A REVISION OF HANCORNIA

(APOCYNACEAE) [1]

By JOSEPH MONACHINO

RESUMEN

Revisión de Hancornia. — El autor considera sistemáticamente este género monoespecífico y sus relaciones con los afines, historiando el origen de la sinonimia actual del mismo y de las variedades que comprende.

Este árbol que habita en Brasil y Paraguay es conocido especialmente con el nombre de « mangabeira » y tiene importancia como fuente secundaria de provisión de goma elástica.

INTRODUCTION

Conspectus. — In this article an attempt is made to summarize all the important taxonomic information concerning the species and varieties of *Hancornia*, whereas all outstanding non-taxonomic references are at least included in the bibliography. The history and synonymy are complete, and all the names dealing with the genus are accounted for. The monospecific status of *Hancornia* is accepted; although no final disposition of the subspecific elements is advanced, the case for varietal treatment in the species is presented in full.

Literature. — There have been published numerous good ta-

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xonomic descriptions of *Hancornia* [1] dating back from the original one by Gomes, and available in such standard works as those of De Candolle (14), Bentham (6), Mueller (65), Schumann (86), the most complete and best treatment of the genus with its single species and several varieties being that of Mueller in *Flora Brasiliensis*. Here Mueller cites 27 collections, including the type collections of every known variety except *cuyabensis*, distributed from Rio de Janeiro and São Paulo to Minas Geraes, Goyaz, Bahia, and Pernambuco. In contrast to this, the author of the present paper has examined 22 collections (of which 3 are probably duplicates) limited to the type collections of only the varieties *Gardneri* and *cuyabensis*, but covering a somewhat larger area.

The account of the Mangaiba given by Piso (71) and Marggraf (56) in 1648 is excellent for their time (Esenbeck and Martius state concerning it: «*Icon satis bona, descriptio elegantissima !* »); yet, its chief interest is historical. The earliest available reference to the Mangabeira, however, is that by Soares de Sousa in his *Tratado Descriptivo do Brasil* em 1587.

The illustrations of the species are also ample, four of the best being the botanical analyses appearing in *Flora brasiliensis,* Gomes' *Observationum Botanico-Medicarum*, Warburg's *Die Kautschukpflanzen und ihre Kultur*, and the field photo of the tree in *Vegetationsbilder*. Schery (85) presents a good photo of the bark ; Travares (92), of leafy branches with fruits in natural size. *H. speciosa* var. *Gardneri* is well illustrated in *Sertum Plantarum*. A distribution map of the species in Matto Grosso is appended to Hoehne's *Phytophysionomia* (30).

Ule (94), Warburg (100), and Reintgen (78) discuss the tapping of the tree and the commercial angle in its exploitation for rubber. G. d'Utra gives an excellent general account of the plant in his *A Mangabeira e sua Cultura*. His article includes chapters on the distribution of the Mangabeira, the species and varieties, botanical description, vegetation and reproduction, soil prefe-

[1] The genus is so well known that it has found a place in *The Century Dictionary and Cyclopedia* (1899). It was named in honor of Philip Hancorne, concerning whom see Gomes (25, p. 51) or Britten (9, p. 249).

rences, transplanting, the establishment of Mangabeiraes, the latex, its coagulation, yield per tree, and the rubber, its yield, treatment and price. H. Potel, in *Borracha de Leite de Mangabeira,* deals with the coagulation, processing, and properties of its latex and rubber. A short notice on the wood structure of the species is given by Record (**77**).

Several other authors that deserve special mention for their contributions to the literature of *Hancornia* are: Traveres, Foulquier, *Kew Royal Gardens* (**42**. An English translation of Warburg's article is given here), Morris, and Jumelle. Uphof's mimeographed article is the latest to appear on the subject. The scattered information presented by Huber in the *Boletim* is of importance for records of the distribution of Mangabeira in Pará.

At the end of the present paper is appended a bibliography of 103 entries wherein, although an attempt is made to include all the important articles on *Hancornia*, no suggestion of bibliographical completeness is admitted, the numerous citations of minor references being merely of those that were encountered during the research on the genus rather than the result of a direct effort for an exhaustive catalogue. Several authors whose works were not available to me were omitted; e. g., Claussen (see *The Bradley Bibliography*) Pekolt and Girard (see Wehmer).

Uses. — The principal economic importance of *Hancornia* is as a source of secondary rubber. Warburg (**100**, p. 109) writes that there is a considerable probability of it becoming a very important tree in rubber culture; however, there is no reliable experimental evidence of this, and the tree has never been successfully cultivated outside of South America. Reference to the elastic gum obtainable from the latex was made by Gomes as early as 1803. The amount of Mangabeira Caoutchouc export has been of a highly fluctuating character; the production has never exceeded 1000 tons per year, although in 1942 as many as seven companies were concerned with it in Bahia. The rubber is produced in all Brazil outside of the state of Amazonas, south of the Amazon river and north of the state of Paraná, the greatest production (according to Morris) being in Minas Geraes and Goyaz. *Hancornia* is not tapped in the lower Amazon, and it is exploited only in a relatively small quantity in the area

near the junction of Tocantins and Araguaya Rivers (according to Coudreau the industry of Mangabeira rubber extraction here had a considerable importance); in the Matto Grosso it is worked only in the south, outside of the Hevea regions. It is reported exploited in a primitive way in Villa San Pedro, Paraguay.

The excellent palatable character of the mature Mangabeira fruits is dwelt upon by Gabriel Soares de Sousa in his *Tratado Descriptivo do Brasil* em 1587, as well as by numerous other authors since. The Mangába is described as aromatically delicious and one of the best fruits in Brazil, eagerly sought by man as well as by deer and other animals. That the fruit be mature before being served is emphasized (Pinto notes how the green fruit is poisonous and if eaten produces an intoxication which might result in death); Piso and Marggraf state the fruit matures only after it has fallen off spontaneously from the tree. Arruda speaks of the Mangabeira fruits being sold in the markets of Pernambuco and Bahia; Huber reports they are greatly appreciated in the markets of Belém. The Mangába is eaten plain or in sugar, and is used to prepare conserves and confitures; a drink is made from it (Huber writes that it is much sought for concocting sherbet in Pará), and if pounded it ferments to make a good vinegar. Some claim the fruit is somewhat astringent; others, that when green it is applied for healing ruptures. Martius writes that a cautious administration of a bark-extract of Mangabeira Brava is an excellent remedy against obstructions of the vicera, particularly the liver, and against jaundice and chronic skin disease. The inner bark is claimed to be an emetic; the root-bark, purgative, and used for uterine disturbances and to induce menstruation. In medicine, the latex is used in pulmonary afflictions and herpetic diseases, as well as to hinder internal abscesses; in industry, locally, to manufacture, varnish. The wood is employed in joinery, and to make wheels and pulleys; it is very easily worked, finishing smoothly, but has no possibilities for export.

Local names. — The vernacular names given to *Hancornia* in Brazil are generally « Mangabeira », for the tree, and « Mangába », for the fruit, the two names being sometimes used interchangeably. Some varients of these nouns are: « Mangabiba »,

« Mangaiba », « Mangareiba », « Mangava », « Mangauva », « Manguba ». Often, the sustantive Mangabeira is qualified by an adjective indicating the habitat of the plant or the variety of the species : « Mangabeira (or Mangaba) Agreste », « M. Brava », « M. (or Mangabinha) das Catingas », « M. do Norte », « M. Mansa », « M. Ova », « M. Rana ». The Tupi name the plant *Tembiù-catù*, and it is reported that the Guaraní (Paraguay) call it *Manga-icé* ; Pinto writes that in Sergipe the Mangaba is called *Fructo de Doente. Mangabeira Branca* and *M. Vermelha* may refer to the seasonal foliage color of the plant. The rubber obtained from *Hancornia* is referred to as *Borracha de Mangabeira*, or reference is made in literature to the geographical source of the product by such terms : *Caoutchouc de Bahia, C. de Ceará, C. de Paraguay, C. de Pernambuc* (or *Pernambuco*), *Pernambuco Caoutchouc* (or *Rubber*), and *Pernambuco Biscuits.*

Abbreviations of herbaria and acknowledgments. — No place of deposit is generally indicated when a particular collection is represented in the Britton Herbarium at the New York Botanical Garden. Otherwisse the depository is thus abbreviated : A, Arnold Arboretum, Jamaica Plain ; F, Field Museum of Natural History, Chicago ; G, Gray Herbarium, Cambridge ; M, Missouri Botanical Garden, St. Louis ; NY, New York Botanical Garden, New York ; US, U. S. National Herbarium, Washington. Acknowledgment is here made to the directors and curators of the institutions listed for their generous loans of herbarium material, and my particular gratitude is expressed for the aid rendered to me by Mr, B. A. Krukoff, Miss E. C. Hall, and Drs. H. A. Gleason and H. N. Moldenke.

SYSTEMATIC TREATMENT

Hancornia Gomes, *Obs. Bot. Med. Pl. Bras.* **2** : 1. pl. 1. 1803, *Mem. Acad. Scienc. Lisboa* (Mem. Corresp.) **3** : 51. pl. 1. 1812.

Ribeirea Arruda, *Discurso Sobre a Utilidad da Instituição de Jardins nas principaes Provincias do Brazil* 57. 1810 ; in Koster, *Trav. Braz.* 499. 1816. — non *Ribeirea* F. Allem. *Trab. Comm. Sc. Expl. Bot. Rio de Janeiro* 29, 39. 1864.

Mangaiba Pisonis, *De Fac. Simpl.* Lib. IV, in *Hist. Nat. Bras.* 76. 1648.

Mangaiba Marcgr., *Hist. Plant.* Lib. III, in *Hist. Nat. Bras.* 121. 1648.

Mangabiba Marcgr., *loc. cit.*

Belonging to the tribe *Carisseae* (**6**) and comprising a single species. Small unarmed trees of slow growth, with usually broad dense crown and drooping branches, 4-7 m high, reported as low as 3,5 m and as tall as 15 m, and about 2-5 m broad at the crown, sometimes broader than high, the trunk usually one, tortuose or straight, 0,2-0,3 (-0,6) m diam., the bark about 1 cm thick, rough, cracked, corky, colored brownish or greyish, the whitish, bluish, or reddish tinged latex abundant (the yield as much as 11 lbs. per tree at the end of $^1/_4$-$^1/_2$ hr. of tapping), with a high content of rubber (reported 57-80 %); branches roughened, grey, the branchlets slender, 1-3 mm diam., irregularly grooved, brownish and somewhat speckled, glabrous to densely pubescent with spreading greyish hairs, the nodes thickened, marked with an interpetiolar line, the vegetative axillary buds inconspicuous; leaves opposite, essentially uniformly spaced, generally deciduous [1], the petioles 3-15 mm long, glabrous or pubescent, with minute axillary glands or processes, the blades broadly to narrowly elliptic or oblanceolate, 3,5-10 cm long and 1,5-5 cm broad, rounded or broadly cuneate to acute at base, usually abruptly short-acuminate at apex, the acumen blunt, up to 5 mm long, the leaf-margins flattened or becoming inrolled, the tissue subcoriaceous, the upper surface dull to subnitidous, sometimes stained rose-chestnut or yellow [2], the under surface pale, obscurely granular, entirely glabrous to pubescent, the midrib impressed on upper surface and raised on lower surface, the principal secondaries (secondary or lateral veins) characteristic, numerous and close, 30-70 pairs with an average distance of 1-2 mm apart near middle, impressed on upper surface of young leaves, becoming slightly raised, raised on under surface, straight and parallel, not frequently branched, diver-

[1] Ule (**95** ; **94**, p. 41) reports *H. speciosa* as evergreen.

[2] D'Utra (**97**, p, 519) refers to Fritz Noack's observation that these stains are always associated with a fungus, *Cercospora Hancorniae*, which in described in detail.

ging from midrib slightly upward from a right angle, connected at leaf-margins, the minor secondaries in between principal ones sometimes evident, the tertiaries infrequent and irregular; *inflorescences* dischasial, terminal, few flowered (1-5 flowered), glabrous to densely hirtellous, the peduncles up to 5 mm long or completely reduced, single or paired, bracted with reduced leaves, the pedicels up to 11 mm long, striate; *calix* (1-) 2-3 (-4) mm diam. below lobes, obtuse or rounded at base, the calyx-tube very short, the calyx-lobes quincuncial, ovate to broadly oblong, 1-2,3 mm broad and (1-) 2-3 mm long, rounded to obtuse or acute at apex, rounded at base, glabrous to densely hirtellous outside, glabrous inside, ciliate, flattened or slightly keeled, not thick (veins showing by transmitted light), without glands within, persistent; *corolla* evolving with the new leaves (fide Warming), funnel-hypocrateriform, white or yellowish, fragrant, the corolla-tube 2,2-3,5 cm long and 1,5-4 mm diam., gradually dilated toward apex, swollen at region of stamens and somewhat constricted at throat, glabrous or pubescent toward upper portion outside, pilose inside with linear hairs from about middle to throat, the corolla-lobes more or less elliptic-oblong, asymetrical, sinistrorsely contorted (viewed externally), slightly if at all twisted, (6-) 12-24 mm long and 3-5 mm broad, glabrous or pubescent outside, sparsely pubescent inside and microscopically papillose at base, ciliate, not thick (veins showing by transmitted light), spreading at maturity; *stamens* inserted at $^1/_8$-$^1/_4$ down from throat of corolla-tube, the filaments evident, 0,8-1,6 mm long, linear-flattened, usually pilose introrsely, the anthers narrowly lanceolate-oblong, 2,3-3,4 mm long, extending into a sharp, straight or slightly bent, non-polleniferous appendage or acumen (0,31-0,48 mm long) at apex, otherwise polleniferous the entire length; *ovary* syncarpous, superior, ovate, generally about 1,5 mm long, sometimes faintly sulcate, without disk or glands, conical and grading into style at apex, entirely glabrous to conspicuously pubescent with erect hairs toward apex, unilocular, the placentas [1] two, each on cross section the shape of a T ovu-

[1] Essentially as in species of *Couma, Lacmellea,* and *Ambelania.* See author's treatment of these genera in *Lloydia,* vols. **6**, n° 4, **7**, n° 4, and ined.

late at the ends and parietal-facing sides of the expansion or cross-arm, the ovules numerous, in about 10 series; *style* long and filiform, at maturity reaching up to about location of anthers, (1,2-) 2 (-3) cm long, glabrous, the thickened apex or clavuncle (*sensu* Miers, **60**, pp. 2, 3) cylindric, 1,2-2 mm long and 0,6-0,8 mm diam., seen on cross-section to be composed of radiating densely compact strands, bearded with circles of hairs at base and summit, the stigma-apiculi two, rather blunt and short, 0,31-0,63 long, microscopically papillose; *fruit* a berry (edible at maturity), rounded or oval, approx. 2-5 cm diam., yellowish colored and marked with red spots or streaks, sometimes pubescent (*fide* D'Utra, **97**, p. 520), aromatic (*fide* Pinto, D'Utra, Moraes), pulp yellowish; seeds of short vitality (12-15 days, *fide* Barretto), 1-6 developing, flattened and oval, about 1 cm long, the hilum small, located near center; embryo about length of seed, the cotyledons oval, rounded at apex, large, the radicle cylindric, small: $^1/_3$-$^1/_5$ the length of cotyledons, the albumen abundant.

Type species: *Hancornia speciosa* Gomes.

Ribeirea Arruda is placed in *Rosaceae* by Dalla Torre et Harms, and questionably in this family by Post et Kuntze in *Lexicon,* Jackson in *Index Kewensis*, and Willis in *Flowering Plants and Ferns;* on the other hand, Martius, Mueller, Miers, D'Utra, and Durand et Jackson in the 1st Supplement of *Index Kewensis* place it in synonymy of *Hancornia*, and this identification is stated by J. Britten (**9**) to be clearly correct. All available evidence, the common name of the tree, its well-known character in Pernambuco, Bahia, and Rio Grande do Norte, its habitat, and particularly the description of its fruit (consistency, size, and greenish-yellow color spotted with red), suggests *Hancornia.* Arruda states that the plant is cultivated in considerable quantity in the environs of Olinda; Gardner (**23**) reports *H. speciosa* as growing very plentifully in the neighborhood of this town. The remark made by Arruda on the stricking phenomenon of fructification of his Mangabeira recalls the statement by Piso, Marggraf, and Gardner (**22**) regarding the fruits of Mangabeira maturing only after falling to the ground. (It is obvius, however, that Arruda's observa-

tion on fructification may have nothing to do with the maturity habit of the fruits).

The date generally cited for the publication of *Hancornia* is 1812. If this were the correct year of its first publication, the establishment of the genus *Ribeirea* in 1810 would have priority over *Hancornia*. Fortunately, however, as James Britten (**9**) first asserted, Gomes' article was originally published independently in 1803 and was subsequently reprinted in the *Memorias*. The *British Museum Catalogue of Printed Books* gives the year 1803 for the publication date of Gomes' *Observ. Bot. Med.*

« Mangaba » and « Mangaiba » were published as monomials antedating the *Species Plantarum of Linnaeus,* and consequently have nomenclaturally none other than a historical interest. These names have been accepted as referring to *Hancornia* by Gomes, G. Don, E. Spach, Martius, Endlicher, De Candolle, M. R. Schomburgk, Lindley, Mueller, Collins, Baillon. Their original illustrated descriptions leave no doubt as to the correctness of this identity.

Saint-Hilaire merges *Hancornia* with *Carissa*, and Martius suggests that the genus more correctly belongs with *Willughbeia*. For my statements on these transfers see the discussions under *H. speciosa* and *H. speciosa* var. *pubescens*.

Hanconia [1] should be placed next to *Parahancornia,* as first implied by Duke (**16**, p. 242); Huber originally described *Parahancornia Amapa* as a species of *Hancornia*. Baillon (**4**, pp. 148, 177) suggests a position for it in the « sous-série Vahéées » and states than its flowers are almost like those of *Couma*.

Nees and Martius, in describing *H. pubescens*, were the first botanists to recognize more than one species of *Hancornia*. A. De Candolle in *Prodromus* lists three species in the genus, one of which, *H. laxa,* is an *Ambelania*. Under *H. speciosa*, the first

[1] A. De Candolle (**14**, p. 326) notes his genus *Winchia* as perhaps not satisfactorily different from *Hancornia*. However, its description in *Prodromus* and illustration in Delessert, *Ic. Pl.* **5**. t. 46 (1846) show *Winchia* to have many flowered paniculate inflorescences and short-tubed corollas, as well as leaves in whorls of 3 and a scandent habit, which distinguish it easily from *Hancornia*. The genus is reported to have but a single species, *W. calophyllum* A. DC., described from Martaban, Burma.

species in his treatment, he named two varieties, and under the second, *H. pubescens,* one doubtful variety. Miers refers to Mueller's « uniting the different species as mere varieties of a single one » and adds « but I make out three distinct species », listing them as *H. speciosa, H. pubescens,* and *H. Gardneri.* Of the plants of *Hancornia* seen by him, he cites only Claussen 222, under *H. pubescens ;* and this collection I exclude from anywhere near *Hancornia*, identifying it in the *Malpighiaceae. H. fluminensis*, published without diagnosis by Glaziou, is a *Skytanthus.* Saint-Hilaire (82) notes that there are two species of Mangabeira, *H. speciosa* and *H. pubescens*, which although having the greatest resemblance to each other should be distinguished by botanists. These two species are accepted by Pinto. Barreto (5, p. 116) mentions three species, the well known *H. speciosa,* another without specific epithet, and a third as *H. Barrettoi*, without diagnosis. D'Utra (97, p. 517) is rather vague regarding the entities he has in mind, but gives an impression that he considers there are more than one in *Hancornia.* He writes that the common Mangabeira is *H. speciosa* of Muell. Arg., which is not to be confused with *H. speciosa* of Gomes, the latter being the *H. minor* of Muell. Arg., and these should not be mistaken for *H. speciosa* of Nees et Mart., which is the species given the name *H. Maximiliani* by Alph. de Candolle. D'Ultra summarizes these statements by adding that all three species exist in the north of Brazil. He continues by crediting *H. floribunda* [which is a *Lacmellea*] as being the most abundant species in Peru and *H. Lundii* in Minas, Goyaz, and Bahia ; he says that *H. pubescens* appears to be a variety of *H. Gardneri,* whereas some botanists suppose the two to be identical. In Paraguay, he claims, there is an undetermined species which seems to differ from the others known. Moraes, interpreting the information given by Pinto, treats *Hancornia* under three names, « Mangabeira », « M. Agreste » (with non-edible fruits), and « M. Brava » (*H. pubescens*). Huber (36, p. 404) surmises that it does not seem impossible to him that within the multitude of varieties observed in *H. speciosa* there might truly be one or another which after a profound study will be found worthy of specific segregation. Some « Mangabeira » latex-tappers,

it is reported, who have dealt with *Hancornia* in coastal Maranhão and also in highland Minas Geraes do not recognize the plants from the two regions as being the same. Bentham and Schumann note under *Hancornia* only one species. Jumelle (**40**) states explicitly that the genus consists of one species, the other entities being forms. Warburg, Chodat, Ule, and Hoehne do not refer to varieties of *H. speciosa ;* Glaziou reports collecting var. *pubescens* ; Malme not only recognized varieties in the species but also described one, while Markgraf described a *forma* of a variety. Malme (**54**) notes that *H. speciosa* is a very variable species. In reference to the varieties of the single species of *Hancornia,* Mueller affirms *H. speciosa* as being very variable, and that its varieties all integrade : « *gradatim micro-macrophyllae, psilo-trichophyllae, longi-brevipetiolatae* ». Nor could the author of the present paper discover in the genus any non-overlapping segregates or consistent characters or coherent morphological relationships of any kind. Striking indeed is the contrast presented by the small leaved, long petioled, glabrous or glabrescent typical variety against the large broad leaved very short petioled, densely hairy var. *pubescens.* But these two extremes are intimately connected in every way by a long line of gradients. Equally provocative is the difference observed in the ovaries of some plants in the study of the internal structure of the flowers ; some were found to be entirely glabrous, whereas others conspicuously densely silvery pubescent on the upper part. But here again, the same plant was found to have ovaries either entirely glabrous or sparsely hairy, and another collection appearing similar in all other respects was seen to have a densely pubescent ovary ; nor could this ovary character be linked with any other feature. Every single character adduced for delimiting varieties in *H. speciosa* has resulted in disappointment, and any rigid concept adopted for the infra-specific elements here must prove both arbitrary and untenable. A. De Candolle characterizes his var. *Maximiliani* (which Nees et Martius treated as straight *H. speciosa*) : « *antherae apice longe subulatae et contortae* », and var. *Lundii* : « *antherae acutae, non contortae* » ; contrariwise and correctly, Mueller, under the former variety (in addition to commenting about the

occurance of intermediate forms between it and his var. *minor*) wrote: «*antherae hujus sunt omnino speciei*». After var. *Maximiliani* Mueller lists *stenophylla,* which he is not willing to credit as a new variety bearing his name, but which he links in some respects with var. *Lundii* (Gardner 1064, considered by De Candolle as a cotype of his var. *Lundii,* is placed with the typical by Mueller). Mueller describes var. *Gardneri* with pubescent branchlets and petioles; Markgraf published a *forma* of this variety with its parts entirely glabrous. De Candolle considered var. *Gardneri* as only doubtfully varietal of *H. pubescens.* Malme at first described his var. *cuyabensis* under *H. speciosa,* merely remarking it was like var. *minor* Muell. Arg. [the typical var.] in leaf size but differed from it strongly in the shorter petioles; similarly, under the species in *Bull. Herb. Bois.,* he cites Hassler 5358 [which belongs with var. *cuyabensis*] merely noting that it approaches var. *minor* but differs in the larger leaves and shorter petioles.

Notwithstanding the strong arguments against giving any rigid status to the numerous varieties of *H. speciosa,* it is conceivable that a very large collection of their representatives from the entire area of distribution coupled with an intensive field study, will discover good geographical forms or races which might maintain an important standing; regardless, a complete submergence of all the varieties into a single entity is an extremist attitude which should be avoided. Even from the meager material available to me, for example, it is suggested that the typical variety covers generally the Rio de Janeiro — Pernambuco sector of Brazil, var. *cuyabensis* the western limits of Matto Grosso — Paraguay, and the *pubescens - Gardneri - Lundii* variety-complex inhabits the central elevated regions of Goyaz and Minas Geraes. But it should be noted that these varieties do not adhere strictly to the regions given, nor are they without intermixtures of other elements. Also a different alignment and evaluation of the known varieties might soon become desirable; for example, the vars. *pubescens* and *Gardneri* may find an infravarietal rank beneath var. *Lundii,* if not fall (as they probably will) into strict synonymy under it. The decisions, however, are beyond the scope of this paper, as the material necessary

for the kind of study the problem requires is at present unavailable to me.

Hancornia speciosa Gomes

Gomes, *Obs. Bot. Med. Pl. Bras.* **2**: 1. pl. 1. 1803; *Mem. Acad. Scienc. Lisboa* (Mem. Corresp.) **3**: 51. pl. 1. 1812.

Ribeirea sorbilis Arruda, *Discurso Sobre a Utilidad da Instituição de Jardins nas Principaes Provincias do Brazil* 57. 1810; in Koster, *Trav. Braz.* 499. 1816.

Echites glauca Roem. et Schult., *Syst. Veg.* **4**: 795. 1819. (Fide Muell. Arg., in Mart. *Fl. Bras.* **6** (1): 24. 1860.)

Carissa speciosa St. Hil., *Pl. Usuelles Bras.* 5. 1824.

Illustrations: Type of *H. speciosa* (**25**): branchlets withl eaves and flowers; analysis of fruits and flowers. *H. speciosa* var. *minor* (**65** fig. 1): flower analysis. *H. speciosa* var. *pubescens* (**65** fig. 2): branch with leaves, flowers, and young fruit. *H. speciosa* var. *Maximiliana* (**65** fig. 3): branchlet with leaves and fruits; longitudinal section of a fruit; seeds, and embryos. (**19**): a copy of figs. 2 and 3 from *Flora Brasiliensis*. (**12. 39. 40**): copies in part of fig. 2 from *Flora Brasiliensis*; a fruit. *H. pubescens* var. *Gardneri* (**22**): branch with leaves and flowers and a flower analysis of the type of var. *Gardneri*. (**100**. 96): branchlet with leaves and flowers; fruits on stalks and in longitudinal section; a seed and embryo. Mangaba (**70**): branches with fruits. Mangabas em tamanho natural; Bahia, 1914 (**92** fig. 4): photo of branchlets with leaves and fruits. *H. speciosa* (**86**): fig. H, a flower; fig. J, a fruit; fig. K, a seed; fig. L, a longitudinal section of a seed showing embryo. *H. speciosa* (**60**): analysis of fruits; seeds, and embryos. (**52**): photo of fruits. *H. speciosa* in Serra do S. Ignacio in Bahia (**95**): photo of entire tree showing habit and « habitat ». Um pé de Mangabeira nas immediações da Bahia (**92** fig. 3): habit photo of entire plant taken on a hillock opposite Roça da Madre de Deus. (**21**): clearer copy of the preceding. Tapping Mangabeira, Maranhão, Brazil (**85** fig. 7): photo of an entire tree. Collecting Mangabeira latex, Maranhão, Brazil (**85** P. 47): photo of a trunk. Trunk of Mangabeira, Maranhão Brazil (**85** fig. 7): close-up photo. Mangaiba [1] (**71**. 56): rough sketch showing entire tree in leaf and fruit; a corolla and a leaf.

[1] Mueller (**65** p. 186), in a footnote in his discussion on the uses of the *Apocynaceae*, states that the illustration of Mangaiba on p. 156 of Piso's *Hist. Nat. Med.* refers to *Mangifera indica* and not to *Hancornia*. Martius (**59** p. 25) also calls attention to this illustration not being of *Hancornia*

Distribution. — *Hancornia* is found is every state in Brazil from SW Amazonas [1] and the mouth of the Amazon Rv. in

speciosa. In the figure under discussion, the branches are not depicted drooping in the usual habit of the Mangabeira, nor are the fruits spotted in the typical way of *Hancornia* and as they are characterized in the Mangaiba figured by Piso in *De Fac. Simpl.*, p. 76. The description following the illustration in *De Fac. Simpl.*, however, is practically verbatim with the one given in *Nat. Hist. Med.*, and there is no doubt that both refer to *Hancornia*.

[1] Mueller reports *H. speciosa* from Tabatinga in western Amazonas near the Peruvian border. Huber (**36** p. 404) calls attention to this seemingly extralimital record. The Mangabeira is found from the mouth of the Amazon, Pará, up to at least Rio Madeira (Humaytá), in the eastern section of the state of Amazonas, and there is no strong reason why the tree might not grow some eight hundred miles further up the river, although the Tabatinga distribution has never yet been reaffirmed. The possibility that the Spix record was an error for a collection from Serra da Tabatinga (western Bahia, near border of Piauhy) was investigated, but with negative result; for no mention is made in *Vitae Itineraque Collectorum Botanicorum* (*Fl. Bras.* Vol. **1**, part 1) regarding Spix or Martius ever traveling in this section of Bahia.

E. Chapel (**10** p. 142) states *H. speciosa* is found in Loreto, Peru on the shores of the Maranon River and its affluents, Ucayali, Napo, Javary, Macapa, etc. Huber (**32** p. 78) has pointed out that Chapel's statement is without foundation; this information, he adds, seems to have been borrowed from Oliver Ordinaire's *Voyage à Travers d'Amérique du Sud du Callao à Belem du Para* (*Bulletin de la Société de Géographie Commerciale de Paris*. Tome 8. 1886) and has passed on to diverse other authors (e. g., T. Seeligmann). Ordinaire makes no mention of *Hancornia* in the work cited by Huber; on p. 391, however, he writes that the rubber tree does not surpass 14 m. « dans les forêts du Pérou » and has leaves « laineuses sur le revers », and Chapel concurs with this description, as applying to *H. speciosa*, in stating that the tree attains a height of 12-14 m. and its leaves are « laineuses au revers ». Jumelle, in his publication of 1898, describes how in Peru the leaves of *H. speciosa* are deciduous in July and reappear in a few days, in the beginning of August; on the other hand, in a latter book, 1903, he asserts that it is certain that all which has been written about exploitation of *Hancornia* in Peru refers to *Castilloa elastica*. Reintgen, on p. 120 of *Die Kautschukpflanzen*, gives the distribution of *Hancornia* from the Atlantic coast to the Andian frontiers of Ecuador, Peru, and Bolivia. D'Utra, on p. 517 of his *A Mangabeira*, also includes Ecuador and Peru in the distribution of the plant, but cites *H. floribunda* from Peru, and writes that the species from this region has not yet been

Pará throughout down to São Paulo or to about the middle of the state of Paraná (**78** p. 120), in the country of Paraguay and possibly in the Gran Chaco of Argentina. It is quite tolerant of habitat conditions, although in general it prefers loose sandy soil in arid sun regions; it is reported from coastal lowlands to plateaux 1500 m high [1], in such terrains as «campos cobertos» and «campos cerrados», «sertões», «caatingas», «taboleiros», «chapadas». Often it flourishes in great stands representing the characteristic tree of the region, as in Goyaz and Minas Geraes, there being records available of its common occurrence in Encrusilhada and Itaparica (Bahia), Olinda and the interior of Pernambuco, Rio Grande do Norte, Ceará, along the coast of SE Marajó (Pará), and according to the United States Consul at Buenos Aires (see Morris, p. 28) it is everywhere abundant in the forest of the Gran Chaco, as also in the Republic of Paraguay.

Specimens examined. — Brazil: Minas Geraes: Mello Barreto 490 (Bello Horizonte; F); Claussen 329 (var. *Lundii;* G); Lund s. n. (cotype var. *Lundii,* photo; 1839); L. O. Williams s. n. (Patos; June 1944). Goyaz: Froes 2079 (near St. Antonio); Gardner 2321 (type coll. *H. pubescens* var. *Gardneri);* Lützelburg s. n. (Aug. 1912; F); Saint-Hilaire 793 (var. *Lundii;* F), s. n. (prob. = 793; without locality; US). Matto Grosso: Malme 2308a (Cotype coll. var. *cuyabensis;* US). Bahia:

determined or at least clearly discriminated. Chapel (**10** p. 159) states that *Hancornia* in «la région vénézuelienne porte le nom de palo de vaca». Ule (**94** p. 15), like Reintgen (**78** p. 120), probably borrowing his record from literature, also notes it from Venezuela. *Hancornia speciosa* is not known from this country. There is evidence that *Brosimum utile* and *Couma macrocarpa* (**62** p. 233) in Venezuela bear the name of arbol de vaca.

[1] Warburg (**100** p. 105; **43** p. 187) states that the claim which credits *H. speciosa* as growing from 3000 or even 4000 to 5000 ft. above the sea is, according to Marval Irmaos, of Bahia, incorrect, the plateaux on which it occurs being but of 500 to 600 ft. elevation. The great majority of other authors substantiate the reports of the tree reaching high altitudes; e. g., 3000-5000 ft. (C. d'Claussen), 1500 m. (D'Utra), over 1000 m (Foulquier), 800 m (Reintgen). Ule (**94** p. 15) personally reports finding the Mangabeira on an altitude of over 1000 m in Serra do São Ignacio.

Luschnath s. n. (var. *minor;* G); Salzmann s. n. (prob. = Salzmann 10, var. *minor* in *Fl. Bras.;* M); coll. undesignated 74 (? = Luschnath s. n.; M). Pernambuco: Gardner 1064 (var. *minor*) [1]; D. Bento Pickel 600 (Prazeres). Ceará: Allemão 972 (US). Amazonas: J. T. Baldwin Jr. 2922 (Humaytá; US); Ducke 223 (Humaytá, Rio Madeira). Without locality (Brazil): Claussen 8 (1840; ex hb. Leningrad; F); Riedel s. n. (prob. = Riedel 2772 var. *Lundii* from Minas Geraes in *Fl. Bras.;* ex herb. horti Petropolitani: G), s. n. (ex herb. horti Petropolitani; NY) [2].

PARAGUAY: Hassler 5358 (Sierra de Maracayú; A).

All the varieties, except *cuyabensis*, cited after the collectors' numbers are as they appear in *Flora Brasiliensis*. Of the other collections, I accept Pickel 600 as of the typical variety; Clausen 8, var. *Lundii;* Hassler 5358, var. *cuyabensis*. Allemão 972, J. T. Baldwin, Jr. 2922 and Ducke 223 are convarietal and approach the typical variety except that their leaves are broader (2,5-3,5 cm broad). Saint-Hilaire s. n. is identical with his 793 (var. *Lundii*) except that its pedicels, calyces and corollas outside are almost glabrous (instead of conspicuously hirtellous); Mello Barreto 490 resembles the two Saint-Hilaire plants but has the parts completely glabrous. These three samples are embraced within my concept to var. *pubescens* forms. Lützelburg s. n. and Froes 2079 are convarietal; L. O. Williams s. n. is very fragmentary, but seems also to belong here. These last mentioned plants are not in complete agreement with any

[1] A. De Candolle cites Gadner 1064 as cotype of his *H. speciosa* y *Lundii*, whereas Mueller places it with the typical variety, his α *minor*. If Lund s. n. be selected as the lectotype of var. *Lundii*, Gardner 1064 does not belong with it but fits rather with the typical form of the species, where it is placed by Mueller. The Salzmann collection relegated correctly to the typical variety by both De Candolle and Mueller approaches, in its shorter petioles, var. *Lundii* more than does Gardner 1064.

[2] This sheet contains a mixture. On the left side are mounted fragments of a usual form of var. *Lundii*, whereas on the right is a representative sample of the typical variety. The latter is almost identical with Luschnath s. n. in floral maturity and also in features due to drying conditions and other accidents, suggesting it may be a portion of the same collection.

of the described varieties; they differ from the description of *stenophylla* in their broader leaves, and from that of var. *Maximiliani* in their shorter petioles and smaller blades. Petioles 4-6 mm long; blades 4-5,5 cm long and 1,2-2,2 cm broad; pedicel and calyx outside hirtellous to glabrescent; ovary pubescent in L. O. Williams s. n. and glabrous in Lützelburg s. n. *Ribeirea sorbilis* is the only species described in the genus by Arruda. For statements on the reduction of *Ribeirea* see discussion previously presented under the genus *Hancornia*.

Echites glauca, cited «Willd. MS. In Brasilia. Comes ab Hoffmannsegge», is here included in synonymy under *H. speciosa* on the authority of Mueller, who based his opinion of their identity upon his examination of Hoffmannsegge's Brazilian plant, 5167, deposited in the Willdenow herbarium.

St. Hilaire transferred *H. speciosa* [1] to *Carissa* incidentally in remarks under his *Strychnos pseudoquina*. Typical *Carissa* is easily distinguished from *Hancornia* in its spinescent habit, in its leaves with their secondary veins arcuate and widely spaced, in its clavuncle and few ovuled ovary.

All the described varieties of *Hancornia speciosa* are herewith presented. This summary is intended to be of service when the proper evaluation of the subspecific entities is eventually possible. By no means is the implication to be that all these varieties are accepted by me as undoubtedly valid.

[1] A. St. Hilaire spelled the name *Handcornia speciosa*. The several other misspellings found in essentially non-botanical works bear hardly any importance for our purpose. Examples of these are *Hacornia speciosa* on p. 568 of A. Heraud's *Nouveau Dictionnaire des Plantes Médicinales* (6th Ed., 1927). Almeido Pinto (**70** p. 290) writes «*Apoicynum hancornia* Linn.» for the species, and Moraes (**63** p. 249) follows this combination for his Mangabeira; in addition, the latter author misspells *H. pubescens* to read *H. pudescens*. Numerous incorrect citations of authorities appear in literature dealing with *Hancornia* as a source of rubber. For example, Jumelle (**40** p. 278) accredits *H. speciosa* and *H. pubescens* to Mueller and the varieties *minor* and *Maximiliani* to Collins, and like Reintgen (**78** p. 119) and Teixeira (**91**), he attributes *H. Lundii* as a binomial to De Candolle.

Hancornia speciosa Gomes (typical variety)

H. speciosa α *minor* Muell. Arg., Mart. *Fl. Bras.* **6** (1) : 24. pl. 8. 1860.

Petioles 9-15 mm long; blades about 6 cm long and 2 cm broad, glabrous; pedicels glabrescent; calyx glabrous or sparsely pubescent outside.

Type. — Gomes cites *H. speciosa* from Rio de Janeiro and the more northern provinces of Brazil; cultivated in Chácara de Andarahí, a little distance away from Rio de Janeiro. Mueller cites the typical variety under α *minor* as follows: « prope Rio de Janeiro: Blanchet 82; in prov. Bahiensi: Blanchet 1038, 3525, Lhotzky, Luschnath, Salzm 10; in prov. Minarum: M; in silvis ad Tabatinga, in confinio Peruviae prov. Río Negro: Spix; in Pernambuco: Gardn. 1064 ».

Hancornia speciosa var. **Maximiliani** A. DC.

A. De Candolle, *Prodr. Syst. Nat.* **8** : 325. 1844.

The leaf-blades of var. *Maximiliani* are a little longer and broader and the petioles a little shorter than in the typical one; petioles about 8 mm long; blades 5-6 cm long and 2-2,5 cm broad.

Type. — As A. De Candolle states, the type description of this variety first appeared under *H. speciosa* in Nees et Martius' *Beitrag zur Flora Brasiliens:* «in Brasiliâ ad viam Felisbertiam. *H. speciosa* Nees et Mart. *Act. Soc. nat. cur.* 11. p. 84 ». Mueller cites: « ad viam Felisbertiam: Prinz. Max. Videns.; in sabulosis deserti prov. Minarum: Pohl 1839; prope Vittoria: Sellow ».

Mueller lists « *stenophylla » under β *Maximiliani* A. DC. in *Fl. Bras.*, omitting any citation of authority for the name. The description reads: leaves narrower than in var. *Maximiliani,* 10-13 mm broad, about 5 cm long, short-petioled as in var. *Lundii.* Collections cited.- « in campis siccis prope Ytu: Riedel; circa S. Ignacio: Sellow ». It is interpreted here that Mueller never intended *stenophylla* be given varietal recogni-

tion and his omission of authority citation was deliberate; for he precedes the epithet by an asterisk and Mueller's custom throughout his treatmen of *Apocynaceae* in *Flora Brasiliensis* has been never to designate the authority for any infra-specific category preceded by an asterisk.

Hancornia speciosa var. **cuyabensis** Malme

Malme, *Arkiv. Bot.* **21** A (n° 6) : 6. 1927.

Petioles about 3 mm long; blades 4-10 cm long and 1,5-3 cm broad; calyx glabrous outside; corolla large, glabrous outside.

Type. — « Matto-Grosso: Cuyabá (11: 1852 et 2308). Etiam prope Buritiet Santa Anna da Chapada observavi ». Malme refers the following as convarietal: « Matto Grosso: Cuyabá (In 'cerrado' minus denso; locis arenosis sat rara. 27/12 1893. Malme 1282 B. Fructibus maturis ornatis) ».

Malme states that this variety was first described by him under *H. speciosa* in Bihang *Till K. Sv. Veg.-Akad Hand.* in 1899 (Band 24. Afd. 3. n° 10. p. 3). In this work the author writes that Malme 1282 B agrees with var. *minor* Muell. Arg. in leaf size but differs strongly from it in its very short petiole. Malme describes Hassler 5358 [which I refer to var. *cuyabensis*] in *Bull. Herb. Bois.* (**54**) under *H. speciosa,* where he notes it approaching var. *minor* but differing in its longer leaves and short petioles.

Hancornia speciosa var. **Lundii** A. DC.

A. De Candolle, *Prodr. Syst. Nat.* **8** : 325. 1844.

Petioles 3-5 mm long; blades 5-7 cm long and 3 cm broad; pedicels pubescent; calyx hirtellous outside; corolla-lobes pubescent outside.

Type. — « in Brasilia (Clauss 334 et 340 in h. Boiss. 105 in h. Deless. et DC.), in Minas Geraes (Lund), in Pernambuco (Gardn. 1064 in h. Dun.) ». Mueller cites: « in campis Minarum: Lund, Claussen 105, 329, 334, 340, Riedel 2772, A. de

St. Hilaire 1395; in prov. Goyazensi: A. de St. Hilaire 793; in Serra de Vento: Sellow 41 ».

Hancornia speciosa var. **Gardneri** (A. DC.) Muell. Arg.

Muell. Arg. in Mart., *Fl. Bras.* **6** (1): 25. 1860. (Pl. 56 in Field. et Gard. *Sert. Plant.* **1**. 1844.)
Hancornia pubescens β *? Gardneri* A. DC., *Prod. Syst. Nat.* **8**: 325. 1844.
Hancornia Gardneri Miers, *Apocyn. S. Am.* 12. 1878.

Petioles short as in var. *Lundii* but hispid-puberulent; blades 7-10 cm long and about 4 cm broad, glabrous or hispid-puberulent on midrib on underside.

Type. — A. De Candolle cites under *H. pubescens* β *? Gardneri;* « in Goyaz (Gardn. 2321) ». Mueller cites under *H. speciosa* δ *Gardneri:* « in prov. Goyazensi: Gardner 2321; ibidem ad Porto Imperial et Trahiras: Pohl 1839 *d;* in Brasilia centrali ad Sertaô d'Amaro Leite: Weddell 2621 ». Gardner (**22**) gives a different number for his original collection of the type: « On hills near the Mission of Duro, Province of Goyaz. Gardner Herb. Bras. 3321 ».

De Candolle considered this as doubtfully a variety *H. pubescens,* whereas Miers asserted that it merited specific rank. In my judgment it is probably merely a form convarietal with *H. speciosa* var. *pubescens.*

Hancornia speciosa var. **Gardneri** f. **glabrata** Markgraf

Markgraf, in Fedde, *Rep. Sp. Nov.* **20**: 18. 1924.

Leaves as in var. *Gardneri* in size and nervature but completely glabrous.

Type. — « Comm. Rondon: Matto Grosso: Utiarity. Baum in Gebüschen. F. C. Hoehne 2068 ».

Under forma *glabrata* Markgraf cites « Comm. Rondon: Matto Grosso: Utiarity. Baum in Gebüschen. F. C. Hoehne 2068 » and also notes « sie tritt nämlich in genau derselben Ausbildung in Paraguay auf ». The Paraguay-Matto Grosso distribution

of this forma recalls var. *cuyabensis*. I have not seen any authenticated specimen of Markgraf's *forma*, but the leaves of var. *Gardneri* differ from those of var. *cuyabensis* in shape, texture, and nervature.

Hancornia speciosa var. **pubescens** (Nees et Mart.) Muell. Arg.

Muell. Arg., in Mart., *Fl. Bras.* **6** (1) : 25. pl. 8, fig. 2. 1860.
Hancornia pubescens Nees et Mart., *Nova Acta Acad. C. L. C. Nat. Curios.* **11** : 86. 1823.
Willughbeia pubescens Mart., *Reise Bras.* **2** : 789. 1828.

Branches densely pubescent; petioles short as in vars. *Gardneri* and *Lundii*, pubescent; blades pubescent on underside, the secondaries not strict and unbranched but connected by transverse ramifications; corolla larger, the tube pubescent outside. In the original description Nees et Martius (**67**, p. 86) write that *Hancornia pubescens* differs from the previous species noted by them [*H. speciosa*, named by De Candolle and Mueller as var. *Maximiliani*] in the leaves, which are narrower, long blunt cuspidate, with the lateral veins not strict and simple but connected by fine transverse branches, and in the flowers which are twice as large. D'Utra states that the fruits of this plant are « avelludados ».

Type. — « in Campis Capitaniae de Goyaz » (The statement of this habitat is attributed to Martius). Mueller cites under ε *pubescens* : « in campis sicciusculis Vâo do Paranan prov. Minarum : M. ».

Under « Ammerkung zum Zweiten Kapitel », Martius (**58**) suggests the genus *Willughbeia* for *Hancornia* : « Mangabeira brava », *Hancornia* (richtiger *Willughbeia*) *pubescens*, Nees et Mart ». He adds merely the distribution of the plant and its medicinal properties, omitting any morphological description or reference to a previous diagnosis of *H. pubescens*. *Willughbeia* Roxb., typified by *W. edulis* Roxb., is applicable only to certain Asiatic vines with axillary cymes of smaller and differently shaped flowers.

Miers asserts that *H. pubescens* merits specific rank, differing from the other members of the genus especially in having few

remote ascending nerves. He cites Claussen 222 as a specimen examined by him. Claussen 222 is available to me and I determine it as malpighiaceous, probably *Heteropterys anoptera* Juss. var. *glandulifera* Niedenzu subvar. *ovata* Niedenzu (ex descrip. in *Pflanzenreich*). My plant consists of sterile material. Miers notes some floral differences in addition to the leaf character of his specimen, but the nature of the information given suggests that these flower characters were borrowed from literature.

H. speciosa var. *pubescens* is known to me only from descriptions and illustration. The two varieties discussed previously, *Gardneri* and *Lundii*, do not appear distinguishable from this except in what are probably insignificant characters; careful field study, it is suspected, will ultimately prove them convarietal. If vars. *Lundii*, *Gardneri*, and *pubescens* be accepted as synonymous, it should be noted that the first has priority (year 1844) in the varietal category of *H. speciosa*, with the second published on the same date and same page as a variety of *H. pubescens*. *H. speciosa* var. *pubescens* was proposed 16 years later, although this entity first appeared in specific rank before any other segregate (year 1823). The present author's personal inclination is to prefer the epithet of the first published segregate representing the synonymous group regardless of the category originally designated, in which case *H. speciosa* var. *pubescens* should be the favored combination. However, according to interpretation of the International Rules of Botanical Nomenclature *H. speciosa* var. *Lundii* must be the valid trinomial for the synonymy covering the three variety names in the event they should prove identical.

EXCLUDED OR DOUBTFUL SPECIES

Hancornia Amapa Huber. *Bol. Mus. Para.* 3 : 443. 1902 = *Parahancornia Amapa* (Huber) Ducke [1].

Hancornia arborescens Spruce ex Muell. Arg., Mart. *Fl. Bras.* 6 (1) : 22. 1860 = *Lacmellea arborescens* (Muell. Arg.) Monachino.

[1] The genera *Parahancornia*, *Lacmellea* and *Ambelania*, are treated by the author in *Lloydia* **6**, nº 4, **7**, nº 4, and ined., respectively.

Hancornia Barrettoi Naudin apud Barreto et fils., *Bull. Soc. Nat. Acclim. France* **47** : 116. 1900. — *Nomen seminudum.*

Type. — « de notre zone la plus chaude, frontière de Saint-Paul et Minas ; gros arbre à haute futaie, se plaisant bien dans les sols pas trop secs, ni trop arides ; du climat le plus sain de notre région sous-tropicale ». Barreto writes that this large tree is the king of rubber trees, giving at a single tapping up to 15 kilograms of the most excellent caoutchouc, and that its pyriform fruits are delicious. No other datum on this plant has been discovered by me.

Hancornia floribunda Poepp., *Nov. Gen.* 3 : 70. 1845. = *Lacmellea floribunda* (Poepp.) Benth.

Hancornia fluminensis Glaz., *Bull. Soc. Bot. France* (Mém. 3e) **57** : 448. 1910. — *Nomen nudum.*

Type. — « in herb. Paris., Berol., Kew., Genev., etc. — Restinga de Cabo Frio, près de la mer, Rio-Jan., 12946 ». I have examined the Glaziou collection (Glaz. s. n., Rio Janeiro, ex Herb. Mus. Paris.; F. Glaz. 12946 ; US), which is a type coll. of *H. fluminensis*, consisting of flowering material, and I find it to be *Skytanthus hancorniaefolius* (A. DC.) Miers [1]. Glaziou proposed *H. fluminensis* as doubtfully a new species of *Hancornia*.

Hancornia gracilis Spruce ex Muell. Arg., Mart., *Fl. Bras.*, (1) : 21. 1860. = *Lacmellea gracilis* (Muell. Arg.) Monachino.

Hancornia macrophylla Spruce ex Muell. Arg., *loc. cit.*, p. 18. = *Ambelania macrophylla* Muell. Arg. and *Ambelania quadrangularis* Muell. Arg.

Hancornia microcarpa Spruce ex Muell. Arg., *loc. cit.*, p. 23 = *Lacmellea microcarpa* (Muell. Arg.) Monachino.

[1] The inflorescenses and undersides of leaves of *H. fluminensis* examined by me are more densely pubescent than those of *Blanchet* 3285, which is probably a cotype coll. of *Skytanthus* (= *Neriandra*) *hancorniaefolius*. (The cotype is cited by De Candolle as Blanch. 3385, from Serra Jacobina, Bahia, whereas Blanch. 3285 is from Igregia Velha. The coll. number 3285 appears clearly in a photo of the cotype deposited in the Berlin Herbarium). Because of this indumentum, the Glaziou collection might suggest *Neriandra Martiana* Muell. Arg., as described in *Fl. Bras.* I am convinced from an examination of the two specimens, however, that if Glaz. 12946 differs from Blanch. 3285 it does so only in minor respects or varietally, and that they are conspecific.

Hancornia monosperma Spruce ex Muell. Arg., *loc. cit.*, p. 22 = *Lacmellea arborescens* (Muell. Arg.) Monachino.

Hancornia ramosissima Spruce ex Muell. Arg., *loc. cit.*, p. 21 = *Lacmellea ramosissima* (Muell. Arg.) Monachino.

Poeppig 2723 was cited by De Candolle in 1844 as perhaps a species of *Hancornia* ; a year later Poeppig made this collection the type of his *Hancornia floribunda*. Mueller transferred Poeppig's name into *Zschokkea* and Bentham finally established the correct combination, *Lacmellea floribunda* (Poepp.) Benth.

« Amapá Branco » is listed as questionably a species of *Hancornia* by Huber (35) in his *Lista Alphabetica das Plantas que Crescem na Região dos Furos*. I could not trace the material representing this species or any further disposition of the name. It is not likely that Huber's «Amapá Branco» is merely a form of the only knownspec ies of *Hancornia*, for Huber was familiar with *H. speciosa* in Pará. Incidentally, it should be noted that Huber had a rather broad conception of *Hancornia*, as manifest by his including *Parahancornia Amapa* in *Hancornia*.

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