

PLANTAE COLOMBIANAE. — III

Investigationes Specierum *Saurauiae*: Locus Primus.

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As a result of preliminary studies towards a revision of the American species of *Saurauia*, I have found it advisable to present the following notes on new or otherwise interesting species from Colombia.

Most of the classical collections of New World species of *Saurauia* are preserved in European herbaria. These are at present unavailable for study. For this reason, I have thought it valuable to call attention to recent and ample collections which have either been compared with authentic material or which have been critically determined.

It is with pleasure that I thank Miss Inés de Zulueta and Mr. Gordon W. Dillon for their beautifully executed drawings of several of the new species herein described.

*Saurauia anolaimensis* R. E. Schultes et H. García-Barriga sp. nov.

Arbor parva et pulcherrima, usque ad 5 m. alta. Rami lignosi strigillosique cum pilis ferrugineis 6 mm. longis densissime obtecti. Folia obovata, petiolata, firme papyracea, apice brevissime acuminata, basi subcuneata vel subrotundata, margine minute serrulata, 13.5-17 cm. longa, 5.5-7 cm. lata; infra cinereo-viridia, dense strigillosa (tactu aspera), nervis lateralibus undecim ad quattuordecim, non elevatis, densissime strigillosis ferrugineisque, supra atroviridia, asperohirsuta cum pilis aliquid subhamulatis, nervis medianis lateralibusque densissime strigillosis, non elevatis. Petioli densissime strigillosi, 2-2.5 cm. longi, 2 mm. in diametro. Pedunculi strigosi, ferruginei, 11-15 cm. longi. Inflorescentiae pauciflorae, pedicellis strigillosis usque ad 2 cm. longis. Bractea pedicelli primarii subtendens foliolacea, magna, strigillosa, elliptica, margine integra vel subsetosa, apice acuta, basi cuneata usque ad 2.5 cm. longa, 4-5 mm. lata; bractea pedicelli secundarii subtendens linearis, 7 mm. longa, 1 mm. lata. Flores magni, pul-

cherrimi, colore albo-flavi, in diametro 2 cm. Sepala quinque, inaequalia; duo exteriora aliquid coriacea, ovata, apice acuta, margine integra, extus omnino dense strigillosa, intus glabra vel puberulenta, 6 mm. longa, 6 mm. lata; tria interiora membranacea, rotundata, basi constricto-stipitata, margine integra extus glabra sed cum carina peripheria mediana conspicua, intus glabra, 7 mm. longa, 8 mm. lata. Petala quinque, alba vel flava, membranacea, ovata, apice rotundata, basi brevi stipitata, margine integra, utrinque glabra, basi prope marginem pulverulenta, usque ad 10 - 12 mm. longa, 8 mm. lata. Stamina plus minusve viginti. Antherae conspicuae, flavae, 3 - 5 mm. longae, versatiles. Staminum filamenta 4 mm. longa, basi densissime barbata albis cum pilis lanosis. Ovarium ovoideum, glabrum, in diametro 2 - 3 mm., nigrum. Styli quinque, carnosi, glabri, subsulcati, 1.5-2 mm longi. Fructus ignotus.

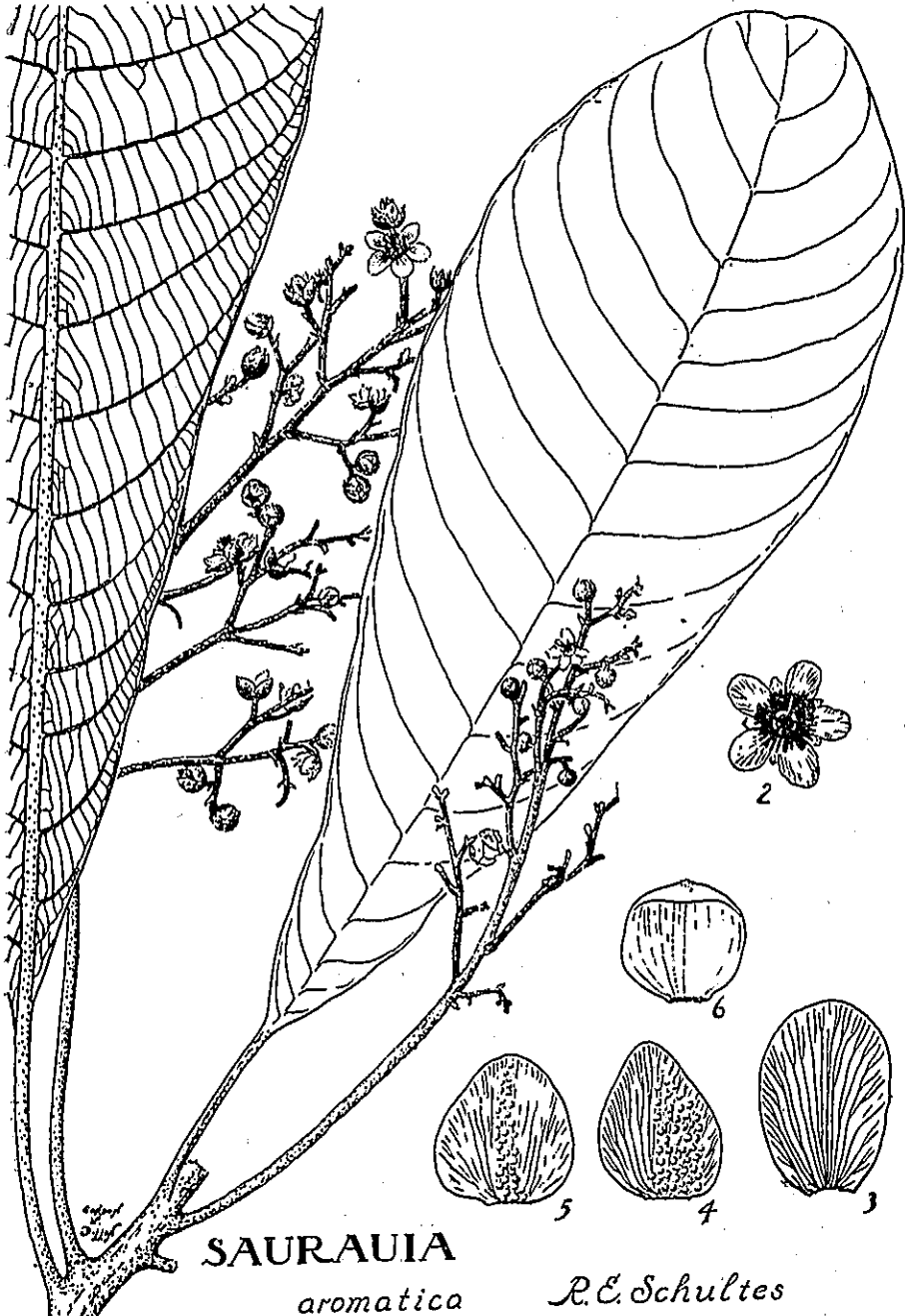
COLOMBIA: Departamento de Cundinamarca, Municipio de Anolaima, carretera entre Anolaima y Cachipay, alt. 1800 - 2260 m., 5 octubre, 1940, *H. García - Barriga* 8994.

(TYPE in Herb. Nac. Colomb.; DUPLICATE TYPE in U. S. Nat. Herb.)

*Saurauia anolaimensis* is very similar to *S. excelsa* Willd. var. *xanthotricha* (Turcz.) Busc., but is distinguished by its very conspicuous floral bracts. The bracts subtending the primary pedicels are foliolaceous in character. Among numerous minor floral and vegetative differences of note is the extremely large size of the flower with its very conspicuous petals.

*Saurauia aromatica* R. E. Schultes sp. nov.

Arbor parva, pulcherrima. Rami robusti, asperi, ferrugineo-scarabridi, prope apicem plus minusve 1 cm. in diametro; ramuli similes sed minores, ferrugineo-subechinati. Folia amplissima, papyracea, oblanceolata, apice brevissime acuminata vel obtusa, basi longe attenuato-cuneata, margine integra vel subintegra, usque ad 40 cm. longa, 16 cm. lata plerumque longe petiolata, (petiolus usque ad 7 cm. longus, 4 mm. in diametro); lamina utrinque glabra, supra venis plus minusve septendecim haud prominentibus, subtus conspicuissime elevatis, rubro-fulvis, sparce strigillosis. Inflorescentiae foliis breviores vel subaequales, multiflorae; pedunculi pedicellique ferruginei, dense echinati atque minutissime pulverulento-puberulenti; bractee minutae, lineares, siccae, plerumque usque ad 3 mm. longae. Flores pulcherrimi, aromatico-fragrantes, usque ad 1.5 cm. in diametro. Sepala quinque, valde inaequalia; duo exteriora coriacea, elliptica apice rotundata, margine integra, 7 mm. longa, 4 mm. lata, extus omnino



**SAURAUIA**

*aromatica*

*R. E. Schultes*

1. flowering branch; 2. flower; 3. petal; 4, 5 and 6. sepals.

echinata spinulis crassis subhamulatis, minutissime pulverulentis, inter spinulas pulverulento-puberulenta, intus pulverulentissima; tria interiora crasso-membranacea, late ovata, apice valde rotundata, margine subintegra, 8 mm. longa, 6 mm. lata, utrinque pulverulenta, extus cum spinularum echinatarum carina mediana armata. Petala quinque, alba, membranacea, glabra, late rotundata, apice rotundata, margine obscure undulata, 9-11 mm. longa, 6-7 mm. lata. Stamina perconspicua, flava, circiter quinquaginta; antherae versatiles, 3 mm. longae; filamenta gracilia, basi densissime barbata. Ovarium globosum, 2.5 mm. in diametro, quinque cum stylibus (qui in maturitate 5 mm, longis et filamentosis sunt) liberis coronatum. Fructus ignotus.

COLOMBIA: Comisaría del Caquetá, Cordillera Oriental, vertiente oriental, Sucre, bosques entre 1000 y 1300 m. alt. "Arbusto, corola blanca", Abril 4, 1940, *J. Cuatrecasas 9105* (TYPE in U. S. Nat. Herb. 1796300; DUPLICATE TYPE in Herb. Nac. Colomb.); — Comisaría del Caquetá, Cordillera Oriental, vertiente oriental, bosques entre Sucre y La Portada, 1200-1350 m. alt. "Arbol, hoja purpúrea envés, corola blanca; estambres amarillos; aromática". Abril 5, 1940, *J. Cuatrecasas 9150* (U. S. Nat. Herb. 1796575 and 1796576, sheets 1 and 2; Herb. Nac. Colomb.).

*Saurauia aromatica*, an extremely beautiful species, appears to be most closely related to *S. pulchra* Sprague of nearby regions. However, it is much larger in all its parts than *Saurauia pulchra* and is much more densely and coarsely echinate along the floral axes and on the outer surface of the sepals. The petals of *Saurauia aromatica* are rotund but often with undulating margins.

*Saurauia brachybotrys* Turczaninov in Bull. Soc. Nat. Moscou 31 (1858) 245.

*Saurauia brachybotrys* and its several varieties are apparently widespread in the western cordillera of central and southern Colombia and in Ecuador. The type of this species was collected at the foot of Mount Tolima (*Linden 972*).

A critical study the descriptions given by Turczaninov and by Buscalloni has enabled me to determine *Schultes 3202* as unquestionably referable to *Saurauia brachybotrys*.

COLOMBIA: Comisaría del Putumayo, Valle de Sibundoy, Sibundoy, collados al norte del pueblo, alt. 2250 m. "Nombre kamsá: *je-nuss*". Nombre castellano: *moquillo*. Fruit edible. Fruits abundantly in March and April. Left in clearing because of the value of its fruits and because it is a host to bees. Wood formerly used as kindling. Bark rasped and powder applied to sores to extract pus". February



*Saurauia brachybotrys* Turcz. A photograph of the tree from which the collection R. E. Schultes 3203 was made; Sibundoy (Putumayo).

Photo: R. E. Schultes.

12, 1942, *Richard Evans Schultes* 3203 (Econ. Herb. Oakes Ames; Herb. Gray; Herb. Nac. Colomb).

Departamento del Cauca, Popayán, *Lehmann* 5537. (U. S. Nat. Herb. N° 1360223).

Comisaría del Putumayo, alta cuenca del Río Putumayo en el Valle de Sibundoy, extremo E. junto a San Francisco, 2200 m. "Arbol frecuente, pétalos blancos, anteras amarillas", 1 enero, 1941, *J. Cuatrecasas* 11578. (Herb. Nac. Colomb.).

*Saurauia brachybotrys* Turczaninov var. *macrantha* Buscalioni in *Malpighia* 25 (1912) 221, et 28 (1917) 31.

The center of distribution of this interesting variety of *Saurauia brachybotrys* appears to be the Department of Cauca.

COLOMBIA: Departamento del Cauca, entre Popayán y Puracé, Quebrada de la Filipilla, 2000 m. alt. "Arbol, corola blanca, pedúnculo y cáliz amarillentos", 10-VII, 1939 *E. Pérez-Arbeláez et J. Cuatrecasas*

5823 (Herb. Nac. Colomb.); - Departamento del Cauca, Popayán, Timbio, en Hatoviejo, bosque, 1800 m. alt. "Gran árbol, flor blanca", 14-VII, 1939, *E. Pérez-Arbeláez et J. Cuatrecasas 6091* (Herb. Nac. Colomb.); - Departamento del Cauca, cordillera occidental, Carpinterías, (bosque entre los cerros de Munchique y Altamira), 2400-2450 m. alt. "Árbol", 15-VII, 1939, *E. Pérez-Arbeláez et J. Cuatrecasas 6148* (Herb. Nac. Colomb.).

*Saurauia caquetensis* R. E. Schultes, sp. nov.

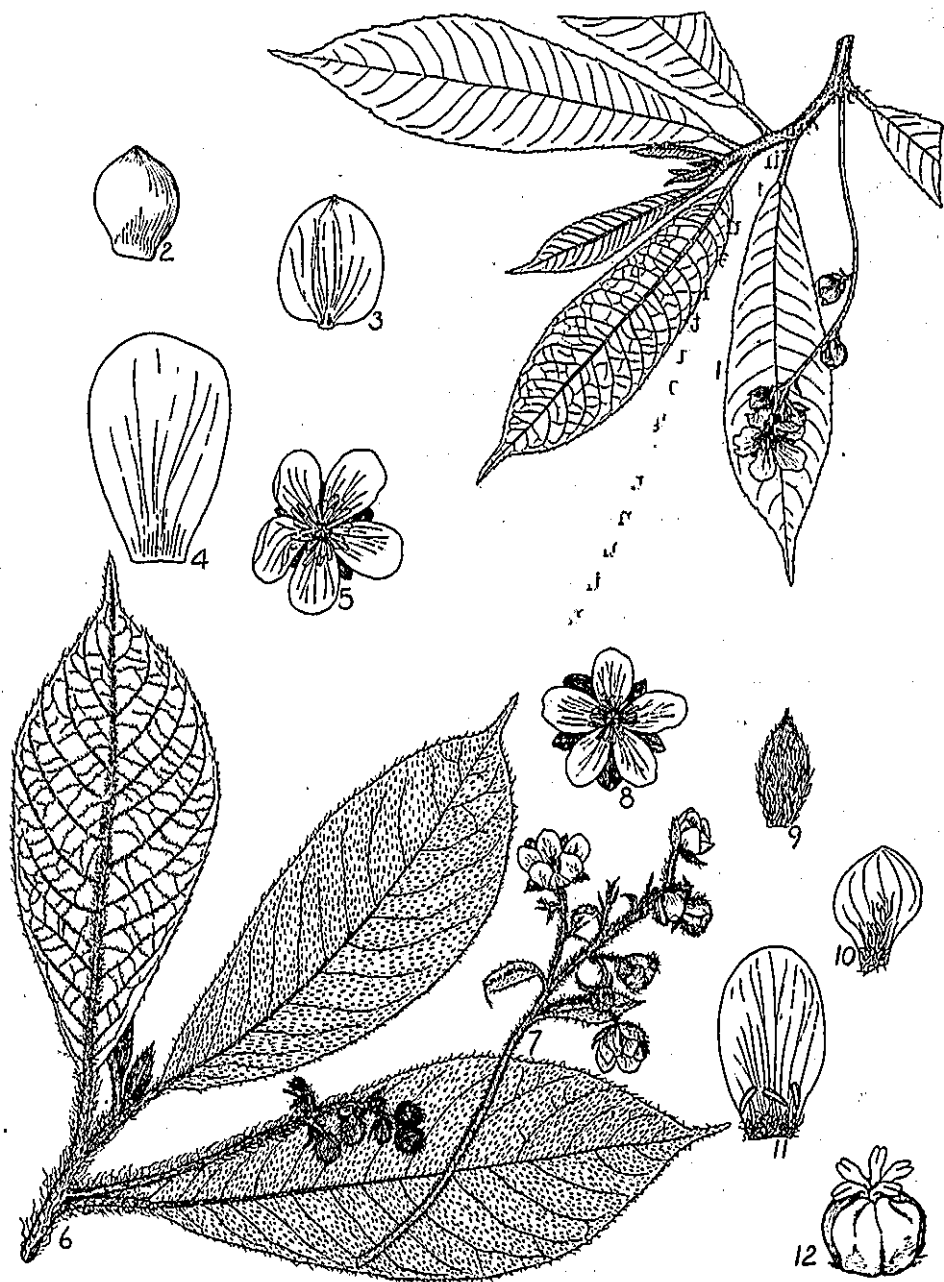
Arbor parva. Ramuli sparse setoso-hirsuti atque minute scabriusculi, fulvo cum cortice. Folia petiolata; lamina obovato-lanceolata, longe acuminata, basi subcuneata, subcoriacea, margine serrulata, utrinque glabra, plus minusve viginti nervis lateralibus, 9.5-11 cm. longa, 2.8-3.3 cm. lata, supra atroviridis et subnitida nervis cum setis sparsis scabridis, subtus fulvo-viridis, sine pilorum floccis in nervorum axillis, nervis dense atque minutissime subpapillatis. Petioli setoso-hirsuti, 1.2-1.5 cm. longi. Inflorescentiae usque ad octoflorae, foliis aequales vel longiores, gracillime pendentes, cum pedunculo usque ad plus minusve 17 cm. longae. Pedunculi graciles, 1.5-2 mm. in diametro, sparsim setuloso-hirsuti. Pedicelli similes, usque ad 4 mm. longi. Bractee subconspicuae, lineares, 4-5 (raro usque ad 10) mm. longae, plerumque 1 mm. latae, scariosae, paucis cum setis. Sepala quinque, ovato-rotundata, membranacea, glabra, margine minute ciliata, exteriora duo 6-7 mm. longa, 5-6 mm. lata; interiora tria 10-11 mm. longa. Petala quinque, rotundato-subquadrangulata, alba, membranacea, glabra, 7-8 mm. lata. Stamina plus minusve triginta, basi densissime barbata, barba rubentibus cum pilis praedita. Staminum filamenta 4 mm. longa, basi aliquid tumida. Antherae versatiles, 3 mm. longae. Ovarium subglobosum, conspicue quinquelobatum, in barba celatum, plus minusve 3 mm. in diametro, stylibus quinquefidis crassis coronatum. Fructus ignotus.

COLOMBIA: Departamento del Huila — Comisaría del Caquetá, cordillera oriental sobre el filo divisorio, en Gabinete, 2300-2450 m. alt. "Arbusto; flor blanca". Marzo 21, 1940, *J. Cuatrecasas 8439* (TYPE in U. S. Nat. Herb.; DUPLICATE TYPE in Herb. Nac. Colomb.).

The closest ally of *Saurauia caquetensis* in apparently *S. narcissifragrans*, from neighbouring regions. This relationship is discussed under *S. narcissifragrans*.

*Saurauia chiliantha* R. E. Schultes, sp. nov.

Arbuscula parva, usque ad 2.50 m. alta. Ramuli robusti, lignosi, glabrescentes, fusco-rubro cum cortice. Folia petiolata, papyracea, ellip-



Above: *Saurauia caquetensis* R. E. Schultes. 1. flowering branch; 2 and 3. sepals; 4. petal; 5. flower.  
 Below: *Saurauia anolaimensis* R. E. Schultes et H. García-Barriga. 6. flowering branch; 7. inflorescence; 8. flower; 9 and 10. sepals; 11. petal and stamens; 12. ovary and styles.

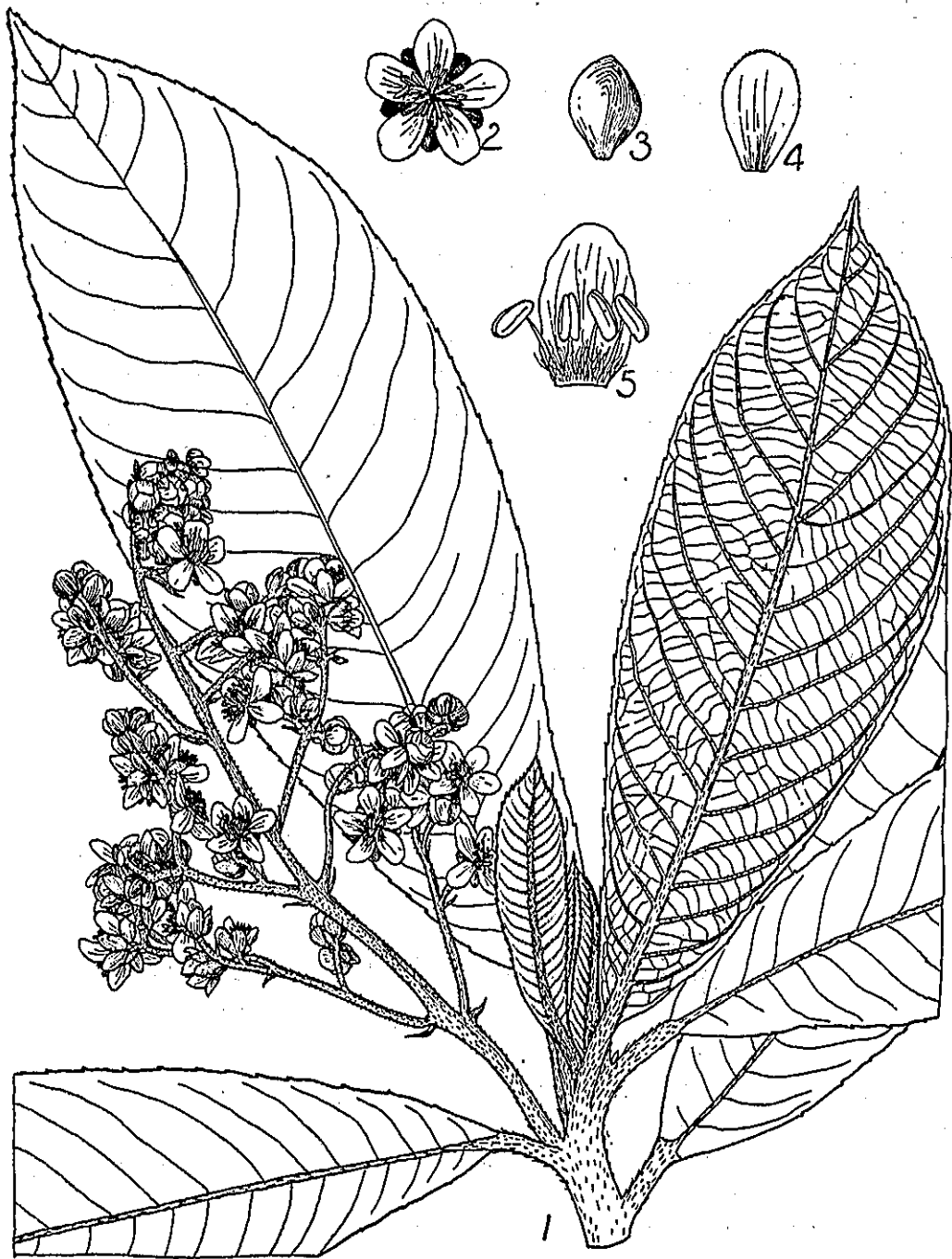
tico-oblanceolata, apice acuta, basi subcuneata, margine pseudodenticulata cum prolongatorum venorum secundorum spinulis subhamulatis et firmis conspicue praedita, cum plus minusve viginti nervis lateralibus, 11 - 18 cm. longa, 3.5 - 5.5 cm. lata; supra atroviridia, glabra, subnitida, nervis sparsim et molliter strigillosis; subtus viridia pallida, densissima atque maxime minutissime stellato-pilosa, sine pilorum floccis in nervorum axillis, nervis prominenter elevatis. Inflorescentiae congestiflorae multifloraeque, foliis conspicue breviores, cum pedunculo usque ad 1.1 cm. longae. Pedunculi aliquid robusti, dense et minute scabro-strigillosi, colore ferruginei. Pedicelli brevissimi, usque ad 3 mm. longi, ferrugineo-strigillosi, Bractee tria, inaequales, ellipticae, pilosae; duo minores 1.5 mm. longae, 0.5 mm. latae; major usque ad 3 mm. longa, 1.5 mm. lata. Flores parvi, albi, fragrantissimi, plus minusve 7 mm. in diametro. Sepala quinque, inaequalia; duo exteriora crasso-membranacea, ovato—rotundata (sepalum extremum apice subacutum, penultimum apice rotundatum), extus glabra vel pulverulenta, 3.5 mm. longa 3 mm. lata, margine apice minutissime ciliata; tria interiora membranacea, ovato—elliptica, apice rotundata, margine subirregularia et ciliata, extus glabra vel pulverulenta, usque ad 4 mm. longa, 3 mm. lata. Petala quinque, alba, membranacea, glabra, ovata, margine subundulata, apice rotundata aliquando laeviter bilobata, 5 mm. longa, 2.5 mm. lata. Stamina plus minusve duodeviginti, basi dense barbata. Staminum filamenta 2 mm. longa, basi aliquid tumida. Antherae versatiles, 2 mm. longae, flavae. Ovarium subglobosum, obscure quinquelobatum, glabrum, 1.5 mm. in diametro, cum stylibus quinque crassis brevibus coronatum. Fructus ignotus.

COLOMBIA: Departamento de Caldas: región del Quindío, entre Circasia y Pereira, cerca del Alto de "El Roble", 2200 m. alt. "Arbolito 2.50 m. alt.; fls. blancas muy olorosas", Agosto 16, 1941, A. Dugand et R. Jaramillo 2988 (TYPE in Herb. Nac. Colomb., Nº 12036; DUPLICATE TYPE in U. S. Nat. Herb).

*Saurauia chiliantha* is apparently most nearly related to *S. strigillosa* Tr. et Planch. but is easily distinguished from this species by the exceedingly small flowers (which are borne in great profusion). There are vegetative differences to be noted in the character of the pilosity and in the leaf margins as well as floral differences in the sepals, petals and stamens. Both species are native to the same general region of the Quindío, in the Central Cordillera.

*Saurauia echinosepala* R. E. Schultes, sp. nov.

Arbor parva, usque ad 2,80 m. alta. Rami robusti, strigosi, fulvo cum cortice obscure striato. Ramuli similes sed minores. Folia ampla,



*Saurauia chillantha* R. E. Schultes. 1, flowering branch; 2, flower; 3 and 4, sepals; 5, petal and stamens.

coriacea, oblanceolata, apice brevissime acuminata, basi rotundata vel cuneata, margine serrulata, usque ad 30 cm. longa, 10 cm. lata; lamina supra atroviridi, glabra, nervis haud impressis, subtus viridi nitidaque, glabra, plerumque plus minusve viginti nervis prominentibus et elevatis, vix strigillosis vel glabris. Petioli robusti, 3-5 cm. longi. Inflorescentiae comparate pauciflorae, foliis breviores, cum pedunculis usque ad 21 cm. longae; bracteae minutae lineares, usque ad 4 mm. longae, strigillosae. Flores magni pulcherrimique, usque ad 2.8 cm. in diametro. Sepala quinque, inaequalia; duo exteriora subcoriacea, elliptica, apice obtusa, margine integra, extus omnino dense echinata, crassis cum spinulis subhamulatis et apice potius recurvatis, minutissime puberulentis, inter spinulas papillosa, intus minutissime granuloso-papillosa, 7 mm. longa, 4-5 mm. lata; tria interiora majora, membranacea, ovata, apice rotundata, margine irregulariter subundulata, extus omnino minute papillosa, cum spinularum echinatarum hamularumque carina mediana armata, intus minute papillosa, 9 mm. longa, 6 mm. lata. Petala quinque, membranacea, alba, late rotundata, 9 mm. longa, 11 mm. longa, margine subintegra vel minute et irregulariter subundulata. Stamina, plus minusve quadraginta, conspicua, cum antheris flavis usque ad 3 mm. longis. Ovarium subglobosum, circiter 3 mm. in diametro, in staminarum barba densa albaque cedata. Styli quinque, crassi, 1.5 mm. longi sed in maturitate probabiliter longiores filamentosique. Fructus ignotus.

COLOMBIA: Departamento de Caldas, entre La Gabriela y La Línea (Carretera del Quindío), 2200-2600 m. alt. "Arbusto de 3 metros, flores blancas". 21 - VII - 1939, E. Pérez-Arbeláez et J. Cuatrecasas 6473. — (TYPE U. S. in Nat. Herb. 1774961; DUPLICATE TYPE in Herb. Nac. Colomb.).

*Saurauia echinosepala* is apparently most closely related to *S. strigillosa* Tr. et Planch. of the same general region. It differs in being much larger, in having very broadly rounded and marginally minutely subundulate petals, and having twice as many stamens. There are also other lesser differences. *Saurauia echinosepala* as indicated by its specific epithet, is very conspicuously echinate on the outer surface of the sepals. *Saurauia echinosepala* bears a more distant relationship to *Saurauia Loseneriana* of Ecuador.

*Saurauia excelsa* Willdenow in Ges. Naturf. Fr. Neue Schr. 3 (1801) 407.

This attractive species of western Venezuela and the adjacent parts of Colombia is somewhat variable in leaf size, but the shape and indument of the leaves as well as the floral characters are constant. The variation in leaf size may be due to the great altitudinal range

SAURAUIA

*echinosepala*

R. E. Schultes



1. flowering branch; 2. flower; 3. petal; 4, 5 and 6. sepals.

of this species. The collection *Killip & Smith 19024* represents a form with leaves which are narrower and smaller than those of the type specimen, a photograph of which I have examined; this collection was compared with authentic material at Kew. The type of *Saurauia excelsa* was collected near Caracas, Venezuela, by Moritz.

COLOMBIA: *Moritz sin. num.*, no definite locality.—Departamento de Santander, Vicinity of Charta, alt. 2000 m., forest. "Shrub or small tree, 12-12 ft. high, petals white".—Feb. 1-11, 1927, *E. P. Killip et Albert C. Smith 19024* (U. S. Nat. Herb).

Departamento de Santander, Quebrada de Pais, north of La Baja, alt. about 3200 m., dense forest, "Tree 15-20 ft.; sepals pale green; petals white; anthers yellow". — Jan 31, 1927, *E. P. Killip et Albert C. Smith 18325* (Herb. Gray).

*Saurauia excelsa* Willdenow var. *xanthotricha* (Turczaninow). Buscalioni in *Malpighia* 25: 7 (1912) 232.

This variety of western Venezuela and eastern Colombia is particularly striking because of its rich reddish-brown pubescence. The type was collected near Caracas by Linden. The collection *Killip & Smith 18322* was compared with authentic material in Berlin.

Buscalioni's treatment of Turczaninow's *Saurauia xanthotricha* as a variety of *S. excelsa* seems to be the most logical disposition of the concept, for other than in the extraordinary coloration of the pubescence, the variety agrees strikingly in all characters with *S. excelsa*.

COLOMBIA: Departamento de Santander, Vicinity of La Baja, alt. 2800 meters. "Shrub 8-10 ft; outer sepals pale green with reddish hair at center without, with a green stripe at center within; petals pure white, filaments yellow-white; anthers yellow".—Jan 14-31, 1927, *E. P. Killip et Albert C. Smith 18322* (Herb. Gray; U. S. Herb. 1353749)

*Saurauia Humboldtiana* Buscalioni in *Malpighia* 25 (1912) 424.

This is apparently a rather widespread species in Colombia. It seems to be very variable in the size of the leaves, but the shape and pubescence of the leaves and the floral characters are surprisingly constant for such a wide-ranging species. I have examined the following collections which are referable without question to Buscalioni's concept. The collections *Killip & Smith 19103* and *19480* were compared with authentic material of *Saurauia Humboldtiana* at Kew by A. C. Smith.

COLOMBIA: Departamento de Santander, Vicinity of California, alt. 3000 m. "Tree 12-15 ft. Petals white, anthers yellow. Open hillsides". Jan. 11-17 1927, *E. P. Killip et Albert C. Smith 16933*.

Departamento de Santander. Vicinity of Charta, alt. 2000-2600 m. "Shrub 10-12 ft. Petals white, stamens yellow. Thicket".—Feb. 1-11, 1927, *E. P. Killip et Albert C. Smith 19103*.

Departamento de Santander, Vicinity of Tona, alt. 1900-2100 m. "Woods. Shrub 5-8 ft". Feb. 17, 1927, *E. P. Killip et Albert C. Smith 19475*.

Departamento de Santander, Vicinity of Tona, alt. 1900-2100 m. "Woods. Shrub 8-12 ft. Petals and filaments white, anthers yellow".—Feb. 17, 1927, *E. P. Killip et Albert C. Smith 19480*.

*Saurauia laevigata* Triana et Planchon in Ann. Sc. Nat., Ser. 4, 18 (1862) 267.

In the Herbario Nacional Colombiano there is a collection of *Saurauia laevigata* from Tolima which is an excellent match for the type. The type was collected in the Departamento del Tolima, on the eastern slope of the Quindío.

COLOMBIA: Departamento del Tolima, El Fresno, "Alto del Aguila", 1800 m. alt. "Arbol 7 m. Flores blancas. Tallos leñosos y delgados". Diciembre 3, 1939, *H. García-Barriga 8227* (Herb. Nac. Colomb.).

*Saurauia narcissifragrans* R. E. Schultes, sp. nov.

Arbor parva, silvatica, fragrantissima, usque ad 6.70 m. alt. Ramuli graciles, setoso-hirsuti primo sed cito subglabrescentes, fulvo-rubro cum cortice. Folia brevipetiolata, firme chartacea, obovato-lanceolata, apice acuminata, basi cordata, margine pseudodenticulata cum prolongatorum venorum secundorum spinulis subhamulatis et firmis conspicue praedita, maturitate 15 - 18 cm. longa, 4.5-5 cm. lata, cum plus minusve duodeviginti venis; supra atroviridia, scabra cum pilis atque setulis remotissime et sparsim armata, venis rubro-hirsutis; subtus viridia pallida, glabra, sine pilorum floccis in venorum axillis, nervis rubris et setoso-hirsutis. Petioli hirsuti, usque ad 11 cm. longi. Inflorescentiae foliis aequales vel raro breviores, multiflorae, cum pedunculo usque ad 18 cm. longae. Pedunculi robusti, conspicue et dense rubro-hirsuti, usque ad 1.5 mm. in diametro. Pedicelli similes, 5 mm. vel raro usque ad 10-12 mm. longi, 0.8 mm. in diametro. Bractae subconspicuae, lineares. 2-4 mm. longae, plerumque 1 mm. latae, scariosae. Flores pulcherrimi, fragrantissimi, albi, plerumque 1.5 cm. in diametro. Sepala

quinque, inaequalia; duo exteriora crassa, elliptica, apice acuta vel subacuta, margine integra, 5-6 mm. longa, 3-3.5 mm. lata, extus maxime perspicue echinata cum spinulis hamulatis crassis rubris usque ad 0.8 mm. longis praedita, inter spinulas pulverulenta, intus minutissime pilosa vel pulverulenta; tria interiora membranacea, ovata, apice rotundata, margine integra, 5.5 mm. longa, 4-4.5 mm. lata, extus densissime puberula et cum spinulorum hamulorum carina media armata, intus glabra. Petala quinque, membranacea, alba, glabra, ovata, margine subundulata, 6 mm. longa, 5 mm. lata. Stamina plus minusve viginti-quattuor, basi densissime barbata. Staminum filamenta gracilia, 3 mm. longa. Antherae conspicuae, versatiles, flavae, 2.5 mm. longae. Ovarium subglobosum, obscure quinquelobatum, 2 mm. in diametro, glabrum, in barba celatum, quinque cum stylibus filamentosis fulvis usque ad 5 mm. longis, apice in stigmate laeviter tumidis coronatum. Fructus ignotus. Planta ab regionibus agrestibus "moquillo" nominatur.

COLOMBIA: Departamento del Huila, Río Villalobos, between Río Suazita and Quebrada Guayabo, dark rain-forest. Alt. about 1400 m. Small tree 15-18 feet tall; peduncles prominently reddish; flowers white, excessively fragrant. January 1940, R. E. Schultes et M. Villarreal 5169 (TYPE in Econ. Herb. Oakes Ames, Harvard Bot. Mus; DUPLICATE TYPE in Herb. Nac. Colomb.); - *ibid.* Jan. 1943, R. E. Schultes et Villarreal 5317 (Herb. Gray, U. S. Nat. Herb.; Herb. Nac. Colomb.)

*Saurauia narcissifragrans* appears to bear closest relationship to *S. caquetensis*, differing in size and shape of the leaves, character of the leaf margins, size of the flowers, shape and size of the sepals, number and size of the stamens and other characters. The Caquetá species and *S. narcissifragrans* are native to neighbouring mountain ridges.

*Saurauia portachuelensis* R. E. Schultes, sp. nov.

Arbor parva vel frutex. Folia parva; foliorum lamina coriacea, lanceolato-elliptica, apice valde acuminata, basi rotundata, margine minute et remote serrulata, 18-24 cm. longa, 5-7 cm. lata; supra aliquid nitida, glabra, nervis dense strigoso-hirsutis cum pilis rubentibus. Inflorescentia foliis brevior, cum pedunculo 16-20 cm. longa. Pedunculus glabrescens, apice remotis cum pilis strigosis. Bractee lineares, dense hispidulae, 4 mm. longae. Flores 1-1.3 cm. in diametro. Sepala quinque; tria exteriora glabra, ovata, apice obtusa, margine inflexa, circiter 3.8 mm. longa, 2 mm. lata, colore fulvo-aurea;



*Sauraula portachuelensis* R. E. Schultes. 1. flowering branch; 2. flower; 3 and 4. sepals; 5. petal.

duo exteriora glabra, ovata vel subrotundata, apice obtuso-rotundata, 4 mm. longa, 2.8 - 3 mm. lata, margine minutissime fimbriifera. Petala quinque, membranacea, glabra, alba, elliptica, apice rotundata, 5 mm. longa, 3.7 mm. lata. Stamina plus minusve triginta, versatilia, basi barbata. Staminum filamenta gracilia, 2.8 mm. longa. Antherae bene conspicuae, circiter 2.8 mm. longae. Ovarium subglobosum, distincte quinquelobatum, glabrum, 1.8 - 2 mm. in diametro, quinque cum stylibus brevibus crassis coronatum. Fructus ignotus.

COLOMBIA: Comisaría del Putumayo, Cerro de Portachuelo, alt. 2750 m. Febr. 1941. *Fray Miguel de Ipiates* 40.—(TYPE in Econ. Herb. Oakes Ames).—Comisaría del Putumayo, alta cuenca del Río Pu-

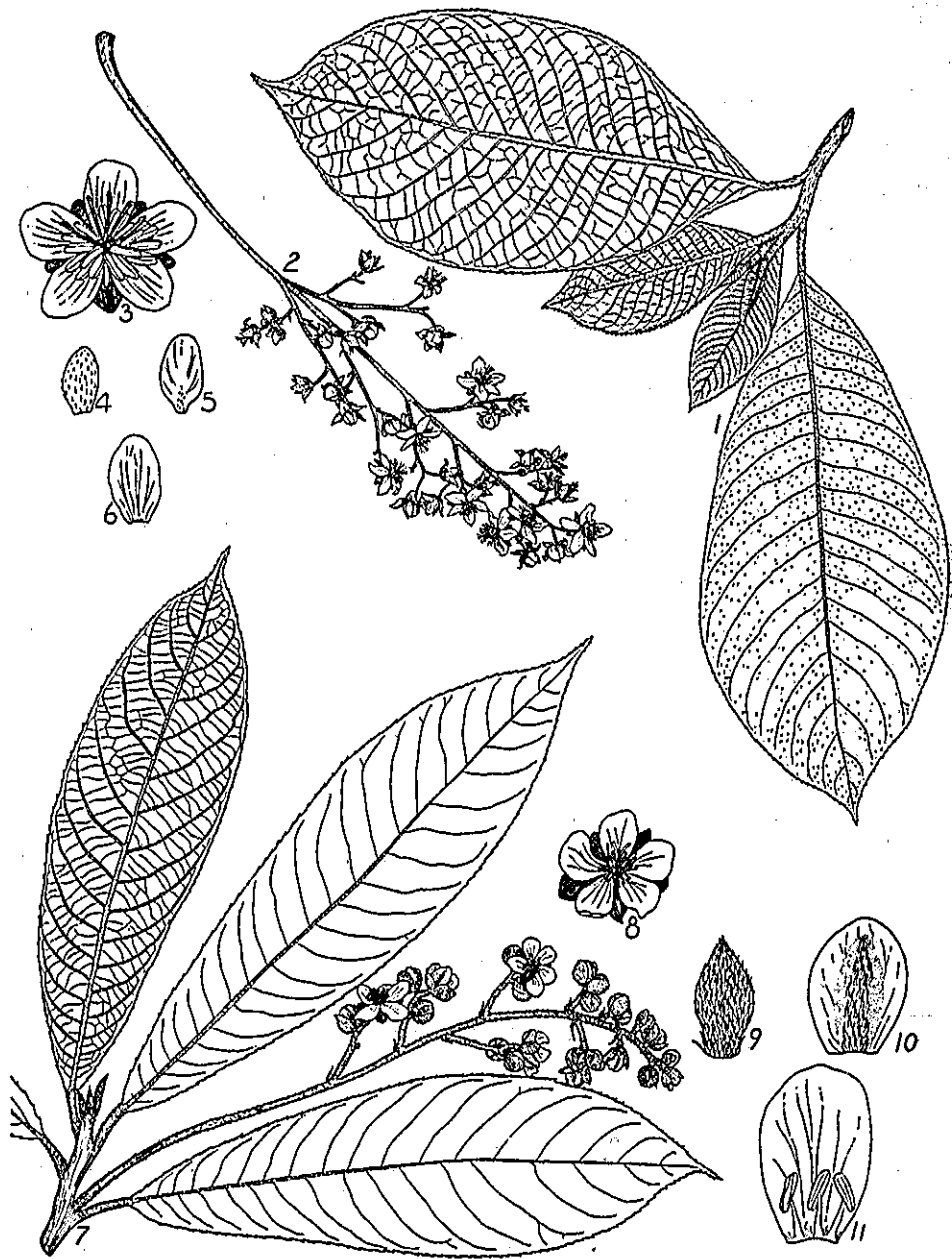
tumayo en el Valle de Sibundoy, bosque paramero en el filo de la Cordillera, La Cabaña, 2800 m. alt. "Arbusto; pétalos blancos, anteras amarillas, 2 enero 1941", *J. Cuatrecasas 11643* (Herb. Nac. Colomb.; U. S. Nat. Herb.).

*Saurauia portachuelensis* appears to have no close relatives. It is a beautiful species conspicuous especially on account of its profusion of very small flowers and the sparsity of pubescence in most parts of the plant. Its leaves are perfectly glabrous and glossy, excepting along the veins and, most striking of all, its sepals are glabrous. The flowers, very numerous and much smaller than is usual in the genus, are suggestive of *Saurauia Smithiana* Busc., an endemic of the isolated Santa Marta range in northern Colombia; the resemblance, however, is merely superficial, and there is no relationship between the two species.

*Saurauia putumayonis* R. E. Schultes et H. García-Barriga, sp. nov.

Arbor parva vel frutex. Folia parva, alterna, ovata et oblonga, petiolata, papyraceo-coriacea, margine serrulata, apice acuta, basi exigue rotundata vel subcuneata, 14.5 - 20 cm. longa, 7.3 - 9.5 cm. lata. infra strigilosa cum nervis lateralibus viginti ad viginti-tria, strigillosis et ferrugineis, supra atroviridia, ferruginea, cum nervis medianis elevatis. Petioli 12 - 22 mm. longi, 2 mm. in diametro, strigosi. Pedunculi strigosi ferruginei 16.5 - 19 cm. longi. Inflorescentiae plus minusve triginta-quinque-florae; pedicellis strigillosis usque ad 2 cm. longis, 1 mm. in diametro. Bractee pedicelli primarii lineares, 3 mm. longae, membranaceae. Flores colore flavido-albae, in diametro 12 mm. Sepala quinque; tria exteriora papyracea, ovato-lanceolata, margine integra et maxime minutissime ciliata, intus glabra, extus echinata, 4.5 mm. longa, 2 mm. lata; duo interiora membranacea, apice rotundata, basi stipitata, margine integra, 5 mm. longa, 2 mm. lata. Petala quinque, flavido-alba, membranacea, ovata, apice rotundata, basi sessilia, margine integra vel obscure subundulata, 5-6 mm. longa, 3 - 3.5 mm. lata. Stamina plus minusve vigintiduo. Antherae perconspicuae, albae, 2.5 mm. longae. Ovarium ovoideum, glabrum vel subglabrum, 1 - 1.5 mm. in diametro, flavum. Styli quinque, crassi, apice conspicue dilatati, in stigmatibus carnosos, 4 mm. longi, glabri. Fructus ignotus.

COLOMBIA: Comisaría del Putumayo; vertiente oriental de la Cordillera, entre Sachamates y San Francisco de Sibundoy, Planada



Above: *Saurauia putumayonis* R. E. Schultes et H. García-Barriga, 1. flowering branch; 2. inflorescence; 3. flower; 4 and 5. sepals; 6. petal.

Below: *Saurauia narclissifragrans* R. E. Schultes, 7. flowering branch; 8. flower; 9 and 10. sepals; 11. petal and stamens.

de Minchoy, alt. 2100 m., Dic, 30, 1940, *J. Cuatrecasas 11431*.—(TYPE in Herb. Nac. Colomb.; DUPLICATE TYPE in U. S. Nat. Herb.).

*Saurauia putumayonis* appears to bear no close relationship with any other species of southern Colombia and Ecuador. It resembles *S. pulchra* Sprague in several respects but is immediately set apart by the unusually small size of its flowers, number of stamens, shape and pilosity of the sepals and several other floral characters.

*Saurauia spinuligera* R. E. Schultes, sp. nov.

Frutex, ut videtur gracilis. Rami robusti, teretes, usque ad 1 cm. in diametro, dense atque conspicuissime strigosi cum spinulis fulvo-aureis et sublignosulis, usque ad 5 mm. longis, fulvo vel fulvo-cinereo cum cortice obscure striato (spinulae ex mammis subconoidalibus circuitu ellipticis, cinereo-fulvis, conspicuis prorumpentes). Folia coriacea, lanceolato-elliptica vel obscure oblanceolato-elliptica, basi rotundata, apice abrupte acuminata, margine serrulata, usque ad 12.5 cm. longa, 4.5 cm. lata; lamina supra viridi vel pallida, glabra, nervis duodecim vel quattuordecim prominenter elevatis, fulvo-aureis, subremote strigillosis. Inflorescentiae ut videtur foliis plerumque aequales, graciles, pauciflorae. Bractee minutae, lineares, glabre, usque ad 2 mm. longae. Flores perfecti non visi. Sepala (qui in fructu sicco persistent) quinque, crasso-membranacea, utrinque glabra, viva probabiliter flava, inaequalia; duo exteriora elliptica, apice valde rotundata, margine integra, 6-7 mm. longa, 4 mm. lata; tria interiora subovata, apice subacuta vel obtusa, margine aliquid undulata et fimbriata, 9 mm. longa, 5 mm. lata. Fructus baccatus, subglobosus, 8-10 mm. in diametro, fulvus. Semina plurima, globosa, fulvo-aurea, 1.5 mm. in diametro, in mucro inclusa; seminum testa durissima et dense papillata.

COLOMBIA: Departamento de Caldas, Cordillera occidental, Cerro Tatamá, alt. 2800-3300 m. "Mossy forest on spur. Shrub". September 8-10, 1922, *Francis W. Pennell 10452* (TYPE in Herb. Gray).

Without exception, *Saurauia spinuligera* is the most extraordinary species of the genus represented in Colombia. It is so outstandingly different that I have had no hesitation in describing it as a new species on the basis of fruiting material without flowers. It is to be hoped that in the near future collections of flowering material of *Saurauia spinuligera* will be made on Cerro Tatamá. The structure of the flowers will indeed be of interest since the vegetative parts of the species are so striking.

*Saurauia spinuligera* apparently has no close allies among the known species of the New World. It is at once set apart from all others by the peculiar spinules on the branchlets. These spinules are somewhat woody, some as long as 5 mm., and grow from ashy yellow, elliptic-subconoidal mammae which are very conspicuous. All other American species of *Saurauia* which I know have tomentose, pilose, or strigillose branchlets, but none are armed with the stout spinules present in *S. spinuligera*. There are a number of other differences, such as the shape and texture of the leaves, the glabrous condition of both surfaces of the leaves and the shape and texture of the sepals, which, taken together, serve to set *Saurauia spinuligera* apart from all other Colombian species.

The presence of such an extraordinarily distinct species of *Saurauia* on Cerro Tatamá, which is, in fact, an island-mountain isolated from neighboring elevations, would seem to suggest that more interesting endemic species or varieties of this genus might be found there. It is my feeling that a thorough study of Cerro Tatamá during several seasons would add much of deep significance to our knowledge of the Colombian flora.

*Saurauia ursina* Triana et Planchon in Ann. Sci. Nat. Sér. 4, 18 (1862): 265.

*Saurauia ursina* is one of the most beautiful species of the genus in Colombia. The type was collected by Triana on the Río Negro in Antioquia where the tree is known by the common name "dulumoco". I have seen the following collections which are unquestionably referable to this species: Killip & Smith 19319 compared with authentic material at Paris by Dr. A. C. Smith, and Bro. Ariste-Joseph A967 compared at Paris by Dr. E. P. Killip. According to field data on labels, *Saurauia ursina* varies from a shrub "2-3 m." (Bro. Daniel 2120) to a "tree 20 ft". tall (Archer 1089).

COLOMBIA: Departamento de Santander, Vicinity of Charta, forest, alt. 2000-2600 m., February 1-11, 1927, E. P. Killip & A. C. Smith 19319 (U. S. Nat. Herb.; Herb. Gray).

Departamento de Antioquia. La Ceja, December 6, 1939, Bro. Daniel 2120 (U. S. Nat. Herb. 1778821).

Departamento de Antioquia, Medellín, La Sierra, alt. 2000 m., W. A. Archer 1089 (U. S. Nat. Herb. 1497398).

Departamento de Boyacá, Chiquinquirá, July, 1909, Bro. Ariste-Joseph A967 (U. S. Nat. Herb. 1185041).

apice acutis, 14 mm. longis, 6 mm. latis; et cum petalis quinque, concavis, valde cucullatis, elongato-obovatis, circa 8 mm. longis, 4-5 mm. latis, superne in ligulam - quae imperfectam est - prolongatis. Fructus longe pedunculatus (pedunculus robustior, dense stellato-pilosiusculus, usque ad 3 cm. longus, circa 2-3 mm. in diametro), ovoideus, 7-8 cm. longus, circa 4 cm. in diametro, apice brevissime cuspidatus vel subrotundatus, basi rotundatus, omnino maxime densissime et minute velutino-stellato-pilosiusculus, sine pilis urticantibus, decem-costatus, quinque cum costis primariis angustis humilibusque (1 mm. latis et usque ad sed raro 2 mm. altis), hebetis, atque quinque cum costis secundariis similibus, minoribus et haud prominentibus, pericarpio tenuissimo atque ut videtur aliquid fragile, maturitate ochro. Semina probabiliter quam sexaginta plures, circuitu triangularia vel angulato-ovata, complanata, 12 x 10 x 10 mm., 4 mm. crassa, in pulpa alba inclusa.

Specimens examined:

BRITISH GUIANA:

A. C. Smith, 3541, March 31-April 16, 1938. "North-western slopes of Kanuku Mountains, in drainage of Moku-moku Creek (Takutu tributary) alt. 150-400 m., dense forest. Slender tree, 4 m. high; fruit on trunk". (TYPE in Herb. Arn. Arb.; DUPLICATE TYPES in Herb. N. Y. Bot. Gard.; U. S. Nat. Herb. 1777366).

The collection Smith 3541 represents a species which is distinct from all its allies in the form of its fruit. Apparently, it is most closely allied to *Herrania Mariae* and related species such as *H. nycterodendron* and *H. Cuatrecasana*. It is much more softly tomentose with brownish stellate hairs than typical *Herrania Mariae*.

Although the collection is without complete floral parts, *Herrania kanukuensis* is sufficiently different in the form of its fruit to warrant specific distinction. The fruit of *Herrania kanukuensis* differs strikingly from all other species, approaching in form only that of the completely unrelated *H. balaensis* of Ecuador. It is relatively small (measuring 9 x 5 cm.) with a rounded or very shortly tipped apex (not elongate ovoid or ellipsoid with an acuminate tip as in most species). The rind is very thin and brittle when dry (in contrast to the usual thick, fleshy and fibrous condition), and the costae are not prominent. In most species, the costae or ribs protrude at least 7-9 mm. either as sharp, thin, cultriform or razor-shaped ridges or as thick, rounded ridges, separated by very deep and wide furrows.

In *Smith 3541*, the five primary ridges are slight, rounded ribs which protrude only 2 mm. at the most, while the five secondary ribs look like very prominent veins. The fruit is yellow when ripe, and it is covered in all parts with a velvet of exceedingly minute and very dense, appressed tomentum of stellate hairs. In this respect, but only in this respect, it approaches the fruit of *Schultes 4011* (*Herrania nycterodendron*). While the fruits of most species of *Herrania* are beset with minute, stinging, bristly hairs which are more or less concentrated along the ribs, the fruits of *Herrania kanukuensis* are completely lacking in these hairs.

The few fragmentary floral parts which remained adhering to the fruit of *Smith 3541* indicate that there are also floral differences between *Herrania kanukuensis* and its closest allies.

***Herrania lemniscata*** (Schomburgk) R. E. Schultes comb. nov.

*Lightia lemniscata* Schomburgk in Rept. Brit. Assoc. Advancem. Sci. 13 (1844) 71, *nomen subnudum*.

*Theobroma Mariae* (Goudot) Schumann var. *lobata* Pulle in Rec. Trav. Bot. Néerl. 9 (1912) 151.

TYPE: Not seen. Collected in Guiana by Schomburgk.

General distribution: British and Dutch Guiana and the Orinoco drainage of eastern Venezuela.

Common name: *Wild coco* (British Guiana).

Meaning of the specific name: The specific epithet "*lemniscata*" refers to the ribbon-like ligules which hang from the petals.

Original description:

"The *Lightia* belongs to this family (*Büttneriaceae*). The great peculiarity of the plant is, that the petals have an elongated appendage, which hangs down from the cluster of flowers like ribbons, and hence its specific name. This tree attains a height of twenty or twenty-four feet, and produces its flowers directly from the stem below the axis of fallen leaves. Only three specimens of this tree were discovered in Guiana by Mr. Schomburgk".

Arbuscula parva, tenuis gracilisque cum trunco simplice, terete, usque ad 8 m. alta, ad apicem trunci ramosa, ramis ut videtur tomentosus denique subglabratis. Foliola amplissima, digitata, longissime petiolata, stipulata, septem-foliolata. Stipulae caducae, minute subulatae, maxime densissime atque molliter ferrugineo-tomentosae, circa 2 cm. longae, basi 2 mm. latae. Petioli robusti, teretes, sulcati, apice late complanato-flabelliformes, densissime atque molliter ferrugineo-

tomentosi, laeviter dilatati atque denique valde constricti, usque ad 45 cm. longi, 8-10 mm. in diametro. Foliola sessilia, inaequalia, mediana usque ad 80 cm. longa, 40 cm. lata, apice acute acuminata, basi longe sensim attenuato-decurrentia, marginibus profundissime pinnatilobata, laciniis usualiter quattuor, irregularibus, plerumque late triangularibus vel late lanceolato-acuminatis, iis in laminarum praecipuarum partem longissimis usque ad 18 cm. longis, 9-10 cm. latis; laminae foliorum papyraceae vel membranaceae, supra atrovirides, subglabrae vel remotissimis cum pilis stellatis, nervis dense ferrugineo-strigillosis, subtus virides pallidae, dense atque molliter stellato-pilosae, nervis dense ferrugineo-tomentosis, utrinque prominentibus cum nervis. Inflorescentiae fasciculatae, usque ad probabiliter triginta vel quadraginta (sed usualiter plus minusve viginti) - florum. Flores caulinares ex trunco inferiore orti in racemis contractis prorumpentes, colore atropurpurei, pedicellati. Pedicelli robusti, teretes, minute atque dense stellato-tomentulosi, articulati, 7-18 mm. longi, basi brevi cum bractea lineari tomentosa, 1 mm. longa subtenti. Floris alabastrus globosus, 9-10 mm. in diametro, densissime atque minute stellato-tomentulosus et stellato-pilosus. Calyx fere usque ad basim divisus, subcymbiformis. Sepala tria, reflexa, subaequalis, crassa, intus densissime pilosiuscula, extus densissime stellato-tomentosa atque stellato-pilosa (duobus cum pilorum generibus distinctis), margine integra atque valde inflexa, fulvo-rubentia; majora dua ovata, apice subobtusa, 12-13 mm. longa, 7 mm. lata, minor unum lanceolato-ellipticum, apice subobtusum, 13-15 mm. longum, 5-6 mm. latum. Petala quinque, basi sessilia, elongato-obovata, concava, apice valde cucullata, margine integra, atosanguinea, quinque cum nervis prominentibus purpureis vel nigris, 6-7 mm. longa, 4 mm. lata, glabra, utrinque sed extus dense muricato-papillosa, crassa, superne in ligulam prolongata. Petalorum ligulae pendulae, membranaceae, filiformes, glabrae, enervatae, basi 1-1.5 mm. latae, plus minusve 85 mm. longae, colore sanguineae. Tubus stamineus quinque-divisus, staminibus alternatim di - et quattuor - antheriferis, simplicibus, cum filamentis brevibus liberisque. Staminodia conspicua, petaloidea, atosanguinea, elliptica, margine leviter atque obscure undulata, apice acuminata, 10-12 mm. longa, 4-5 mm. lata, glabra, utrinque dense muricato-granulosa. Ovarium sessile, ovoideo-globosum, 4.5-5 mm. longum, 2.5 mm. in diametro, distincte decem-costatum, quinque cum costis primariis et quinque secundariis, ochrum, densissime hispido-pilosum. Stylus teres, glaber, simplex, stigmatate obscure quinque-fido. Fructus ignotus.

## Specimens examined:

## BRITISH GUIANA:

W. A. Archer 2514, September 7-12, 1934. "Northwest District, Barima River, Red Hill. Slender shrub, 10 ft. Fruit borne at base of stalk. Leaf 7-palmate. Wild coco. Fruit sweet and edible, also used to make beverage like chocolate". (TOPOTYPE in U. S. Nat. Herb. 1663202).

J. S. de la Cruz 3892 May. 10-23, 1923. "Northwest District, Wana-ma River, lat. 7° 45' long. 60° 15' W." (Herb. N. Y. Bot. Gard.; Herb. Gray; Herb. Field Mus. 544530).

## VENEZUELA:

H. H. Rusby et R. W. Squires 252, 1896. Near mouth of Río Orinoco. (Herb. N. Y. Bot. Gard.).

Ll. Williams 11339, January 3, 1939. "(Bolívar), Matayaka, (Maquiritare), Abare (Mucuchies). Arbol delgado, 6-8 m. de alto, con tronco sencillo, torcido; corteza marrón oscuro; fr. amarillento cuando maduro y contiene pulpa comible; en la selva anegada en la estación lluviosa, en el Salto de Para, Medio Caura, Edo. Bolívar, alt. 120 m." (Herb. Field Mus. 987196; U. S. Nat. Herb. 1778349.).

The name *Lightia lemniscata* was published by Schomburgk in 1844 without an adequate description and without the citation of specimens. It must be considered a *nomen subnudum*. Several years later, Schomburgk (in *Linnaea* 20 (1847) 756) reduced the name to synonymy under Goudot's *Herrania Mariae*, and, wishing to perpetuate a generic name honoring Gov. Light of British Guiana, he transferred the name *Lightia* to a new genus in another family.

In 1848, he (Schomburgk "Fauna und Flora von British-Guiana" (1848) 993) listed under *Herrania Mariae* specimen (s) which he had collected in British Guiana along the river Barima and its affluents. It is probable, then, that this represents the area from which the type material of *Lightia lemniscata* came.

Fortunately, I have had an opportunity to study a collection (W. A. Archer 2514) from this same region. I am considering it as a toptype, although it must be remembered that Schomburgk's mention of the "River Barima and its affluents" circumscribes a rather extensive area.

All of the material of *Herrania* from British Guiana and north-eastern Venezuela which I have seen is (with the single exception of collections from near the Brazilian border) referable to one species. This species is distinct from others of Middle and South America. I

am inclined to believe that these specimens are referable to the concept which Schomburgk called *Lightia lemniscata*.

In the New York Botanical Garden there is a specimen collected in the easternmost part of Venezuela near the mouth of the Río Orinoco in 1896 (*H. H. Rusby et R. W. Squires 252*). On the label of this specimen there is the following annotation in the handwriting of N. E. Brown: "*= coll. by Schomburgk in Brit. Gui.*" Since N. E. Brown was sent to England by Dr. Britton to match material with the older classical collections, I presume that he compared this specimen with Schomburgk's material.

On the basis of this annotation and the homogeneity of the Guianan collections, I am validating Schomburgk's *nomen subnudum* and transferring it to the genus *Herrania*.

*Herrania lemniscata* is one of the most strikingly distinct species of the genus. It can be distinguished at once by its very large and broad leaves with pinnati-lobed leaflets. It is apparently most closely related to *Herrania laciniifolia* of central Colombia, but its leaflets are much more coarsely incised with fewer and wider lobes. Florally *Herrania lemniscata* does not seem to be distantly allied to *H. Mariae*. It would appear that the Guianan *Herrania lemniscata* occupies a somewhat intermediate position between the Colombian *H. laciniifolia* and the Brazilian *H. Mariae*. It will be of the greatest interest to learn the form of the fruit of *Herrania lemniscata*. At the present time nothing is known of the fruit, but I venture to predict that it will be similar in general structure and appearance to the fruit of *Herrania laciniifolia*.

***Herrania nitida*** (Poeppig) R. E. Schultes comb. nov.

*Abroma nitida* Poeppig Nov. Gen. ac Sp. Pl. 3 (1845) 73.

*Theobroma nitida* (Poeppig) Schumann ex Martius Fl. Brasil. 12 pt. 3 (1886) 72. Non *Theobroma nitida* Bernoulli in Neue Denkschr allg. Schweiz. Gesell. gesam. Naturw. 24, N<sup>o</sup> 3 (1871) 15, t. 7, fig. 3

TYPE: Not seen; photograph seen. *Poeppig 1979*, July 1830: Perú Departamento de San Martín, Río Tocache.

General distribution: Northeastern Perú and southern Colombia

Common names: *Cacahuillo*; *cacao de monte*; *cacao silvestre*  
Kofán Indian name: *Ko-kee-ot'-chu*.

Meaning of the specific name: The specific epithet "*nitida*" refers to the usually smooth character of the leaf surfaces in contrast to the usual condition of pilosity which is customary in this genus.



*Herrania nitida* (Poeppig) R. E. Schultes. Flowers.  
Photograph of Schultes 3465, Puerto Ospina, Putuma-  
yo, Colombia.

Photo: Schultes.

Original description:

"Arbor biorgyalis, caudice stricto debili, ramis vix ullis. Petioli alterni, pedales vel sesquipedales, profunde striati, uti nervi pube brevi, adpressa, tecti. Foliola sena, interdum quina, valde inaequalia, intermedium reliquis utplurimum multo majus, pedale vel quindecim pollicum longitudinem attingens, superne dimidium pedem latum, lateralia sensim minora, omnia basi cuneata, glaberrima, laete viridia, nitida, chartaceo-rigida. Flores utplurimum axillares, potius extraaxillari-laterales semper solitarii. Pedunculus circiter duas lineas longus uti calyx pilis fuscis, rigidulis hirtus. Petala glabra, cucullata,

lamina roseo alba, unguem versus sanguinea, ligula terminale simplice, lineari cucullum saltem sexies longitudine excedente. Tubus stamineus quinque-decemfidus; stamina fertilia decem, per paria sub cucullo petali recondita, inaequalia, altero brevior monanthero, altero longiore tres antheras ferente; filamenta lata; antherae aequales, biloculares, longitudinaliter dehiscentes; stamina sterilia quinque cum petalis alterna, eorundem cucullum multum superantia, oblonga, acuta, atropurpurea. Ovarium quinquangulare, quinqueloculare; ovula numerosa, horizontalia, angulo loculorum interno affixa. Styli quinque, cohaerentes; stigmata simplicia. Fructus maturus deest".

Small tree, rather weak, graceful, probably up to 4 meters tall, with dark brown, roughened bark; the trunk usually less than 7 cm. in diameter at the base. The branches sparsely and minutely tomentose, becoming glabrous. Petioles subcomplanate, conspicuously striate-sulcate, ferruginous, very minutely, closely appressed stellate-tomentulose, basally somewhat swollen, up to 40 cm. long, 5 mm. in diameter. Leaves grouped at the apex of the trunk, digitate, long-petiolate, 7-9 foliolate, stipulate. Stipule linear, up to 2.5 cm. long., 1 mm. wide, usually brown stellate-setulose. Leaflets sessile or almost so, unequal, lanceolate-oblong, apically acuminate, basally very long attenuate-decurrent, marginally entire, rigid chartaceous or subcoriaceous, light green, shiny, glabrous above, glabrous or rarely with very sparse and deciduous minute stellate-hairs remotely placed along the nerves beneath; the central leaflets 25-45 cm. long, 7-14 cm. wide, the lateral leaflets much smaller and often asymmetrical. Inflorescences fasciculate, often very numerous on the basal portion of the trunk, up to 30-40 flowered. Flowers caulinary, pedicellate. Pedicels articulate, densely appressed tomentulose with occasional strigose setae, 5 mm. long, less than 1 mm. wide. Calyx subcymbiform. Sepals three, yellow-red, externally very coarsely stellate-setose, internally glabrous; outer sepal rounded-ovate, 9 x 10 mm.; inner sepals elliptic, acute, 12 mm. long, 6 mm. wide. Petals five, broadly obovate, rotund, 4-5 mm. wide at the top, 5-6 mm. long, strongly cucullate, fleshy membranous, very densely muricate-papillose on both sides but especially without, glabrous, longitudinally marked with five or six dark red veins, yellowish-red or rose-white, apically prolonged into a ligule. The ligule of the petals linear, pendulous, basally slightly contracted, apically slightly coiled (strongly coiled when immature), pink or scarlet, up to 80 mm. long, membranaceous, glabrous, longitudinally marked with five purple nerves. Stamen tube 5-fid, alternately 2 and 4 antheriferous

with simple, flattened free filaments. Staminodes conspicuous, petaloid, glabrous, muricate-granulose, elliptic, apically acute, marginally slightly undulating, dark blood-red without, yellowish-red within, 9 mm. long, 5 mm. wide. Ovary 5 - costate, 5 - locular, subcylindric, densely and very minutely stellate-pilose, yellow, about 1.8 mm. long, 1 mm. in diameter. Style strongly complanate, 3 mm. long, with a simple stigma. Fruit baccate, ovoid, apically acuminate, 11 cm. long, 5 cm. in diameter, dull, rich green, 10-costate (five primary and five secondary ribs), the ribs very thin, cutelliform, minutely and sparsely hispid with stinging hairs along the ribs. Seeds 30-40 or more, flattened, roughly triangular in outline, 9 mm. x 8 mm. x 5 mm. thick, imbedded in a white pulp.

Specimens examined:

COLOMBIA:

*R. E. Schultes 3405*, March 23-25, 1942. "Comisaría del Putumayo, Río Putumayo, Puerto Ospina, alt. about 280 m. Small tree. Ligules scarlet. Petals cream-yellow with red veins. Staminodes red outside, yellow-red inside. Sepals yellow-red. Kofán Indian name: *Ko-kee-ot'-chu*". (Econ. Herb. Oakes Ames; Herb. Nac. Colomb.; Herb. Gray; Herb. Arnold Arboretum; U. S. Nat. Herb.; Herb. Field Mus.)

*R. E. Schultes 3698*, May 3, 1942. "Comisaría del Caquetá, Río Orteguaza, Tres Esquinas. In fruit". (Econ. Herb. Oakes Ames; Herb. Nac. Colomb.)

PERU:

*Poeppig 1979*, July 1830. Departamento de San Martín, Río Tocache. "Peruvia orientalis. In ripa fluminis Tocache". (TYPE in Herb. Vienna - not seen; PHOTOGRAPH OF THE TYPE in Herb. Field Mus. 956678).

(?) *E. P. Killip & A. C. Smith 27431*, August 3-11, 1929. "Departamento Loreto, Iquitos, alt. about 100 m., woods. Slender tree, 10-15 ft. high, about 1 inch diam., fls., arising directly from the trunk, appendage of petals cream white, calyx deep purple". (Herb. N. Y. Bot. Gard.; U. S. Nat. Herb. 1461183). This is questionably referable to *Herrania nitida*.

*Llewelyn Williams 2332*, August 1929. "Dept. Loreto, Caballo-Cocha on the Amazon River". (U. S. Nat. Herb. 1515399).

*Llewelyn Williams* 2843, August - September 1929. "Dept. Loreto, La Victoria on the Amazon River" (\*) (U. S. Nat. Herb. 1516069).

*Herrania nitida* is apparently rather a variable species. This can be understood when one realizes that it is probably the most widely distributed species of *Herrania*. The usual lack of pilosity on the leaflets at once serves to distinguish this species from the other species of the Amazonian drainage. *Herrania nitida* can also be immediately distinguished from most other species by the prevailing yellow color of the floral parts.

The nearest ally of *Herrania nitida* seems to be *H. aspera*, but the degree of relationship of the two cannot be definitely established until *H. aspera* is more clearly understood. The collection *Schultes* 3698, referable to *Herrania nitida*, tends to approach, in some of its vegetative characters, the concept of *H. aspera* as represented by the collection *Killip* 34247.

*Herrania nitida* (Poeppig) R. E. Schultes var. *sphenophylla* R. E. Schultes var. nov.

TYPE: *J. M. Schunke* 45, January 16, 1935: Perú, Departamento Loreto, Guamitonococha, Río Mazán.

General distribution: This variety apparently has the same distribution as *Herrania nitida*: Northeastern Perú and southern Colombia.

Meaning of the varietal name: The varietal epithet "*sphenophylla*" refers to the narrowly lanceolate-elliptic shape of the leaflets by which the variety is chiefly distinguished from the species.

*Arbuscula parva* a *Herrania nitida* specialiter foliolatis minoribus et lanceolato-ellipticis vel angustissime obovatis, item quoque inflorescentibus paucius-floribus, floribus usualiter aliquid majoribus et rubentioribus atque statura multo minima differt.

Specimens examined:

COLOMBIA:

*G. Klug* 1853, December 1930. "Comisaría del Putumayo, Umbría, 0° 54' N, 76° 10' W, alt. 325 m; forest. Tree 4 m., fl. reddish, borne on main stem". (Herb. N. Y. Bot. Gard.; Herb. Field Mus. 691000).

(\*) May I draw attention to the fact that La Victoria may well be the name of a large farm and sugar-cane plantation situated on the left or northern bank of the Amazon, a few miles above Leticia, in territory formerly disputed between Colombia and Perú, but which now is under the full sovereignty of Colombia.—  
EDITOR.

## PERU:

*J. M. Schunke* 45, Jan. 16, 1935. "Departamento Loreto, Guamitonococha. Río Mazán, alt. 100-125 m. Common name: *Cacahuño*. Bush 1.5 m. high; fls. scarlet, fruit green edible. Solitary in dense forest". (TYPE in Herb. Arn. Arb.; DUPLICATE TYPES in Herb. N. Y. Bot. Gard., Herb. Field Mus. 997525).

*Herrania nycterodendron* R. E. Schultes spec. nov.

TYPE: *R. E. Schultes* 4011, 20 Junio 1942: Perú, Departamento Loreto, Remanso, Río Putumayo.

General distribution: Northern Loreto, Perú, and probably the southern part of the Colombian Amazonas.

Common names: *Cacao de monte*; *cacao de murciélagos*; *cacao silvestre*.

Huitoto Indian names: *Mu-se'-ge-ke*; *mu-se'-na*.

Meaning of the specific name: The specific epithet "*nycterodendron*" is a rendition into Greek of the common name *palo de murciélagos* or "bat-tree".

Arbuscula parva, tenuis gracilisque, usque ad 4.30 m. alta, trunco usualiter simplice, erecto, cylindrico, apice ramoso, ochro-cinereo cum cortice scrobiculato obtecta, basi usque ad 8-9 cm. in diametro. Folia ad trunci apicem congregati, ampla, digitata, longissime petiolata, septem-foliolata, stipulata. Stipulae caducae, lineares, acutae, 2.5-4 cm. longae, plus minusve 3 mm. latae, siccae, tomentosae. Petioli robusti, teretes sed obscurissime sulcati, basi leviter dilatati, subferruginei maxime densissime atque molliter tomentosi, usque ad plus minusve 60 cm. longi, 8-9 mm. in diametro. Foliola sessilia, inaequalia, lanceolato-oblonga, apice in cuspidem plus minusve acutum usque ad 2 cm. producta, basi longe sensim attenuato-decurrentia, margine integra (vel minute et obscure subundulata) atque saepe cum venarum prolongatorum mucronulatis hirsutis usque ad 1 mm. longis conspicuissime armata; laminis firme chartaceis vel papyraceis, centralibus usque ad 60 cm. longis, 22 cm. latis, supra atroviridibus et subnitidis, subglabris vel sparsissime et minute hirsutis, in venis praecipuis minute tomentosis, subtus viridibus pallidis molliter stellato-pilosis, in venis praecipuis densissime atque molliter ferrugineo-tomentosis; nervis utrinque sed subtus magis prominenter elevatis. Inflorescentiae fasciculatae, usque ad 45-florae. Flores caulinae, longe pedicellati, ex trunco orti inferiore in racemis contractis prorumpentes. Pedicelli gracillimi, adpresso-tomentosi, articulati, 2-2.5 cm. longi, basi brevi cum bractea lineari, acuta, dense tomentosa,



*Herrania nycterodendron* R. E. Schultes. Fruits. Photograph of Schultes 4011 (TYPE), Río Putumayo, Remanso, Perú.



*Herrania nycterodendron* R. E. Schultes. Fruits. Photograph of Schultes 4011 (TYPE), Río Putumayo, Remanso, Perú.

Photo: R. E. Schultes.

3 mm. longa subtenti. Alabastrus floris subglobosus, magnus, plus minusve 7-8 mm. in diametro, dense et minute stellato-pilosiusculus, fulvus colore. Calyx subcymbiformis, fere usque ad basim divisus. Sepala tria, valde inaequalia, crassa, fulvo-purpurea, aestivatione valvata, extus minute stellato-pilosiuscula, intus minutissime puberula; duo interiora elliptica, margine integra, apice subacuta, circiter 15 mm. longa, 7-8 mm. lata; exteriorum late rotundo-obovatum, apice rotundo-obtusum, margine integrum, 19 mm. longum, 15 mm. latum. Petala quinque, basi sessilia, late rotundata, concava, apice valde cucullata, 10 mm. longa, 8-9 mm. lata, glabra, utrinque sed extus magis muricato-papillosa, pallide ochra purpureis cum nervis septem, superne in ligulam prolongata. Petalorum ligulae filiformes, pendulae, membranaceae, omnino glabrae sed basi minute granulosa, basi 2 mm. latae, usque ad 90-100 mm. longae, colore atropurpureae cum nervis nigris prominentibus. Tubus stamineus quinque-divisus, staminibus alternatim duo - et quattuor-antheriferis, filamentis glabris, gracilibus liberisque. Staminodia conspicua, petaloidea, reflexa, lanceolata-elliptica, apice acuta, margine integra, 19-21 mm. longa, 7-9 mm. lata, utrinque muricato-granulosa. Ovarium sessile, ellipsoideum, decem-costatum et quinque-loculatum, dense pilosum, 3 mm. altum, 2 mm. in diametro, ochrum, Stylus filamentosus, glaber, apice profunde quinque-fidus. Stigmata quinque, crassa. Fructus ellipsoideus, 10-12 cm. longus, 4-5 cm. in diametro, apice longe et sensim attenuatus, saepe prope apicem potius constrictus, apice acutus vel saepe rotundo-obtusus, basi indentatus atque pedunculatus (pedunculus lignosus, usque ad 4-5 cm. longus, 3-4 mm. in diametro), omnino maxime densissime et minutissime velutino-stellato-pilosiusculus, sine pilis urticantibus, profundissime decem-costatus, quinque cum costis primariis crassis et valde hebetato-rotundatis, atque quinque cum costis secundariis similibus et minoribus, pericarpio crassulento, sublignoso, maturitate cinereo-ochro. Semina usque ad plus minusve centum, circuitu triangularia vel angulato-ovata, complanata, 9 x 8 x 8 mm., 2 mm. crassa, in pulpa alba inclusa.

Specimens examined:

PERU:

*R. E. Schultes 4011*, 20 Junio, 1942. "Departamento Loreto, Río Putumayo, Remanso. Alt. 180 m. In forest. Small tree 25 ft. tall. Basal diameter 3-4 inches. Flowers, borne on lower 8 or 9 ft. of the trunk, deep-blood red in all parts. Fascicles with up to 30-40 flowers. Fruit ripening to an ashy yellow color with a hard fibrous rind. Seeds in

a sweet pulp. Pulp edible. Leaves extremely hairy. Common names: *Palo de chimbe*; *palo de murciélago*. Huitoto Indian name: *Mu-se'-na*. (TYPE in Econ. Herb. Oakes Ames, Sheets 1, 2, 3; DUPLICATE TYPES in Herb. Nac. Colomb. Sheets 1, 2; Herb. Gray, sheets 1, 2; Herb. Arn. Arb.; Herb. Field Mus.; U. S. Nat. Herb.).

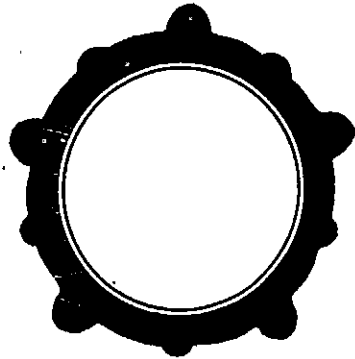
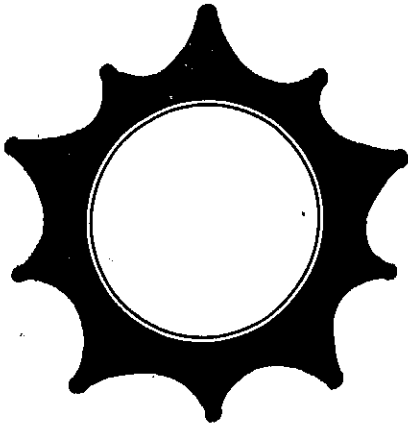
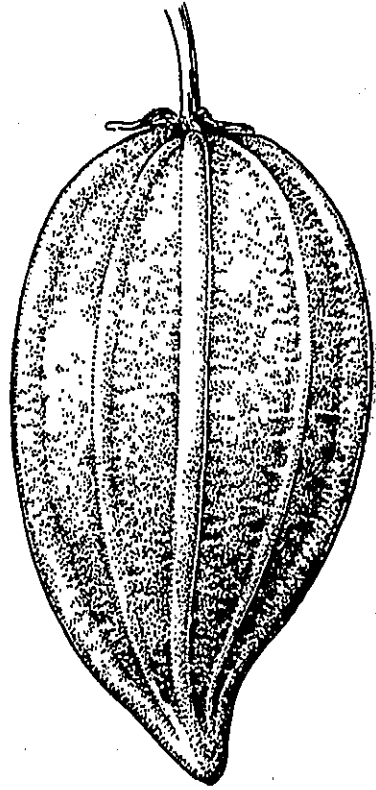
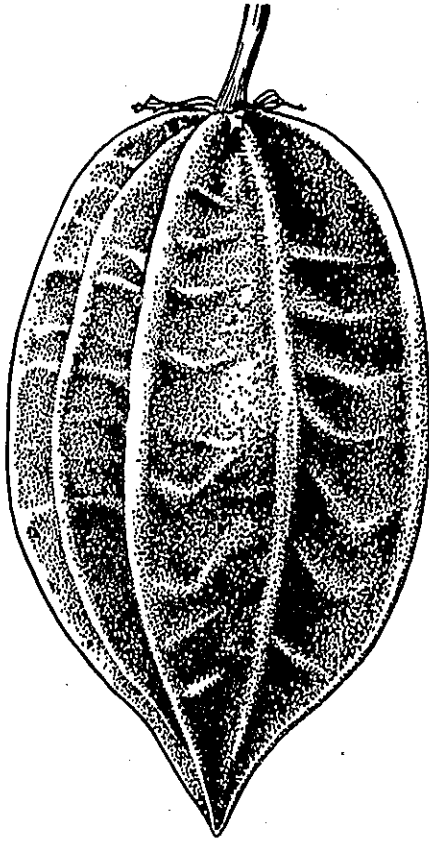
*R. E. Schultes 4012*, 21 Junio, 1942. "Departamento Loreto, Río Putumayo, Brazilian settlement "Corbata" opposite Isla Salamanca. Alt. 180 m. Tree 15 ft. tall. Petals somewhat striped. Bark mottled brown-gray. Thirty flowers in fascicle. Basal diameter 3 inches. Common names: *Cacao silvestre*; *cacao de monte*; *cacao de murciélago*. Huitoto Indian name: *Mu-se'-ge-ke*. (Econ. Herb. Oakes Ames, Sheet 1, 2; Herb. Nac. Colomb. sheets 1, 2; Herb. Gray, sheets 1, 2; Herb. Field Mus.; U. S. Nat. Herb.).

*G. Klug 1588*, April, 1931. "Departamento Loreto, Mishayacu, near Iquitos, alt. 100 m. Forest. Tree". (Herb. Arn. Arb.; Herb. U. Y. Bot. Gard.; Herb. Field Mus. 873372).

*G. Klug 2069*, March 1931. "Departamento Loreto, Florida, Río Putumayo at the north of Río Zubineta, altitude about 200 meters. Forest. Tree 4 m.; fl. wine-red, borne on trunk. (Herb. Arn. Arb.; Herb. Gray; U. S. Nat. Herb.).

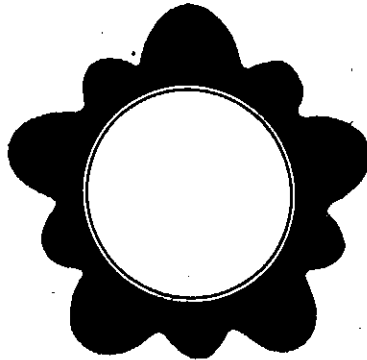
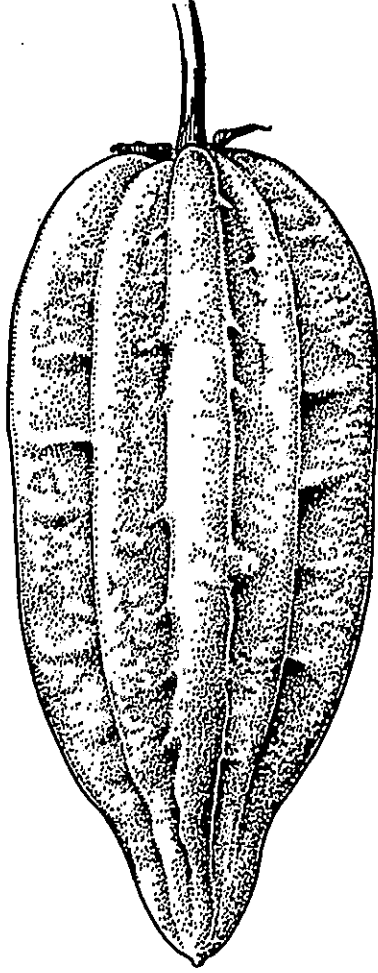
*Herrania nycterodendron* is most closely related to *H. Mariae* and *H. Cuatrecasana*. It is immediately set apart from these species, however, chiefly by its curious type of fruit. The fruit of *Herrania nycterodendron* has a dry, somewhat coarse and fibrous rind which is covered completely with a soft indument of velvety hairs; it lacks the stinging hairs which are usually present on the fruit in this genus. The ribs of the fruit of *Herrania nycterodendron* are broad and rounded with deep furrows. The fruit is apically much more bluntly rounded in most cases than is that of related species.

The natives of the Peruvian bank of the Río Putumayo near Remanso, Isla Salamanca, refer to *Herrania nycterodendron* as "bat-tree" or "tree of the bats". This curious vulgar name may be due, as several explained to me, to the fact that the soft, velvety indument of the fruit feels like the fur of small bats which are common in the vicinity. It may also be due to the fact that the fruits cluster on the basal portions of the stem in such a manner as to suggest bats which are accustomed to pass the day hanging in clusters from the lower parts of the trunk of small trees in the dark forests (cf. photographs). The Huitoto name, *mu-se'-na*, is also applied to the marraca (*Theobroma glauca* Karsten), and *mu-se'-ge-ke*, the diminutive, is very commonly used to refer to *Herrania nycterodendron* and *H. Mariae*.



Left: Fruit of *Herrania Martae* (somewhat reduced) side view and cross-section.  
Right: Fruit of *Herrania kanukuensis* (somewhat reduced) side view and cross-section.  
The hairs of these fruits have been omitted deliberately on the drawings in order to show detail of structure and texture.

Drawn by Gordon W. Dillon



Fruit of *Herrania nycerodendron* (somewhat reduced), side view and cross-section.

Drawn by Gordon W. Dillon.