

On the characters and relationships of the genus *Monopteryx* Spruce*

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(WITH TWO TEXT FIGURES)

The name *Monopteryx* was applied by Spruce to a papilionaceous tree of the upper Río Negro, in the forest region along the boundary between Brazil and Venezuela. The name evidently refers to the broadly developed upper pair of calyx teeth, which completely enclose the floral bud and are conspicuous in the open flower. In the notes on Spruce's travels, edited by the late Alfred Russell Wallace, there are two references to this genus: The first, accompanied by a well-drawn sketch, gives the size of *M. angustifolia* Spruce and describes its strongly developed buttresses, for which the native name "sapopema," i. e. flat root, is proposed;† the second assigns the other species, *M. Uaucu* Spruce, to a place among the oil-yielding trees of Equatorial America.

The first diagnosis of the genus, accompanied by description of the two species, was given by Bentham in Martius' *Flora Brasiliensis*.‡

The main generic characters were found in the short, sub-bipartite calyx, with large upper lip formed by the union of the two anterior lobes, and in the almost obsolete lower lip, entire or obscurely tridentate, and exterior in the bud. Furthermore the petals were stated to be sessile and almost equal in length to the calyx, and the ten stamens to be free, with basifixed anthers. The stipitate ovary, surmounted by a short style, was described as uniovulate and the ovule as anatropous. Bentham supposed that the unknown legume was drupaceous, because the other affinities were with *Dipteryx*, notwithstanding which he placed the genus among the Sophoreae.

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† Notes of a Botanist on the Amazon & Andes 1: 20-23; 335, f. 29; 480 (concerning "sapopemas"). London. 1908.

‡ 15¹: 307-309. pl. 122. 1862.

Among the plants collected by myself in Venezuela in 1913 there are specimens of flowers and fruits of a tree which undoubtedly belongs to Spruce's genus, but the study of this material shows clearly that Bentham's characterization of *Monopteryx* was drawn from immature flowers. It is indeed a very well-known fact that in most, if not in all, papilionaceous flowers the stamens are free in the bud. Moreover, the drawings of the other floral details in the plate referred to above give an impression of imperfect condition of the several parts, such as it is found when dissecting undeveloped flowers. In my Venezuelan specimens I found free stamens, sessile petals, etc. in alabastra on the point of opening, but the mature flowers (FIG. 1) showed very different characters.

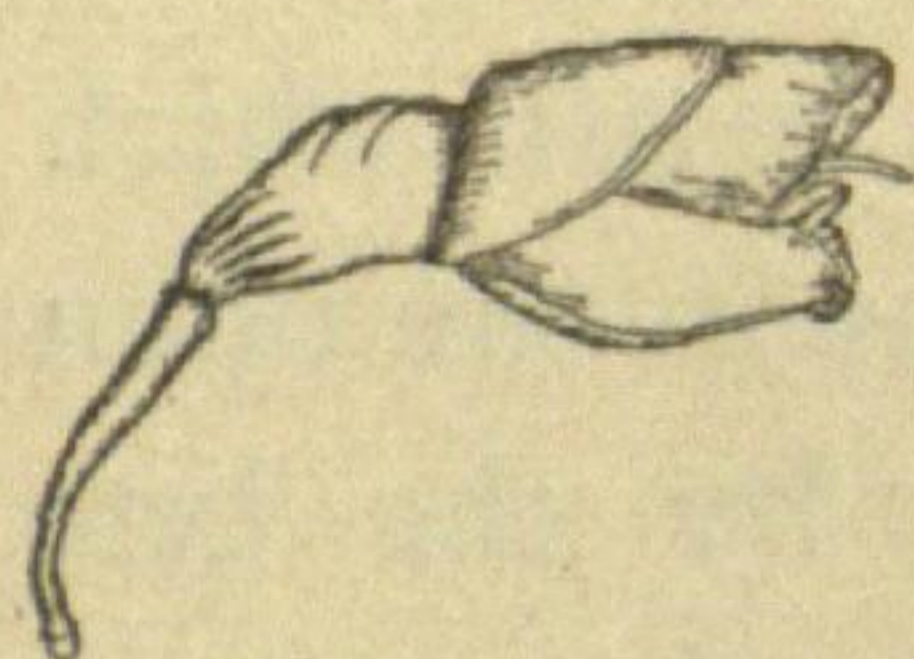


FIG. 1. MONOPTERYX JAHNII Pittier. Flower. Natural size.

In the calyx (FIG. 2, *a*) no traces of the three inferior lobules are found, a detail which, however, does not necessarily contradict the observations made upon the other two species. But the petals (FIG. 2, *b*), more than twice as long as the calyx, are perfectly developed, the wings and carinal petals having claws about 2.5 mm. long and well-developed auricles. The ten stamens (FIG. 2, *c*) are united into a tube 6 mm. long, slit only at the base, and the carinal stamen is longer than the others; the anthers (FIG. 2, *c'*, *c''*), bicuspidate at base and tip, are dorsifixed; the short-stipitate ovary (FIG. 2, *d*) is just as often two- as one-ovulate; and the style is much more developed than the drawings in Bentham's plate would lead one to expect.

With reference to the fruit, there is a puzzling detail in the fact that Spruce stated that oil and a cheese-like substance were extracted from it. Considering the similarity in all structural particulars of the flowers of the Venezuelan tree and those of the two species known heretofore, they must necessarily be considered as congeneric; but on the other hand it is not readily seen how the small seeds of the former could attract the attention of the aborigines as an oil producer.

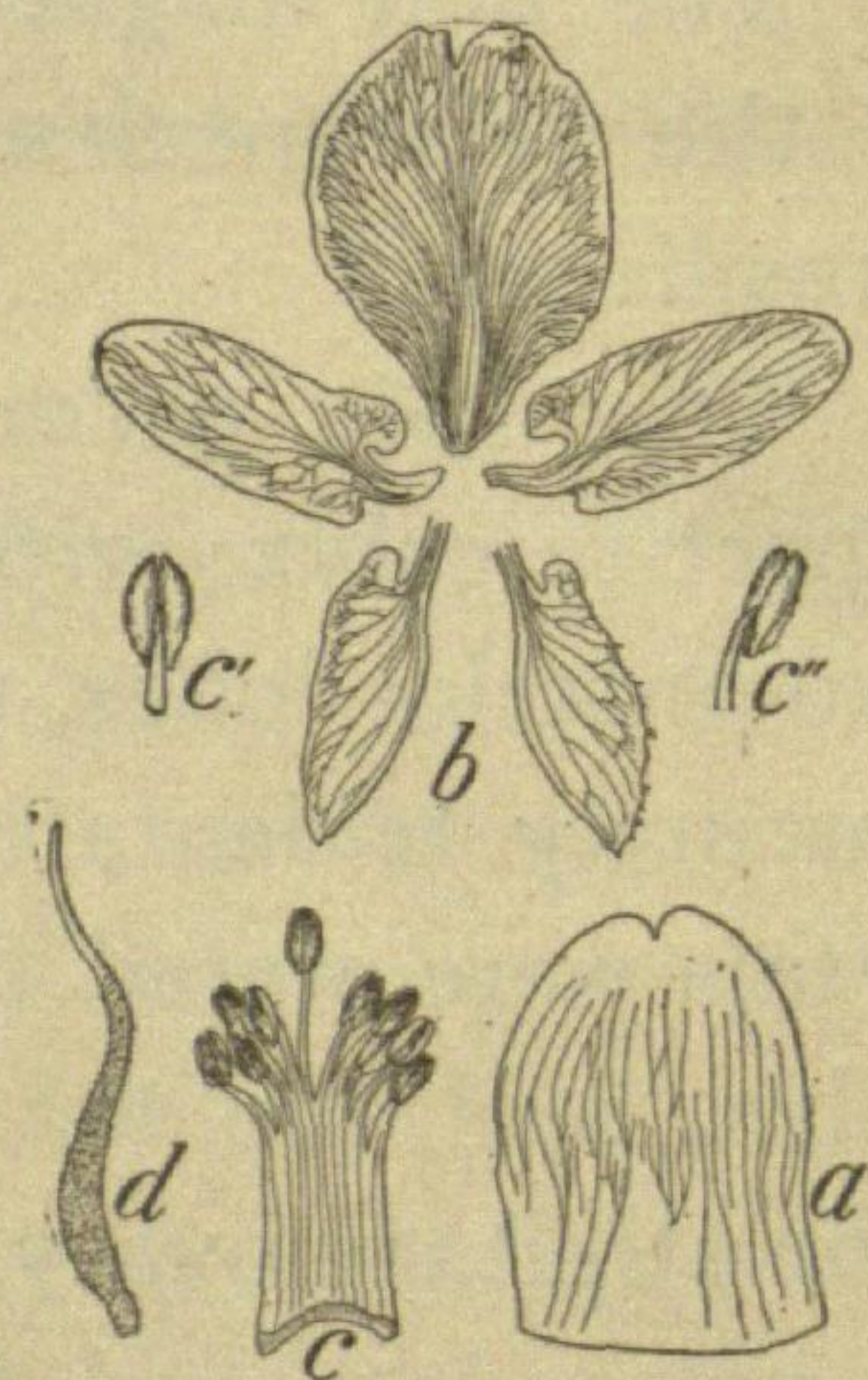


FIG. 2. MONOPTERYX JAHNII Pittier. *a*. Calyx split open. *b*. Petals. *c*. Staminal tube split open. *c'*. Stamen from the back. *c''*. Stamen from the side. *d*. Pistil. All natural size.

I should not be surprised, indeed, if the name *uacu* or *uaucu* had been misapplied, when used to designate a species of *Monopteryx*.

The fruits of the Venezuelan specimens are very much like those of all *Pterocarpus* species, the wing embracing the whole pod from its base to the end of the style, which, however, is on the median line and does not project outside the margin of the wing as in that genus. Besides, the seeds are apparently always single on the median line of the pod, while in *Pterocarpus* they are either single or in pairs, enclosed in a more or less orbicular pod, central to the wing.

In examining the leaves of my specimens I found on the main rachis, between the insertion of the lateral leaflets and at the base of the terminal leaflets, traces of glandular formations as mentioned by Bentham. In *M. angustifolia* the leaflets are distinctly alternate, whereas they are subopposite in my specimens; in *M. Uaucu* they are trifoliolate, and said to be opposite in the basal pair.

In the absence of the fruit and of perfectly developed stamens, the peculiar structure of the calyx as described above would justify the placing of the genus *Monopteryx* in the Geoffraeinae, with *Coumarouna* and *Pterodon*, with the difference that in the former the two broadly developed lobules are adnate. But with our present knowledge we are able to place it definitely in the Pterocarpinae and next to *Pterocarpus*.

The Venezuelan plant collected by me differs from both the species discovered by Spruce in several characters, for which reason it must be considered as new. From *Monopteryx angustifolia* it departs in having a larger number of leaflets (thirteen instead of nine), in the greater development of the inflorescence, and in the total absence of the three inferior teeth of the calyx. *Monopteryx Uaucu* is clearly differentiated by its three-foliolate leaves.

Following are the emended characteristics of the genus *Monopteryx* and a description of the new species, *M. Jahni*.

MONOPTERYX Spruce em.

Calyx turbinatus, tubo breve subbipartito; labium superius (e laciniis 2 alte connatis) maximum, complicatum, emarginatum, florem ante anthesin includens, inferius obsoletum vel (e laciniis

3 connatis) aestivatione exterius, breve, acutum, integrum vel obscure tridentatum. Corolla papilionacea; petala unguiculata, calycis labium superius valde superantia. Vexillum obovatum vel suborbiculatum, emarginatum. Alae oblongo-cultriformes, biauriculatae, vexillo breviores. Carina subfalcata, vexillo brevior, petalis carinalibus dorso superne cohaerentibus. Stamina 10, monadelphia, inaequalia; antherae ovato-oblongae, dorso affixae, versatiles. Ovarium breve stipitatum, 1-2-ovulatum, stylo glabro, leviter arcuato, sub apice hinc stigmatoso. Legumen fusiforme, indehiscens, circumcirca late elliptico-alatum. Semen solitarium, depressum, elongato-naviculiforme, funiculo brevissimo.

Arbores Americae aequinoctialis, foliis alternis impari-pinnatis, foliolis coriaceis, petiolo inter foliola glandulifero. Racemi ad apices ramulorum paniculas laxas floribundas at parum ramosas formantes.

Genus *Pterocarpo* simile, sed differt calyce bipartito, labio superiore valde evoluto, inferiore obsoleto vel inconspicuo, et legumine fusiformi elliptico-alato nec orbiculato. Species 3, Brasiliae borealis et Venezuelae.

Monopteryx Jahonii Pittier, sp. nov.

Coma elongata, ramulis cano-pubescentibus, foliis 11-13-foliolatis, rhachide pilosulo longitudinaliter striato inter foliola glandulifero, foliolis alternis vel suboppositis, ovato-vel elliptico-acuminatis, basi rotundatis, acumine apiculatis, supra glabris subtus pallidioribus pilosulisque, petiolulis cano-pubescentibus, racemis simplicibus ad apicem ramulorum late paniculatis, rhachidibus pedicellisque leviter rufo-pubescentibus, bracteis delapsis, bracteolis ovato-acutis hirsutis caducissimis, ad basin et medium solitariis, ad calycem 2 oppositis suffultis, floribus longe pedicellatis, calyce minute rufo-pubescente, basi turbinato, labio superiore late evoluto emarginato, inferiore nullo, vexillo breve lateque unguiculato, emarginato, calyce multo longiore, glabro, ambito pallide roseo-flavido basi supra unguem macula purpurea notato, alis longe unguiculatis, cultriformibus, basi biauriculatis apice late rotundatis vexillo subaequantibus, carina subfalcata, petalis auriculatis longe unguiculatis alis angustioribus, margine superiore minute lanato-villoso, staminibus 10 monadelphis, inferiore superioribus longiore, ovario breve stipitato, 1-2-ovulato, villosa, stilo glabro apice truncato, legumine longe pedicellato, basi attenuato, late elliptico-alato, utrinque pubescente, semine depresso, anguste elongato, naviculiforme.

Arbor parva, decidua, 8-10-metralis, coma oblonga. Petiolus communis 19-25 cm. longa; foliola 6-11.5 cm. longa, 2.5-4.5 cm. lata; petioluli 4 mm. longi. Racemi usque ad 30 cm. longi, floribundi; pedicelli 8-9 mm. longi; calycis tubum circa 5 mm. longum, labio superiore 9 mm. longo; vexillum 13.5 mm. longum, 9.5 mm. latum; alae roseo-flavae, margine superiore paulo sinuata, 9 mm. longae, 3.5-3.8 mm. latae; stamina glabra 9-13 mm. longa; pistillum 17-18 mm. longum. Legumen (an maturum?) 5.5 cm. longum, 2.7 cm. latum.

VENEZUELA: Cárdenas Farm, Siquire Valley, State of Miranda, at an altitude of about 500 m., flowers and fruits, March 24, 1913. (*H. Pittier 6005*, type; U. S. Nat. Herb. Nos. 601729, 30).

I have named this species for my friend Dr. Alfred Jahn, a distinguished explorer, engineer, and botanist of Venezuela. Its local vernacular name is *tasajo*, a word used also to designate salt beef dried in the sun.

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