *B. magnoliaefolia* H. B. K. p. 136; DC. *Prod.* IX. 155 is **Distictella magnoliaefolia** (H. B. K.) Sandwith comb. nov.

The type, Bonpland 973 from Javita, was seen by neither De Candolle nor Schumann. Bureau identified it as a *Distictis*, that is to say, as a member of the genus now known as *Distictella*. This determination is obviously correct. The leaflets of the specimen are glabrous, but remarkably lepidote on the lower surface. The affinity is evidently with *D. racemosa* (Bur. et K. Schum.) Urb. and its allies, and since the specific epithet is earlier than those of these species, the new combination is inevitable.

Bignonia n° 12, *B. tiliaefolia* H. B. K. p. 136 ; DC. *Prod.* IX. 159.

The Bonpland specimen, which was seen by neither De Candolle nor Schumann, is fragmentary but is clearly a *Pithecoctenium* and is probably to be referred to *P. echinatum* (Jacq.) K. Schum.

Bignonia n° 14, *B. verrucosa* H. B. K. p. 137 ; DC. *Prod.* IX. 163.

The Bonpland type, n° 1051 from Caicara, Orinoco, was seen by neither De Candolle nor Schumann. It has been correctly matched by Bureau with the specimen (n° 831) of *B. carichanensis* of the same authors, and may be treated as a synonym of *Arrabidaea carichanensis* (H. B. K.) Bur. et K. Schum.

Bignonia n° 15, *B. apurensis* H. B. K. p. 138 ; DC. *Prod.* IX. 163 ; is **Adenocalymma apurense** (H. B. K.) Sandwith comb. nov.

The Bonpland specimen, n° 812, has remained uninterpreted by later writers, but was written up as *Adenocalymma apurense* by Bureau. It agrees with the description except for the dense pubescence of the outer surface of the corolla. There is also in the Paris Herbarium a photograph of a sheet (at Berlin ?) showing branchlets and simple tendrils and labelled « N° 812, bignonia, rio Apure (Humboldt). » The leaves of the Bonpland specimen are simple on young branchlets, the leaflets very small as described, and shortly pilosulous beneath. The bracts have mostly fallen, but the uppermost are fairly long and about 2,5 mm. broad. The calyx is glabrous with few or no glands ; and the corolla is up to 5,7 cm. long, with the limb about 3 cm. in diameter. The plant is an obvious *Adenocalymma* of the peculiar group consisting of *A. marginatum, A. inundatum, A. Hintoni* and *A. impressum,* and the specific epithet is earlier than theirs.

Bignonia n° 16, *B. umbrosa* H. B. K. ; *Lundia umbrosa* (H. B. K.) Bur. ; should in future be known as *Lundia corymbifera (Vahl)* Sandwith in *Rec. Trav. bot. neerl.* XXXIV, 229 (1937)

(*Bignonia corymbifera* Vahl), Vahl's type having been misidentified by Bureau and Schumann as a common Brazilian species of *Arrabidaea,* see *Fl. Bras.* pp. 36, 37.

Bignonia n° 17, *B. riparia* H. B. K. p. 138; DC. *Prod.* IX, 164; is **Stizophyllum riparium** (H. B. K.) Sandwith comb. nov.

The Paris type, Bonpland sine no., from the Rio Magdalena, was unknown to De Candolle and Schumann. It is obviously to be referred to the genus *Stizophyllum,* but is apparently distinct from both *S. perforatum* (Cham.) Miers and *S. inaequilaterum* Bur. et K. Schum., being allied to the former species. The specific name antedates those of species hitherto assigned to *Stizophyllum.* The branchlets of *S. riparium* are terete and striate, densely pubescent with curly fulvous hairs which are easily rubbed off. The leaflets are 13-16 cm. long by 6,5-9 cm. broad, pilosulous above on the main nerves and more or less so all over beneath, the lower surface deeply sculptured-punctate. The axillary inflorescence is fulvous with the same indumentum as that of the branchlets, 7 cm. long, the flowers appearing at the apex on pedicels about 9 mm. long and with linear bracts. Calyx 7,5 mm. long, irregularly sinuate-truncate, densely adpressed-fulvous-pubescent. Corolla about 3 cm. long, white, rather scattered whitish-pubescent outside (this is characteristic of the genus), the limb about 1,5 cm. in diameter.

Bignonia n° 20, *B. fluviatilis* Aubl. sec. H. B. K. p. 139, non. Aubl. is **Tabebuia barbata** (E. Mey.) Sanwith comb. nov.

Bignonia barbata E. Mey, in *Nov. Act. Nat. Cur.* xii. 782 (1825), *Zeyhera barbata* (E. Mey) Miq. in *Flora,* xxv. ii. 430 (1842). *Tecoma barbata* (E. Mey.) DC. *Prod.* ix. 221. *Tecoma toxophora* Mart. emend. DC. *l. c.* 217, excl. syn. Marcgr.; non Mart. in *Flora* xxiv. ii. Beibl. 15 (1841). *Couralia toxophora* (Mart. em. DC.) Benth. et Hook. f. ex K. Schum. in Engl. *Pflanzenfam.* iv. 3 B. 239 (1894); Bur. et K. Schum. in *Fl. Bras.* p. 346.

BRAZIL. Rio Negro *Martius* (Herb. DC. and Herb. Deless., Conserv., Geneva); Robert Schomburgk 1028 (Kew): Spruce

1375 (Kew). Santarem, by Rio Tapajoz, *Spruce* 594 (Kew; Herb. Deless., Conserv., Geneva). Matto Grosso; Machado River region, Krukoff 1469 (Kew), 1543 (Kew). Rio Solimoes; near Codajaz, Krukoff 4503 (New York).

Venezuela. Carichana, Bonpland 1200 (Paris).

Vernacular names, *Tauarí do gapó* (fide Spruce); *Pau d'arco roxo* (fide Krukoff). The flowers are violet or purplish-rose, withe within the tube, sometimes yellowish near the throat.

The Bonpland specimen of this very distinct species was not seen by Schumann who referred this misidentification with Aublet's *Bignonia fluviatilis,* together with the new name based on it by E. Meyer, to the synonymy of *Couralia fuviatilis* (Aubl.) Splitg., see *Fl. Bras.* p. 348. The description of the external pubescence of the corolla tube which at once distinguishes this plant, should have made Schumann suspect that Humboldt and Bonpland's material was probably conspecific with Martius' material of his *Tecoma toxophora* as emended by De Candolle; which indeed it proves to be. E. Meyer's epithet therefore, being prior to Martius', must stand within the new combination in the genus *Tabebuia,* to which *Couralia* should be reduced. Moreover, Martius' own published use of the name *Tecoma toxophora* was based on the figure and description of «Guirapariba» (Pao d'arco) of Marcgrav, *Hist. Plant.* i. 118 (1648), but Marcgrav described his tree as producing yellow flowers before the leaves, characters which fit *T. serratifolia* (Vahl) Nichols. much better than *T. barbata.*

Bignonia n° 23, *B. Clematis* H. B. K. p. 141; DC. *Prod.* IX, 169; Bur et K. Schum. in *Fl. Bras.* p. 275, in syn. *Pleonotoma Clematis* (H. B. K.) Miers in *Proc. Royal Hort. Soc.* iii. 184 (1863), *P. variabilis* (Jacq.) Miers var. *Clematis* Bur. et K. Schum. in *Fl. Bras. l. c.*

Schumann reduced this species, together with *Pleonotoma chondrogona* (Miq.) Miers, to an aggregate *Pleonotoma variabilis* (Jacq.) Miers, presumably also treating it as the basis of his var. *Clematis.* The two authentic sheets of Bonpland 777 from the Llanos de Calabozo, Guárico, Venezuela, have been recently examined. That at Paris consists of foliage only; the Berlin

sheet of Humbolt's set is much better, and bears the small flowers of the Guiana *P. chondrogona,* the calyx being scarcely up to 2,5 mm. long and 4 mm. wide and conspicuously (up to 0,5 mm.) denticulate, while the corolla is only 2,5-3 cm. long with the limb about 2 cm. in diameter and the indumentum exactly as in *P. chondrogona.* The anther-thecae slightly exceed 3 mm. in length. The leaflets are very young and in the semi-membranous condition, cordate at the base, pubescent along the midrib of the upper surface (not glabrous, as described), scarcely or not at all punctate beneath.

Jacquin's plate of *Bigonia variabilis* shows a flower with a much larger calyx and corolla agreeing well with material from Costa Rica, Colombia and Trinidad. The fruit of *P. variabilis* as thus understood is a short and broad, linear-oblong capsule, the valves being less than 20 cm. long and 1,5-2,4 cm. broad. On the other hand, the fruit of *P. Clematis,* judging from *Pittier* 11437 from El Sombrero, Guárico, Venezuela, is a narrowly elongate-linear capsule, the valves being nearly 35 cm. long and 8,5-12 mm. broad. On the evidence both of scientific characters and of distribution it appears reasonable to separate *P. Clematis* (including *P. chondrogona*) as a distinct species from *P. variabilis.*

Jacaranda n° 2, **Jacaranda obtusifolia** Humb. et Bonpl. Pl. Aequin. i. 62, t. 18 (1805); H. B. K. p. 145; DC. *Pordr.* ix. 228; *Fl. Bras.* p. 387.

According to Schumann this species is not to be found either in the Berlin or the Paris Herbarium, but the type, Bonpland 824 from Carichana, Venezuela, was seen at Paris in Jan. 1937. The material consists of fragments, several corollas, one calyx, two leaf-rhaches and a single leaflet. The leaf-rhaches are densely pubescent and not definitely winged. The leaflet is pubescent all over both surfaces, thick with revolute margins and the nerves impressed above, mutilated at the apex. The calyx is about 2 mm. long, with broadly deltoid-acute teeth, very sparsely puberulous outside. The corolla is sigmoid at the base, glabrous outside, up to about 4 cm. long; the limb is 3-3.5 cm. in diameter and pilose within. The staminode is densely pilose

near and above the middle for some distance, otherwise glabrous (unless the hairs have fallen or have been rubbed off towards the apex).

Not precisely matched with other material from the Orinoco or elsewhere, but Sprague 11, from Cabuyaro, Rio Meta, must approach *J. obtusifolia* very closely. It should be possible, by the aid of further collecting of « Arbol Roseto » near the type locality on the Orinoco and by comparison with the plate and description in Humboldt and Bonpland's *Plantae Aequinoctiales,* to clear up the identity of this species and its relationship with *J. rhombifolia* G. F. W. Mey. of Guiana.

Spathodea n° 2, **Spathodea orinocensis** H. B. K. p. 147 (♀ = *Phryganocydia corymbosa* (Vent.) Bur.) and n° 4, *S. fraxinifolia* H. B. K. p. 147 (♀ = *Memora* sp.).

The Venezuelan types of these two species were not seen at Paris in 1937, but are doubtless to be found in the *Bignoniaceae* of the herbier général. Neither was mentioned in the *Flora Brasiliensis,* but De Candolle saw *S. fraxinifolia* at Paris, see *Prodr.* ix. 207.

(Royal Botanic Gardens, Kew.)