

FIELDIANA

Botany

Published by Field Museum of Natural History

Volume 36, No. 1

August 18, 1972

New Species From South America, I

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Over the past few years several valuable collections from the forested regions of Peru have been sent to Field Museum in exchange for identification. One of these, sent by Dr. Theodore Dudley of the U. S. National Arboretum Herbarium, contained the new species of *Demosthenesia* described below.

A most valuable set of collections of tree species from a dendrology project conducted by the Peruvian Forest and Wildlife Service has been sent to this museum for identification. Dr. Louis O. Williams has already described several new taxa from this material, publishing them in previous issues of this journal. In continuing the study of this material begun by Dr. Williams, I have encountered several novelties, one of which is the following new species of *Erythroxylon* from the Department of Tumbes.

The other two novelties are based on collections from a Museum-sponsored project on which it has been my privilege to work since joining the staff of Field Museum. This project has been supported by a continuing grant from the National Science Foundation. Most of the collections for this project have been made by Mr. José Schunke Vigo whom I have memorialized in the specific epithet of the following new species of *Tabebuia*. Mr. Schunke is a resident of Tingo María, Peru, a son of the natural history collector, Mr. José Schunke López (given as José M. Schunke on many herbarium labels), and grandson of the German botanist and collector, Karl (Carlos) Schunke.

BIGNONIACEAE

Tabebuia schunkevigoi Simpson sp. nov.

Arbor 30 m. alta; diametro trunci 27 polices. Ramuli aliquantum complanati longitudinaliter praesertim in internodiis extremis; epiderme ferruginea ad fuli-

Library of Congress Catalog Card Number: 72-84440



FIG. 1. *Tabebuia schunkevigoi* Simpson. A, branchlet with leaves, $\times \frac{1}{2}$; B, branchlet with inflorescence, $\times \frac{1}{2}$; C, flower opened lengthwise, $\times 1\frac{1}{4}$; D, anther, $\times 5$; E, bilobed style tip, $\times 5$; F, fruit, $\times \frac{1}{4}$; G, seeds, $\times \frac{1}{4}$. Drawn by Marion Pahl.

ginea. Folia opposita, decidua, palmatim composita; foliolis supra olivaceis, subtus palide subviridibus et flavinerviis, in statu sicco nitide fumosis supra sed obscure fumosis subtus, ovatis vel ovato-ellipticis, integris, abrupte longe acuminatis, ad basim late obtusis vel truncatis et in foliolis lateralibus parum obliquis; laminis 65-140 mm. longis et 35-60 mm. latis; petiolulis 10-40 mm. longis, supra profunde canaliculatis, laevibus, glabris sed minute furfuraceis in sulco et ad extremis, articulatis ad petiolum et basim folioli, in statu sicco nigris; petiolis plerumque 7-15 cm. longis, striatis longitudinaliter, canaliculatis in facie adaxiali,

glabris vel leviter furfuraceis, in statu sicco micantibus nigris; pubibus furfuraceis pilis dendriticis concistans. Inflorescentia apicalis, thyrsus cum rache et ramis condensatis, dense tomentosus; pubibus pilis minutis et fusco-flavis. Calyx atrovio-laceus, 8-11 mm. longus, campanulatus, dense breviter tomentosus, subanthesi irregulariter circumscissilis. Corolla lilacina, plerumque 60-65 mm. longa et 2 cm. lata ad faucem; lobis 5, breviter villosis in ambis paginis, duobus supernis ca. 15 mm. longis et 12-15 mm. latis, truncatis vel parum emarginatis, tribus infernis ca. 20 mm. longis et 10-15 mm. latis; tubis ca. 4-4.5 cm. longis, extus breviter villosis, intus praeter pilosis in latis uno glabris; basibus tuborum constrictis, 3 mm. latis et 8-10 mm. longis, et intus et extus glabris, in statu sicco nigris. Stamina fertilia 4, inclusa, didynama; filamentis longioribus ca. 15 mm. longis; filamentis brevioribus 10-12 mm. longis; antheris 4-4.5 mm. latis; sacculis antherarum unusquisque 2-2.3 mm. longis, vertice connatis, oppositis et parum sursum curvatis extremitates versus. Stylus 22-28 mm. longus, constrictus ad basim, tunc pro parte ca. 2-2.5 mm. supra basim tumidus, illinc apicem versus angustatus; stigmate bilobato, lobis ca. 1.5 mm. longis et 0.8 mm. latis. Ovarium ca. 4 mm. longum, diametro 1.8 mm., cylindricum, obtusum ad apicem, parum contractum ad basim. Discus cupulatis ca. 1.2 mm. altus, ad basim ovarii arcte adpressus atque includens. Fructus capsulam bicellularem, atropurpureus, in statu sicco nigricans, ca. 22 mm. latus et usque ad 55 cm. longus, linearis, ad ambo extremo acutus, teres vel septo contrarium modice complanatus. Semina numerosa, complanata, ca. 12 mm. lata et 5-6 cm. longa; alis membranaceis.

Tree 30 m. tall; trunk with a d.b.h. of 27 inches (ca. 68.5 cm.). Branchlets somewhat flattened lengthwise in the ultimate internodes; epidermis light brown to sooty brown. Leaves opposite, deciduous, palmately compound; leaflets olive-green above, very light green and with yellowish nerves beneath, in a dried state lustrous grey-brown above, dull grey-brown beneath, ovate or ovate-elliptic, entire, abruptly long acuminate, broadly obtuse or truncate at the base, in lateral leaflets slightly oblique at the base; blades 65-140 mm. long and 35-60 mm. wide; petiolules 10-40 mm. long, deeply grooved above, smooth, glabrous except minutely scurfy in the groove and at the ends, black in dried condition, articulate with the leaflet base and with the petiole tip; petioles mostly 7-15 cm. long, glossy black in a dried state, striate lengthwise, shallowly grooved on the abaxial surface, glabrous or slightly scurfy; scurfy pubescence of tiny dendritic hairs. Inflorescence apical, a thyrsus with rachis and branches condensed, tomentose; pubescence of tiny brownish yellow hairs. Calyx dark violet, 8-11 mm. long, campanulate, densely short tomentose, irregularly circumscissile at anthesis. Corolla lilac, mostly 60-65 mm. long and ca. 2 cm. wide at the throat; lobes 5, short villous on both surfaces, two upper lobes ca. 15 mm. long and 12-15 mm. wide, truncate or slightly emarginate, three lower lobes ca. 20 mm. long and 10-15 mm. wide; tube ca. 4-4.5 cm. long, short villous outside, glabrous within except pilose along one side; the tube base constricted, 3 mm. wide and 8-10 mm. long, glabrous within and without, black in a dried state. Fertile stamens 4, included, didynamous; longer filaments ca. 15 mm. long; shorter filaments 10-12 mm. long; anthers 4-4.5 mm. across; anther sacs each 2-2.3 mm. long, apically united, opposite and slightly upturned at the tips. Style 22-28 mm. long, constricted at base, inflated for about 2-2.5 mm. above the base, then tapering upward; stigma bilobed, lobes ca. 1.5 mm. long and 0.8 mm. wide. Ovary ca. 4 mm. long and 1.8 mm. in diameter, cylindrical, obtuse at apex, slightly constricted at base. Disc cupulate, ca. 1.2 mm. high, enclosing and closely appressed to base of the ovary. Fruit a 2-celled capsule, dark

purple, in dried state blackish, ca. 22 mm. wide and up to 55 cm. long, linear, acute at both ends, terete or moderately flattened contrary to septum. Seeds numerous, flattened, ca. 12 mm. wide and 5-6 cm. long; wings membranous.

PERU: Dept. Huanuco: Prov. Pachitea; Dist. Honoria; in "high forest" (i.e., mature forest) and "low forest" (i.e., successional forest) across the Pachitea River from Tournavista, alt. ca. 300 m., *José Schunke V. 2596* (holotype F; isotypes US, NY, G, COL, USM, and others). *Tahuari de flor morada*.

The genus *Tabebuia* is accepted here as defined by Sprague and Sandwith (Kew Bull. 1932:18) to include the genus *Couralia* Splitg. This species is probably most closely related to *C. toxophora* (Mart.) Benth. & Hook., or at least to the herbarium materials to which that name is usually attached. The nomenclatural validity of the name *C. toxophora* (Mart.) Benth. & Hook. and its application could both benefit from a careful study—a matter which I hope to pursue in a future publication.

ERICACEAE

Demosthenesia dudleyi Simpson sp. nov.

Frutex scandens, ligneus; ramuli juvenes internodiis ultimis complanati longitudinaliter, tomentosi implexis albis pilis, nodis inflatis; vetior ramulus glabrescens, epiderme in reticulum elongatum longitudinaliter findens, expositens laevem nitentem corticem quae in veteribus ramis aliquantum asperescens lichenibus et hepaticis tectis. Folia sessilia; petiolis usque ad 2 mm., plerumque minoribus; laminis late ovatis, subcoriaceis, supra pilis glandulosis dispersis inter sparsum tomentum, subtus fere glabris praeter pilos dispersos glandulosos, basi truncata ad leviter cordata. apice late acuto usque obtuso vel rotundato, nervis 9-11 palmatim divergentibus e petiolo, reti venularum secundario supra non manifesto, subtus inconspicuo, marginibus integris sparse ciliatis. Gemma axillaris usque ad 2.5 mm. longa, inclusa a perulis duobus linearilanceolatis carinatis et longiacuminatis. Inflorescentia axillaris, racemosa; rachidi usque ad 2 cm. longa, tomentosa; omni pedicello subtento a bracteam et ferenti duas bracteolam ad locum circa tertia parte longitudinis supra basem; bracteis circa 4 mm. longis, elliptico-oblongis, ad basim truncatis, ad apicem rotundatis ad obtusis, multinervatis e basibus, integris et ciliatis; bracteolis ovato-lanceolatis, 4-5 mm. longis, ad basim truncatis, longiacuminatis, ciliatis, distichis et suboppositis; pedicellis usque ad 18 mm. longis, sparse tomentosus strictis attenuatis pilis, his in summis tertia parte pedicelli et in partibus inferne calycum interspersis pilis clavatis et glanduliferis. Calyx usque ad 1 cm. longus, gamosepalus 2-3 mm. e basi; lobis 6-8 mm. longis, oblongis, acuminatis, glabris vel subglabris, ciliatis. Corolla "carnosa et ceracea intense rubra" (fide collectoris), 17-22 mm. longa, extus tomentosa, intus glabra, tubulosa, leviter inflata ad basim; lobis valvatis, 4-6 mm. longis, linearibus, acutis. Stamina 10, ca. 16 mm. longa; filamentis ca. 1 mm. longis, complanatis, marginibus conjunctis ad



FIG. 2. *Demosthenesia dudleyi* Simpson. A, branch bearing leaves and flowers, $\times \frac{1}{2}$; B, flower bud, $\times 1\frac{1}{2}$; C, pedicel and flower with corolla removed, $\times 2$; D, corolla tube opened lengthwise showing stamens, $\times 3\frac{1}{2}$; E, filament with attached anther sacs, adaxial surfaces, $\times 10$. Drawn by Marion Pahl.

basim; conectivo antherae et parte summa filamentorum vittam constantem ex pilis sericeis ferenti extus; sacculis antherarum 2.5-3 mm. longis, papillatis; tubulis antherarum ca. 12 mm. longis laevibus glabris, ad apicem dehiscentibus cum fissuris 2.5-3 mm. prolongatis. Stylus indivisus, antheras non excedens. Fructus mihi ignotus.

A woody vine; young branchlets flattened lengthwise in the ultimate internodes, tomentose with rather matted, white hairs, nodes inflated; older branchlets becoming glabrous, the epidermis splitting longitudinally into an elongated network, exposing a smooth, shiny bark that on older branches becomes somewhat roughened and covered with lichens and leafy liverworts. Leaves sessile, the petiole not exceeding 2 mm., usually less; blade broadly ovate, truncate to slightly cordate at the base, broadly acute to obtuse or rounded at the apex, subcoriaceous, glandular hairs scattered amid a sparse tomentum above, nearly glabrous below except for the scattered glandular hairs, nerves 9-11, palmately divergent from the petiole, secondary network not visible above, faint beneath, margins entire, sparsely ciliate. Bud in the leaf axil enclosed in 2 linear-lanceolate, carinate and long-acuminate bud scales, to about 2.5 mm. long. Inflorescence axillary, racemose, the rachis to about 2 cm. long, tomentose, each pedicel subtended by a bract and bearing 2 bracteoles at a point about one-third of length from pedicel base; bracts elliptic-oblong, about 4 mm. long, truncate based, rounded to obtuse at apex, several-nerved from the base, margin entire and ciliate; bracteoles ovate-lanceolate, 4-5 mm. long, truncate at the base, long-acuminate, ciliate, distichous and subopposite; pedicels to about 18 mm. long, sparsely tomentose with straight attenuate hairs, these interspersed in the upper one-third of the pedicel and the lower part of the calyx with clavate, glandular hairs. Calyx to 1 cm. long, gamosepalous for 2-3 mm., the lobes 6-8 mm. long, oblong, acuminate, glabrous or subglabrous, ciliate margined. Corolla "fleshy and waxy deep red" (fide collector), 17-22 mm. long, tomentose outside, glabrous within, tubular, slightly inflated at base; lobes valvate, 4-6 mm. long, linear, acute. Stamens 10, ca. 16 mm. long; filaments ca. 1 mm. long, flattened, their edges joined at the base, tip of filament and connective bearing a band of sericeous hairs externally; anther sacs 2.5-3 mm. long, papillate roughened; anther tubules about 12 mm. long, smooth, glabrous, opening apically by elongated clefts 2.5-3 mm. long. Style undivided, not exceeding the anthers. Fruit unknown.

PERU: Dept. Cuzco: Prov. La Convención; fairly common vine, in enclaves of elfin forest scattered amid the wet grasslands on the summit ridges at Camp 7, at ca. 3,400 m. alt., ca. 28 km. walking distance northeast from Hacienda Luisiana and the Apurimac River, *T. R. Dudley 11199* (holotype at F, isotypes at NA and USM).

This species is readily distinguished by the leaves which are very broad, often slightly cordate, and have a rounded or very broadly acute apex. Mature leaves are mostly over 2.5 cm. wide and usually have a length-width ratio of from 1:1 to 1:1.2. The corolla is pubescent and in this respect somewhat resembles *D. spectabilis* (Rusby) A. C. Smith, but the flower is considerably smaller than in that species. It is perhaps most closely related to the group composed of

D. graebneriana (Hoer.) A. C. Smith, *D. mandoni* (Britton) A. C. Smith, *D. microphylla* (Hoer.) A. C. Smith, and *D. fabulosa* (Sleumer) A. C. Smith, although the assumed affinity with the last species is based only on comparison with the description since I have seen no specimens of it.

ERYTHROXYLACEAE

Erythroxylon pacificum Simpson sp. nov.

Arbor ca. 20 m. alta; cortice ramulorum palide griseo. Folia subcoriacea; laminis ovatis vel orbicularibus, glabris, supra nitidis praesertim ad maturitatem, subtus hebetatis, in specimine florifero 3-4 cm. longis et 2.0-2.4 cm. latis, in specimine fructifero 3-6 cm. longis et 2.1-4.2 cm. latis; petiolis 3-6 mm. longis, supra canaliculatis, glabris; stipulis 1.8-2.5 mm. longis, non striatis. Pedicelli floriferi 2.5-4.5 mm. longi, valde longistrorsum procrati; pedicelli fructiferi 5-8 mm. longi. Flores (4) 6-10 in fasciculis axillaribus; lobis calycis 0.8-1.0 mm. longis, late triangularibus; petalis 2.5-3.2 mm. longis, 1.6 mm. latis, oblongis vel leviter obovatis, late acutis; tubo staminum lobos calycis aequanti vel leviter excedenti; filamentibus in parte discreta ca. 3.5 mm. longis; antheris 0.8 mm. longis, apiculatis, apiculo usque ad 0.3 mm. longo; ovario tubum staminum excedenti per tamquam 0.8 mm.; stylis per totam longitudinem discretis, ca. 1.2-1.5 mm. longis; stigmatibus capitatis. Fructus 1.3-1.6 cm. longus, asymmetricice oblongus, uniseminalis. Semen endospermia abundantem continens.

Tree, ca. 20 m. tall, d.b.h. 14.7 inches. Branchlets with light grey bark; vascular trace of stipule on either side apparent as a low ridge extending from base of stipule to next lower node. Leaves subcoriaceous; blade 3-4 cm. long by 2.0-2.4 cm. wide in flowering specimen, 3-6 cm. long by 2.1-4.2 cm. wide in fruiting material, shiny above especially at maturity, dull beneath, ovate to orbicular, glabrous; petiole 3-6 mm. long, channelled above, glabrous; stipules 1.8-2.5 mm. long, nonstriated. Flowering pedicels 2.5-4.5 mm. long, in fruit 5-8 mm. long, noticeably longitudinally ridged. Flowers borne in axillary clusters of (4) 6-10, each subtended by a bract; calyx lobes 0.8-1.0 mm. long, broadly triangular; petals 2.5-3.2 mm. long by 1.6 mm. wide, oblong or slightly obovate-oblong, broadly acute; staminal tube equaling or slightly exceeding the calyx lobes; free filaments about 3.5 mm. long; anthers 0.8 mm. long, apiculate, apiculus up to 0.3 mm. long; ovary exceeding the staminal tube by about 0.8 mm.; styles separate throughout, about 1.2-1.5 mm. long; stigma capitate; fruit 1.3-1.6 cm. long, asymmetrically oblong, 1-seeded. Seed with abundant endosperm.

PERU: Dept. Tumbes: Prov. Zarumilla; Forest Service Dendrology Project *Tree no. T-39*: flowering collection, *Canales 17* (holotype F, isotypes LIM, MOL, USM, US, NY, P, K) fruiting collection *Canales 6* (paratype F, isoparatypes LIM, MOL, USM, US, NY, P, K) wood samples at LIMw, MADw, USw, BWCw, CLPw, CTFw, PRFw, FPAw, CHITw, MEXFw, MERw, TOFOW, RPPRw.

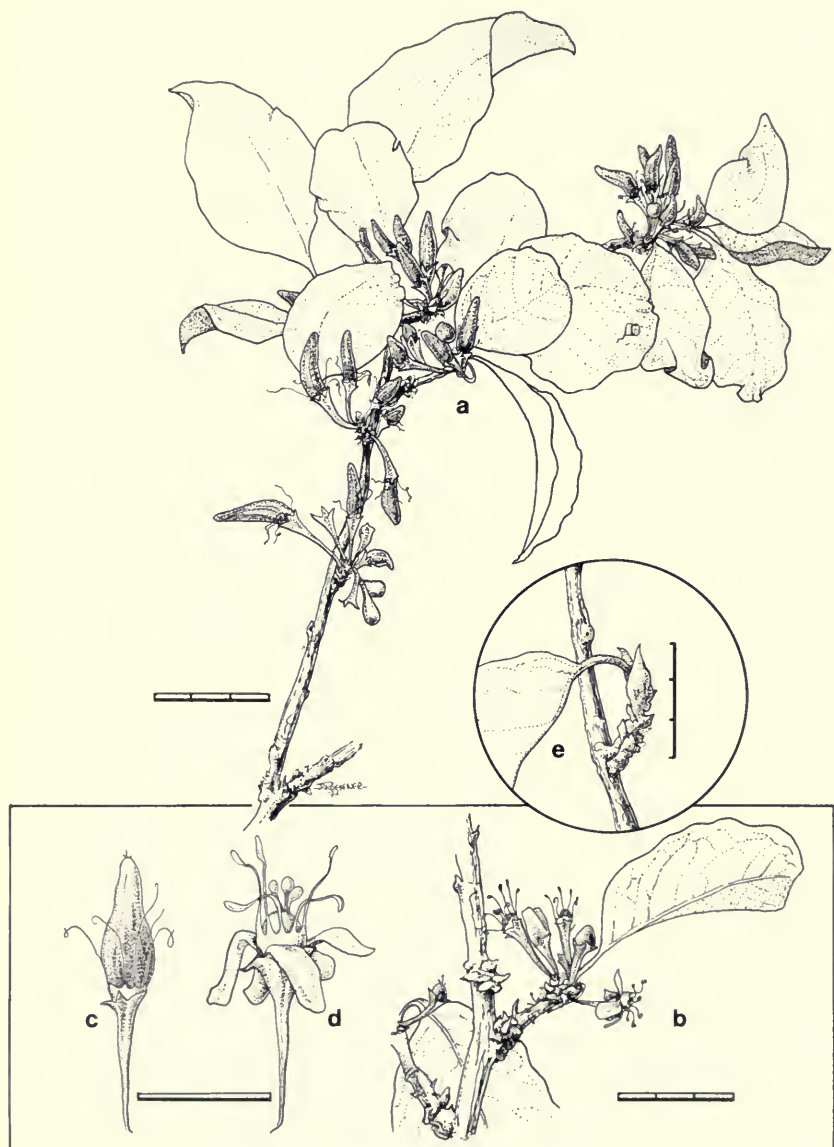


FIG. 3. *Erythroxyton pacificum* Simpson. A, branch bearing fruiting clusters; B, flowering cluster; C, fruit; D, flower; E, leaf base, petiole, and stipule. Scale in A and B = 3 cm., C and D = 1 cm. Drawn by Richard W. Roesener.

According to Schulz's treatment of Erythroxylaceae in the "Pflanzenreich," this species would be assigned to *Erythroxylon*, section *Archerythroxylon*. The section is characterized by stipules nonstriate, flowers perfect, and styles free. There seem to be about seven species of section *Archerythroxylon* that occur in the coastal regions of northern Peru and Ecuador. The following artificial key may serve to separate those seven species.

1. Leaves obovate, apex rounded to emarginate.
 2. Leaves markedly bilineate beneath, the lines paralleling the midrib. *E. carthagenense*.
 2. Leaves not bilineate or only weakly so.
 3. Filament tube distinctly shorter than the calyx.
 4. Stipules half the petiole length. *E. havanense*.
 4. Stipules as long as petiole or longer. *E. cumanense*.
 3. Filament tube equalling or exceeding the calyx.
 5. Leaves coriaceous, glaucous beneath, borne on stubby spur shoots; lateral branches rigid and at right angles to main branch. *E. glaucum*.
 5. Leaves membranous to subcoriaceous, light colored but not glaucous beneath; lateral branches erect-spreading. *E. hondense*.
1. Leaves not obovate, usually elliptic or oblong, apex acute or acuminate.
 6. Filament tube distinctly shorter than calyx.
 7. Leaf apex obtusely acuminate. *E. ruizii*.
 7. Leaf apex rounded to broadly acute. *E. havanense*.
 6. Filament tube equalling or exceeding the calyx. *E. pacificum*.

RUBIACEAE

Pentagonia rubriflora Simpson sp. nov.

Arbor 14-15 m. alta. Ramuli, petioli, stipulae et inflorescentiae dense lanatae, pilis palido-ferrugineis ad rubris. Folia 52-75 cm. longa; laminis 48-65 cm. longis et 19-22 cm. latis, subtus velutinis, supra sparse tomentosus, elliptico-oblanco-latis, ad apicem acutis, ad basim rotundatis ad obtusis, leviter decurrenti in 5-7 cm. longo petiolo; stipulis binatis, gemmam includentibus, marginibus imbricatis, dextrorsum hemitorsivis, caducis, 4.5-5.5 cm. longis, anguste triangularibus. Inflorescentia cymam ebracteata, axillaris usque ad 2.5 cm. longae (flores exclusi). Calyx ca. 22 (-30) mm. longus, bifidus (raro trifidus) per $\frac{2}{3}$ longitudinis, extus lanatus, intus glaber, viridoluteus, in statu sicco fuliginosus. Hypanthium dense lanatum, in statu sicco argenteum cinnamomeo suffusum. Corolla usque ad 35 (-45) mm. longa, rubra, extus glabra vel sparse pubescens sed versus apicem loborum sublanata, intus praeter inter basibus filamentorum dense pilosis glabra; lobis ca. 6-10 mm. longis et 4-5 mm. latis. Stamina 5; filamentis 11-14 mm. longis, glabris; antheris ca. 3 mm. longis, caudatis, affixis ad basim. Discus cupulatus, ca. 2.5 mm. altus. Stylus ca. 18 mm. longus, bifidus; lobis 2.5 mm. longis. Fructus mihi ignotus.



FIG. 4. *Pentagonia rubriflora* Simpson. A, leaf, bud, and flower cluster; B, flower; C, flower with corolla tube opened lengthwise. Scale in A = 5 cm., in B and C = 3 cm. Drawn by Richard W. Roesener.

Tree 14–15 m. tall. Branchlets, petioles, stipules, and inflorescences densely woolly with a light rusty to rufous pubescence. Branchlets strongly 4-ribbed in at least the ultimate 2 internodes; pubescence becoming dark and sloughing off older parts of twigs. Leaves opposite, 52–75 cm. long; blades 48–65 cm. long by 19–22 cm. broad, velvety tomentose beneath, velvety sparse tomentose above, olive green above, lighter beneath, elliptic-oblongate, apex acute, base rounded to obtuse and slightly decurrent onto the 5–7 cm. long petiole, some blades nearly pandurate in the lower half; stipules paired and enclosing the bud, margins overlapping, dextrally half-spiraled, light straw- or ochre-colored, caducous, 4.5–5.5 cm. long, narrowly long-triangular, when fallen, exposing a sheathing, 3–5 mm. long, ciliate collar that encircles the stem at the nodes. Inflorescence an axillary, ebracteate cyme, to 2.5 cm. long (excluding flowers). Calyx to 22 (rarely 30) mm. long, bifid or rarely trifid for two-thirds its length, woolly pubescent outside, glabrous within, greenish yellow drying to a sooty grey-brown. Hypanthium densely woolly, a cinnamon tinged silver color in the dried material. Corolla to 35–45 mm. long, red, glabrous or very sparsely pubescent outside except becoming almost woolly toward the tips of the lobes, glabrous inside except densely pilose between the filament bases; lobes about 6–10 mm. long by about 4–5 mm. wide. Stamens five, filaments glabrous, 11 to 14 mm. long; anthers basally attached, caudate, about 3 mm. long. Disc cupular, about 2.5 mm. high. Style ca. 18 mm. long, bifid; lobes ca. 2.5 mm. long. Stigma lining the inside of the stylar lobes. Fruit unknown.

PERU: Dept. San Martín: Prov. Mariscal Cáceres; Dist. Campanilla; Río Sión, southwest of the village of Sión, in high forest, alt. ca. 450 m., Oct. 3, 1969, *José Schunke V. 3472* (holotype F, isotypes LIM, US, COL, NY, G, USM, MO, K, P, MG, INPA).

This species is closely related to *P. spathicalyx* Schum. and *P. velutina* Standl. The following key may serve to separate the three species.

1. Leaf blades glabrous or subglabrous on both surfaces; bracts or bracteoles present, red colored; calyx glabrous to sparsely pubescent; corolla white to yellowish white, occasionally with pinkish lobes; widespread in Amazonian Colombia, Peru, and Brazil. *P. spathicalyx*.
1. Leaves densely pubescent at least beneath; bracts absent or inflorescence densely congested; calyx various; corolla various.
 2. Leaf blades densely pubescent beneath, glabrous above, 40–45 cm. long by 20–25 cm. wide; calyx sparsely puberulous; corolla unknown; known only from type locality at Puerto Arturo, near Yurimaguas, Dept. Loreto, Peru. *P. velutina*.
 2. Leaf blades densely pubescent beneath, puberulous above, 48–65 cm. long by 19–22 cm. wide; inflorescence ebracteate; calyx pilose, greenish yellow; corolla red; from near Sión in the middle valley of the Huallaga River below Tocache. *P. rubriflora*.