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### PLANTAE AUSTRO-AMERICANAE VI PLANTARUM PRINCIPALITER VALLIS AMAZONIAE NOVARUM VEL MINUS COGNITARUM NOTAE DIVERSAE

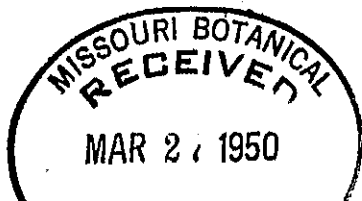
BY

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RECENT work on a number of South American plant collections, for the most part of Amazonian origin, has uncovered several novelties and has provided us with additional information of a phytogeographical or ethnobotanical nature. The following notes are offered as a contribution to our knowledge of this interesting part of the New World.

I am grateful to a number of my botanical colleagues for their determination of plants in certain groups: Dr. L. H. Bailey and Dr. H. Emery Moore (Palmae); Dr. Robert Woodson (Apocynaceae); Dr. José Cuatrecasas (Chloranthaceae, Moraceae, and Musaceae); Dr. Harold N. Moldenke (Menispermaceae); and Dr. Bassett Maguire (Rapateaceae). It is also a pleasure to express my appreciation to Mr. Elmer W. Smith for his beautiful and highly accurate drawings of several of the newly described species. The drawings of the concepts of *Her-  
rania* were made possible by a grant from the American

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Cocoa Research Institute, for which my sincere thanks are due.

#### TRIURIDACEAE

**Soridium Spruceanum** *Miers* in Proc. Linn. Soc. 2 (1850) 75.

Although rare in collections, *Soridium Spruceanum*, the type of which was from Pará, is not uncommon in the upper Rio Negro basin.

BRAZIL: Estado do Amazonas, Rio Uaupés, Taracua, January 28-February 9, 1948, *Richard Evans Schultes & Francisco López 9681A*.

#### PALMAE

**Bactris balanophora** *Spruce* in Journ. Linn. Soc. 11 (1871) 146, 153.

*Bactris balanophora* was described from material gathered by Spruce from San Carlos on the upper Rio Negro in Venezuela. The collection cited below places the concept for the first time well within the Amazonian area of Colombia and very greatly extends the known range of the plant.

COLOMBIA: Comisaría del Amazonas, Rio Igaraparaná, vicinity of La Chorrera. "Leaf and petiole 9 feet long. Plant 12-15 feet tall." June 4-10, 1942, *Richard Evans Schultes 3938*.

**Chamaedorea integrifolia** (*Trail*) *Dammer* in Verhandl. Bot. Ver. Brandenburg 48 (1907) 125.

This small palm is apparently new to the flora of Colombia.

COLOMBIA: Comisaría del Amazonas, Rio Loretoyacu. Alt. about 100 m. October 20-30, 1945, *Richard Evans Schultes 6626*.

**Chamaedorea lanceolata** (*Ruiz & Pav.*) *Kunth* Enum. Pl. 3 (1841) 172.

*Chamaedorea lanceolata* is herewith reported, apparently for the first time, from Colombia.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. Alt. about 100 m. "Fruit ripening orange." October 20-30, 1945, *Richard Evans Schultes 6603*.

*Geonoma interrupta* (*Ruiz & Pav.*) *Martius* Hist. Nat. Palm. 2 (1823) 8, t. 7.

According to Dugand's enumeration of palms found in Colombia (in *Caldasia* 1 (1940) 44-48), this species of *Geonoma* has never before been recorded.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. Alt. about 100 m. "Twelve feet tall." October 20-30, 1945, *Richard Evans Schultes 6749*.

*Geonoma laxiflora* *Martius* Hist. Nat. Palm. 2 (1823) 12, t. 11.

*Geonoma laxiflora*, an Amazonian species, is now recorded as an element of the flora of Colombia.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. Alt. about 100 m. "Small palm. In clumps, 12-15 ft. tall. Tikuna name = *bē-ee-chá*." October 20-30, 1945, *Richard Evans Schultes 6656*.

*Geonoma pycnostachys* *Martius* Hist. Nat. Palm. 2 (1823) 16, t. 17.

Described from material collected by Martius in the Caquetá of Colombia, *Geonoma pycnostachys* is now registered from the headwaters of the Río Putumayo. Since the locality cited below is exactly on the boundary between Colombia and Ecuador, this species should likewise be assigned to the flora of Ecuador.

COLOMBIA: Comisaría del Putumayo, Río San Miguel or Sueumbios, Santa Rosa and vicinity. "Small terrestrial plant. Kofán Indian name: *tsau-hess*." April 1942, *Richard Evans Schultes 3547*.

*Lepidocaryum tenue* *Martius* Hist. Nat. Palm. 2 (1823) 51, t. 47.

Dugand (loc. cit. 31) enumerates only two species of *Lepidocaryum* from Colombia. *Lepidocaryum tenue*, fre-

quent in Amazonian Brazil, is, however, now definitely reported from Colombia.

COLOMBIA: Comisaría del Amazonas, Río Karaparaná, between El Encanto and the mouth. Alt. about 150 m.? "Stems used in basketry." May 22-28, 1942, *Richard Evans Schultes 3851*.

*Parascheelia anchistropetala* *Dugand* in *Caldasia* 1 (1940) 12, t. 4, 5.

*Schultes 5856* is topotypical and represents the second collection of this interesting savanna palm.

COLOMBIA: Comisaría del Vaupés, Río Vaupés, savanna at base of Cerro Circasia. "Inflorescence basal. Leaf 6-7 feet long with 72" leaflets." March 7, 1944, *Richard Evans Schultes 5856*.

#### RAPATEACEAE

*Rapatea longipes* *Spruce ex Körnicke* in *Linnaea* 37 (1871-72) 472.

Spruce collected the type of *Rapatea longipes* at "Panuré" on the Río Uaupés. The collection cited below is topotypical.

BRAZIL: Estado do Amazonas, Río Uaupés, Ipanoré. "Bracts of inflorescence red." November 14-15, 1947, *Richard Evans Schultes & João Murça Pires 9079*.

*Rapatea modesta* *Maguire sp. nov.*

Herbae parvae acaulescentes perennantes. Folia 3-6, 20-50 cm. longa; vaginis valde equitantibus distichisque; in uno plano dispositis, submembranaceis, vel tenuiter chartaceis, late rotundatis, nervis distinctis ca. 40 munitis, 1.8-2.5 cm. e costa ad marginem, (4-) 5-9 cm. longis; petiolis (7-) 10-30 cm. longis, ca. 2.4 mm. crassis, apicem versus anguste alatis; laminis tenuiter chartaceis, 8-15 cm. longis, 3-5 cm. latis, oblongo-ellipticis, nervis primariis 15-20 (-30), apice subconduplicato, abrupte caudato-acuminato, obtuso, 15-20 mm. longo, basi abrupte constricta, inaequilaterali. Pedunculus pseudo-

terminalis, solitarius, 10-30 cm. longus, 2-2.5 mm. crassus, ad apicem paulum dilatatus compressusque, apicem versus castaneo-furfuraceus, demum glabrescens. Inflorescentia compressa; involucri bracteis 2, reniformicaudatis, 2.5-3.5 cm. longis, 2.5-3 cm. latis, tenuiter multinervatis, albidis, ad basim castaneo-furfuraceis, apice 1-2.5 cm. longo; receptaculo convexo, ca. 6 mm. lato, 4 mm. alto, bracteis paleaceis; spiculis sessilibus, bracteolis 8-10, lineari-oblongatis, 9-10 mm. longis, 1-2 mm. latis, trinervatis, membranaceis, sub calyce approximatis, abrupte acuminatis, acumine 1.5-2 mm. longo. Sepala 3, ca. 10 mm. longa, indistincte 3-5 nervata, ad basim delicate membranacea in tubum connata, sursum libera lanceolato-acuminata, indurata; corolla delicate membranacea, alba ut videtur, ca. 10 mm. longa, ad basim per 1-2 mm. ad corollam adnata, laminis ovato-deltaeideis, acutis, ca. 5 mm. longis; staminibus 6, ca. 6 mm. longis; filamentis membranaceis, 1-2 mm. longis, 0.8-1 mm. latis; antheris ca. 4 mm. longis, quadrilobatis in sectione transversali, ad basim auriculatis sursum arctantibus, albis ad apicem vix castaneo-furfuraceis; appendice ca. 1.5 mm. longa, castanea, cochleariformi, lineari-oblonga, e basi brevi sigmoidea oriente; stylo plusminusve stamina aequante, stigmatate trigono, acuto; ovario triloculari, ad basim membranaceo, sursum subindurato, albo; ovulum unum in loculo; semine oblongo, 5-6 mm. longo, 3-3.5 mm. lato, integumento interiore denso, saturate castaneo, longitudinaliter striato, striis manifestis per integumentum exterius albidum translucens ad apicem disjunctum et bulbosum, ad hilum densum et oblique concavum.

Small acaulescent perennial herbs. Leaves 3 to 6, 20-50 cm. long; sheaths strongly equitant and distichous, disposed in a single plane, sub-membranaceous or thinly chartaceous, broadly rounded, with about 40 distinct



nerves, 1.8-2.5 cm. broad from midrib to margin, (4) 5-9 cm. long; petioles (7) 10-30 cm. long, about 2.5 mm. thick, narrowly winged toward the apex; blades thinly chartaceous, 8-15 cm. long, 3-5 cm. broad, oblong-elliptic, with 15-25 (30) primary veins, the apex sub-conduPLICATE, abruptly caudate-acuminate, obtuse, 15-20 mm. long, the base abruptly constricted, inequalateral. Peduncle pseudo-terminal, solitary, 10-30 cm. long, 2-2.5 mm. thick, somewhat enlarged and compressed at the summit, brown-scurfy-pubescent upward, at length glabrescent. Inflorescence compressed. Involucral bracts 2, reniform-caudate, 2.5-3.5 cm. long, 2.5-3 cm. broad, finely multi-veined, whitish and brown-scurfy at the base, the apex 1-2.5 cm. long. Receptacle convex, about 6 mm. broad, 4 mm. high, bracts paleaceous. Spikelets essentially sessile, bractlets 8-10, linear-oblancoolate, 9-10 mm. long, 1-2 mm. broad, 3-nerved, membranaceous, abruptly acuminate, the acumen 1.5-2 mm. long, the bractlets approximately arranged below the calyx. Sepals 3, about 10 mm. long, faintly 3-5-veined, the bases delicately membranous and completely connate into a tube, the upper halves free, lanceolate-acuminate, indurate. Corolla delicately membranous, white, apparently about 10 mm. long, the claws connate for 1-2 mm., the blade ovate-deltoid, acute, about 5 mm. long. Stamens 6, about 6 mm. long; filaments membranous, 1-2 mm. long, 0.8-1 mm. broad, adnate to the corolla for 1-2 mm.; anthers about 4 mm. long, 4-lobed in cross section, auriculate at the base tapering upward, white, scantily brown-scurfy at the summit; appendage about 1.5 mm. long, brown, cochleariform, linear-oblong, attached by a short, sigmoid base. Style more or less equaling the stamens, the stigma trigonous, acute. Ovary 8-celled, membranous at the base, the upper part subindurate, white; ovules 1 per cell. Seed oblong, 5-6 mm.

long, 3-3.5 mm. broad, the inner integument dense, dark brown, longitudinally striate, the striae visible through the whitish translucent outer integument which becomes separated and bulbous at the apex, and dense and obliquely concave at the hilum.

Doctor Maguire writes me, in connection with his description of *Rapatea modesta*, that: "*Rapatea modesta* is most closely related to *R. longipes* Spruce ex Körnicke, from which it differs in its smaller habit, broader, shorter, and more conspicuously veined membranous leaf-sheaths, relatively broader and more numerous veined leaf-blades, considerably larger heads, more acuminate spiked bractlets, and white rather than yellow flowers.

"These two species are to be associated in habitat and range. *Rapatea modesta* occurs in sand savannahs in the trapécio region between the Putumayo and Amazon watersheds in southeastern Colombia. The four collections of *Rapatea longipes* which I have examined are from the region of the upper Rio Negro in Brazil, Colombia and Venezuela.

"The epithet *modesta* was suggested by the collector's comment that this attractive and distinct little *Rapatea* appealed to him in the field as a shy, almost retiring, but lovely member of the caatinga community."

COLOMBIA: Comisaría del Amazonas, Trapécio amazónico, interior regions of trapécio between the Amazon and Putumayo watersheds. Alt. above 100 m. November 1945, *Richard Evans Schultes 6900* (TYPE in N.Y. Bot. Gard.).—Same locality, November 1946, *George A. Black & Richard Evans Schultes 46-361*.

*Rapatea modesta* has a red-flowered form which grows promiscuously with the white color-form. Red flowers have not hitherto been reported for the genus.

COLOMBIA: Comisaría del Amazonas, Trapécio amazónica, interior regions of trapécio between the Amazon and Putumayo watersheds. Alt. above 100 m. "Same as 6900, except flowers red." November 1945, *Richard Evans Schultes 6899*.

*Rapatea Spruceana* Körnicke in *Linnaea* 37 (1871-73) 470.

*Rapatea Spruceana* has apparently not hitherto been reported for the flora of Colombia. The type was collected by Spruce along the lower Río Guainía, possibly on the Colombian side. *Schultes & López 9297* may be considered as topotypical.

COLOMBIA: Comisaría del Vaupés, Río Negro, El Castillo, San Felipe (opposite San Carlos, Venezuela). "Flowers yellow." December 12, 1947, *Richard Evans Schultes & Francisco López 9297*.

#### MUSACEAE

*Heliconia lingulata* Ruiz & Pavon Fl. Peruv. et Chil. 8 (1802) 71.

Known from the Departamento del Valle in Colombia, *Heliconia lingulata*, through the collection here cited, is now recorded from the Colombian Amazon watershed.

COLOMBIA: Departamento del Cauca, Puerto Limón, "Bracts rose-coloured. *Platanillo*. Leaves 12 feet long. Inflorescence 6 feet long." February 28, 1942, *Richard Evans Schultes 3351*.

*Heliconia psittacorum* Linnaeus filius Suppl. (1781) 158.

*Heliconia psittacorum* is widespread in the northern tropical parts of South America; in Colombia, it has been collected from the Llanos, from Santander, and from the Vaupés basin. *Schultes 6633* is apparently the second collection from the Colombian Amazonia and greatly extends the known range of the species in that area.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. "Bracts red with tips green. *Capavira*." October 20-30, 1945, *Richard Evans Schultes 6633*.

*Heliconia Schumanniana* Loesener in *Engl. Bot. Jahrb.* 54, Beibl. 117 (1916) 12.

*Heliconia Schumanniana*, the type of which came from

eastern Perú, has apparently not previously been recorded from Colombia.

COLOMBIA: Comisaría del Putumayo, Río Caucaya, entre Puerto Jaramillo y el Río Putumayo. Altitude about 225 m. May 16, 1942, *Richard Evans Schultes 3711*.

***Heliconia stricta* Huber** in Bol. Mus. Goeldi 4 (1906) 543.

*Heliconia stricta* was described from material collected in Perú. *Schultes 3489*, from the boundary of Colombia and Ecuador, is apparently the first collection of the species from either of these countries.

COLOMBIA: Comisaría del Putumayo, Río Sucumbios (San Miguel) Puerto Conejo. "Platanillo." April 2-5, 1942, *Richard Evans Schultes 3489*.

#### CHLORANTHACEAE

***Hedyosmum toxicum* Cuatrecasas** in *Caldasia* 3 (1945) 482.

*Hedyosmum toxicum* is very seldom used as a medicine and always with great care, and it is never taken as a beverage. Unless the decoction of the leaves be made rather weak, it can act as a violent emetic and is a strong intoxicant.

COLOMBIA: Comisaría del Putumayo, Páramo de San Antonio, altitude about 3000 m. "*Granisillo pequeño*. Large tree. Leaves aromatic. A tea of leaves sometimes used as a stomach tonic and as purge. It is a strong emetic." February 13, 1942, *Richard Evans Schultes 3249*.

***Hedyosmum translucidum* Cuatrecasas** in *Caldasia* 3 (1945) 436.

A remarkable tonic-stimulant effect is noted immediately after a draught of a very hot decoction of the leaves of *Hedyosmum translucidum*. It may contain an active stimulant. During plant-collecting trips in the high, cold páramos of the western part of the Comisaría del Putumayo, I often prepared from the leaves of this bush, *granisillo*, the delicious aromatic beverage which travel-

lers in these high, inhospitable regions have learned to employ as a stimulant.

COLOMBIA: Comisaría del Putumayo, Páramo de San Antonio, altitude about 3000 m. "*Granisillo del grande*. Leaves aromatic. Tea of leaves used occasionally as a beverage and medicinally for stomach upsets." February 13, 1942, *Richard Evans Schultes 3221*.

#### MORACEAE

*Cecropia latiloba* *Miquel* in *Martius Fl. Bras.* 4, pt. 1 (1853) 147.

Known from Brazil and possibly Perú, *Cecropia latiloba* seems not to have been previously reported as a component of the Colombian flora.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. "Small tree." October 20-30, 1945, *Richard Evans Schultes 6720*.—Same locality. "Small tree." November 1945, *Richard Evans Schultes 6912*.

*Cecropia telealbida* *Cuatrecasas* in *Rev. Acad. Colomb. Ciénc.* 6 (1945) 294, t. 2, fig. 6.

The type of *Cecropia telealbida* was collected in southern Huila at a much higher altitude (1850 m.) than the two collections cited below.

COLOMBIA: Departamento del Huila, Río Villalobos, Quebrada Guayabo, altitude 1400-1450 m. January 1948, *Richard Evans Schultes & M. Villarreal 5172*.—Departamento del Huila, Río Villalobos, region of the confluence of Ríos Villalobos and Cauchos. Altitude 1400 m. January 1948, *Richard Evans Schultes & M. Villarreal 5205*.

*Cecropia telenivea* *Cuatrecasas* in *Rev. Acad. Colomb. Ciénc.* 6 (1945) 295.

This second collection of *Cecropia telenivea* is topotypical.

COLOMBIA: Comisaría del Putumayo, Valle de Sibundoy, Sibundoy, hills north of town, altitude about 2250 m. "Large tree." February 18, 1942, *Richard Evans Schultes 3275*.

*Cecropia tolimensis* *Cuatrecasas* in *Rev. Acad. Colomb. Ciénc.* 6 (1945) 282, t. 1, fig. 4, t. 2, fig. 5.

*Cecropia tolimensis* was described from material from Tolima, much to the north of the Huila locality of *Schultes & Villarreal 5128* which represents the second collection of the species to be reported.

COLOMBIA: Departamento del Huila, Pitalito, Calamo, open fields. Altitude about 1300 m. December 30, 1942, *Richard Evans Schultes & M. Villarreal 5128*.

*Coussapoa intermedia Martius ex Miquel* in *Martius Fl. Bras. 4, pt. 1 (1853) 133*.

*Coussapoa intermedia*, hitherto known from Amazonian Perú and Brazil, is now recorded for the flora of Colombia.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. "Large tree." October 20-30, 1945, *Richard Evans Schultes 6726*.

*Coussapoa magnifolia Trécul* in *Ann. Sci. Nat., ser. 3, 8 (1847) 98*.

Although *Coussapoa magnifolia* is known from eastern Perú, I have been unable to find other collections of this species from Colombia.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu. "Epiphyte." October 20-30, 1949, *Richard Evans Schultes 6698*.

#### OLACACEAE

*Heisteria cyanocarpa Poeppig & Endlicher* Nov. Gen. ac Sp. 3 (1845) 85, t. 241.

In Macbride's "Flora of Peru" (*Field Mus. Publ. Bot. 13, pt. 2, no. 2 (1937) 423*), Standley gives, as the distribution of this species, eastern Perú and Amazonian Brazil. Apparently it has not been recorded as an element of the Colombian flora, although it is frequent in the southern part of the Colombian Amazonia. Several of the collections cited as Peruvian, however, are actually from Colombian territory and attest the frequency of this shrub, especially in the *trapécio amazónico*. *Ll.*

*Williams 2745, 2805, 2808, 2949* (from La Victoria) and *3169* (from Leticia) are Colombian.

Similarly, *Heisteria eurycarpa* Standl., known only from the type collection made at La Victoria, near Leticia, Colombia, has been cited as Peruvian; although this concept undoubtedly occurs on the Peruvian as well as on the Colombian side of the Amazon River, it is advisable to include it in an enumeration of Colombian plants.

COLOMBIA: Comisaría del Amazonas. Trapéicio amazónico, Loretoyacu River. Alt. about 100 m. "Bush. Bracts red." October 1945, *Richard Evans Schultes 6832*.

#### MENISPERMACEAE

*Sciadotenia toxifera* *Krukoff & Smith* in Bull. Torr. Bot. Club 66 (1939) 308.

*Sciadotenia toxifera* has previously been known from Amazonian Ecuador where Richard C. Gill collected it as an ingredient of the curare of the Canelos Indians of the Napo-Pastaza area. This was the first report of the genus as an arrow poison plant (*Krukoff & Smith loc. cit.*).

The Witoto Indians of Amazonian Colombia no longer prepare curare, but knowledge of which plants entered into their poisons is still extant. *Sciadotenia toxifera* was indicated as one of the principal ingredients.

COLOMBIA: Comisaría del Amazonas, Karaparaná, El Encanto. "Bush in swamps. Fruit with soft brown hairs but with a blue-green sheen through indumentum. Height 8 ft. Witoto name: *hē-dē-ká-pē*. Formerly used to make arrow poisons, together with other plants." May 23, 1942, *Richard Evans Schultes 3866*.

#### STERCULIACEAE

*Herrania Camargoana* *R. E. Schultes sp. nov.*

Arbuscula parva, tenuis gracilisque, vulgo plusminusve octo vel decem (sed saepe usque ad viginti septem) pedes alta; erecto cum trunco tereti, circiter 4-5 pollices in

diametro, nigro cum cortice oblecta; prope trunci apicem parce ramosa; ramis tomentosus sed mox glabratis. Ramuli dense villosi, ferrugineis cum pilis, subglabrescentes. Folia amplissima, digitata, sex- ad novem-foliata, longissime petiolata. Petioli teretes, basi valde constricti, molliter aureo-ferrugineo-tomentelli, usque ad 60 cm. longi, 10 mm. in diametro. Stipulae persistentes, subulatae, densissime tomentellae, usque ad 3 cm. longae. Foliola sessilia, oblanceolata vel late lanceolato-ovata, leviter erecta, inaequalia, membranaceo-papyracea, apice acuminata, basi attenuata, margine dimidio superiore regulariter et conspicue sinuata, et omnino pilis vel pseudociliis stellatis armata, 60-75 cm. longa, 16-26 cm. lata, supra aspera, sparse pilosa cum pilis longis et solitariis, subtus submolliter tomentella cum pilis longis stellatis. Inflorescentiae fasciculatae, multiflorae, ex trunci omnibus partibus sed vulgo inferioribus prorumpentes. Pedicelli articulati, usque ad 28 mm. longi, 0.8 mm. in diametro. Alabaster floris globosus, usque ad 10 mm. in diametro, stellato-pilosus. Calyx trifidus, fere usque ad basim divisus, subcymbiformis. Sepala late elliptico-oblonga, apice subacuta, margine integra, extus atropurpurea, intus sanguinea, plusminusve 12 mm. longa, 8-9 mm. lata, intus glabra, extus stellato-pilosa cum pilis ferrugineis usque ad 1 mm. longis atque pilis albis minutissimis. Petala quinque, sessilia, obovato-rotundata, apice valdissime concavo-cucullata, circiter 8 mm. longa, 6 mm. lata, quinque cum nervis atropurpureis longitudinalibus atque nervulis reticulatis, alibi flava, extus conspicue muricato-verrucosa, superne in ligulam extensa. Ligulae lineares, plusminusve 90 mm. longae, basi 1.7 mm. latae, apice filiformes, basi ipsa sanguineae sed maxima pro parte albido-flavae. Tubus stamineus quinque-divisus cum staminibus diantheriferis et simplicibus cum filamentis brevibus liberisque. Ovarium ellipsoideum,

3.5 mm. longum, 2-2.5 mm. in diametro, densissime et grossiuscule albido-pilosum. Stylus teres, simplex, flavus, stigmatate apice inconspicue quinquediviso, 3 mm. longus. Staminodia conspicua, rhomboideo-elliptica, apice obtusa, margine integra, utrinque verrucosa, cinereo-purpurea, 14 mm. longa, 5 mm. lata. Fructus numerosi, quasi globosi vel leviter ellipsoidei, apice abruptissime et longe apiculati (apicula 2-2.5 cm. longa), plusminusve 8-8.5 cm. longi, 3.5-4.5 cm. in diametro, basi attenuati, sepalis persistentibus cum pedunculo 3-4 cm. longo, 2.5 mm. in diametro, longitudinaliter decem-costati, cum costis primariis et secundariis subaequalibus, tenuibus cultriformibusque, altitudine irregularibus sed maxime pro parte (vivo) 5-6 mm. altis, transverse irregulariter sed conspicue costati cum costis cultriformibus, quam longitudinalibus paulo humilioribus vel saepe altioribus, in costarum longitudinalium et transversalium junctionibus projectionibus carnosio-mollibus mammoso-spiniformibus (quae apice aliquid hebetatae sunt) productis, in costis omnibus et multo sparsius inter costas pilis stellatis urticantibus armati; pericarpio crasso, maturitate rufo vel sanguineo; semina viginti quinque, obtuse rotundato-pyramidalia, circiter 9 mm. longa  $\times$  11 mm. lata  $\times$  7 mm. crassa, in pulpa alba inclusa.

Brazil: Estado do Amazonas, Rio Negro, Serra de São Gabriel. "Treelet 12 feet tall. Fruit globose. All ten longitudinal ribs about equal, sharp, transverse ribs as high or higher. Projections formed at juncture of longitudinal and transverse ribs long, upturned, soft, hispid, stinging hairs along ribs and to a lesser extent between. Ripening scarlet. Seeds 25." February 12, 1948, *Richard Evans Schultes & Francisco López 9722* (TYPE in Herb. Gray).—Estado do Amazonas, Rio Uaupés, between Ipanoré and confluence with Rio Negro, Serra Wabeese, on left bank a little below Bela Vista. November 17, 1947, *Richard Evans Schultes & Francisco López 9144* (TYPE of flowers in Herb. Gray).—Estado do Amazonas, Rio Negro. "Encosta da Serra de Cabary a 450 m. de altitude. Arbusto de 5 metros." December 2, 1945, *Ricardo de Lemos Fróes 21468*.—Estado do Amazonas, Rio Negro, Uaupés (São Gabriel). "Mata sopé Serra São Gabriel. Arbusto

5 metros; flores ruges rubro." December 22, 1945, *Ricardo de Lemos Fróes 21540*.—Estado do Amazonas, Rio Negro, São Gabriel (Uaupés), Serra de São Gabriel, near summit. Alt. c. 100 m. "Single-trunked treelet up to 9 m. tall. Three or four leaves on top. Fruit clustered on stem, usually near base, three to four in each fascicle, almost globose with very abruptly pointed apex, main and secondary longitudinal ribs almost equal, but transverse ribs as high or higher than main ribs, forming upturned pseudoechinate projections at right angled point of juncture, hispid stinging hairs all along ribs and to lesser extent on surface of fruit. Ripening a scarlet. Seeds 25, embedded in acid, white pulp. Trunk 4-5 inches in diameter. Bark smooth, black. Leaflets curiously "spurred" at base, thickened spur causing them to be somewhat erect. Extremely common. Leaflets entire in lower half, regularly sinuate in upper half. *Cacao jacaré*. Tukano=*ee-só-pê-kê*." September 15, 1947, *Richard Evans Schultes & Francisco López 8758*.—Same locality and date. "Trunk black, columnar, 3 inches in diameter. Treelet 8 m. tall. Leaf lobes thickened at base into spur-like prong, throwing them upwards. Fruit on stem at 5 ft. above ground. Ripening red. Transverse and main ridges meet to form curious thickening in form of upturned 'hooks,' covered with stinging hairs." *Richard Evans Schultes & Francisco López 8759*.—Same locality and date. "Seven m. tall; diameter 3 inches. Bark black. Fruit ripens red. 25 seeds. Fruit looks softly echinate due to warty projections all over where transverse and horizontal ribs cross." *Richard Evans Schultes & Francisco López 8762*.—Same locality and date. *Richard Evans Schultes & Francisco López 8763*.—Estado do Amazonas, Rio Negro, Tapurucuara (Santa Isabel). September 11, 1947, *Richard Evans Schultes & Francisco López 8956*.—Estado do Amazonas, Rio Negro basin, Rio Paduari. October 27, 1947, *Ricardo de Lemos Fróes 22673*.—Estado do Amazonas, Rio Negro, near São Gabriel, at base of Serra Uanari. October 31, 1947, *Richard Evans Schultes & João Murça Pires 8978*.—Estado do Amazonas, Rio Uaupés, Serra Wabeese, below Bela Vista. "Flowers many in clusters. Calyx segments red, petals and staminodes greyish purple. Ligules greyish purple, 5-6 cm. long. Treelet 15 ft. tall." November 17, 1947, *Richard Evans Schultes & João Murça Pires 9130*.—Estado do Amazonas, Rio Negro, Serra de São Gabriel. "Treelet 8 ft. tall. Flowers in many-flowered fascicles. Sepals externally dark blood-red, internally scarlet; petals ashy red with yellow stripes; staminodes ashy purple-red, internally showing white-yellow patches, externally dark red. Ligules 8-9 cm. long, linear, externally red, internally white-yellow, but folded or inrolled so that red is enclosed. Tukano: *ô-só-pee-kô*." November 20-25, 1947, *Richard Evans Schultes & Francisco López 9162*.—Estado do Amazonas, Rio Negro, mouth of Rio Xié. December 2, 1947, *Richard Evans Schultes & Francisco López 9205*.—Estado do Amazonas, Rio Negro, Nazaré. "Treelet 15 ft.

tall. Trunk 4 inches in diameter. Fascicles with up to 30 flowers. Flowers dull ash-purple with exterior of sepals scarlet and most of length of infolded ligules a faintly purplish white. Buds perfectly globose. Bark nearly black. Leaves few. Leaflets unevenly lanceolate. Fruit 'spiny,' apically very long acuminate. *Cacao de jacaré.*" December 5, 1947, *Richard Evans Schultes & Francisco López 9240.*—Estado do Amazonas, Rio Negro, Serra de São Gabriel. "Small treelet, 12 feet tall." January 14, 1948, *Richard Evans Schultes & Francisco López 9619.*—Estado do Amazonas, Rio Negro, Serra Jacamín. "Small treelet about 12 feet tall. Trunk slender, 3-4 in. in diameter, bark thin, smooth, black. Leaves large, hairy, upper half of leaflets sinuate. *Cacao de macaco.*" March 27, 1948, *Richard Evans Schultes & Francisco López 9747.*—Estado do Amazonas, Rio Negro between São Felipe and Karapaná. May 4, 1948, *Richard Evans Schultes & Francisco López 9869.*

*Herrania Camargoana* is named in honor of Dr. Felisberto Camargo, founder and director of the Instituto Agronômico do Norte in Belém do Pará, Brazil. Possessed of a deep patriotism and a fervent desire to take the benefits of agronomical science to the poor and forgotten *caboclo* of the Amazon valley, Camargo has, at times almost single-handedly, carried out an energetic crusade to improve the lot of the Amazon through better agriculture. In spite of discouraging odds in the form of tremendous distances, primitive transportation and actual lack of geographical knowledge of large areas; and of poverty, sickness, apathy and lack of education amongst the people themselves, the efforts of Camargo and his small but loyal group of scientists are beginning to bear real fruit. To the best of my knowledge, this program, embracing many phases of fundamental biological research (from plant exploration and introduction to forest tree breeding and phytopathology) and the establishment of nurseries and plantations, constitutes the only sustained agricultural work of a truly scientific nature which the Amazon has seen in the four centuries since its discovery by Europeans.

Restricted apparently to the uppermost Rio Negro basin, *Herrania Camargoana* seems to have as its closest

ally the Guianan and Venezuelan *H. lemniscata*. This relationship is strikingly evident when one compares the fruits of the two concepts. Both species have relatively small capsules in which there are transverse ribs nearly as large as the cultriform longitudinal ribs, and soft, pointed mammoid projections at each junction of the longitudinal and transverse ribs. The former species, however, has much longer and upturned projections than the latter, and would seem, in this as in some other characters, to represent an extreme in the evolution of the genus. There would appear to be a rather easily traceable trend from *Herrania Mariae* through *H. lemniscata* to *H. Camargoana*, on the one hand, and to *H. laciniifolia* on the other.

The coloration of the flowers of *Herrania Camargoana* and *H. lemniscata* is similarly complex and also indicates a relationship. No other known species of *Herrania* can match these two for complexity of floral coloration. *Herrania Camargoana*, according to field notes quoted in detail above, has sepals which are dark blood-red externally but scarlet internally; petals which are ashy red or purple with yellowish stripes; staminodes which are ashy purple-maroon with white-yellow patches internally but entirely dark red externally; and ligules, red without and white-yellow within, which are folded or inrolled, so that the red is enclosed and is not seen directly. *Herrania lemniscata* has, according to field notes (*Steiermark* 60558), sepals which are white in the uppermost two-thirds and rose-salmon below, with rose stripes; and staminodes (called "petals" on the label) which are dull yellow with dull rose specks in the lower half.

The shape and size of the leaflets, however, differ strikingly in the two concepts. *Herrania Camargoana* has oblanceolate or broadly lanceolate-ovate leaflets which measure 60-75 cm. in length and 16-26 cm. in

width with the upper half regularly and conspicuously sinuate. *Herrania lemniscata* has leaflets which are at least 80 cm. long and 40 cm. wide with the margin very deeply pinnatilobate with usually four irregular, for the most part widely triangular or widely lanceolate-acuminate segments, each up to 18 cm. long and 9-10 cm. wide.

***Herrania kanukuensis*** *R. E. Schultes* in *Caldasia* 2 (1948) 11; in *Bot. Mus. Leafl. Harvard Univ.* 18 (1949) 277.

Hitherto known only from the type collection from the Kanuku Mountains in adjacent British Guiana, *Herrania kanukuensis* is now registered, through the collection cited below, from northern Amazonian Brazil.

Inasmuch as *Herrania kanukuensis* has never been illustrated, it has seemed advisable to publish, with this phytogeographical note, a drawing of this species (Plate XXXIII).

BRAZIL: Territorio do Rio Branco. Lower Rio Branco, Tapanaruca. "Tree in clump, 8 meters; rouge flowers. Lowland, border of high forest." February 23, 1948, *Ricardo de Lemos Fróes 23003*.

***Herrania kofanorum*** *R. E. Schultes* *sp. nov.*

Arbuscula parva, tenuis gracilisque, usque ad quindecim pedes alta, ex radice plerumque unus truncus erectus, cylindricus, apice ramosus, cinereo-nigro cum cortice scrobiculato et scabrido, usque ad septem cm. in diametro crescens. Rami ferrugineo-tomentosi, denique subglabrati, subteretes sulcatique. Ramuli similes sed tomentosiores. Folia ad trunci apicem collecta, ampla, digitata, longissime petiolata, septem-foliolata, stipulata. Stipulae caducae, lineares, acutae, 2.5-3 cm. longae, circa 3 mm. latae, siccae, extus hispidulae vel strigillosae, intus usu subglabrae. Petioli robusti, teretes sed obscurissime sulcati, basi leviter dilatati, subferruginei, densissime

atque molliter tomentosi, usque ad 30 cm. longi, 6 mm. in diametro. Foliola sessilia, inaequalia, lanceolato-oblonga, apice in cuspidem vel mucronem acutum usque ad 2 cm. longum producta, basi sensim attenuato-decurrentia, margine conspicue atque regulariter undulato-sinuata; laminis firme coriaceis, plerumque 17-30 cm. longis, 6-11 cm. latis, supra atroviridibus, glabris vel maxime sparsissime atque minutissime strigilloso-pilosiusculis albis cum pilis caducis, in venis praecipuis minute fusco-hirsutis, subtus fulvo-viridibus, densissime atque molliter stellato-pilosis, in venis praecipuis ferrugineo-tomentosis; costa nervisque utrinque sed subtus magis prominenter elevatis. Inflorescentiae fasciculatae, usque ad vigintiflorae. Flores caulini, longe pedicellati, e trunco inferiore orti, in racemis contractis prorumpentes. Alabaster magnus, elongato-globosus, 1.8 cm. in diametro, stellato-pilosus, subfulvo-rubens. Pedicelli robusti, teretes, articulati, densissime et minute stellato-pilosiusculi, subcinereis cum pilis, plerumque 9-10 mm. longi, 1-1.5 mm. in diametro, basi bractea brevi, lineari, acuta, dense tomentosa, 2-4 mm. longa subtenti. Calyx subcymbiformis, fere usque ad basim divisus. Sepala tria, valdissime inaequalia, subchartacea, margine integra, intus minute papillosa, subglabra atque probabiliter cito glabra, extus sparsim pilis stellato-strigosis usque ad 1 mm. longis et etiam pilis stellato-pilosiusculis minutissimis armata, aestivatione valvata; duo interiora elliptica, apice acuta, 10 mm. longa et 6 mm. lata; exterius rotundato-ovatum, 15-16 mm. longum, 15 mm. latum, apice rotundatum et saepe profunde (usque ad 2 mm.) incisum, incisura ut sulcus medianus ad laminae basim intus extensa. Petala quattuor vel quinque, rotundato-obovata, sessilia, concava, apice valde cucullata, glabra, utrinque (sed extus magis) muricato-papillosa vel granulosa, atrorubentia, quinquenervia, purpureis cum venis longitudinaliter stri-

ato-venosa, superne in ligulam extensa, 9 mm. longa, 7 mm. lata. Petalorum ligulae filiformes, pendulae, membranaceae, omnino glabrae sed basi minute granulosae, plusminusve 1 mm. latae, 80-100 mm. longae, basi valde dilatatae. Tubus stamineus quinquedivisus, staminibus invicem duo- et quattuor-antheriferis, filamentis valde complanatis, brevibus liberisque. Staminodia conspicue petaloidea, lanceolato-elliptica, apice acuta, basi attenuata, utrinque grosse muricato-papillosa, margine integra 22 mm. longa, 6 mm. lata. Ovarium sessile, elongato-ovoideum, distincte decemcostatum atque quinqueloculare, ochraceum, densissime stellato-pilosum, 2.5-3 mm. in diametro. Pistillum complanatum, 3 mm. longum, glabrum, simplex. Fructus ignotus sed luteus in maturitate dicitur.

*Herrania kofanorum* differs from its very close ally *H. balaënsis* Preuss in being smaller, in having leaflets only half as large, and in having the sepals very conspicuously unequal instead of nearly alike. *Herrania kofanorum* has two inner sepals which are elliptic, 20×6 mm. and an outer one which is rotund-ovate, 15-16×15 mm., whereas *H. balaënsis* has three lanceolate-elliptic sepals which measure 14×6 mm. Furthermore, the outer sepal of *Herrania kofanorum* is so constructed that it is often conspicuously slit to a depth of 2 mm., and this slit is prolonged as a furrow to the base of the interior of the sepal (when the split is not present, there is a markedly thin furrow); nothing similar is seen in *H. balaënsis*. Both these species are related to *Herrania Dugandii*.

ECUADOR: Río San Miguel o Sucumbíos, entre el Río Putumayo y la Quebrada Teteyé, alt. 260 m. Nombre Kofán: *ko-kee-of-chu*. "Small tree, 15 ft. Flowers large, deep red-purple in all parts. Fascicles many-flowered. *Cacao silvestre*." March 29, 1942, *R. E. Schultes 3478*. (TYPE in Econ. Herb. Oakes Ames; DUPLICATE TYPES in Herb. Nac. Colomb., Herb. Gray, U. S. Nat. Herb.).

COLOMBIA: Comisaría del Putumayo, Río Putumayo, trocha entre

Puerto Ospina y Concepción, alt. 250 m. Nombre vulgar: *cacao silvestre*, *cacao de monte*. "Small tree, 12 ft. tall. Flowers dark red. Kofán name: *ko-kee-oi-chu*." April 20-30, 1942, R. E. Schultes 3670.

***Herrania Mariae* (Mart.) Decaisne ex Goudot var. *putumayonis* R. E. Schultes var. nov.**

Arbuscula usque ad duodecim vel quattuordecim pedes alta, ab *Herrania Mariae* principaliter foliis multo majoribus (usque ad 52 cm. longis, 18 cm. latis), lanceolato-ellipticis (non conspicue rhomboideis); petiolis robustioribus et longioribus; floribus majoribus, alabastro globoso usque ad 17 mm. in diametro; ligulis brevioribus, usque ad 70 mm. longis sed saepissime paulo brevioribus differt.

Additional material may indicate that this concept is deserving of specific rank. At the present time, however, it would seem advisable to treat it as representing a variety of *Herrania Mariae*. The fruit of *Schultes 4010* is hardly distinguishable from that of *Herrania Mariae*. The flowers have several differentiating characters, the most conspicuous of which is the shorter ligule. Vegetatively, the collection is extremely similar to *Herrania nycterodendron* (with the type plant of which it was growing) and differs markedly from *H. Mariae* chiefly in the departure from the typical rhomboid form of the leaflets and in their unusually large size. The type plant of *Herrania Mariae* var. *putumayonis* consisted of four or five trunks in a clump, whereas *H. Mariae* usually, if not always, is a treelet with a single trunk.

*Herrania Mariae* var. *putumayonis* may represent a western variant of the species which is most abundant in the eastern half of the Amazon basin.

PERU: Departamento de Loreto, Río Putumayo, entre los Ríos Igaraparaná y Yaguas, Puerto San Salvador o Pesquería, cerca de las Islas Batalón I y Batalón II. Alt. 100-150 m. (?). "Bark basally black, smooth, above grey-brown. Wood soft. Height 12-14 feet. Petals

deep blood-red. Ligules pink, white for half the length. Witoto name: *mu-se-na*. Spanish name: *cacao silvestre*." June 20, 1942, Richard Evans Schultes 4010 (TYPE in Herb. Gray).

***Herrania nitida* (Poepp.) R. E. Schultes var. *aspera* (Karsten & Triana) R. E. Schultes comb. nov.**

*Brotobroma aspera* Karsten & Triana ex Triana Nuev. jén. e esp. plant. fl. Neo-Granad. (1854) 12.

*Herrania aspera* (Karsten & Triana) Karsten in *Linnaea* 28 (1857) 447.

Arbuscula parva ab *Herrania nitida* principaliter foliis utrinque asperioribus et apicem versus margine definite sinuatis, florum partibus omnibus sanguineo-purpureis, fructibus probabiliter minoribus differt.

With the scarcity of collections, it is rather difficult to evaluate this concept. It is certainly not specifically distinct from the widespread and somewhat variable Amazonian *Herrania nitida*. At the present state of our knowledge, it is probably best treated as a variety. The very definitely and regularly sinuate margin of the upper part of the leaflets is apparently a constant character, although in several of the Peruvian collections which I have assigned to *Herrania nitida* there is a tendency for the margin to be obscurely undulate.

Karsten, in discussing *Herrania aspera* (in *Linnaea* loc. cit.) and in pointing out its difference from *H. pulcherrima* Goudot, stated that it occurs "in vallis Orenocensis marginibus ad pedem Andium bogotensium meridensiumque. . . et littora fluminis Magdalenae." He cited no specimens. The presumed type of the concept—*Triana 5333*—was collected in the Llanos of Villavicencio. The only other collections which have as yet come to my attention are a topotype, one from the Apaporis basin and several from the *trapécio amazónico*. Therefore, I believe that Karsten's assertion that *Herrania nitida* var. *aspera* is found in the Magdalena basin

may be erroneous and may have been based on a sterile collection of *H. albiflora*, superficially often rather similar. When Triana and Planchon (Prodr. Fl. Novo-Granat. (1862) 209) erroneously reduced *Herrania aspera* to synonymy under *H. pulcherrima*, additional confusion concerning the distribution of the concept resulted.

COLOMBIA: Intendencia del Meta, Llanos de San Martín, Villavicencio, altitude 400 m., January 1856, *J. Triana 5333* (TYPE).—Comisaría del Amazonas, Río Amazonas, La Victoria. "Small tree. Edge of forest." August–September, 1929, *Llewelyn Williams 2816*.—Intendencia del Meta, Llanos de San Martín, Villavicencio, altitude about 500 m. "Dense forest. Small tree, 3 m. high. Leaves borne at summit; stem about 2 cm. in diameter, bearing red flowers in lower part." March 17, 1939, *E. P. Killip 34247*.—Comisaría del Vaupés, Upper Apaporis basin, Río Macaya near confluence of Ajaju and Macaya, near Puerto Hevea. Altitude 350 meters. Sandy, well-drained soil. "Treelet 12 ft. tall, basal diameter 3 inches. Bark smooth, black, thin. Fruit on lower portion of trunk, ellipsoid, 10-ribbed, long-tipped, rich green, stinging hairs up to 1 mm. long along ribs and between them to a lesser extent. Persistent sepals brown, dried, densely hirsute. Fruit (without peduncle which is 25 mm. long and 5 mm. in diameter) 9–10 cm. × 5 cm. in diameter." June 1943, *Richard Evans Schultes 5529*.—Comisaría del Amazonas, Trapéicio amazónico, Leticia. Alt. about 100 m. September–November 1944, *Richard Evans Schultes 6141; 6143; 6144; 6147; 6149; 6192 A*.—Comisaría del Amazonas, Trapéicio amazónico, Río Loretoyacu. Alt. about 100 m. "Small treelet. Tikuna Indian name: *cha-té-rá*." October 20–30, 1945, *Richard Evans Schultes 6640*.

*Herrania nitida* (Poepp.) R. E. Schultes fma.  
*sphenophylla* R. E. Schultes stat. nov.

*Herrania nitida* (Poepp.) R. E. Schultes var. *sphenophylla* R. E. Schultes in *Caldasia* 2, no. 6 (1943) 20.

Continued field studies of the rather variable *Herrania nitida* complex indicate the advisability of treating this concept as a form and not as a variety.

*Herrania pulcherrima* Goudot var. *pacifica* R. E. Schultes var. nov.

Arbor parva usque ad viginti quinque pedes alta, ab

*Herrania pulcherrima* foliolis valde membranaceis, supra minute stellato-pilosis et non muricatis vel subtuberculatis, lateralibus saepissime valde obliquis; floribus vulgo multo minoribus cum partibus (petalis ligulisque) ochraceis vel albis; fructibus minoribus (11.5 cm. longis, 7 cm. in diametro) principaliter differt.

This concept would seem to represent a Pacific coastal variant of *Herrania pulcherrima*, a species which, in its typical form, is endemic to the cordilleras of Colombia.

COLOMBIA: Departamento del Valle, Pacific coast, Río Yurumanguí, Caimanero. Forest. Alt. 10 m. "Arbolito 6 m. Tallo 6-7 cm. diámetro, gris negruzco oscuro, leso con verrugas. Inflorescencias caulinares paucifloras. Capullos florales pardo-ocráceos." February 5, 1944, *J. Cuatrecasas 16010*.—Intendencia del Chocó, Río San Juan, vicinity of Palestina. Alt. 0-30 m. "Arbolito 8 m. Tallo 15 cm. diámetro. Hoja membranosa, gruesa, rígida, verde amarillenta. Pecíolo verde, ocráceo. Fruto 11.5 cm. × 7 cm., prismático-piramidal, apuntado con 5 costillas muy salientes y otras cortas; algunos nervios muy marcados; verde amarillento." May 28, 1946, *J. Cuatrecasas 21337*.—Departamento de Antioquia, north of Dabeiba, road to Turbo. "Closed rain forest. Tropical, shady, wet. Alt. 300 m. Height of plant 5-6 m. Flowers cauline. Rose-white interior; red appendages 10 cm. long; corolla deep red. Grows deep in rain forest. Leaf and petiole with hairy brown wool." February 25, 1942, *Univ. California 3rd Bot. Gard. Exped. Andes 1942, 30173* (Leg. R. D. Metcalf & J. Cuatrecasas).

ECUADOR: "Foot of Western Cordillera. Alt. 100 m. In the shade of the forest. Tree 5 m. high, 7 cm. diameter. Bark blackish with small warts. Leaves alternate, palmate, with 7 leaflets; leaflets 60 cm. long; leafstalks 60 cm. long with 2 quite narrow,  $2\frac{1}{2}$  cm. long stipules. Leaves and stem, when young, brownish velvet-hairy. Flowers on the old stem, on short peduncles. Flower almost 3 cm. in diameter, dark red, with 8 cm. long reddish-white, thread-like appendages. Fruit not seen, said to be cacao-like, with edible, white, sweet husks of the seeds. Rare. Not used. Vulg. *cacao de monte*." No date, *A. Rimbach 48*.—Provincia Pichincha, Santo Domingo de los Colorados. Alt. 800 m. "Especie árboles con flores directamente pegadas al tronco. Flores rojas." August 10, 1945, *M. Acosta-Solis 10923*.

*Herrania purpurea* (Pitt.) R. E. Schultes in *Caldasia* 2, no. 9 (1944) 333.

*Theobroma purpureum* Pittier in Fedde Rep. Sp. Nov. 13 (1914) 319.

The binomial *Herrania purpurea* was published as a *nomen nudum* in the first edition of Thomas Belt's "The Naturalist in Nicaragua" (1874) 116. Belt wrote: "About here grows a cacao (*Herrania purpurea*) differing from the cultivated species (*Theobroma Cacao*)." I have been unable to discover a description of the plant or a publication of the binomial prior to 1874. In the preface of his book, Belt stated that "Prof. D. Oliver of Kew has kindly named for me some of the plants." In the collection of *Herrania* at Kew, I did not find any specimen from Nicaragua collected prior to 1874 and annotated with this binomial. Dr. N. Y. Sandwith of Kew has kindly searched through the archives and reports that he can find nothing which might suggest that Oliver had published the binomial.

Pittier's description of *Theobroma purpureum* was based upon a Panamanian plant collection, and he made no mention of a prior publication of this specific epithet. There is no doubt that the binomial which Belt published refers to the same concept which Pittier later and independently described and for which he used the identical specific epithet. In accordance with the International Rules of Botanical Nomenclature, therefore, we must consider Pittier's *Theobroma purpureum* as the first valid use of the specific epithet.

#### TERNSTROEMACEAE

*Mahurea tomentosa* Ducke in Arqu. Inst. Biol. Veg. Rio Janeiro 1 (1935) 208; in Trop. Woods 43 (1935) 22.

It would appear that this collection is the first of the genus *Mahurea* from Colombia. There are several species from Venezuela, the Guianas and Brazil, usually

associated with the old Duida-Roraima type of flora. *Schultes 3929* was collected in a sandy caatinga at La Chorrera, a locality having many elements in common with the floras of the Apaporis, Vaupés and upper Río Negro caatingas.

COLOMBIA: Comisaría del Amazonas, Río Igarapará, La Chorrera and vicinity. "Bush. Flowers pink." June 6, 1942, *Richard Evans Schultes 3929*.

#### COMBRETACEAE

##### **Combretum karijorum** *R. E. Schultes sp. nov.*

Frutex scandens. Ramuli glabri et subnitidi, teretes, 2 mm. in diametro. Petioli robustiores, brunnei, 4 mm. longi. Folia papyracea, atroviridia, ovata, plerumque 11-16 cm. longa, 8.5-11 cm. lata, basi rotundata, apice breviter acuminata, integra, supra nitida, omnino glabra; venis secundariis plusminusve septem supra haud impressis, subtus prominenter elevatis, tertiis prominentioribus. Inflorescentiae ex axibus superioribus prorumpentes, usque ad 15 cm. longae. Flores adhuc ignoti. Samara 30 mm. longa, 12-13 mm. lata, omnino glabra, maturitate rufescentia, alis elongato-linearibus, 2.5-3.5 mm. altis, margine subintegra, transverse minutissime striolatis.

*Combretum karijorum* appears not to be closely allied to other known Amazonian species of the genus and can be distinguished at once by its unusual fruit. The samara is very long in relation to its lateral dimensions—the body being elongate-lanceolate and the wings linear, nearly as wide at the center as at the ends. This shape is unusual in *Combretum*. There are other differences of lesser importance, such as the extreme reduction of the petioles which gives the large and ovate leaves almost a subsessile appearance.

The specific epithet refers to the once populous and fiercely warlike tribe of Karijona Indians, who formerly

inhabited the upper Apaporis basin, now reduced to fewer than twenty individuals residing on the Río Vaupés and at La Pedrera on the Río Caquetá. The Karijonas refer to this plant as *le-che-mah*.

COLOMBIA: Comisaría del Vaupés, Macaya-Ajaju River confluence. Mount Chiribiquete. "Vine. Fruit green, with reddish tinge." May 15-16, 1943, *Richard Evans Schultes 5452*.

**Combretum rotundifolium** *L. C. Richard* in Act. Soc. Hist. Nat. Paris 1 (1792) 108.

In spite of its abundance in Amazonian Colombia, *Combretum rotundifolium* does not seem to have been reported from this Republic. Collections have also been made in Venezuela and the Guianas.

COLOMBIA: Comisaría del Vaupés, Macaya River, vicinity of Cachivera del Diablo and mouth of river. Altitude about 300 meters. "Flowers red. Vine." May 1943, *Richard Evans Schultes 5501*.

#### APOCYNACEAE

**Ambelania cuneata** *Mueller-Argoviensis* in Martius Fl. Bras. 6, pt. 1 (1868) 17.

This represents apparently the second collection of *Ambelania cuneata*. The type was from the upper Río Negro near the confluence of the Ríos Guainía and Casiquiare.

COLOMBIA: Comisaría del Vaupés, Río Vaupés, Caño Pacú. Sandy or rocky savanna. "Bush. Flowers yellowish." March 6, 1944, *R. E. Schultes 5815*.

**Ambelania zschokkeiformis** *Markgraf* in Notizbl. Bot. Gart. Berlin 12 (1935) 295.

The two collections cited represent apparently the second and third collections of this species, which was described on the basis of material which Ducke found on the Mauésmirim, an affluent of the Río Maués. The Marmellos material establishes the occurrence of *Ambelania zschokkeiformis* in the great Rio Madeira basin and greatly amplifies the known range of the species.

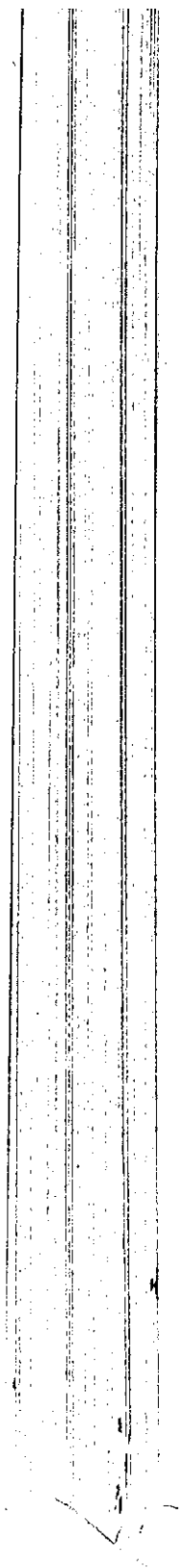
BRAZIL: Estado do Amazonas, Rio Marmellos (affluent of Rio Madeira), Igarapé de Poté. "Small treelet growing in dense stands on sand bars. Trunk very stout at base, up to 18 inches in diameter rapidly tapering upwards. Bark light grey-brown, corky. Flowers cream. Latex white. Trunk always grows at 20° angle from vertical against current. 'Seen only in Marmellos' according to inhabitants. One of most characteristic sand bar plants. In rainy season almost completely submerged. Common name: *boia*." August 6, 1945, *Richard Evans Schultes & Edgar Cordeiro 6514*.—Same locality, near mouth of river. "*Boia*. On sand bars." August 12, 1945, *Richard Evans Schultes & Edgar Cordeiro 6533*.

EXPLANATION OF THE ILLUSTRATION

PLATE XXVII. *PARASCHEELIA ANCHISTROPETALA*  
*Dugand*. Habit photographs.

*Photographs by R. E. SCHULTES*

PLATE XXVII



EXPLANATION OF THE ILLUSTRATION

PLATE XXVIII. (Upper figure). *HERRANIA KOFANORUM* R. E. Schultes. Habit photograph of flowers of Schultes 3478.

*Photograph by R. E. SCHULTES*

(Lower figure). *HERRANIA PULCHERRIMA* Goudot var. *PACIFICA* R. E. Schultes. Habit photograph of the fruit.

*Photograph by J. CUATRECASAS*

PLATE XXVIII



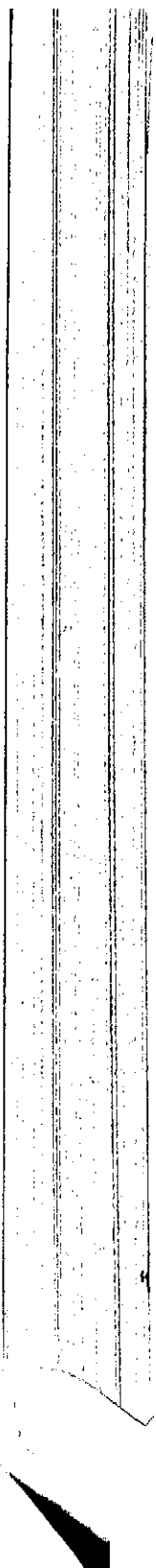
EXPLANATION OF THE ILLUSTRATION

PLATE XXIX. HERRANIA CAMARGOANA *R. E. Schultes*.  
(Upper figure). Habit photograph of flowers of  
*Schultes & Pires 9130*.

(Lower figure). Habit photograph of fruits of type  
plant.

*Photographs by R. E. SCHULTES*

PLATE XXIX



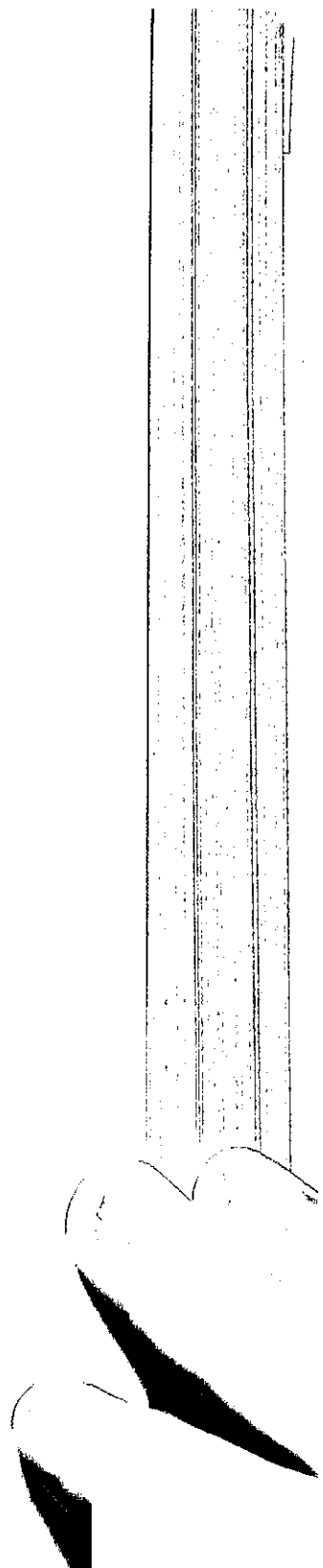
EXPLANATION OF THE ILLUSTRATION

PLATE XXX. (Upper figure). *HERRANIA MARIAE* (Mart.) Decaisne ex Goudot var. *PUTUMAYONIS* R. E. Schultes. Habit photograph of flowers and fruits of type plant.

(Lower figure). *AMBELANIA ZSCHORKEIFORMIS* Markgraf. A colony along the bank of the Rio Marmellos, Brazil,

*Photographs by R. E. Schultes*

PLATE XXX

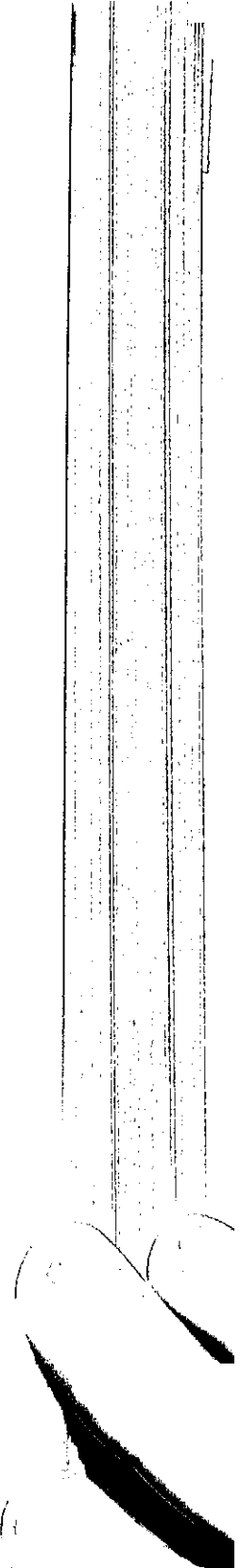
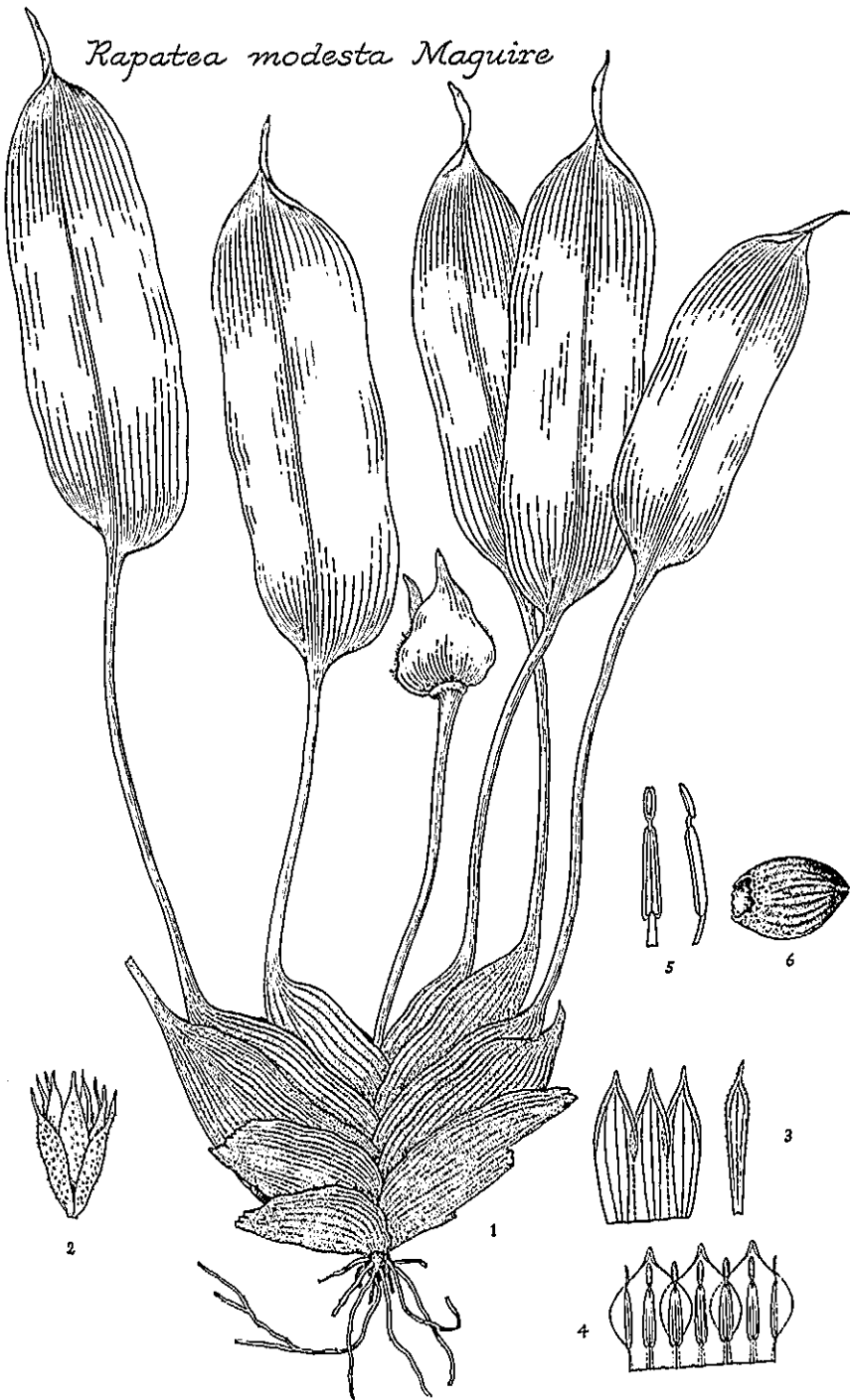


### EXPLANATION OF THE ILLUSTRATION

PLATE XXXI. *RAPATEA MODESTA* *Maguire*. 1, entire plant, about one third natural size. 2, spikelet, somewhat more than one half natural size. 3, bractlet of spikelet, somewhat more than one and one half times natural size. 4, calyx, semi-diagrammatic, shown spread out in a single plane, somewhat more than one and one half times natural size. 5, corolla, semi-diagrammatic, shown spread out in a single plane, stamens attached in position, somewhat more than one and one half times natural size. 6, stamen, front and side view, somewhat more than twice natural size. 7, seed, adaxial face, somewhat more than twice natural size.

PLATE XXXI

*Rapatea modesta* Maguire



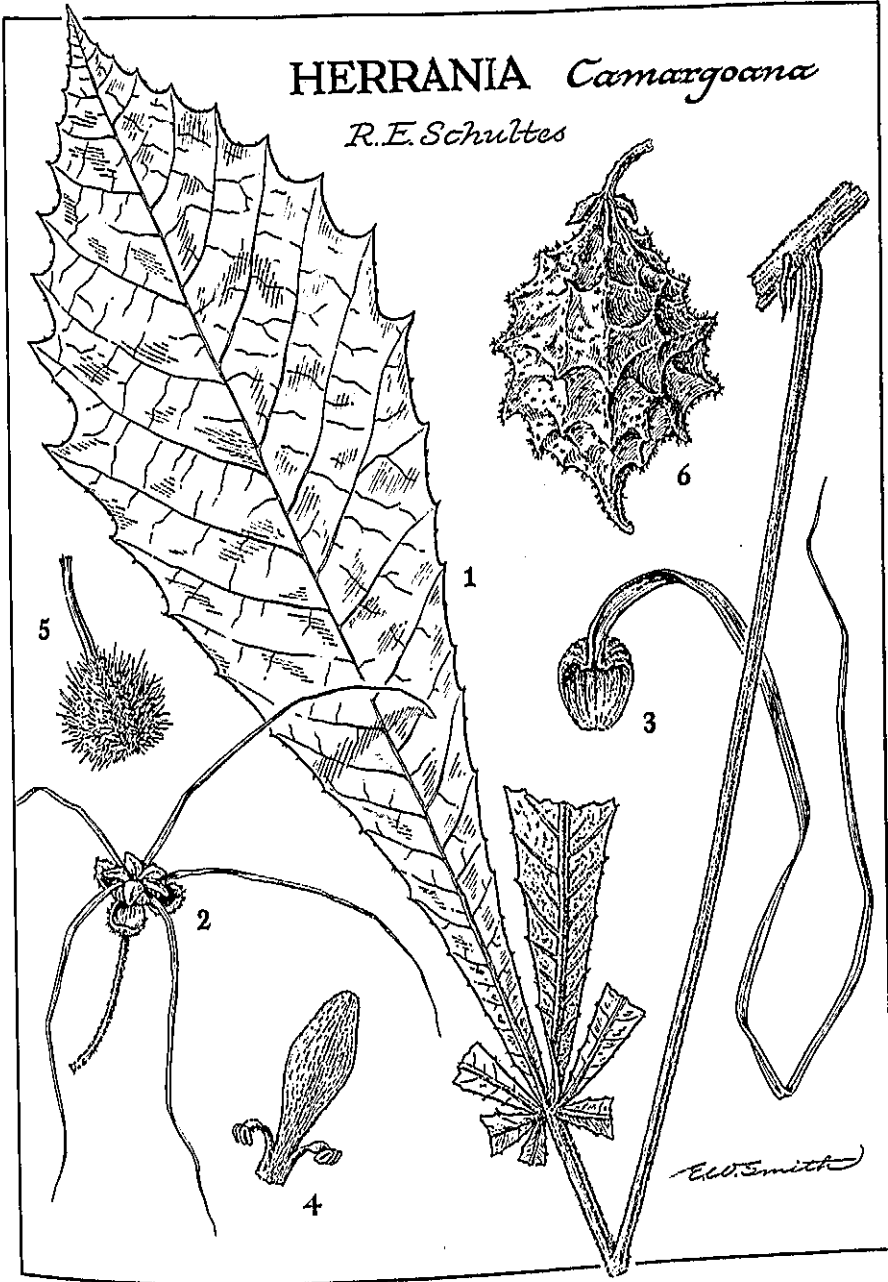
EXPLANATION OF THE ILLUSTRATION

PLATE XXXII. HERRANIA CAMARGOANA R. E. Schultes. 1, leaf, about one quarter natural size. 2, flower, about one half natural size. 3, petal, about twice natural size. 4, staminode and anthers, about twice natural size. 5, ovary and style, about four times natural size. 6, fruit, about one half natural size.

*Drawn by E. W. SMITH*

HERRANIA *Camargoana*

R. E. Schultes

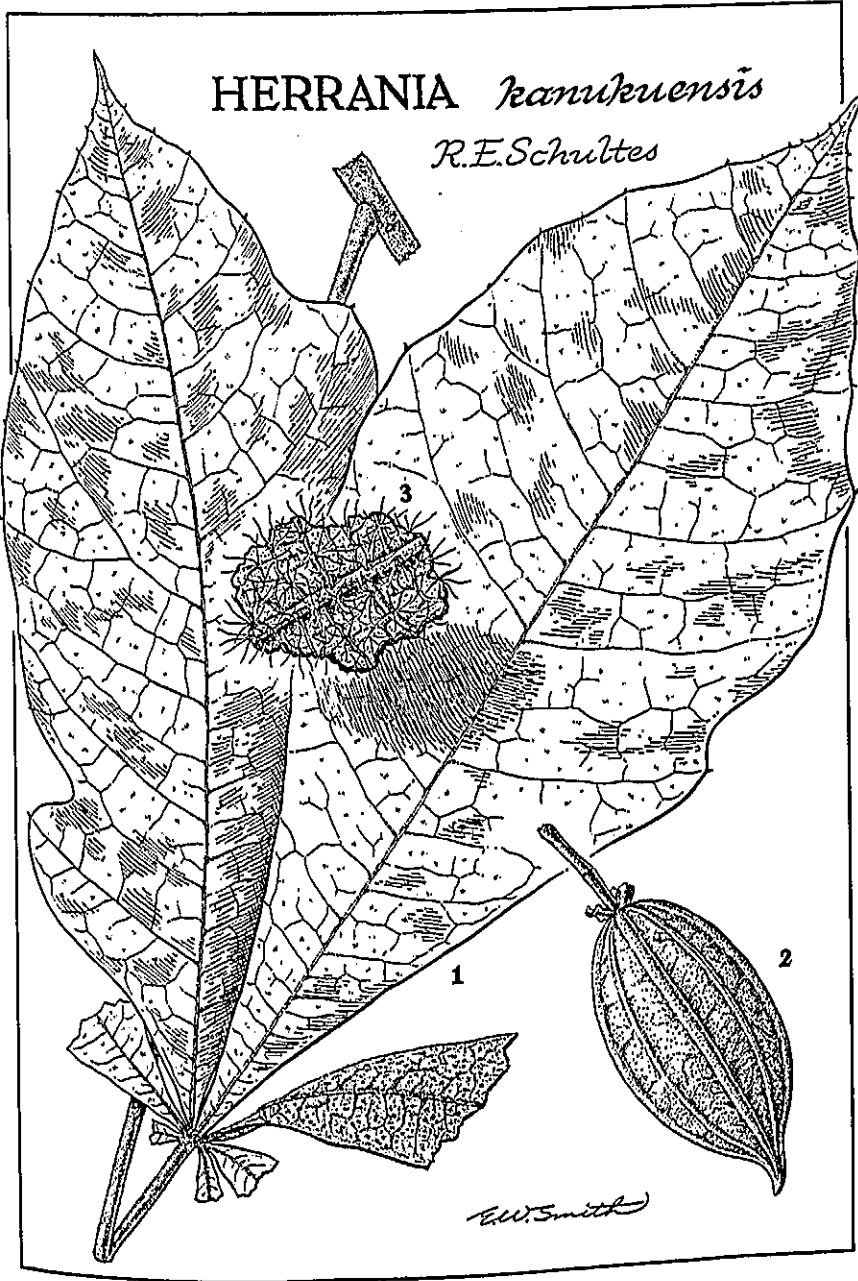


EXPLANATION OF THE ILLUSTRATION

PLATE XXXIII. *HERRANIA KANUKUENSIS* R. E. Schultes. 1, leaf, about one sixth natural size. 2, fruit, about one half natural size. 3, portion of under surface of leaflet, showing pilosity, about four times natural size.

*Drawn by* E. W. SMITH

HERRANIA *kamukuensis*  
R.E.Schultes



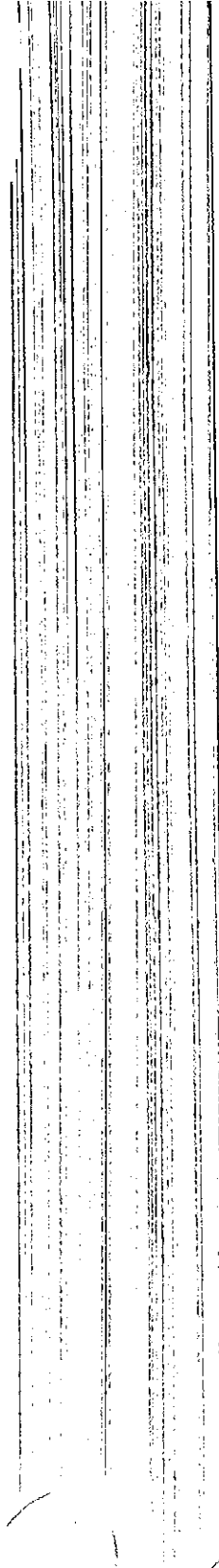
EXPLANATION OF THE ILLUSTRATION

PLATE XXXIV. *HERRANIA KOFANORUM* R. E. Schultes  
1, leaf, one half natural size. 2, flower, one half  
natural size. 3, petal, about twice natural size.  
4, staminode and anthers, about twice natural size.  
5, ovary and style, about four times natural size.

*Drawn by* E. W. SMITH

HERRANIA *kofanorum*  
*R. E. Schultes*





EXPLANATION OF THE ILLUSTRATION

PLATE XXXV. *HERRANIA NYCTERODENDRON* R. E. Schultes. 1, leaf, about one quarter natural size. 2, flower, one half natural size. 3, staminode and anthers, about twice natural size. 4, ovary and style, about four times natural size. 5, fruit, about one half natural size. 6, portion of under surface of leaf, showing pilosity, about four times natural size.

*Drawn by* E. W. SMITH

HERRANIA *nycterodendron*

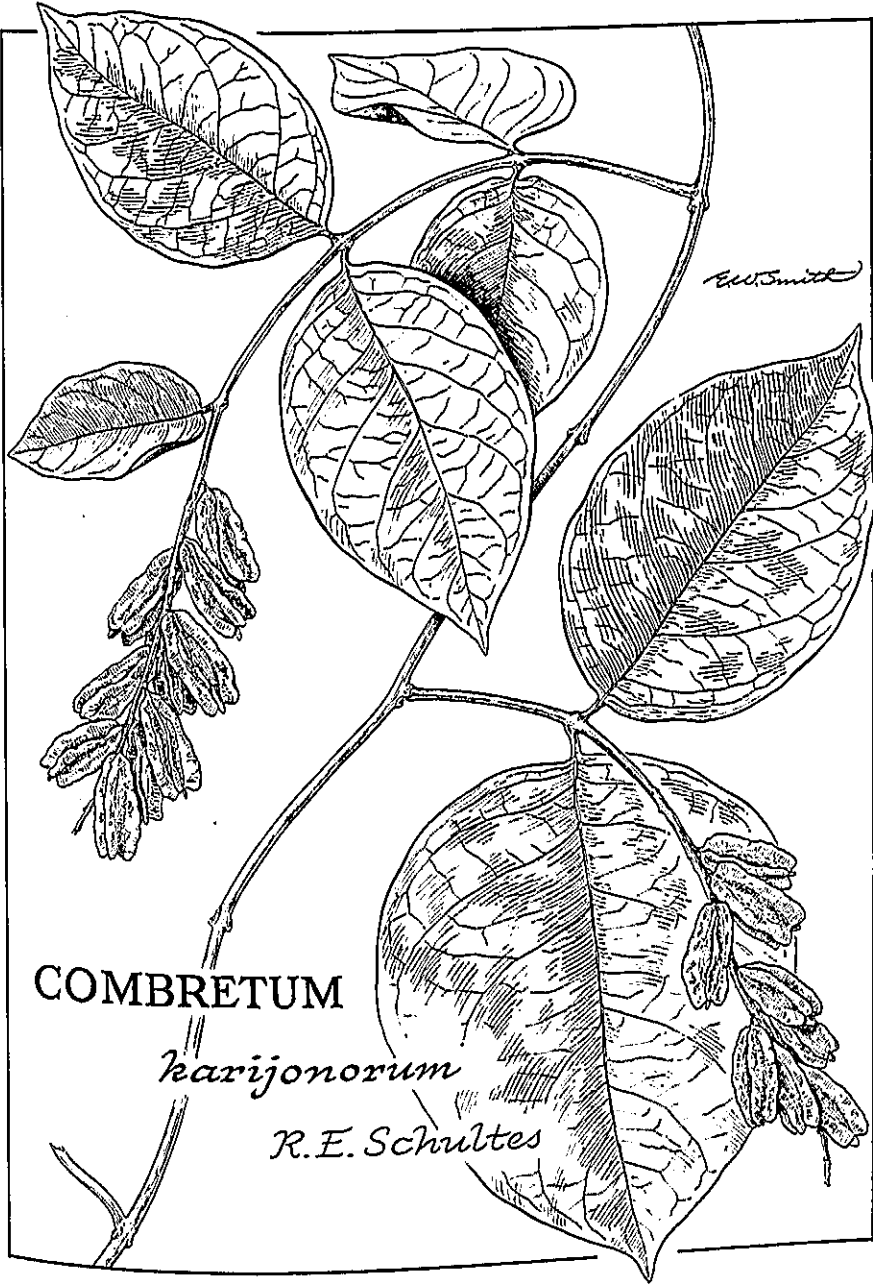
*R.E. Schultes*



EXPLANATION OF THE ILLUSTRATION

PLATE XXXVI. *COMBRETUM KARIJONORUM* R. F. Schultes. Habit drawing of fruiting branch from the type plant, natural size.

*Drawn by* E. W. SMITH



*R.E. Smith*

COMBRETUM

*karijonorum*

*R.E. Schultes*