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# FLORA OF GUATEMALA

JOHNNIE L. GENTRY, JR.

AND

PAUL C. STANDLEY

✓  
FIELDIANA: BOTANY

VOLUME 24, PART X, NUMBERS 1 and 2

*Published by*

FIELD MUSEUM OF NATURAL HISTORY

APRIL 11, 1974

JUL 5 1974

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*Biology*

FLORA OF GUATEMALA  
PART X



# FLORA OF GUATEMALA

JOHNNIE L. GENTRY, JR.

*Assistant Curator, Vascular Plants  
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AND

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*Late Curator of the Herbarium  
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FIELDIANA: BOTANY

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## Flora of Guatemala - Part X, Numbers 1 and 2

### SOLANACEAE. Potato or Nightshade Family

JOHNNIE L. GENTRY, JR. AND PAUL C. STANDLEY

Herbs, shrubs, or small trees, sometimes woody vines, occasionally epiphytic, often armed with prickles, the pubescence of simple or often stellate or variously branched hairs; leaves alternate, sometimes in pairs (subopposite), simple, entire to deeply parted, or odd-pinnate, stipules absent; inflorescences cymose, often racemose, subumbellately clustered or paniculately disposed or reduced to a single flower, pseudoterminal, lateral and opposite the leaves or internodal, or axillary; flowers perfect, actinomorphic or sometimes zygomorphic, typically 5-merous; calyx gamosepalous, campanulate to tubular, 5-lobed or -parted, sometimes 4-6-lobed, usually persistent and in some accrescent or much inflated in fruit; corolla gamopetalous, subrotate, campanulate, funnelform, salverform, tubular, or urceolate, the limb 5-lobed, mostly plicate, valvate, or imbricate in bud; stamens 5, sometimes 4, or only 2, epipetalous, alternate with the corolla lobes; anthers with 2 thecae, 1 theca sometimes reduced, dehiscent by longitudinal slits or by terminal pores, sometimes connivent, the connective sometimes enlarged; pistil 1; ovary superior, bilocular, sometimes tetralocular by false septae, or 3-5 locular, or rarely unilocular, with axile placentation, the ovules several to many in each cell, rarely few or one, the hypogynous disk usually present and apparent; style solitary and terminal; stigma capitate and entire or shallowly bilobed, sometimes dilated or somewhat expanded and flattened; fruit a berry or capsule; seeds several to many, sometimes few, or rarely one, often strongly compressed, sometimes angular and often with a pitted testa; embryo subperipheral, strongly curved, spiral, or straight; endosperm carnose.

A family of about 85 genera with some 2,300 species, cosmopolitan, best developed in tropical America.

All of the solanaceous genera in Central America are represented in Guatemala except *Margaranthus* (included in this treatment). Two other genera, *Fabiana imbricata* R. & P., a native of South America, and *Lycium halimifolium* Miller, a native of Europe, are occasionally grown in Guatemalan gardens. *Valerioa* originally placed in the Solanaceae by Standley and Steyermark is synonymous with *Peltanthera* in the Loganiaceae and *Eutheta* placed here by Standley is a synonym of *Melasma* in the Scrophulariaceae.

Solanaceae are of great economic importance, yielding foods, such as *Solanum tuberosum* (potato), *S. melongena* (eggplant), *Lycopersi-*

*con esculentum* (tomato), *Capsicum spp.* (peppers), drugs, such as *Atropa belladonna* (atropine or belladonna), *Datura stramonium* (stramonium), *Hyoscyamus niger* (hyoscyamine and scopolamine), *Nicotiana tabacum* (tobacco), and ornamentals, such as *Browallia*, *Brunfelsia*, *Cestrum*, *Datura*, *Lycium*, *Nicotiana*, *Nierembergia*, *Petunia*, *Physalis*, *Salpiglossis*, *Schizanthus*, *Solandra*, *Solanum*, and *Streptosolen*.

Corolla subrotate to campanulate or urceolate, rarely tubular-campanulate.

Anthers dehiscing by terminal pores or slits.

Calyx truncate and often bearing 5 or 10 appendages just below the margin of the calyx. . . . . *Lycianthes*.

Calyx 5-lobed or 5-parted; calyx appendages absent.

Anther connective broad and thickened adaxially; plants unarmed.

*Cyphomandra*.

Anther connective slender, not prominently thickened adaxially; plants often armed with prickles. . . . . *Solanum*.

Anthers dehiscing by longitudinal slits.

Leaves pinnate; anthers coherent and terminated by sterile tips.

*Lycopersicon*.

Leaves simple; anthers free or sometimes coherent but not terminated by sterile tips.

Corolla urceolate. . . . . *Margaranthus*.

Corolla subrotate to campanulate, rarely tubular-campanulate.

Calyx lobes sagittate-cordate at their bases; corolla blue. . . . . *Nicandra*.

Calyx lobes not sagittate-cordate at their bases; corolla white, greenish-white, yellow or yellowish-brown.

Fruiting calyx accrescent and spreading beneath the berry or bladderly-inflated and enclosing the berry, the calyx contracted at the apex and often invaginated basally.

Inflorescences umbellate and long-pedunculate; fruiting calyx spreading beneath the berry . . . . . *Jaltomata*.

Inflorescences consisting of a single pedicellate flower or sometimes in axillary fascicles; fruiting calyx bladderly-inflated and enclosing the berry, the calyx contracted at the apex. . . *Physalis*.

Fruiting calyx not at all to strongly accrescent, sometimes surpassing the berry but not bladderly-inflated and enclosing the berry, the calyx not contracted at the apex nor spreading beneath the berry.

Inflorescences consisting of axillary fascicles, with the calyx 5 mm. long or less, truncate, 5-lobed or -dentate not more than one-half way to the base or rarely with the inflorescences long-pedunculate, and the leaves in pairs, dimorphic, very unequal in size and different in shape . . . . . *Witheringia*.

Inflorescences axillary, consisting of 1-2 (-3) pedicellate flowers or if the flowers in axillary fascicles the calyx 12 mm. long or more and 5-parted nearly to the base.

Corolla throat pubescent; corolla limb parted one-half way or nearly to the base, calyx appendages absent and the anthers yellowish; fruit not pungent to the taste. . . . . *Atheneae*.

Corolla throat glabrous; corolla limb scarcely lobed, with the calyx truncate and bearing 5 linear or subulate appendages just below the margin of the calyx or the anthers bluish to bluish tinged; fruit often very pungent to the taste.

*Capsicum*.

Corolla tubular, funnellform or salverform.

Fertile stamens 4 and didynamous, or the stamens 2, sometimes with 1-3 staminodes; corolla lobes sometimes linear or clavate.

Corolla tubular, the flowers small and inconspicuous.

Corolla very small, 3 mm. long or less; fruit tuberculate, tardily dehiscent, acute at the apex, one-seeded. . . . . *Melananthus*.

Corolla 10-13 mm. long; fruit smooth, readily dehiscent, obtuse at the apex, several-seeded. . . . . *Schwenckia*.

Corolla salverform, the flowers large and showy.

Corolla tube less than 2 cm. long, the throat closed by filaments; thecae of the upper anthers dimorphic; seeds angulate; herbs. . . . . *Browallia*.

Corolla tube 3 cm. long or more, the throat not closed by filaments; thecae of the upper anthers equal in size; seeds rounded; shrubs or sometimes suffrutescent herbs. . . . . *Brunfelsia*.

Fertile stamens 5, sometimes one reduced; staminodes absent.

Leaves in pairs, dimorphic, very unequal in size and different in shape. . . . . *Witheringia*.

Leaves solitary, rarely in pairs, but then not dimorphic.

Inflorescences consisting of axillary fascicles. . . . . *Acnistus*.

Inflorescences racemose, cymose or paniculate, or consisting of a single pedicellate flower.

Corolla 16 cm. long or more.

Corolla yellowish or yellowish-brown, the corolla lobes obtuse, imbricate in bud; scandent shrubs. . . . . *Solandra*.

Corolla white, the corolla lobes acuminate to long-caudate, plicate in bud; erect shrubs or small trees. . . . . *Datura*.

Corolla 12 cm. long or less.

Fruit a berry; plants shrubs or small trees.

Corolla salverform or narrowly funnellform, 3 cm. long or less; fruit much exceeding the calyx, and short-stipitate; seeds few; plants terrestrial. . . . . *Cestrum*.

Corolla broadly funnellform or tubular, 3.5 cm. long or more; fruit surpassed by the calyx, if not then the leaves glandular-punctate, the fruit not stipitate; seeds numerous; plants nearly always epiphytic.

Pubescence of stellate and branched hairs; corolla tubular. . . . . *Juanulloa*.

Pubescence of simple hairs or hairs absent; corolla funnellform. . . . . *Markea*.

Fruit a capsule, septicidally dehiscent; plants nearly always herbaceous.

Inflorescences racemose or paniculate. . . . . *Nicotiana*.

Inflorescences consisting of a single pedicellate flower.

Plants viscid-pubescent; calyx parted nearly to the base. *Petunia*.

Plants pubescent to nearly glabrous, but not viscid-pubescent; calyx lobed not more than one-half way to the base.

Corolla tube 4.5 cm. long or more; calyx deciduous, circumscissile near the base and leaving a persistent flaring collar under the fruit; fruit armed with spines; leaves subentire to shallowly lobed, 3 cm. wide or more. . . . . *Datura*.

Corolla tube 1.5 cm. long or less; fruit unarmed, included in the persistent calyx; leaves entire, 1 cm. wide or less. . . . . *Bouchetia*.

### ACNISTUS Schott

Shrub or small trees; leaves alternate, entire, petiolate; inflorescences consisting of axillary fascicles, the flowers long pedicellate; calyx campanulate, 4-5-lobed

or sometimes truncate, slightly or not at all accrescent in fruit; corolla funnellform, white, the limb 5-lobed, the lobes valvate or induplicate-valvate in bud; stamens 5; filaments slender, inserted just below the middle of the tube; anthers oblong or ovate, longitudinally dehiscent, apiculate; ovary bilocular, the ovules numerous, the disk prominent, carnose; style slender and exerted; stigma dilated and shortly bilobed; fruit a berry; seeds numerous, laterally compressed; embryo strongly curved.

About 20 species, with only one native in Central America, ranging from southern Mexico to Costa Rica, West Indies, and South America. A few other species have been described from Mexico. Some authors treat *Acnistus* Schott as a synonym of *Dunalia* H.B.K., see Sleumer, *Lilloa* 23: 117-142. 1950, but also see A. T. Hunziker, *Bol. Acad. Nac. Ci.* 41: 211-244. 1960. The generic limits of *Acnistus* and *Witheringia* need to be critically reviewed.

***Acnistus arborescens*** (L.) Schlecht. *Linnaea* 7: 67. 1832.  
*Atropa arborescens* L. *Cent. Pl.* 2: 10. 1756. *Palo de gallina*.

Damp or wet thickets, 1,360 m.; Santa Rosa; Jalapa. Southern Mexico. Nicaragua; Costa Rica. West Indies. South America.

A shrub or a small tree with corky-like bark, commonly 3-6 m. tall; leaves elliptic to oblong, mostly 5-15 cm. long, 3-5.5 cm. wide, acute or obtuse, attenuate at the base, glabrous or nearly so above, densely tomentose-floccose with branched or simple multicellular hairs below, sometimes glabrate; petioles 1-1.5 cm. long; flowers numerous, in axillary fascicles; pedicels 1.5-2.5 cm. long; calyx chartaceous, light brown, 2.5-4 mm. long, glabrous, the lobes short and rounded, about 1 mm. long, sometimes truncate; corolla white, 8-11 mm. long, glabrous within, glabrous or puberulent externally, the tube 4.5-6.5 mm. long, the lobes 3-5 mm. long, spreading and acute; stamens exerted; filaments 4-5.5 mm. long; anthers 2-2.5 mm. long, apiculate; style 9-11 mm. long; berry orange or yellow, 5-6 mm. in diameter, globose, pulpy; seeds reticulate-foveate.

*Acnistus arborescens* is not very common in Guatemala, at least not often collected. It is more abundant in some parts of Costa Rica.

### ATHENAEA Sendtner, nom. cons.

Herbs or shrubs; leaves alternate, sometimes in pairs, entire or sinuate-angulate, petiolate; inflorescences consisting of axillary fascicles or of 1 or sometimes 2 pedicellate flowers; calyx campanulate, 5-lobed, slightly to much accrescent in fruit; corolla subrotate, white or yellow, often with 5 darker contrasting spots near the mouth of the corolla tube, the mouth villosulous, the limb 5-lobed, the lobes valvate in bud; stamens 5; filaments filiform or dilated at the base, exerted; anthers oblong, longitudinally dehiscent; ovary bilocular, the ovules numerous, the disk inconspicuous; style slender, exerted; stigma entire or emarginate, slightly dilated; fruit a berry, surpassed by or included in the accrescent calyx, the fruiting calyx sometimes appressed to the fruit, but not bladderly-inflated and enclosing the



FIG. 1. *Acnistus arborescens*. A, habit,  $\times \frac{1}{2}$ ; B, corolla dissected,  $\times 4$ ; C, calyx and style,  $\times 5$ .

fruit, the base not invaginate; seeds numerous, laterally compressed; embryo strongly curved.

About 15 species in tropical America. One other Central American species occurs in Costa Rica. The generic limits of *Athenaea* are not well defined, at least in Central America. It is treated as a synonym of *Withania* by some workers, but that genus is apparently found only in the Old World. A few species previously placed here are currently treated in *Witheringia*.

A more thorough study of the generic limits of *Athenaea* and related genera will probably result in some modification from the present treatment (see comments under the species).

Inflorescences consisting of 1 or sometimes 2 pedicellate flowers; leaves narrow, 2-4 cm. wide, the base obtuse; corolla limb 1 cm. wide; calyx 3.5-4.5 mm. long.  
*A. cernua*.

Inflorescences consisting of axillary fascicles, the flowers 5-9; leaves broad, 10-18 cm. wide, the base cordate; corolla limb 2.5 cm. wide; calyx 14 mm. long.  
*A. viscosa*.

***Athenaea cernua*** Donn.-Sm. Bot. Gaz. 48:297. 1909. *Physalis melanocystis* (Robinson) Bitter var. *cernua* Waterfall, Rhodora 69:99. 1967, *syn. nov.*

Moist forests, 900 m.; Petén; Alta Verapaz (type from near Sasis, *Tuerckheim II 2245*). Mexico.

A much branched herb, the stems with short glandular hairs, often with long multicellular hairs in addition to the shorter ones; leaves solitary or sometimes in pairs, then similar in size and shape, the leaves ciliate, pubescent with short multicellular hairs above and below, the hairs often glandular, mostly confined to the veins below, apex acuminate or acute, base obtuse, the larger leaves mostly 4-13.5 cm. long, 2-4 cm. wide, the petioles 1-3.5 cm. long; flowers solitary or sometimes 2, the pedicels slender, 1.5-1.8 cm. long, cernuous in fruit, with short glandular hairs; calyx 3.5-4.5 mm. long, glandular pubescent with multicellular hairs, the lobes lanceolate to narrowly triangular, accrescent in fruit; corolla subrotate, yellow or white with 5 darker contrasting (at least when dried) villosulous spots near the mouth of the tube, the mouth of the corolla tube villosulous, the limb 1 cm. wide, parted to the middle or just below, the lobes about 2.5-3 mm. long, ciliate; filaments 1.5 mm. long; anthers 1.2 mm. long; style 3-3.5 mm. long; berry globose, red, about 8 mm. in diameter, at maturity the accrescent calyx splits and becomes reflexed, exposing the mature fruit; seeds 1-1.2 mm. long.

*Athenaea cernua* has been treated as a variety of *Physalis melanocystis* by Waterfall (1967). The fruiting calyx indicates stronger affinities with *Athenaea* than with *Physalis*.

***Athenaea viscosa*** (Schrader) Fern. Proc. Am. Acad. Sci. 35:567. 1900. *Saracha viscosa* Schrader, Index Sem. Hort. Acad. Goett.

5. 1832. *A. macrocardia* Standl. & Steyerl. Field Mus. Bot. 22: 375. 1940 (type from below Finca Alejandria, Sierra de las Minas, Zacapa, *Steyermark 30004*).

In pine forested canyons, 2,000 m.; Zacapa. Mexico.

An herb 3–3.5 m. tall, the stems densely villosulous, the hairs glandular and multicellular; leaves solitary, entire to sinuate-angulate, broadly ovate, 15–30 cm. long, 10–18 cm. wide, pubescent above and below with short and long multicellular, glandular hairs, the longer hairs more dense on the veins, apex acuminate or long-acuminate, base oblique, deeply cordate; petioles long, 4–12 cm. long, densely glandular-villosulous; flowers few to numerous, the slender pedicels, 2.5–5 cm. long, densely glandular-villosulous; calyx 1.4 cm. long, densely glandular-villosulous, deeply parted, the lobes ovate, 1.2 cm. long, apex narrowly long-acute, slightly accrescent in fruit; corolla subrotate, densely glandular-villosulous externally, pale yellow-cream, with 5 olive-green spots near the mouth of the tube, the mouth of the corolla tube villosulous, the limb about 2.5 cm. wide, parted to below the middle, the lobes 1 cm. long, ciliate; filaments 4.5 mm. long; anthers 4 mm. long; style 10 mm. long; berry globose, orange, 1.2–1.5 cm. in diameter; seeds 1.5 mm. long.

*Athenaea viscosa* is morphologically similar to a group of species in *Physalis* that have the corolla 5-lobed and the flowers mostly several in the leaf axils, but it differs in characters of the fruiting calyx. The species is retained in *Athenaea* until further study is conducted. The correct name is *Physalis schraderiana* Bernh., when referred to that genus.

### BOUCHETIA A. De Candolle

Herbs, erect or decumbent, pubescent; leaves alternate, entire, short petiolate or sessile; inflorescences reduced to a single flower, pseudoterminal and subopposite the leaves, the flowers pedicellate; calyx tubular-campanulate, 5-lobed, slightly accrescent in fruit; corolla funnelform, white or blue, the limb 5-lobed, the lobes short, imbricate-plicate in bud, the posterior lobe outermost in bud, the tube slender below, ampliate above; stamens 5, 4 didynamous, the fifth one shorter than either pair or with 2 long and 3 shorter stamens; filaments filiform, subequally inserted below the middle of the corolla tube; anthers connivent, the thecae confluent at the apex, longitudinally dehiscent; ovary bilocular, the ovules numerous, the disk cupular; style filiform, smooth and included; stigma transversely dilated, oblong, reflexed and somewhat acute on both ends; fruit a capsule, septical, the valves bifid; seeds numerous and angulate; embryo almost straight.

A genus of one or possibly two species ranging from the southwestern United States to Guatemala and South America.

***Bouchetia erecta*** DC. ex Dunal in DC. Prodr. 13: 589. 1852.

Open grassy places, 1,400–1,600 m.; only one collection is known from Guatemala (Huehuetenango) between Las Palmas and Chaculá,



FIG. 2. *Bouchetia erecta*. A, habit,  $\times 1$ ; B, corolla dissected,  $\times 1\frac{1}{2}$ , calyx dissected,  $\times 1\frac{1}{2}$ . *Browallia americana*. C, habit,  $\times \frac{1}{2}$ ; D, flower,  $\times 2$ ; E, style and stigma,  $\times 10$ ; F, upper stamen,  $\times 10$ ; G, lower stamen,  $\times 10$ .



Sierra de los Cuchumatanes, *Steiermark* 51761. Southwestern United States. Mexico. South America.

Low perennial herbs, the stems slender, few to several, erect or decumbent, 2 dm. long or less, sparsely pubescent with inwardly curved hairs; leaves linear to lance-ovate, 1.5–3.5 cm. long, 0.3–1 cm. wide, acute, the base cuneate, nearly glabrous or puberulent, the lower leaves short petiolate, the upper ones sessile; flowers solitary, the pedicels 1.5–3 cm. long; calyx pilose, 6–10 mm. long, the lobes 2.5–4 mm. long, linear, unequal or equal, acute or obtuse; corolla white or blue, pilose externally, the limb about 1 cm. wide, the tube 1–1.5 cm. long, the lobes short, obtuse; stamens with two long pairs, the fifth one shorter than either pair or with two long and three shorter stamens; filaments 4.5–7.5 mm. long; anthers about 1 mm. long, the thecae confluent at the apex; style 6–9.5 mm. long, included; capsule 5.5–7 mm. long, included in the accrescent calyx; seeds angulate, about 1 mm. long, reticulate-foveate.

### BROWALLIA L.

Herbs; leaves alternate and entire, petiolate; inflorescences racemose or the flowers solitary; calyx tubular, mostly 5-lobed, slightly accrescent in fruit; corolla salverform, slightly zygomorphic, blue or violet, occasionally white, the limb 5-lobed, the lobes imbricate-plicate in bud, the posterior lobes outermost in bud, the tube ventricose just below the mouth of the tube; perfect stamens 4, didynamous, included, the fifth stamen rudimentary or absent; filaments subequally inserted in pairs above the middle of the corolla tube; anthers longitudinally dehiscent, the thecae of the upper anthers dimorphic, the larger thecae pollen-bearing, the smaller theca sterile; ovary bilocular, the ovules numerous, the disk inconspicuous; style filiform, corrugated above, included; stigma expanded and somewhat flattened, slightly bilobed; fruit a capsule, membranaceous or subcoriaceous, septicidal, the valves bifid; seeds numerous and angulate; embryo straight or slightly curved.

Probably only two species in the genus, although several others have been described, ranging from southern Mexico to Costa Rica, Panama, West Indies, and South America. The other species (*Browallia speciosa* Hook.) occurs in Central America in the mountains of Costa Rica and Panama.

***Browallia americana*** L. Sp. Pl. 631. 1753. *B. demissa* L. Syst. ed. 10. 1118. 1759. *B. melanotricha* Brandegee, Univ. Calif. Publ. Bot. 6: 61. 1914 (type from Cerro del Boquerón, Chiapas, *Purpus* 6662). *Teresa*; *Teresita*; *Santa Teresita*.

Moist or wet thickets or forests, often a weed in cafetales or other cultivated land, 600–1,800 m.; Alta Verapaz; Baja Verapaz; Jalapa; Santa Rosa; Guatemala; Sacatepéquez; Chimaltenango; Huehuetenango; Suchitupéquez; Quezaltenango. Southern Mexico to Costa Rica. Panama. West Indies and South America.

Slender annual plants, 2.5-6 dm. tall, the stems much-branched, often glandular-pubescent above; leaves ciliate, sparsely pilose or sometimes glabrous, ovate or lanceolate, 4-10 cm. long, 1-5 cm. wide, acute or acuminate, the base attenuate; petiole 0.5-3 cm. long; inflorescence racemose or flowers solitary; pedicels 5-15 mm. long; calyx glandular-pubescent, 4-8 mm. long, (4-)5(-6)-lobed, the lobes 1.5-2 mm. long, shorter than the tube and unequal, acute; corolla blue or violet, occasionally white, the throat yellow, the limb 1.2-1.5 cm. wide, the lobes retuse, short and broad, the tube 1-1.8 cm. long; stamens 4, didynamous, inserted about 3 mm. below the mouth of the tube; filaments about 2 mm. long, dilated upward and ciliate, the upper ones curved and closing the throat of the corolla tube; style included, 1.2-1.5 cm. long, abruptly curved at the apex; capsule ovoid, 5-8 mm. long, surpassed by the accrescent calyx, the valves with appressed hairs; seeds 1 mm. long, foveolate-reticulate.

This is a common ornamental plant throughout Central America. It is doubtful whether the plant is native in Guatemala or only an escape from cultivation, since it is usually found about dwellings or in cultivated land.

Called *no-me-olvides* and *simpatica* in El Salvador.

### BRUNFELSIA L.

Shrubs or small trees, rarely suffrutescent; leaves alternate and entire, often coriaceous, petiolate or subsessile; inflorescences cymose or consisting of an axillary and solitary flower, the flowers large and showy; calyx campanulate-tubular, 5-lobed; corolla salverform, slightly zygomorphic, white or scarlet or deep purple, the limb broad and spreading, shallowly 5-lobed, the lobes imbricate in bud, the posterior lobes outermost in bud; stamens 4, didynamous, included; filaments subequally inserted in pairs above the middle of the corolla tube; anthers longitudinally dehiscent, consisting of apparently 1 theca or 2 thecae and then confluent, the thecae equal in size; ovary bilocular, the ovules numerous, the disk inconspicuous; style included, smooth; stigma dilated or expanded and flattened, bilobed; fruit a capsule, fleshy or coriaceous, apparently indehiscent or septicial and tardily dehiscent; seeds several and rounded; embryo slightly incurved.

About 40 species in tropical America. Only one other species is in Central America. Mr. T. Plowman is currently working on a monograph of the genus.

Corolla white, the tube 10-11 cm. long; leaves broadest above the middle; shrubs or small trees. . . . . *B. nitida*.

Corolla scarlet or orange, the tube 3-4 cm. long; leaves broadest below the middle; suffrutescent. . . . . *B. nyctaginoides*.

**Brunfelsia nitida** Benth. in DC. Prodr. 10: 201. 1846. *Galán*.

Cultivated for ornament in Petén. Native of the West Indies. We have seen only two collections from Guatemala. These collec-



FIG. 3. *Brunfelsia nycaginoides*. A, habit,  $\times \frac{1}{2}$ ; B, corolla dissected,  $\times 2$ ; C, calyx dissected,  $\times 2$ .

tions (*Tún 609* and *Lundell 2417*) probably represent escapes from cultivation.

Shrubs or small trees, glabrous throughout; leaves subcoriaceous and lustrous, oblanceolate or obovate, 5–8.5 cm. long, 1.5–3 cm. wide, acute or acuminate, the base attenuate, the petiole 3–4 mm. long; flowers axillary and solitary on short bracteate branches shorter than the pedicels, or sometimes clustered; pedicels 5–10 mm. long; calyx 1–1.2 cm. long, parted to near the base, the lobes 7–8.5 mm. long, lanceolate or elliptic, acute or acuminate; corolla white, the limb 3.3–5 cm. wide, the lobes undulate, the tube slender, about 10 cm. long, inconspicuously ampliate just below the mouth; filaments about 1 cm. long; anthers apparently one-celled; style 9.5–10 cm. long; stigma dilated and bilobed; capsule about 1 cm. in diameter, globose, smooth and glabrous; seeds about 5 mm. long, reticulate-foveate.

A very attractive plant that should be more widely planted as an ornamental. Called *Galán de noche* in Mexico (Chiapas).

***Brunfelsia nyctaginoides*** Standl. Field Mus. Bot. 22: 47. 1940 (type from Chiapas, Volcán de Tacaná, *Matuda 2411*).

Mixed or fir forests, 1,800–3,800 m.; El Progreso; San Marcos. Mexico (Chiapas).

Plants suffrutescent, usually scandent, the young stems pilose; leaves membranaceous, ciliate, pilose, sometimes sparsely so above, ovate or ovate-elliptic, 4–10 cm. long, 2–3.5 cm. wide, acute or acuminate, the base attenuate, the petiole 0.5–1 cm. long; inflorescences cymose, few-flowered; pedicels pilose, mostly 1–1.5 cm. long; calyx 1 cm. long, lobed to the middle or more deeply so, the lobes pilose, 5–6 mm. long, ovate or lanceolate, acute; corolla scarlet, with the throat orange or yellowish, or the tube orange and the lobes scarlet, the limb 2–2.5 cm. wide, the tube 3–4 cm. long, gradually ampliate above; filaments 4–6.5 mm. long; anthers 2-celled, the cells confluent at maturity; style about 3 cm. long; stigma expanded and flattened, slightly bilobed at the apex; capsule about 7 mm. in diameter, globose, smooth and glabrous; seeds about 5 mm. long, reticulate-foveate.

There has been some doubt regarding the generic disposition of this species. See remarks by Standley and Steyermark in Field Mus. Bot. 22: 376–377. 1940.

## CAPSICUM L.

Herbs or suffrutescent plants or sometimes shrubs; leaves alternate, often in pairs, entire or repand, petiolate; inflorescences axillary, consisting of 1–3 flowers, the flowers pedicellate; calyx campanulate, truncate or with 5 minute lobes, sometimes bearing 5 linear or subulate appendages just below the margin of the calyx, slightly accrescent in age; corolla subrotate (in ours) or campanulate, white, greenish-white, yellowish-white, yellow, or purple, the limb scarcely to shallowly 5-lobed, the lobes plicate or valvate-plicate in bud; stamens 5; filaments slender, glabrous; anthers longitudinally dehiscent; ovary bilocular or rarely trilocular, the ovules numerous, the disk inconspicuous; style slender, nearly always exerted;

stigma clavate or slightly dilated; fruit a berry, usually very pungent, very juicy or rarely almost dry, globose to oblong, sometimes inflated and much enlarged; seeds numerous, laterally compressed, reticulate or nearly smooth; embryo curved to subspiral.

A genus of about 30 species, ranging from the southwestern United States to South America and the West Indies, introduced in tropical climates throughout the Old World. Certain species are of great economic importance and are cultivated in temperate and tropical regions in both hemispheres for their use both as a food and as a condiment. The generic limits of *Capsicum* have been greatly improved by the recent study of *Witheringia* by Hunziker (1969).

Calyx bearing 5 linear or subulate appendages just below the margin of the truncate calyx.

Leaves ovate to elliptic, the apex short-acuminate, pubescent throughout below, the leaves often in pairs, the smaller ones similar in shape; calyx inconspicuously 5-ribbed, the calyx appendages 1.5–2.5 mm. long. . . *C. ciliatum*.

Leaves narrowly lanceolate to narrowly elliptic, the apex narrowly long-acuminate, pubescent only on the veins below, the leaves in pairs, the smaller ones very different in shape and size; calyx conspicuously 5-ribbed, the calyx appendages 3–5.5 mm. long. . . . . *C. lanceolatum*.

Calyx truncate or with minute lobes; calyx appendages absent.

After first flowering node, one flower per node, rarely more; fruits globose or ovoid. . . . . *C. annuum* var. *aviculare*.

After first flowering node, two or more flowers per node, very rarely less; fruits ellipsoid-lanceolate or lanceolate. . . . . *C. frutescens*.

See D'Arcy and Eshbaugh, *Baileya* in press, for a key to the species of *Capsicum* north of Colombia.

**Capsicum annuum** L. Sp. Pl. 188. 1753. *C. petenense* Standl. Carnegie Inst. Wash. Publ. 461: 84. 1935 (type from La Libertad, Petén, *Lundell 3754*). *Chi-ic*; *chile bolita*; *chile chocolate*; *chile chultin*; *chile diente deperro* (Alta Verapaz); *chile chocolate* (Huehuetenango); *chile huaque* (Chimaltenango and Huehuetenango); *chile largo* (Jutiapa); *chile zambo* (Huehuetenango). Widely known as *chile* or *chili*.

Commonly cultivated in Guatemala, except at higher elevations, mostly in small quantities in gardens. A native of tropical America, that is now widely cultivated in temperate and tropical regions of the world. The original distribution may never be known because of its wide use as a food plant. *Capsicum annuum* var. *annuum* is unknown as an escape from cultivation. It includes most of the cultivated forms in Mexico and Central America.

*Chile*, either fresh or dried, is used very commonly for flavoring all kinds of meat and vegetable dishes, but not in such strength or quantity as in Mexico. That country seems to be the center of in-

tensity of chile as a condiment. Its use in food in Central America gradually decreases as one travels southward.

Green chile is a favorite dish when available, the fresh fruits being used in large amounts. They are cooked alone by frying or in other ways or mixed with eggs or vegetables. The well-known town of San Martín Chile Verde in Quezaltenango received its name from the fact that its inhabitants were particularly fond of *chile verde*.

A condiment called *chilmol*, consisting of chile, vinegar, onions, and various condiments, is in popular use for flavoring soup and other dishes after they are placed on the table. Sweet peppers, *chile dulce*, are not very common but are obtainable in the larger markets. Chiles stuffed with meat constitute a popular and often intensely "hot" dish. A saucer of small fresh chiles, usually *chiltepe*, often is placed on the dining table and one to three of them are placed in a plate of *caldo* or soup. Chile leaves and young shoots are sometimes boiled and eaten as a pot herb.

*Chile*, both dry and fresh, is offered in large quantities in all the Guatemalan markets, sometimes brought from remote regions of the country by *cargadores*. Several varieties are always on sale. *Chile huaque* is a common hot variety with long, narrowly conical, gradually tapering fruits; *chile zambo* is similar but with relatively thicker fruits; *chile pasa* (which should mean merely dry chile) is a very large form; *chile chocolate* has red, not very hot fruits; *chile diente de perro* is small, green, and very pungent; *chile de relleno* is the large sweet pepper, also called *chile dulce*; *chile de zope* and *chile lengua de gallina* are small forms similar to *chile diente de perro*; *chile bolito* has small globose fruits 1.5 cm. in diameter or somewhat larger; *chile chulín* of Alta Verapaz has ovoid fruits about 2 cm. long; *chi-ic* is a similar form of Coban. *Chamborote* is a form with very pale green or almost white fruits, very irregular in form; *chile ululté* of Alta Verapaz has a long and thick, very pungent fruit that is much used in soup. The name *chile* is of Nahuatl derivation. The name *aji* is only rarely used in Guatemala, although used in some parts of Central America and particularly in Panama. It is a word of Antillean derivation.

***Capsicum annuum* L. var. *aviculare* (Dierb.) D'Arcy & Eshbaugh, Phytologia 25: 350. 1973. *C. indicum* 5. *microcarpon* var. *aviculare* Dierb. Handb. Med.-Pharm. Bot. 30. 1819. *C. baccatum* auct., non L. 1753. *C. minimum* Miller, Gard. Dict. ed. 8. *Capsicum* no. 10. 1768. *C. annuum* var. *minimum* Heiser, Ciencia y Nat.**

7: 52. 1964. *Chile de montaña* (Huehuetenango); *chiltepe* (Izabal; Jutiapa; Santa Rosa; Zacapa).

Wet, moist or dry thickets, sometimes in rocky forests, 1,200 m. or less; Petén; Izabal; Zacapa; Chiquimula; Jalapa; Sololá; Huehuetenango; Jutiapa; Santa Rosa; Escuintla; Retalhuleu; Suchitépéquez. British Honduras. Florida westward to Arizona and south throughout Mexico and Central America to Colombia. West Indies.

An herb or shrub 1–2.5 m. tall, densely branched, the branches sparsely pubescent or glabrous; leaves slender petiolate, solitary or often in pairs, ovate to lanceolate or elliptic, apex acuminate, base attenuate, the larger leaves mostly 3.5–8 cm. long, 1–3 cm. wide; flowers solitary or rarely 2–3; calyx truncate or with minute lobes; corolla white, rarely greenish; berry red, globose or ovoid, apex obtuse, 5–10 mm. in diameter, rarely exceeding 15 mm. in length; seeds cream to yellow.

The name *C. annuum* var. *baccatum* L., has been applied incorrectly to this taxon. See Eshbaugh, Taxon 17: 51–52. 1968, for explanation concerning this matter.

This is the common and widely distributed, spontaneous variety of the cultivated pepper, *Capsicum annuum*. The fruits are intensely pungent. They are so hot that a single small one will sometimes make a bowl of soup quite unpalatable for many people. They are used chiefly for making the condiment *chiltepe*. Large quantities of them are sold in the markets, but it is more convenient to have a bush just outside the kitchen. They are much sought after by birds. The fruits undoubtedly have been used for flavoring food in Guatemala for a very long time.

Commonly referred to as “bird pepper.” The Maya names of Yucatan are *max* and *maaxic*. Called *chile*; *chile bravo*; *chile de perro*; *chile silvestre*, and *chiltepe* in Honduras.

***Capsicum ciliatum*** (H.B.K.) Kuntze, Rev. Gen. 2: 450. 1891. *Witheringia ciliata* H.B.K. Nov. Gen. Sp. Pl. 3: 15. 1818. *Brachistus pringlei* Wats. Proc. Am. Acad. Sci. 25: 159. 1890. *Capsicum pringlei* Macbr. & Standl. Field Mus. Bot. 11: 173. 1936.

Moist or dry forests, 780–1,650 m.; Guatemala; Sacatepéquez; Huehuetenango; Santa Rosa; Escuintla. Mexico. Honduras. Nicaragua. South America.

A slender shrub 2–4.5 m. tall, the branches pubescent with small incurved hairs, sometimes rather densely pubescent; leaves solitary or often in pairs, then unequal in size and similar in shape, pubescent above with slightly incurved hairs, the cells of the hairs not noticeably swollen, pubescent throughout below, the hairs



FIG. 4. *Capsicum frutescens*. A, habit,  $\times \frac{1}{2}$ ; B, flower,  $\times 5$ ; C, anther, abaxial view,  $\times 5$ ; D, mature fruit,  $\times 2$ .



more dense, especially on the veins, the larger leaves ovate to elliptic, 3–12 cm. long, 1–4 cm. wide, apex short-acuminate, base attenuate, often narrowly winged; petioles 0.5–2.5 cm. long, pubescent with incurved hairs; smaller leaves 1.5–4 cm. long, 0.7–2.5 cm. wide, apex acute or acuminate, short petiolate or sessile; flowers mostly solitary or sometimes 2, the pedicels very slender, 5–15 mm. long, sparsely pubescent; calyx 1–1.5 mm. long, only slightly 5-ribbed, sparsely to densely pubescent, with 5 linear appendages, these 1.5–2.5 mm. long; corolla yellow 5–6.5 mm. long, glabrous, shallowly lobed, the lobes about 1 mm. long; filaments 2–2.5 mm. long; anthers 2 mm. long; style 4–4.5 mm. long; berry red, globose, juicy, 6–8 mm. in diameter; seeds 2–2.5 mm. long, yellow.

We are following A. T. Hunziker, Kurtziana 6: 250–259. 1971, in applying this name to Central American plants. He also reports that this species never has pungent fruits.

***Capsicum frutescens*** L. Sp. Pl. 189. 1753. *Chiltepe*.

Known from only one collection in Guatemala, La Libertad, and vicinity, *Aguilar 199*, which may possibly represent cultivated material. The label does not specify the habitat. A widely distributed weed. British Honduras. Southern United States. Mexico to South America. West Indies. It is grown throughout the islands of Polynesia and has been reported from India (Heiser and Smith, 1953).

A densely branched herb or shrub, the branches sparsely pubescent or glabrous; leaves slender petiolate, solitary or often in pairs, ovate to ovate-lanceolate, apex long acuminate or acuminate, base attenuate, the larger leaves 4–12 cm. long, 1–4.5 cm. wide; flowers 2 or more at a node, rarely 1; calyx truncate or with minute lobes, prominent constriction lacking between base of the calyx and pedicel; corolla greenish-white or yellowish-white; berry red, ellipsoid-lanceolate or lanceolate, apex acute, 1.5–3 cm. long, 0.5–1.2 cm. in diameter; seeds cream to yellow.

*Capsicum frutescens* is apparently rare in Guatemala, at least as an escape from cultivation. It is often seen growing around houses, where it is planted for its intensely pungent fruits.

The larger fruited plants are widely cultivated in tropical and subtropical regions of the world.

***Capsicum lanceolatum*** (Greenm.) Morton & Standl. Field Mus. Bot. 22: 272. 1940. *Brachistus lanceolatus* Greenm. ex Donn.-Sm. Bot. Gaz. 37: 212. 1904 (type from Chucaneb, Alta Verapaz, *Donn.-Sm. 1837*). *Pajarito del río*; *yerba de pajarito* (Quezaltenango).

Moist or wet forests sometimes in mixed forests, 500–2,000 m., rarely higher; Alta Verapaz; Baja Verapaz; Sacatepéquez; Chimaltenango; Sololá; Quezaltenango; Huehuetenango; Suchitépéquez; San Marcos. Southern Mexico (Chiapas). Honduras.

A slender shrub or sometimes a slender tree or suffrutescent, 1-5 m. tall, the branches pubescent with small incurved hairs, sometimes nearly glabrous; leaves in pairs, very unequal in size and different in shape, sparsely pubescent above with multicellular hairs, the cells slightly swollen, these hairs readily discernible, pubescent on the veins below, the hairs incurved or glabrous, the larger leaves mostly inequilateral, narrowly lanceolate to narrowly elliptic, 5-15 cm. long, 1.5-3 (-4) cm. wide, apex narrowly long-acuminate, base attenuate; petioles 0.5-1 cm. long, pubescent with incurved hairs or glabrous; smaller leaves ovate to subrotund, 1-5 cm. long, 0.8-2.5 cm. wide, apex obtuse, short petiolate or subsessile; flowers mostly solitary, or sometimes 2, the pedicels very slender, 1.5-3.5 cm. long, glabrous; calyx 1.5-2 mm. long, conspicuously 5-ribbed, sparsely pilosulous or glabrous, with 5 subulate appendages, these 3-5.5 mm. long, subequal, rather thick; corolla white to pale yellow, 6.5-10.5 mm. long, glabrous, shallowly lobed, the lobes 1-2 mm. long; filaments 2-2.5 mm. long; anthers 1.5 mm. long; style 4.5-5 mm. long; berry orange-red to red, globose, juicy, 7-10 mm. in diameter; seeds 2-2.5 mm. long, yellow.

**Capsicum pubescens** Ruiz & Pavon, Fl. Peruv. 2: 30. 1799. *C. guatemalense* Bitter, Fedde Repert. Sp. Nov. 20: 377. 1924 (type from Las Nubes, Suchitepéquez, *Bernoulli & Cario 2339*). *Chile cuarto caldos; cuile de caballo; chile garrapata; chile siete caldos.*

Cultivated frequently for its very pungent fruit; grown in Alta Verapaz, Chimaltenango, Quezaltenango, San Marcos, and Sololá, and probably other departments as well. Also cultivated in Honduras and Costa Rica. It is a native of South America, probably Peru.

*Capsicum pubescens* is the most easily recognized species of the cultivated peppers. It is readily separated by its purple corolla, black seeds, and rugose and glabrous leaves. The herbage is often densely pubescent.

Called *chile petenero* in Honduras.

We are following Bukasov, Bull. App. Bot. Gen. and Pl., Suppl. 47: 261-273. 1930, and Eshbaugh (*personal communication*) in treating *C. guatemalense* as a synonym here.

## CESTRUM L.

*References:* P. Francey, Monographie du genre *Cestrum* L., Candollea 6: 46-398. 1935; 7: 1-132. 1936. C. V. Morton, The genus *Cestrum* in Guatemala, J. Arnold Arbor. 17: 341-349. 1936.

Shrubs or trees, rarely scandent; leaves alternate and entire, rarely in pairs, petiolate, axillary leaves sometimes present and persistent; inflorescences axillary or terminal, paniculate, racemose, or fasciculate, or the flowers rarely solitary, the flowers pedicellate or sessile, the bracts of the inflorescences mostly small or some-

times large and leaf-like; calyx campanulate to tubular, 5-lobed; corolla funnel-form or salverform, variously colored, the limb 5-lobed, the lobes valvate in bud or somewhat valvate-plicate at the base of the lobes, the tube ampliate above; stamens 5, included; filaments equal, variously inserted on the corolla tube, often with a small appendage at their bases; anthers longitudinally dehiscent; ovary bilocular, short-stipitate, the ovules few, the disk inconspicuous or moderately thick; style filiform, included or shortly exserted; stigma entire or bilobed; fruit a berry, often juicy, short-stipitate; seeds few, compressed, rounded, or angulate; embryo straight or slightly curved.

A genus of some 250 species all in tropical America. Several other species are known from southern Central America. A few species are cultivated for their fragrant flowers.

Pubescence of stellate and/or branched hairs.

Filaments geniculate at their bases, appendages absent; corolla tube glabrous externally (in ours) . . . . . *C. lanatum*.

Filaments relatively straight, not geniculate at their bases, appendages present; corolla tube pubescent externally . . . . . *C. mortonianum*.

Pubescence of simple hairs or hairs absent.

Inflorescence axillary, consisting of a single long-pedunculate flower.

*Cestrum* sp.

Inflorescence axillary and/or terminal, 2-many flowered, not consisting of a single long-pedunculate flower.

Corolla tube pubescent externally . . . . . *C. dasyanthum*.

Corolla tube glabrous externally.

Filaments with appendages at their bases, these sometimes inconspicuous.

Corolla tube 9.5-11 mm. long; leaves with a small tuft of hairs in the axils of the mid-vein below . . . . . *C. dumetorum*.

Corolla tube 14-23 mm. long; leaves without a small tuft of hairs in the axils of the mid-vein below.

Leaves narrow, lanceolate-linear or very narrowly lanceolate, 1-2.5 cm. wide, rarely wider, the larger leaves 4 to 10 times as long as wide; flowers borne in fasciculate inflorescences.

Calyx tube green, sparsely glandular externally, the lobes lanceolate, 0.8-1.5 mm. long; corolla greenish or greenish-yellow; axillary leaves often present. . . . . *C. luteovirescens*.

Calyx tube dark purple (at least when dried), glabrous, the lobes short-mucronate, 0.5 mm. long or less; corolla white; axillary leaves always absent. . . . . *C. skutchii*.

Leaves broad, not lanceolate-linear or very narrowly lanceolate, the larger leaves rarely less than 3 cm. wide, the larger leaves 2 to 4 times as long as wide; flowers borne in racemose or paniculate inflorescences.

Axillary leaves present; calyx and rachis of the inflorescences purple (at least when dried) . . . . . *C. elegantissimum*.

Axillary leaves absent; calyx and rachis of the inflorescences green.

Calyx 5-6.5 mm. long, the lobes prominent; filaments 4-6.5 mm. long; corolla orange. . . . . *C. aurantiacum*.

Calyx 1.5-3.5 (-4) mm. long, the lobes nearly always inconspicuous; filaments 2-3.5 mm. long; corolla greenish or greenish-yellow.

Appendages of the filaments densely pubescent. . . . . *C. franceyi*.

Appendages of the filaments glabrous or only rarely inconspicuously pubescent in *C. nocturnum*.

- Mature stems and petioles puberulent; leaves puberulent on the mid-vein below, at least near the base; petioles 2-4 mm. long. . . . . *C. cobanense*.
- Mature stems and petioles glabrous; leaves glabrous; petioles 5-15 mm. long.  
 Inflorescences lax, dichotomously branched, the rachis slender; pedicels long, 1-1.5 mm. long. . . . . *C. evanidum*.
- Inflorescences erect, not dichotomously branched, the rachis stout; pedicels short, 0.5 mm. long or less.  
 Rachis of the inflorescences shorter than the subtending petiole; corolla tube 14 mm. long; fruit with one seed. . . . . *C. glanduliferum*.
- Rachis of the inflorescences greatly surpassing the petiole; corolla tube 17-20 mm. long; fruit with five seeds. . . . . *C. nocturnum*.
- Filaments without appendages at their bases, although sometimes swollen and geniculate.  
 Corolla lobes 7-9.5 mm. long; scandent shrubs. . . . . *C. scandens*.
- Corolla lobes 1-5 mm. long; erect shrubs or trees.  
 Leaves pubescent below; inconspicuously so on the veins in *C. fraternum*.  
 Calyx lobes long, 2-5 mm. long; flowers borne in fasciculate inflorescences; filaments 9.5-11 mm. long. . . . . *C. regelii*.
- Calyx lobes short, 0.8 mm. long or less; flowers borne in racemose or paniculate inflorescences, sometimes in fasciculate inflorescences in *C. alternifolium*; filaments 0.5-5 mm. long.  
 Leaves inconspicuously pubescent below, the hairs only on the veins; filaments 4.5-5 mm. long, pilosulous at their bases; pedicels 3-5 mm. long. . . . . *C. fraternum*.
- Leaves evidently pubescent below, at least when young, the hairs on the veins and lamina; filaments 0.5-3 (-3.5) mm. long, glabrous or pilosulous at their bases; pedicels 0.5-3 mm. long.  
 Inflorescences fasciculate; corolla lobes 5-6 mm. long; calyx 2-3 mm. long; fruit purplish; lowland species, below 500 m. . . . . *C. alternifolium*.
- Inflorescences racemose or paniculate; corolla lobes 3-4 mm. long; calyx 3.5-4 mm. long; fruit white; ranging from 2,000-3,800 m. . . . . *C. guatemalense*.
- Leaves glabrous below.  
 Corolla tube short, 10-12 mm. long.  
 Pedicels long, 3-5.5 mm. long; corolla tube 2 mm. wide at the middle; above 2,500 meters. . . . . *C. formosum*.
- Pedicels short, 1 mm. long or less; corolla tube 1 mm. wide at the middle; below 1,500 meters.  
 Leaves broadest at the middle or above, cuneate at the base; filaments 3.5-4 mm. long, pilosulous at their bases; rachis of the inflorescences equalling or shorter than the petioles. . . . . *C. megalophyllum*.
- Leaves broadest at their bases, mostly rounded at the base; filaments 1-2 mm. long, glabrous at their bases; rachis of the inflorescences mostly greatly exceeding the petioles. . . . . *C. racemosum*.
- Corolla tube long, 14-20 mm. long.  
 Calyx 5-6.5 mm. long, the lobes 1-3 mm. long, long mucronate or subulate; corolla orange. . . . . *C. aurantiacum*.
- Calyx 2.5-4 mm. long, the lobes 0.5 (-1.5) mm. long, if exceeding 0.5 mm. in length, the lobes ovate-triangular in shape; corolla pale yellow or greenish-yellow.

Filaments 6-7 mm. long, geniculate at their bases; corolla tube glabrous internally; pedicels 3.5-6.5 mm. long. *C. anagyris*.

Filaments 2-4.5 mm. long, relatively straight at their bases, not geniculate; corolla tube pubescent internally; pedicels 0.3-3.5 mm. long.

Pedicels short, 0.3 mm. long; corolla lobes 5 mm. long; calyx minutely puberulent..... *C. franceyi*.

Pedicels long, 1.5-3.5 mm. long; corolla lobes 2-3 mm. long; calyx glabrous..... *C. pacayense*.

***Cestrum alternifolium*** (Jacq.) O. E. Schulz in Urban, Symbol. Antill. 6: 270 1909. *Ixora alternifolia* Jacq. Enum. Syst. Plant. 12. 1760.

In thickets, 250-400 m.; Zacapa; Chiquimula. Southern Mexico. Honduras; El Salvador; Costa Rica. Panama and West Indies. Northern South America.

A slender shrub, 0.5-3.5 m. tall, the young branches pilosulous; leaves ovate to ovate-lanceolate, 4.5-9 cm. long, 2-3.5 cm. wide, glabrous above, pilosulous on the veins or throughout below, apex acute, base obtuse; petioles 0.4-0.6 cm. long, pilosulous; inflorescences axillary and terminal, fasciculate, few-flowered, the bracts linear to lanceolate, pilosulous; pedicels 0.5 mm. long or less, glabrous; calyx 2-3 mm. long, glabrous except for the ciliolate lobes, the lobes deltoid to triangular, 0.8 mm. long or less; corolla greenish, the tube 17-21 mm. long, glabrous externally and internally, ampliate just below the mouth of the corolla tube, the lobes 5-6 mm. long, ovate to ovate-lanceolate, marginally pubescent externally; filaments 0.5-2 mm. long, glabrous, appendages absent; style 18-22 mm. long; fruit 9-12 mm. long, purplish; seeds about 8, 5-6 mm. long.

***Cestrum anagyris*** Dunal in DC. Prodr. 13., pt. 1: 608. 1852.

Oak or pine forests, 2,220-3,000 m.; Totonicapán; Quezaltenango. Southern Mexico.

A slender shrub 1-2 m. tall, the branches glabrous; leaves lanceolate to elliptic, 5-10 cm. long, 1.5-3.5 cm. wide, glabrous above and below, apex acuminate or acute, acute or short attenuate at the base; petioles 1-1.5 cm. long; inflorescences lax, axillary and terminal, paniculate, glabrous, many-flowered, the bracts linear, caducous; pedicels 3.5-6.5 mm. long, glabrous; calyx 3-4 mm. long, cleft on two sides one-fourth to one-third length of the tube, glabrous except for the ciliolate lobes, the lobes 0.2-0.5 mm. long, deltoid and very short-mucronate; corolla greenish-yellow, the tube 14-17 mm. long, ampliate above from just above middle of the tube, the lobes 3-4 mm. long, ovate, marginally pubescent externally; filaments 6-7 mm. long, swollen, canaliculate and slightly geniculate at their bases, glabrous, appendages absent, the corolla tube glabrous internally; style 13.5-16 mm. long; fruit 10-12 mm. long, white; seeds 2-4, 3.5-5 mm. long.

***Cestrum aurantiacum*** Lindley, Bot. Reg. 30: 71, misc. no. 65. 1844; 31: t. 22. 1845. *C. chaculanum* Loes. Verh. Bot. Ver. Prov. Brandenb. 65: 97. 1923. *C. paucinervium* Francey, Candollea 6: 101.

1935 (type from San Miquel Uspantán, Quiché, *Heyde & Lux 3135*). *C. aurantiacum* var. *chaculanum* Francey, l. c. 104. *Chipín* (Guatemala); *hediondillo*, *huele de noche*, *pay-té* (Huehuetenango); *huevo* (Jalapa).

Moist thickets or forests, often in pine-oak forests, 1,000–2,600 m.; Alta Verapaz; Baja Verapaz; Zacapa (described from a cultivated plant grown in England from seeds sent by Skinner from Chimalapa); Chiquimula; Jalapa; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quiché; Quezaltenango; Huehuetenango; Jutiapa. Southern Mexico to Nicaragua.

A shrub 1.5–6.5 m. tall, sometimes a tree 8.5 m. tall, the branches glabrous or sparsely pilosulous; leaves ovate to elliptic, 7–17 cm. long, 2.5–5.5 cm. wide, glabrous above and below, apex acute or short-acuminate, acute to obtuse or sometimes short-attenuate at the base; petioles 1–3 cm. long, glabrous; inflorescences terminal or axillary, paniculate or racemose, several- to few-flowered, the rachis pilosulous or glabrous, the bracts linear, caducous, the flowers sessile or subsessile or the pedicels as much as 1.5 mm. long; calyx tubular, 5–6.5 (–9) mm. long, glabrous except for the ciliolate lobes, the lobes subulate, long-mucronate or rounded and long-mucronate, (0.7–)1–2(–3) mm. long, the lobes extending downward on the calyx tube as five nerves; corolla orange or rarely yellow, the tube 17.5–20 mm. long, the corolla lobes 3–3.5 (–5.5) mm. long, ovate or lanceolate, marginally papillate-puberulent externally; filaments 4–6.5 mm. long, swollen and geniculate, canaliculate or subappendiculate, pilosulous at their bases, the staminal traces pilosulous; style 16.5–18.5 mm. long; fruit 8–12 mm. long, white; seeds 7–9, 3–5 mm. long.

In Huehuetenango the crushed leaves are used with soap and cold water to remove stains from clothing (fide Steyermark).

*Cestrum aurantiacum* is a common shrub in Guatemala usually collected at middle elevations.

### ***Cestrum cobanense* Francey, Candollea 6: 372. 1935.**

Wet forests, 1,500 m.; Alta Verapaz (type from Cobán, *Tuerckheim II 2372*). Endemic. Known only from the type collection.

A shrub, the branches slender, puberulent; leaves lance-ovate or narrowly elliptic, 5.5–9 cm. long, 1.5–2 cm. wide, glabrous above, sparsely puberulent only on the midvein below, apex acuminate, rounded or very shortly attenuate at the base; petioles very short, 2–4 mm. long, puberulent; inflorescences terminal or axillary, paniculate, puberulent, the bracts linear, puberulent, caducous; pedicels 0.5–1 mm. long; calyx 1.5 mm. long, glabrous except for the ciliolate lobes, the lobes 0.5 mm. or less long, deltoid; corolla tube 16.5–18 mm. long, glabrous externally, ampliate just below the throat of the corolla tube, the lobes 3–4 mm. long, lanceolate, marginally papillate-puberulent; filaments 2.5–3.5 mm. long, appendaged at their bases, the appendages about 0.2 mm. long, entire and glabrous; style 15.5–18.5 mm. long; fruit unknown.

*Cestrum cobanense* is distinguished from other species in Guatemala by its very short petioles, puberulent branches, and appendiculate filaments.

***Cestrum dasyanthum*** Donn.-Sm. Bot. Gaz. 23: 11. 1897. *Chipshi*; *chipshin* (Huehuetenango).

Moist forests, 2,300–3,000 m.; Huehuetenango (type from between San Martín and Todos Santos, *Nelson 3622*). Endemic.

A shrub 1.5–6 m. tall, the branches pilosulous, the hairs brownish; leaves ovate to elliptic, 5–13.5 cm. long, 2–4.5 cm. wide, pilosulous above and below, more densely so on the veins below, apex acute, obtuse at the base, the petioles 1–2.5 cm. long; axillary leaves early deciduous, nearly orbicular, 4.5–6 mm. long, 4–5 mm. wide, subsessile, apex obtuse; inflorescences axillary and terminal, paniculate or racemose, few- to many-flowered, the rachis pilosulous, the hairs brownish, the bracts linear, caducous; pedicels 0.5–1 mm. long, pilosulous, sometimes sparsely so; calyx 5–6 mm. long, pilosulous, the lobes about 0.5 mm. long, rounded and mucronate or mucronate, the calyx tube cleft down both sides one-third to nearly one-half to the base; corolla yellow, the tube 11.5–15 mm. long, pilosulous externally, gradually ampliate above, the lobes 4–4.5 mm. long, ovate, pilosulous or villosulous externally; filaments 3.5–4 mm. long, slightly swollen, geniculate and pilosulous at their bases, the staminal traces pilosulous, appendages absent; anthers about 1 mm. long; style 10.5–13 mm. long; fruit about 12 mm. long; seeds 13, 3.5–4 mm. long.

The pubescent corolla tube readily separates this species from all others in Guatemala except *Cestrum mortonianum* which has branched and stellate hairs.

***Cestrum dumetorum*** Schlecht. Linnaea 7: 61. 1832. *Huele de noche* (Jutiapa); *huele de noche negro* (Guatemala).

Moist or wet thickets, 600–1,205 m.; Guatemala; Jutiapa; Santa Rosa. Southern Mexico to Costa Rica.

A shrub or small tree, 2–3 m. tall, the branches pilosulous or glabrous; leaves ovate-lanceolate or elliptic-lanceolate, 5–14.5 cm. long, 2–6.5 cm. wide, glabrous or puberulent above, puberulent on the veins below and with a small tuft of hairs in the axis of the secondary veins, the hairs sometimes inconspicuous; petioles 1.5–2.5 cm. long; axillary buds lanate; inflorescences terminal and axillary, paniculate, the sessile flowers several to many; calyx 4–6 mm. long, villosulous-pilosulous, the tube with one or two clefts about one-third the length of the tube, shallowly 5-lobate, the lobes unequal, 0.5 mm. long or less; corolla pale green, the tube 9.5–11 mm. long, about twice as long as the calyx, glabrous externally, gradually ampliate above, the lobes 5–6 mm. long, lanceolate, marginally puberulent externally; filaments 1–2 mm. long, appendaged at their bases, the appendages 0.2–0.5 mm. long, entire and glabrous, the staminal traces pilosulous; style 10–11.5 mm. long; fruit 5–8 mm. long; seeds 4, 3–4 mm. long.

*Cestrum dumetorum* is a very distinctive species in which the calyx tube is about one-half the length of the corolla tube, filaments lacking appendages, and leaves with a small tuft of hairs in the axils of the mid-vein below. The lanate axillary buds are also a characteristic of this species.

***Cestrum elegantissimum*** Morton, J. Arnold Arbor. 17: 347. 1936. *Cerezo blanco* (Quezaltenango).

Moist dense forests or mixed forests, 1,200–2,000 m.; Sololá; Quezaltenango; Suchitepéquez (type from Finca Mocá, *Skutch 2071*). Endemic.

A slender shrub 1–5 m. tall, the branches glabrous; leaves glabrous above and below, oblong-lanceolate to oblong-elliptic, sometimes lanceolate, 6–17.5 cm. long, 1.5–4.5 cm. wide, apex acuminate, rounded or obtuse at the base, the petioles short, 5–10 mm. long; axillary leaves orbicular or lanceolate, 0.3–1.5 cm. long, sessile and somewhat clasping; inflorescences terminal, paniculate, lax, few- to many-flowered, the rachis dark purple, pilosulous to inconspicuously puberulent, the bracts dark purple, linear, caducous; pedicels glabrous or inconspicuously puberulent, 1–1.5 mm. long; calyx 2–3 mm. long, dark purple, glabrous or inconspicuously and sparsely puberulent, the lobes deltoid and acuminate, about 0.5 mm. long, ciliate; corolla greenish or greenish-yellow, the tube 18.5–21 mm. long, glabrous externally and internally, ampliate just below the mouth of the corolla tube, the lobes 5–8 mm. long, narrowly lanceolate or oblong-lanceolate, marginally papillate-puberulent externally; filaments 2.5–3.5 mm. long, appendaged at their bases, appendages glabrous and entire; style 17–19 mm. long; fruit 1–1.5 cm. long; seeds 4, 6–7 mm. long.

The axillary leaves and appendiculate filaments distinguish *C. elegantissimum* from all other *Cestrum*s in Guatemala except *C. luteovirescens*, which has very narrow leaves and a fasciculate inflorescence.

***Cestrum evanidum*** Morton, J. Arnold Arbor. 17: 346. 1936.

Moist forests or dense mixed forests, 1,300–1,600 m.; Sacatepéquez; Chimaltenango; Quezaltenango; Suchitepéquez (type from Finca Mocá, *Skutch 2071A*); San Marcos. Endemic.

A slender shrub or a small tree, 2.5–6.5 m. tall, the young branches inconspicuously puberulent, soon glabrate; leaves ovate-lanceolate to narrowly elliptic or elliptic-oblong, 8–19 cm. long, 2–5.5 cm. wide, glabrous above and below, apex acuminate, rounded to obtuse at the base; petioles 0.5–1.5 cm. long, glabrous; inflorescences lax, terminal or axillary, paniculate, dichotomously branched, glabrous, the rachis slender, the bracts minute, caducous; pedicels 1–1.5 mm. long, glabrous; calyx green, 2–2.5 mm. long, the lobes about 0.5 mm. long, deltoid, apex pilosulous; corolla green or greenish-white, the tube slender, 20–23 mm. long, gradually ampliate upwards, the lobes 4.5–5 mm. long, lance-oblong, exter-



nally marginally papillate-puberulent; filaments 2.5–3.5 mm. long, appendaged at their bases, the appendages deeply parted to entire, glabrous; anthers about 1 mm. long; style 19–22 mm. long; fruit about 6 mm. long; seeds 5, 3–5 mm. long.

*Cestrum evanidum* is probably closely related to *C. nocturnum*. It is separated from that species by the lax, dichotomously branched inflorescence and pedicellate flowers.

**Cestrum formosum** Morton, J. Arnold Arbor. 17: 348. 1936.

In thickets or pine-fir forests, 2,665–3,200 m.; Quiché (type from south slope of Volcán Atitlán, *Skutch 2143*); Sololá; Quezaltenango. Endemic.

A shrub 4.5–5.5 m. tall, sometimes a tree 8 m. tall, the branches glabrous; leaves elliptic or lanceolate, 6–12 cm. long, 1.5–3.5 cm. wide, glabrous above and below, apex acuminate, acute or obtuse at the base; petioles long, 1.5–2.5 cm. long, glabrous; inflorescences terminal and axillary, paniculate or racemose, glabrous, few-flowered, the bracts linear; pedicels 3–5.5 mm. long; calyx 4–5 mm. long, green, glabrous except for the ciliolate lobes, the lobes 1 mm. long or less, unequal, the tube with two clefts about one-fourth to one-third the length of the tube; corolla greenish-yellow, the tube 10–11 mm. long, glabrous externally, gradually ampliate upwards, the lobes 4–5 mm. long, broadly ovate and mucronate, marginally puberulent externally; filaments 1.5 mm. long, glabrous, the staminal traces pilosulous, appendages absent; style 11–12 mm. long; fruit 7 mm. long; seeds 5, 4 mm. long.

**Cestrum franceyi** Morton, J. Arnold Arbor. 17: 345. 1936. *C. pedunculatum* Francey, Candollea 7: 66. 1936, non Sessé & Mociño, 1894.

Known only from the type collection, Pansamala, Alta Verapaz, *Tuerckheim 833*). Endemic.

A shrub (?), the branches minutely puberulent; leaves elliptic-lanceolate or ovate-lanceolate, 9–10.5 cm. long, 2.5–4.5 cm. wide, glabrous above and below, apex acuminate or cuspidate, rounded at the base; petioles 6–11 mm. long; inflorescences axillary and terminal, 5.5–10.5 cm. long, long pedunculate, the rachis minutely puberulent, the bracts linear, minutely puberulent, the flowers short pedicellate, the pedicels 0.3 mm. long; calyx 3.5 mm. long, minutely puberulent externally, the lobes ovate-triangular, 0.5–1.5 mm. long, the margin glabrous; corolla tube 17.5 mm. long, the corolla lobes 5 mm. long, ovate or triangular-ovate, marginally pilosulous externally, glandular internally; filaments 3 mm. long, gibbose or appendaged and densely pilosulous at their bases, the staminal traces pilosulous; style 17.5 mm. long; fruit unknown.

**Cestrum fraternum** Morton, J. Arnold Arbor. 17: 345. 1936.

Moist thickets, 2,340 m.; Quiché (type from Nebaj, *Skutch 1682*). Endemic. Known only from the type collection.



FIG. 5. *Cestrum formosum*. A, habit,  $\times \frac{1}{2}$ ; B, flower,  $\times 2$ ; C, calyx dissected,  $\times 2$ .

A shrub 2.5 m. tall, the young branches puberulent, soon glabrate; leaves narrowly elliptic, 7.5–17.5 cm. long, 3–5.5 cm. wide, glabrous above, sparsely puberulent on the veins below, apex acuminate, the base acute or obtuse; petioles 1.5–2 cm. long, glabrous; inflorescences terminal and axillary, paniculate, puberulent, the bracts minute, caducous; pedicels 3–5 mm. long; calyx 3–3.5 mm. long, green, the lobes about 0.5 mm. long, broadly deltoid, slightly mucronate, ciliolate; corolla pale yellow, the tube sometimes tinged with maroon, 16–17 mm. long, glabrous externally, gradually ampliate above, the lobes 3.5–4 mm. long, broadly ovate and mucronate, inconspicuously papillate externally; filaments 4.5–5 mm.

long, swollen and pilosulous at their bases, the staminal traces pilosulous; appendages absent; style 17 mm. long; fruit unknown.

**Cestrum glanduliferum** Kerber ex Francey, *Candollea* 6: 386. 1935.

Moist forests, 1,050 m.; Chimaltenango, near Sibajá, *Standley 62283*. Known in Guatemala only from this collection. Southern Mexico.

A shrub or tree, 6.5 m. tall, the branches glabrous (in ours) or sparsely and minutely glandular; leaves elliptic-oblong or elliptic-lanceolate, 11–26.5 cm. long, 3.5–10.5 cm. wide, subcoriaceous, glabrous above, minutely glandular-puberulent below, (glabrous below in ours), apex acute or short-acuminate, narrowly rounded to acute at the base; petioles 1–2 cm. long; inflorescences axillary, racemose, few-flowered, the rachis pilosulous, and shorter than the petioles, the bracts linear, pilosulous, persistent or caducous, the flowers subsessile and short pedicellate; calyx 3.5–4 mm. long, glabrous or inconspicuously glandular, the lobes triangular, about 0.5 mm. long, the apex pilosulous; corolla green or grayish-green, the tube slender, 14 mm. long, gradually ampliate upwards, the lobes 3–3.5 mm. long, oblong, glabrous externally and internally; filaments 2 mm. long, appendaged at their bases, the appendages slightly notched to parted to their bases or entire, very inconspicuously papillate-puberulent, the corolla tube otherwise glabrous; style 11.5 mm. long; fruit about 6 mm. long; seed one, 4.5 mm. long.

**Cestrum guatemalense** Francey, *Candollea* 6: 98. 1935. *Huele de noche; huele zorra* (Chimaltenango).

Wet thickets or moist forests, sometimes in *Cupressus* forests, 2,000–3,800 m.; Jalapa; El Progreso; Baja Verapaz; Guatemala; Sacatepéquez; Chimaltenango; Totonicapán; Quezaltenango; Huehuetenango (type from mountains near Hacienda Chaucol, *Nelson 3666 bis*); San Marcos. Southern Mexico (Chiapas).

A shrub or small tree 1.5–8.5 m. tall, the branches pilosulous or glabrous, sometimes densely pubescent; leaves elliptic to elliptic-oblong or lance-elliptic, sometimes ovate, 6–12(–17) cm. long, 2–4(–6) cm. wide, glabrous above except on the mid-vein, pilosulous below especially on the veins or in age almost glabrous, apex acuminate or narrowly acute, acute or obtuse, sometimes rounded at the base; petioles 1–2(–3) cm. long; axillary leaves sometimes present; inflorescences axillary and terminal, racemose or paniculate, sparsely to densely pubescent, the bracts linear, caducous; pedicels 0.5–3 mm. long, glabrous; calyx 3.5–4 mm. long, glabrous except for the ciliolate lobes, the lobes broadly deltoid or ovate and short-mucronate, 0.2–0.5 mm. long; corolla pale yellow to greenish-yellow or purplish-yellow, the tube 14–18 mm. long, glabrous externally, gradually ampliate upwards, or sometimes abruptly so just below the mouth of the corolla tube, the lobes 3–4 mm. long, ovate and short-mucronate, marginally pubescent externally; filaments 1.5–3(–3.5) mm. long, glabrous or pilosulous at the base, appendages absent, sometimes the base of the filaments swollen, the staminal traces pilosulous or very rarely glabrous; style 13–17 mm. long; fruit about 12 mm. long, white; seeds 7, 2.5–5 mm. long.

***Cestrum guatemalense*** var. ***gracile*** Morton, J. Arnold Arbor. 17: 349. 1936. *Hediondilla* (San Marcos). The type is from Calél, Totonicapán, Shannon (Donnell-Smith 282). Distinguished from variety *guatemalense* by the pilosulous calyx.

A common shrub in the western and central mountains of Guatemala. *Cestrum guatemalense* and *C. pacayense* are closely related and may prove to be a single species.

***Cestrum lanatum*** Mart. & Gal. Bull. Acad. Brux. 12, pt. 2: 146. 1845.

Moist or dry thickets, sometimes along rivers or in pastures, 800–2,200 m.; Chiquimula; El Progreso; Guatemala; Sololá; Quiché; Santa Rosa; Escuintla; Sacatepéquez. Southern Mexico to Costa Rica. Panama.

A shrub or sometimes a small tree, 2–5(–8.5) m. tall, the young branches densely covered with branched (with rays along their stalks) hairs; leaves lanceolate to elliptic or ovate, 4.5–20 cm. long, 2–6.5 cm. wide, with branched and stellate hairs above, soon glabrate, or sometimes the hairs persistent, often rugulose above, densely pubescent below, the hairs branched and stellate, soft to the touch or sometimes slightly asperous, apex acute or acuminate, rounded or obtuse at the base; petioles 5–25 mm. long, densely covered with branched hairs; axillary leaves sometimes present, lance-ovate to ovate, 10–20 mm. long, 5–10 mm. wide, apex obtuse, short petiolate; inflorescences axillary and terminal, paniculate, usually dense and many-flowered, the rachis densely covered with branched hairs, the bracts linear, densely covered with branched hairs, caducous, the flowers sessile or subsessile; calyx 3.5–4 mm. long, densely covered with branched hairs, the lobes about 0.5 mm. long; corolla pale yellowish-green or greenish, the tube 10–11 mm. long, glabrous externally (in ours), gradually ampliate above, the lobes 2.5–3 mm. long, ovate to ovate-lanceolate, marginally pilosulous externally; filaments 3–3.5 mm. long, slightly swollen and geniculate, gibbose or subappendiculate at their bases, pilosulous on about the lower one-third of the filament, the staminal traces often pilosulous; style 10–11.5 mm. long; fruit about 7 mm. long; seeds 2–5, 3–3.5 mm. long.

*Cestrum lanatum* can be easily recognized in Central America by the short corolla tube, geniculate filaments, and most of its parts being densely covered with branched or branched and stellate hairs.

It is closely related to *C. mortonianum*, but that species has a longer corolla tube, appendiculate, and straight filaments. In Guatemala *C. lanatum* is readily distinguished from *C. mortonianum* by its glabrous corolla tube.

The crushed leaves give off a strong and disagreeable odor but the flowers are fragrant. The leaves are sometimes placed in hen's nests to drive off some of the parasites that infest the nests.

Called *huele de noche* and *palo hediondo* in El Salvador.

***Cestrum luteovirescens*** Francey, *Candollea* 6: 349. 1935.

Moist thickets or mixed forests, 1,200–2,200 m.; Guatemala; Sacatepéquez (type from Capetillo, *Donn.-Sm.* 2679); Sololá. El Salvador.

A slender shrub 1.5–3.5 m. tall, the branches glabrous; leaves narrowly lanceolate to lanceolate-linear or rarely narrowly elliptic, 4–17.5 cm. long, 1–2.5 cm. wide, rarely to 3 cm. wide, glabrous above and below, apex narrowly acute or acuminate, sometimes acute, obtuse or sometimes acute at the base; small axillary leaves often present, lanceolate to ovate-lanceolate, 3–30 mm. long, short petiolate or sessile; inflorescences terminal, fasciculate, few-flowered, the bracts linear, the flowers sessile or short-pedicellate, subtended by leaves, the leaves sparsely glandular, the pedicel 0.5 mm. long; calyx 3.5–4.5 mm. long, sparsely and inconspicuously glandular, the lobes lanceolate, 0.8–1.5 mm. long, ciliate; corolla greenish or greenish-yellow, the tube 17–18.5 mm. long, glabrous externally, gradually ampliate upwards, the corolla lobes 4–5 mm. long, ovate or lanceolate, marginally glandular-puberulent externally; filaments 2.5–3 mm. long, appendaged at their bases, the appendages 0.8 mm. long, entire or slightly notched, pilosulous; style 16.5–18 mm. long; fruit about 8 mm. long, white; seeds 4, 3.5–4.5 mm. long.

*Cestrum luteovirescens* and *C. skutchii* are the only two species in Guatemala with the larger leaves very long and narrow, almost never exceeding 2.5 cm. in width. It is separated from *C. skutchii* by flower color, longer calyx lobes, and glandular calyx.

***Cestrum megalophyllum*** Dunal in DC. Prodr. 13, pt. 1: 638. 1852. *C. baenitzii* Lingelsh. Fedde Repert. Sp. Nov. 7: 248. 1909.

Moist or wet forests or mixed forests, 1,500 m. or less; Alta Verapaz; Izabal; Suchitepéquez; Quezaltenango; San Marcos. British Honduras. Southern Mexico to Costa Rica. Panama. West Indies. Northern South America.

A shrub 2–3 m. tall, sometimes a tree to 10 m. tall, the branches puberulent or glabrous; leaves oblanceolate or elliptic, sometimes elliptic-oblong, 16.5–26 (–32) cm. long, (3)–5–8 cm. wide, glabrous above and below, the apex acuminate or acute, the base cuneate; petioles 1.5–2 cm. long; inflorescences axillary, racemose, few-flowered, the axis equalling or shorter than the petioles, pubescent, usually densely so, the bracts usually persistent, minute and densely pubescent, the hairs brownish; pedicels 1 mm. long or less; calyx 2.5–3 mm. long, greenish, glabrous or pilosulous, the lobes small, 0.5 mm. long or less, triangular, apex acute, ciliate and pilosulous apically; corolla greenish-white, the tube 11–12 mm. long, gradually ampliate above, glabrous externally, the lobes 3–3.5 mm. long, lanceolate, acute, marginally puberulent externally; filaments 3.5–4 mm. long, pilosulous at their bases, appendages absent; style 9–10.5 mm. long; fruit 6.5–9 mm. long, black or violaceous; seeds 3, 4.5–5.5 mm. long.



FIG. 6. *Cestrum mortonianum*. A, branch,  $\times \frac{1}{2}$ ; B, calyx with immature fruit,  $\times 3\frac{1}{2}$ ; C, dissected corolla,  $\times 2\frac{1}{2}$ , with detail of ovary,  $\times 5$ , and stamen,  $\times 6$ ; D, corolla with detail of hairs,  $\times 4$ .

In Guatemala, this species may be separated from all others on the basis of the inflorescence and the filaments pilosulous at their bases and the absence of appendages.

***Cestrum mortonianum*** J. L. Gentry, *Phytologia* 26:267. 1973.

Moist forests or thickets, 1,050–2,500 m.; Chimaltenango; Quezaltenango; San Marcos (type from northwestern slopes of Volcán Tajumulco, *Steiermark* 36509). Endemic.

A shrub or small tree, 2.5–5 m. tall, the branches with branched (with rays along their stalks) and simple, puberulent hairs; leaves ovate to elliptic, 7–26 cm. long, 3–10 cm. wide, sparsely pubescent with branched and a few simple hairs above, more densely pubescent below, the hairs branched and short stipitate-stellate, apex acuminate or acute, acute or obtuse at the base; petioles 1–3.5 cm. long; inflorescences axillary, few- to many-flowered, the rachis with branched hairs, a few simple hairs intermixed, the bracts linear, caducous, the flowers sessile or subsessile; calyx 5–5.5 mm. long, sometimes cleft on one side, covered with branched hairs, a few simple ones intermixed, the lobes 0.2–0.5 mm. long; corolla pale green, the tube 16–16.5 mm. long, covered with branched hairs externally, gradually ampliate above, the lobes 4.5–5 mm. long, ovate, pubescent externally or sometimes only marginally pubescent; filaments 4 mm. long, appendiculate at their bases, the appendages entire, 0.3 mm. long, densely pilosulous, the staminal traces densely pilosulous; style 15–15.5 mm. long; fruit immature.

This species is closely related to *Cestrum lanatum*. It can be readily distinguished from that species by the appendiculate and relatively straight filaments.

***Cestrum nocturnum*** L. Sp. Pl. 191. 1753. *C. nocturnum* var. *mexicanum* O. E. Schulz in Urban, *Symb. Antill.* 6:256. 1909. *Dama de noche*; *huele de noche*.

Moist or wet thickets or forests, sometimes in open places, 1,800 m. or less; Petén; Alta Verapaz; Izabal; Jalapa; Guatemala; Sacatepéquez; Chimaltenango; Quiché; Huehuetenango; Escuintla; Suchitépéquez. British Honduras. Southern Mexico to Costa Rica. Panama. West Indies.

A shrub 1–4 m. tall, the young branches sparsely pilosulous or glabrous; leaves ovate or lanceolate to elliptic or elliptic-oblong, mostly 8–16 cm. long, 2.5–6 cm. wide, glabrous above and below, apex acuminate, rounded to acute or short attenuate at the base; petioles 1–1.5 cm. long, glabrous; inflorescences axillary and terminal, racemose and paniculate, usually many-flowered, the rachis pilosulous or sometimes glabrous, the bracts linear, caducous, pilosulous or sometimes glabrous, the flowers subsessile and short pedicellate; calyx 2–3 mm. long, glabrous, shallowly cleft on two sides, the lobes triangular or mucronate, 0.2–0.5 mm. long, ciliolate; corolla greenish-yellow or pale green, the tube slender, 17–20 mm. long, gradually ampliate upwards, the corolla lobes 3–3.5 mm. long,

lance-oblong, marginally pilosulous externally; filaments 3–3.5 mm. long, appendaged at their bases, the appendages mostly entire to slightly notched or sometimes cleft to the base, glabrous or inconspicuously pilosulous, the staminal traces glabrous or inconspicuously pilosulous; style 16.5–19.5 mm. long; fruit 7–9 mm. long, white; seeds 5, 3.5–4 mm. long.

This species has sweet-scented flowers. In Central America the berries are said to be poisonous.

*Cestrum nocturnum* is a common lowland species. It is fairly uniform throughout its wide range.

Known in British Honduras by the following names: *chacayum*, *dama de noche*, *sapillo*, and "night bloom."

***Cestrum pacayense*** Francey, *Candollea* 6: 90. 1935. *C. kellermanii* Francey, l.c. 89 (type from Volcán de Pacaya, *Kellerman 6453*). *Hediondillo* (San Marcos); *huele de noche* (Guatemala).

Moist or wet, usually dense forests, 1,800–3,300 m.; Guatemala (type from Volcán de Pacaya, *Kellerman 6404*); Chimaltenango; Sololá; Quezaltenango; San Marcos. El Salvador. Honduras.

A shrub 2–5 m. tall or sometimes a tree 12 m. tall, with a dense crown, the branches glabrous; leaves narrowly elliptic to elliptic or lanceolate, 5–17.5 cm. long, 2–4.5 cm. wide, glabrous above and below, apex acuminate or narrowly acute, attenuate to obtuse at the base; petioles 1–2.5 cm. long, glabrous; axillary leaves rarely present; inflorescences axillary and terminal, paniculate or racemose, glabrous or sometimes sparsely pilosulous, few-to many-flowered, the bracts linear; pedicels 1.5–3.5 mm. long; calyx 2.5–3 mm. long, glabrous, except for the ciliolate lobes, the lobes 0.5 mm. long or less, broadly ovate and shortly mucronate or only mucronate; corolla pale yellow or pale greenish-yellow, the tube slender, 15.5–18 mm. long, glabrous externally, abruptly ampliate just below the mouth of the corolla tube, the lobes 2–3 mm. long, ovate and short-mucronate, papillate-puberulent on the margins externally; filaments 2–4.5 mm. long, glabrous or pilosulous at the base, appendages lacking, the staminal traces pilosulous; style 15.5–18 mm. long; fruit 8–10 mm. long, white; seeds 7, 4 mm. long.

Probably not distinct from *C. guatemalense*.

***Cestrum racemosum*** R. & P. *Fl. Peruv.* 2: 29, *t. 154*. 1799. *Cestrum panamense* Standl. *J. Wash. Acad. Sci.* 15: 460. 1925. *C. racemosum* var. *panamense* Francey, *Candollea* 6: 274. 1935. *syn. nov.* *Dama de noche*; *Ixcayaquay* (Petén).

Moist or wet forests, sometimes in cafetales as shade trees or in dry quebradas, 35–1,000 m., rarely higher; Petén; Izabal; Quezaltenango; San Marcos. British Honduras. Southern Mexico. Honduras; Nicaragua; Costa Rica. Panama. Colombia.



A shrub 1–10 m. tall or a tree sometimes 26 m. tall with a trunk 6.5 dm. in diameter, the branches glabrous or very sparsely puberulent; leaves lanceolate or lance-oblong, 7–22.5 cm. long, 2.5–7 cm. wide, glabrous above and below, the lateral veins prominent and broadly curved to the leaf margin, the apex acuminate to long acuminate, the base mostly rounded; petioles 1–1.5 cm. long; inflorescences axillary and terminal, racemose or paniculate, few- to many-flowered, the rachis pilosulous, the bracts linear, pilosulous, persistent or caducous; pedicels 0.5 mm. long, pilosulous, or the flowers sessile; calyx 1.5–2 mm. long, pilosulous, the lobes triangular, 0.2–0.5 mm. long, ciliolate; corolla greenish-yellow or pale green, the tube slender, 11–12 mm. long, glabrous externally, very gradually ampliate until just below the mouth of the corolla tube, the corolla lobes 2.5–3 mm. long, oblong-lanceolate, marginally puberulent externally; filaments 1–2 mm. long, appendages absent, the staminal traces inconspicuously pilosulous; style 11–12 mm. long; fruit 5–7.5 mm. long; seeds 4–8, 2.5–4 mm. long.

Called "night bloom" in British Honduras.

The treatment of *Cestrum panamense* as a variety of *C. racemosum* may be correct, but its elevation to specific rank does not appear to be justified.

***Cestrum regelii*** Planchon in Fl. Serres, 9: 229, t. 946. 1854. *C. chiapense* Brandege, Univ. Calif. Publ. Bot. 6: 192. 1915. *C. jacaltenanginum* Loes. Verh. Bot. Ver. Brandenb. 65: 98. 1923 (type from Jacaltenango, Huehuetenango, *C. & E. Seler 2641*).

Moist forests, 1,465–1,800 m., rarely higher; Guatemala; Sacatepéquez; Huehuetenango; San Marcos. Southern Mexico (Chiapas).

A shrub to 3.5 m. tall, the young branches mostly densely covered with simple multicellular hairs; leaves ovate to ovate-elliptic or lanceolate, 4–12 cm. long, 1.5–4.5 cm. wide, pilosulous above and below, more densely so on the veins below, apex acute or acuminate, acute or rounded at the base; petioles 1–2 cm. long; inflorescences axillary and terminal, fasciculate, and few-flowered or only with a few solitary flowers, subtended by leaves, the bracts foliaceous, lanceolate or linear; calyx 5–10 mm. long, densely covered with multicellular hairs, the lobes lanceolate to oblong-lanceolate, or linear, 2–5 mm. long, narrowly acute, pilosulous internally; corolla bright orange, the tube 15.5–20 mm. long, externally glabrous, ampliate upwards, ventricose just below the mouth of the corolla tube, the corolla lobes 1–1.5 mm. long, ovate and mucronate, marginally puberulent externally; filaments 9.5–11 mm. long, swollen, canaliculate and inconspicuously pilosulous at their bases, appendages absent; style 16–18 mm. long; fruit black or violaceous.

***Cestrum scandens*** Vahl, Ecolg. Amer. 1: 24. 1796. *C. perilambanon* Loes. Verh. Bot. Ver. Brandenb. 65: 98. 1923 (type from Chiquimula, *C. & E. Seler 3381*). *Chunumo coyote* (Chiquimula).

Wet or dry thickets or lowland forests, just above sea level to 900 m.; Chiquimula; Jutiapa; Santa Rosa; Escuintla; Retalhuleu.

Southern Mexico. El Salvador to Costa Rica. Colombia and Venezuela.

Scandent shrubs, 2.5 m. long or less, the branches puberulent or glabrous; leaves ovate to ovate-lanceolate, 7–16.5 cm. long, 3.5–6 cm. wide, glabrous above and below, apex acuminate or acute, rounded or subcordate at the base; petioles 1–1.5 cm. long; inflorescences lax, axillary and terminal, paniculate or sometimes racemose, the axis 2.5–15 mm. long, sparsely pilosulous, the bracts small, ciliolate, caducous; pedicels 0.5–1.5 mm. long; calyx 3.5–4 mm. long, green, the lobes about 1 mm. long, triangular, acute, ciliolate; corolla pale green or green, the tube 18–20 mm. long, slender, ampliate at the throat of the corolla tube, glabrous, the lobes 7–9.5 mm. long, narrowly oblong-lanceolate, acute, ciliolate; filaments 0.5 mm. long or less, glabrous, appendages absent; style 17–19 mm. long; fruit 7–10 mm. long, blue or white; seeds 5–8, 5 mm. long.

*Cestrum scandens* is easily recognized by its scandent habit, very long and narrow corolla lobes, and the stamens inserted just below the mouth of the corolla tube.

***Cestrum skutchii*** Morton, J. Arnold Arbor. 17: 347. 1936.  
*Aguaacatillo de montaña* (Quezaltenango).

Second growth thickets, 1,500–1,710 m.; Quezaltenango (type from Volcán de Zunil, *Skutch 988*). Endemic.

A shrub 1.5–3.5 m. tall, glabrous throughout; leaves lanceolate-linear, 14.5–24 cm. long, 1.5–2(–2.5) cm. wide, glabrous above and below, apex very narrowly acute, acute or very shortly attenuate at the base; petioles 8–10 mm. long; inflorescences axillary and pseudo-terminal, fasciculate, and 3–9 flowered, or a few flowers solitary, axis dark purple, the bracts linear, dark purple, glabrous; pedicels 4–5 mm. long, dark purple, cleft about one-third the length of the calyx on two sides, the lobes short-mucronate, 0.5 mm. or less long, unequal, ciliolate; corolla white, more or less suffused with purple, the tube 19–20 mm. long, gradually ampliate above, the lobes 5–6 mm. long, broadly ovate, acute, inconspicuously papillate marginally; filaments 3.5 mm. long, appendaged at their bases, the appendages entire, about 0.3 mm. long, pilosulous; style 18–19 mm. long; fruit pale green, 8 mm. long.

*Cestrum skutchii* is similar to *C. luteovirescens* and it can be separated from that species by the characters stated in the key.

### ***Cestrum* sp.**

Wet forests, 1,500 m. Known only from the following collection, Huehuetenango, Sierra de los Cuchumatanes, 2 miles southeast of Maxbal, about 17 miles north of Barillas, July 15–16, *Steyermark 48708*.

A vine, the branches glabrous; leaves lance-elliptic, 5–11 cm. long, 1.5–3 cm. wide, glabrous above and below, apex long acuminate, obtuse at the base; petioles 3–7 mm. long, glabrous; inflorescences axillary, consisting of a single, sessile flower on a long peduncle, the peduncles 1.5–3.5 cm. long, glabrous, one of the

flowers sessile in the leaf axil; fruiting calyx 3–3.5 mm. long, glabrous, the lobes 0.5 mm. long or less, broadly deltoid; fruit 6.5 mm. long; seeds 7, 2–3.5 mm. long.

This specimen seems to represent an undescribed species, but we hesitate to describe it on inadequate material. The inflorescence is unique among the species known in Guatemala.

Morton (1936) suggested that *C. psittacinum* Stapf should probably be included in the Cestruums of Guatemala. The species was described from cultivated material of unknown origin. We have not included it in our treatment because of its unknown origin and the lack of specimens in herbaria.

### CYPHOMANDRA Sendtner

Shrubs or small trees, unarmed; leaves alternate, entire, 3-lobed, or pinnatifid, often large, sometimes dimorphic, long petiolate; inflorescences cymose, mostly beside the leaf axil, the rachis nodose, the flowers pedicellate; calyx campanulate, 5-lobed; corolla subtovate, pink to purplish, or greenish-purple, the limb deeply 5-parted, the lobes valvate in bud; stamens 5, exerted; filaments short and broad; anthers oblong or attenuate, dehiscent by two apical pores or slits, these often continued as longitudinal introrse slits part way down the thecae, the connective prominent, adaxially thickened; ovary bilocular, the ovules numerous, the disk annular, entire or dentate; style thick or elongate and filiform; stigma scarcely or strongly dilated; fruit a berry, often large, ovoid, oblong, or elliptic; seeds numerous, compressed; embryo strongly curved or subspiral.

About 60 species all in tropical America. Two or three other species are found in southern Central America.

Ovary covered with short, glandular and eglandular hairs, the pubescence persisting in fruit; stigma strongly dilated; anther connective 1.5–2 mm. wide at the base.....*C. rojasiana*.

Ovary and fruit glabrous; stigma scarcely dilated; anther connective 0.8–1.5 mm. wide.....*C. betacea*.

*Cyphomandra betacea* (Cav.) Sendtn. Flora 28: 172. 1845. *Solanum betaceum* Cav. Icon. 6: 15, t. 524. 1801. *Granadilla*; *pix*, *caxlan pix* (Quecchi); *tomate*; *tomate de árbol*; *tomate extranjero*; *tomate granadilla*.

A native of South America that is cultivated for its edible fruit in many parts of tropical America. Planted occasionally in the mountains of Guatemala at middle elevations. The fruit is often seen in the markets of Huehuetenango, Quezaltenango, Guatemala, and Cobán. It is somewhat more acid than the common tomato, *Lycopersicon*, and is used in much the same manner, principally for salads and *dulces*.



FIG. 7. *Cyphomandra rojasiana*. A, habit,  $\times \frac{1}{2}$ ; B, corolla,  $\times 1\frac{1}{2}$ ; C, style,  $\times 2\frac{1}{2}$ ; D, stamen, abaxial view,  $\times 2\frac{1}{2}$ ; E, stamen, lateral view,  $\times 2\frac{1}{2}$ ; F, calyx,  $\times 3$ ; G, mature fruit,  $\times \frac{1}{2}$ .

Called *tomate de palo* in Honduras.

The correct name for this species may be *C. crassifolia* (Ortega) Kuntze.

**Cyphomandra rojasiana** Standl. & Steyerl. Field Mus. Bot. 22: 377. 1940.

In thickets or second growth, 1,100–1,500 m.; Quezaltenango; Suchitepéquez (type from Finca Mocá, *Skutch 1472*). Mexico (Chiapas).

A shrub 2–3.5 m. tall, sometimes straggling, the branches covered with short, glandular and eglandular hairs, glabrate in age; leaves membranaceous, entire, broadly ovate, 12–30(–45) cm. long, 9–18(–27) cm. wide, the hairs short, glandular and eglandular above and below, apex acuminate, rounded, and cordate at the base; inflorescences mostly axillary or sometimes extra-axillary, cymose, few-flowered, the rachis nodose; peduncles 2–3.5 cm. long, accrescent in age, the hairs short, glandular and eglandular; pedicels 8–15 mm. long, in fruit to 4.5 cm. long, the hairs short, glandular, and eglandular; calyx campanulate, 2–3 mm. long, the hairs short, glandular and eglandular, the lobes ovate, 1.5–2 mm. long, apex mucronate, densely pubescent; corolla limb parted nearly to the base, the lobes oblong or lanceolate, 8–12 mm. long, acute, externally green, internally purple, shining and bordered with green, ciliate, otherwise glabrous; filaments 1.5 mm. long; anthers 4.5–6 mm. long, the connective gibbose, projecting below the base of the anther sacs, 1.5–2 mm. wide at the base; ovary covered with short, glandular and eglandular hairs; style thick, 3.5–5 mm. long; stigma strongly dilated; fruit elliptic or ovate-elliptic, 5 cm. long, 3–3.5 cm. wide, pubescence of glandular and eglandular hairs, light yellow with rich green stripes and splotches at both ends; seeds 3.5–5 mm. long.

This species is closely related to the common tree tomato, *Cyphomandra betacea*, and may be only a variety of that species.

The stems and leaves give off a disagreeable odor when crushed, fide *Skutch*.

Called *huevo de gato* in Chiapas.

## DATURA L.

*References:* W. E. Safford, Synopsis of the genus *Datura*. J. Wash. Acad. Sci. 11: 173–189. 1921. A. G. Avery et al., Blakeslee: The Genus *Datura*. The Ronald Press. New York. 289 pp. 1959.

Herbs, shrubs, or small trees, glabrous or pubescent; leaves alternate, entire to sinuate, or shallowly lobed, membranaceous, petiolate; inflorescences consisting of a solitary flower, the flowers pedicellate and in the forks of the branching stem, small or very large and showy, erect or pendulous; calyx long tubular, 5-lobed or spathe-like and cleft down one side, sometimes circumscissile near the

base and leaving a persistent flaring collar under the fruit; corolla funnellform or narrow funnellform, white, yellow, pink, or red, the limb 5-lobed or 10-toothed, the lobes acuminate to long caudate, plicate in bud, the tube long and slender; stamens 5, inserted near the middle of the corolla tube, included (in ours) or slightly exerted; filaments slender, pubescent or glabrous below; anthers linear, free or rarely coherent, longitudinally dehiscent; ovary bilocular (sometimes falsely tetralocular), the ovules numerous; style filiform, included; stigma bilobed; fruit a capsule, 4-valvate or breaking open irregularly, armed with spines or unarmed; seeds numerous, laterally compressed or angulate; embryo curved.

About 25 species, mainly in warm-temperate or tropical regions of the world. Only one other species, *Datura metel* L., a native of India, occurs spontaneously in Centra America, others, e. g., *D. arborea*, probably are cultivated occasionally. Apparently all species of *Datura* have alkaloids with narcotic properties. Several species have been used in religious and ceremonial rituals by the native people of the New World. Mr. T. E. Lockwood is currently working on a revision of section *Brugmansia* (tree Daturas). He is recognizing this section at the generic rank.

Shrubs or small trees; flowers pendulous, 22-30 cm. long; calyx completely deciduous or persistent, not circumscissile and forming a flaring collar under the fruit; fruit unarmed.

Calyx spathe-like, terminating in an acuminate point; anthers free. *D. candida*.

Calyx tubular, lobed at the apex; anthers coherent. . . . . *D. suaveolens*.

Herbs; flowers erect, 4.5-18 cm. long; calyx circumscissile near the base and leaving a persistent flaring collar under the fruit; fruit armed with spines.

Fruiting pedicels erect; fruits dehiscent regularly, 4-valvate; leaves sparsely pubescent or glabrate below. . . . . *D. stramonium*.

Fruiting pedicels nodding; fruits breaking open irregularly; leaves commonly densely pubescent below.

Corolla 4.5-6 cm. long. . . . . *D. pruinosa*.

Corolla 14-18 cm. long. . . . . *D. innoxia*.

***Datura candida*** (Pers.) Safford, J. Wash. Acad. Sci. 11: 182. 1921. *D. arborea* R. & P. Fl. Peruv. 2: 15, t. 127. 1799, non *D. arborea* L. 1753. *Brugmansia candida* Pers. Syn. Pl. 1: 216. 1805. *Campana*; *florifundio*; *floripondio*; *kampani* (Quecchí); *krevapunta*; *trompetero*.

Moist or wet thickets, 360-2,500 m.; Alta Verapaz; Quiché; Quezaltenango; Santa Rosa; Suchitépéquez. Perhaps a native of Peru. It is cultivated in many parts of Guatemala and naturalized in some areas. Widely planted in tropical regions as an ornamental for its large and showy white flowers.

A shrub or small tree, 2-5 m. tall, the branches pilosulous or puberulent; leaves entire or sometimes repand, broadly ovate to ovate-oblong or ovate-elliptic, mostly 15-30 cm. long, 6-12 cm. wide, pilosulous above and below, apex



FIG. 8. *Datura candida*. A, habit,  $\times \frac{1}{2}$ ; B, portion of corolla showing stamens,  $\times \frac{1}{2}$ ; C, pistil,  $\times \frac{1}{2}$ .

narrowly acute or acuminate, base rounded or sometimes acute, often unequal; petioles mostly 4.5–12 cm. long, pilosulous; flowers pendulous, very fragrant; pedicels 3.5–5 cm. long, pilosulous; calyx 10–15 cm. long, spathe-like, cleft down one side but otherwise entire, persisting around the mature fruit, pilosulous or glabrate, acuminate; corolla white, the tube 22–30 cm. long, margin of the limb between the lobes entire, the lobes spreading, long caudate, 5.5–7 cm. long; stamens included, inserted just below the middle of the tube; filaments 4–4.5 cm. long, villous below, the staminal traces villosulous; anthers free, 2.5–3 cm. long; style included 17–19 cm. long, the stigma oblong, 5–7 mm. long; fruit unarmed, fusiform, 20 cm. long, 2 cm. diameter at the middle, seldom maturing; seeds 6–10 mm. long, angulate, rugose.

*Datura candida* is often confused with *D. arborea*, a name frequently applied to any white flowered tree-datura.

Flowers sometimes are placed beside the pillows of persons troubled with insomnia because of the popular belief that the fragrance of the flowers induces sleep.

Called *floripondio* in El Salvador and Honduras.

**Datura innoxia** Miller, Gard. Dict. ed. 8, *Datura* no. 5. 1768. *D. meteloides* DC. in Dunal, Prodr. 13(1): 544. 1852. *Tapá* (Jutiapa); *tapate* (Zacapa).

Damp thickets or waste places, 200–850 m.; Zacapa; El Progreso; Chiquimula. United States, mostly the west and southwest. Mexico. Honduras. West Indies. South America.

Herb 1 m. tall or less, the stems densely pilosulous; leaves subentire to repand or sinuate, sometimes shallowly lobed, lanceolate to broadly ovate, mostly 10–22 cm. long, 4.5–10.5 cm. wide, pilosulous above, more densely so below, especially on the veins, apex acuminate or narrowly acute, base unequal, short attenuate, acute or sometimes rounded; petioles 3.5–8.5 cm. long, densely pilosulous; flowers erect, fragrant; pedicels 1–2 cm. long, densely pilosulous; calyx 10–12 cm. long, pilosulous, circumscissile just above the base of the tube and falling off with the corolla, the base persistent and accrescent, forming a flaring collar at the base of the fruit, the lobes 1.5–2.5 cm. long, narrowly long acuminate; corolla white, 10-lobed, the tube 14–18 cm. long, the lobes spreading, caudate, 8–10 mm. long; stamens included, inserted above the middle of the corolla tube; filaments 4.5–5.5 cm. long, glabrous, the staminal traces glabrous; anthers free, 1–1.4 cm. long; style included, 13.5–16.5 cm. long, fruit nodding, globose, 2.5–3 cm. in diameter, breaking open irregularly, armed with numerous, long and slender, pubescent spines; seeds compressed, 4–4.5 mm. long.

*Datura innoxia* was described from a cultivated plant grown in England. The seeds were sent from Mexico. It is frequently cultivated as an ornamental in gardens, now widely distributed in such places as the Canary Islands, the Near East, India, and China.



*Datura innoxia* has been divided into at least three subspecific taxa by A. S. Barclay, in herb. We have only the typical form of the species in Guatemala. It has been frequently confused with *D. metel* L., a native of Asia, now introduced into the Americas, from which it can be distinguished by its usually dense pubescence of the herbage, 10-lobed corolla limb and the fruits armed with long and slender spines. *Datura metel* has a 5-lobed corolla limb and the fruits armed with tubercles or short, broad spines. It often has a double corolla.

***Datura pruinosa*** Greenm. Proc. Am. Acad. Sci. 33: 486. 1898.

Known only from the following collection in Guatemala; Zacapa, 180 m., *Kellerman 7017*. Mexico.

Herb, the stems pilosulous; leaves repand to shallowly lobed, ovate to ovate-oblong, 6-14.5 cm. long, 3.5-8.5 cm. wide, pilosulous above and below, apex acute or acuminate, base unequal or sometimes equal, acute to rounded; petioles 1.5-4.5 cm. long, pilosulous; flowers erect; pedicels 0.4-0.8 mm. long, densely pilosulous; calyx 3-4.5 cm. long, pilosulous, circumscissile just above the base of the tube and falling off with the corolla, the base persistent and accrescent, forming a flaring collar at the base of the fruit, the calyx lobes 1 cm. long, narrowly acute; corolla white, 5-lobed, the tube 4.5-6 cm. long, the lobes spreading, caudate, 6 mm. long; stamens included, inserted at about the middle of the corolla tube; filaments 1.2-1.6 cm. long, glabrous; anthers free, 2.5-3.5 mm. long; style included, 3-3.5 cm. long; fruit nodding, globose, 2-4 cm. in diameter, breaking open irregularly, armed with numerous, long and slender, pubescent spines; seeds compressed, 3-4 mm. long.

The Kellerman collection cited above was annotated by A. S. Barclay as *Datura leichhardtii* F. v. Muell. in Benth. using the name *pruinosa* at the subspecific rank. *Datura leichhardtii* is based upon plants collected in Australia. We are maintaining the use of the name *D. pruinosa* for these Mexican and Guatemalan plants until the type can be studied.

***Datura stramonium*** L. Sp. Pl. 1: 179. 1753. *Machul* (Huehuetenango); *tapa* (Chimaltenango, Jutiapa); *vuélvete loca* (Chimaltenango, Jutiapa, Sololá).

In old fields, waste ground, cultivated fields or thickets, 850-2,500 m.; Jalapa; Chimaltenango; Sololá; Quezaltenango; Huehuetenango; Jutiapa; Sacatepéquez. British Honduras. United States. Mexico. El Salvador to Costa Rica. West Indies. South America. Old World. Widely distributed in temperate and warm temperate regions of the world.

A weedy herb 1 m. or less tall, the young stems pilosulous, glabrate in age; leaves sinuate to shallowly lobed, the lobes acute, ovate to ovate-oblong or elliptic, 8-22 cm. long, 3.5-14 cm. wide, pilosulous or glabrous above and below, apex narrowly acute, base unequal or equal, short attenuate, acute or sometimes rounded; petioles 1.5-5.5 cm. long, glabrous or pilosulous; flowers erect; pedicels 0.5-1 cm. long, pilosulous; calyx 2.5-3.5 cm. long, pilosulous or glabrate, circumscissile just above the base of the tube and falling off with the corolla, the base persistent and accrescent, forming a flaring collar at the base of the fruit, the calyx lobes 3-5 mm. long, acuminate or long acuminate; corolla white or violet, 5-lobed, the tube 6-9 cm. long, the lobes spreading, caudate, 8-10 mm. long; stamens included, inserted below the middle of the corolla tube; filaments 2.2-2.5 cm. long, sparsely villosulous at the base; anthers 3.5-5 mm. long; style included, 4-6 cm. long; fruit erect, ovoid, 2.5-3.5 cm. in diameter, dehiscent regularly, 4-valvate, armed (in ours), the spines numerous, long and slender or sometimes unarmed; seeds compressed, 3-3.5 mm. long.

*Datura stramonium* has been separated into at least three sub-specific taxa by A. S. Barclay, in herb.

It is reported that cigarettes made from the dried leaves are sometimes smoked in Guatemala to relieve asthma.

Called thorn-apple or Jimson (a corruption of Jamestown) weed in the United States. Called *tapa* or *tapate* in Central America.

***Datura suaveolens*** Humb. & Bonpl. ex Willd. Enum. Hort. Berol. 227. 1809.

A native of Brazil now commonly cultivated in tropical regions and becoming naturalized in some areas. Only one collection is known from Guatemala. Quezaltenango, along Quebrada San Gerónimo, 1,300-2,000 m., *Steyermark 33456*.

A shrub or small tree, 1-6.5 m. tall, the young branches pilosulous or puberulent; leaves entire or sometimes repand, ovate to elliptic, mostly 15-36 cm. long, 4.5-14 cm. wide, pilosulous above and below, glabrate in age above, apex acuminate or acute, the base obtuse or acute, sometimes short attenuate, often unequal; petioles mostly 2-10 cm. long, pilosulous; flowers very fragrant and pendulous; pedicels 2.5-5.5 cm. long, puberulent or glabrate; calyx 5-lobed, 9-12 cm. long, tubular, glabrous, deciduous, the lobes 2-3.5 cm. long, short acuminate; corolla white, the tube 22-28 cm. long, the lobes spreading, long caudate, 3.5-4.5 cm. long; stamens included, inserted just below the middle of the tube; filaments 3.5-4.5 cm. long, villous below, the staminal traces villosulous; anthers coherent, 3.5-4 cm. long; style included, 18-22 cm. long, the stigma oblong, 5-5.5 mm. long; fruit unarmed, fusiform, 20 cm. long, 2.5 cm. in diameter at the middle; seeds 8-12 mm. long, angulate and rugose.

### JALTOMATA Schlechtendal

Herbs; leaves alternate, often in pairs, entire or sinuate-dentate, petiolate; inflorescences axillary and umbellate, with a long peduncle, the flowers pedicellate;

calyx broadly campanulate, 5-lobed, accrescent in fruit and spreading beneath the berry or spreading campanulate; corolla rotate, greenish-white or pale green, 5-lobed, the lobes valvate in bud; stamens 5; filaments filiform, dilated and somewhat swollen at their bases, pubescent or sometimes glabrous; anthers longitudinally dehiscent; ovary bilocular, the ovules numerous, the disc annular; style slightly dilated above; stigma capitate, emarginate; fruit a berry; seeds numerous, laterally compressed; embryo strongly curved.

About 15 species ranging from the southwestern United States to South America and the West Indies. Only the following two species are known from Central America.

*Jaltomata* Schlecht. is the correct name that applies to the plants traditionally referred to as *Saracha* R. & P. See comments by J. L. Gentry, *Phytologia* 27: 286-288. 1973, for an explanation of the use of the name *Jaltomata* Schlecht.

Plants small, the stems prostrate or decumbent, 2 dm. long or less; pedicels 2, rarely 3; leaves small, 1.5-3.5 cm. long. . . . . *J. confinis*.

Plants large, the stems erect or decumbent, 6-9 dm. long; pedicels mostly 3-5; leaves large, 5.5-18 cm. long. . . . . *J. procumbens*.

***Jaltomata confinis*** (Morton) J. L. Gentry, *Phytologia* 27: 286. 1973. *Saracha confinis* Morton, *Proc. Biol. Soc. Wash.* 51: 77. 1938.

Open places on roadside banks or grassy hillsides, 2,400-3,800 m.; Chimaltenango (type from Santa Elena, *Skutch 447*); Huehuetenango. Endemic.

Prostrate or decumbent herbs, usually pilosulous throughout, the stems several, usually branching, 1.2-2.2 dm. long; leaves ovate to ovate-rhomboid, 1.5-3.5 cm. long, 2 cm. wide or less, acute, the base attenuate; petiole 1-10 mm. long; inflorescences umbellate with 2 or rarely 3 flowers; peduncles 2-4 cm. long; pedicels 8-20 mm. long; calyx 4-5 mm. long, accrescent in fruit and spreading campanulate, about 1 cm. wide, the lobes ovate, acute; corolla greenish-white, the limb about 1 cm. wide; filaments 2.5-3 mm. long, densely hairy below; anthers about 1.5 mm. long; style about 2 mm. long; berry (immature) about 9 mm. in diameter.

***Jaltomata procumbens*** (Cav.) J. L. Gentry, *Phytologia* 27: 287. 1973. *Saracha procumbens* (Cav.) R. & P. *Fl. Peruv.* 2: 43. 1799. *Atropa procumbens* Cav. *Icon. Pl.* 1: 53, *t. 72*. 1791. *Saracha jaltomata* Schlecht. *Hort. Hal.* 10. 1839. *Cinco negros*; *hierab ixbolul*; *madre jilete*; *belladona cimarrona*.

Moist or wet thickets or forests, often a weed in cultivated fields, 800-2,500 m.; Alta Verapaz; Izabal; Guatemala; Chimaltenango; Solola; Quezaltenango; Huehuetenango; Escuintla; Suchitpequez; San Marcos. Southwestern United States. Mexico to Costa Rica. Panama. South America.



FIG. 9. *Jaltomata procumbens*. A, habit,  $\times \frac{1}{2}$ ; B, fruit and calyx,  $\times 2$  and  $\times 3$ ; C, corolla dissected,  $\times 3$ .

Erect or decumbent herbs, usually branched above, essentially glabrous throughout or pilose, the stems thick and somewhat succulent, 6-9 dm. tall or sometimes taller; leaves ovate to elliptic, 5.5-18(-35) cm. long, 3-8(-19) cm. wide, acuminate, attenuate at the base; petiole 0.5-5 cm. long, sometimes slightly winged; inflorescences umbellate, with 3-5(-15) or rarely 2 flowers; peduncles 2-4 cm. long; pedicels 1-2 cm. long; calyx 4-5 mm. long, accrescent in fruit, and widely spreading beneath the berry, 2-2.5 cm. wide, the lobes ovate, acute; corolla greenish-white or pale green, the limb 1-2.5 cm. wide; filaments 3.5-4.5 mm. long, densely pubescent or sometimes glabrous; anthers 2-2.5 mm. long; style about 5 mm. long; berry purple or black, 10-12 mm. in diameter, subglobose, very juicy; seeds 1.5-2 mm. long, laterally compressed, reticulate-foveate.

The young leaves are used as a pot herb by the Indians.

### JUANULLOA Ruiz & Pavón

Shrubs, mostly epiphytic; leaves alternate or in pairs, entire, petiolate; inflorescences cymose, lateral or pseudoterminal, the flowers large and pedicellate; calyx campanulate or tubular, 5-lobed; corolla tubular, reddish to orange (in ours), or whitish, yellow to brown, the limb 5-lobed, the lobes small and broad, imbricate in bud, the tube slightly ampliate above the middle and contracted at the apex; stamens 5, mostly included; filaments inserted near the base of the corolla tube, densely hairy at the point of insertion; anthers longitudinally dehiscent, oblong or linear, apiculate; ovary bilocular, the ovules numerous, the disk thick and annular; style filiform; stigma bilobed, slightly dilated; fruit a berry, sometimes almost dry, indehiscent; seeds large, numerous and compressed; embryo slightly or strongly curved.

Species about 10, in the tropical rain forests from southern Mexico and Central America and in South America along the Andean countries to Bolivia. Only the following species is known in Mexico and Central America.

**Juanulloa mexicana** (Schlecht.) Miers, *Ann. Mag. Nat. Hist.* 4: 188. 1849. *Laureria mexicana* Schlecht. *Linnaea* 8: 513. 1833. *J. sargii* Donn.-Sm. *Bot. Gaz.* 18: 5, t. 1. 1893 (type from near Escuintla, 330 m., *Donnell-Smith 1467*).

Nearly always an epiphyte on trees, Pacific slope, 300-1,000 m.; Escuintla; Quezaltenango. Southern Mexico. Honduras; Costa Rica. Panama.

An epiphytic shrub, rarely terrestrial, the branches thick and spreading, with corky bark, 4 m. long or less, the young branches usually densely pubescent with stellate and branched (rays along their stalks) hairs; leaves mostly crowded near the ends of the branches, sometimes in pairs, membranaceous or subcoriaceous, obovate or elliptic, 10-20 cm. long, 3.5-10(-13) cm. wide, obtuse or acute, cuneate at the base, sparsely pubescent with branched hairs or glabrate above, usually more densely pubescent with branched hairs or somewhat glabrate below, the

Botanical Gazette 1893.

Plate I.



FIG. 10. *Juanulloa mexicana*. Plate I from the Botanical Gazette for the year 1893, used by permission of the University of Chicago. Magnifications may be calculated from the description.

petiole 0.5–1.5 mm. long; inflorescence cymose, pseudoterminal or lateral; pedicels thick, 1–2 cm. long, densely covered with ochraceous, very short simple and branched hairs; calyx narrowly campanulate, 2.5–3 cm. long, costate, orange, densely covered with ochraceous, very short simple and minute branched hairs, red within, cleft for half its length or more, the lobes oblong-lanceolate or lanceolate, equal or unequal, acute; corolla red or orange, 4–5 cm. long, densely covered with yellowish very short simple and minute branched hairs, the lobes 2–2.5 mm.

long, obtuse; stamens included or rarely slightly exerted; filaments 2-2.4 cm. long, inserted 4.5-5 mm. from the base of the tube, densely hairy at the point of insertion; anthers 11.5-12.5 mm. long, apiculate; style included, about 4 cm. long; berry globose-ovoid, about 2 cm. long, surpassed by the calyx; seeds 4-4.5 mm. long, oblong, reticulate-foveate.

LYCIANTHES (Dunal) Hassler

Reference: G. Bitter, Die Gattung *Lycianthes*, Abh. Naturwiss. Vereine Bremen 24: 292-520. 1920.

Shrubs, vines, or herbs, unarmed; glabrous or pubescent, the hairs simple or often variously stellate or branched; leaves simple, alternate, entire, the upper leaves often in pairs; inflorescences axillary, the flowers mostly pedicellate; calyx campanulate, truncate, often bearing 5 or 10 linear-subulate to knob-like appendages at or just below the margin of the calyx; corolla subrotate, white to purple, or pale yellow, the lobes plicate or sometimes valvate in bud; stamens 5, sometimes unequal in length; filaments short and equal or sometimes 1 or 3 filaments longer than the others; anthers ellipsoid to oblong, dehiscent by small apical introrse pores; ovary bilocular, the disk inconspicuous; stigma capitate, entire or obscurely bilobed; ovules numerous (in ours); fruit a berry, usually globose and fleshy, sometimes ellipsoid; seeds numerous (in ours), compressed; embryo strongly curved or spiral.

A genus of about 140 species, in the tropics of both hemispheres. Other species are known from southern Central America. *Lycianthes* was established principally by the work of Bitter, who published a monograph in 1920. While the segregate genus has been accepted by some recent authors, it has been criticized by others, notably by the late C. V. Morton. For a discussion of the subject (unfavorable to maintenance of *Lycianthes*) see C. V. Morton, Contr. U. S. Natl. Herb. 29: 54-55. 1944.

Stems and leaves with stellate and/or variously branched hairs, sometimes inconspicuously pubescent or nearly glabrous throughout; simple hairs rarely present.

Appendages absent on the truncate calyx; leaves whitish below . . . *L. hypoleuca*.  
Appendages present on the truncate calyx; leaves green, pale yellow or reddish below.

Appendages of the calyx relatively long, 8-12 mm. long, covered with long simple, furcate and dichotomously branched hairs . . . . . *L. purpusii*.

Appendages of the calyx short, linear or sometimes knob-like, 4 mm. long or less, covered with relatively short stipitate-stellate or sessile-stellate hairs.

Appendages of the calyx about as broad as long, knob-like and glandular. *L. ocellata*.

Appendages of the calyx linear or subulate-linear, longer than broad, not knob-like nor glandular.

Stamens subequal in length; stems and lower surface of leaves densely covered with reddish to reddish-brown hairs.

Leaves broadly ovate to ovate or ovate-elliptic; fruits 10-15 mm. in diameter . . . . . *L. limitanea*.

Leaves lanceolate to narrowly elliptic; fruits 7 mm. in diameter.

*L. cuchumatanaensis.*

Stamens unequal in length, one anther evidently projecting above the others; stems and lower surface of leaves pubescent with yellowish to yellowish-brown hairs or sometimes glabrous.

Corolla purplish; long stamen exceeding other four by (2-) 3-4 mm.; pubescence of the calyx minute, nature of the hairs discernible only with the aid of a microscope. . . . . *L. lenta.*

Corolla white; long stamen exceeding other four by 1-1.5 mm.; pubescence of the calyx long, nature of the hairs nearly always discernible with the naked eye in flowering specimens.

Larger leaves narrow, narrowly elliptic to lanceolate or lance-elliptic, moderately to sparsely pubescent or glabrous below; flowering pedicels 15-25 mm. long; ranging from 1,300-2,400 m.

*L. chiapensis.*

Larger leaves broad, elliptic to ovate-elliptic or ovate-lanceolate, densely to moderately pubescent below; flowering pedicels 10-16 mm. long; Caribbean lowlands, below 1,000 m. . . . . *L. armentalis.*

Stem and leaves with simple hairs, sometimes inconspicuously pubescent or glabrous throughout; stellate hairs absent.

Appendages absent on the truncate calyx or inconspicuous (knob-like).

Leaves lustrous, in pairs, very different in size and shape; plants glabrous throughout, usually epiphytic. . . . . *L. nitida.*

Leaves dull, solitary or in pairs, different in size, but similar in shape; plants pubescent, rarely glabrous throughout, terrestrial.

Appendages of the calyx absent; the calyx sometimes inconspicuously nerved; just above sea level to 900 m., rarely higher; widespread.

*L. synanthera.*

Appendages of the calyx present (knob-like); 1,500-3,000 m.; endemic.

Leaves evidently puberulent below; filaments 1 mm. long, the anthers acute; young branches sparsely puberulent. . . . . *L. gongyloides.*

Leaves glabrous or inconspicuously puberulent below; filaments 3-3.5 mm. long, the anthers obtuse; young branches scurfy. *L. ceratocalycia.*

Appendages conspicuously present (linear or subulate-linear) on the truncate calyx.

Stamens unequal in length, one anther evidently projecting above the others.

Appendages of the calyx connate at their bases, strongly reflexed in fruit.

*L. connata.*

Appendages of the calyx distinct at their bases, erect to spreading in fruit.

Plants glabrous throughout. . . . . *L. chiapensis.*

Plants evidently pubescent, at least in part.

Plants herbaceous; inflorescences consisting of a solitary flower, the pedicels 6-8 cm. long; anthers 5.5 mm. long or more; fruit ellipsoid, acute at the apex. . . . . *L. ciliolata.*

Plants woody vines or shrubs; inflorescences consisting of 2-15 flowers, the pedicels 0.5-3 cm. long; anthers 4 mm. long or less; fruit globose.

Long calyx appendages 9.5-11 mm. long. . . . . *Lycianthes* sp.

Long calyx appendages 1-4 mm. long.

Leaves densely pubescent below, the hairs long; long calyx appendages 1-2 mm. long; seeds entire, 2-2.5 mm. long.

*L. arrazolensis.*

Leaves sparsely pubescent below, the hairs short; long calyx appendages mostly 2.5-4 mm. long; seeds slightly notched, 3-4 mm. long. . . . . *L. tricolor.*

Stamens subequal in length.



Leaves glabrous above and below or with hairs in tufts in the axils of the mid-vein below; inflorescences consisting of 3-5 flowers.

Corolla 7.5-8 mm. wide; leaves glabrous below. . . . . *L. orogenes*.

Corolla 12 mm. wide; leaves with hairs in tufts in the axils of the mid-vein below. . . . . *L. barbatula*.

Leaves pubescent above and below, the hairs sometimes inconspicuous, without hairs in tufts in the axils of the mid-vein below; inflorescences usually consisting of 1-2 flowers.

Appendages of the calyx 9 mm. long or more, densely pubescent, the hairs long, at least some glanduliferous and 2 mm. long or more.

*L. gorgonea*.

Appendages of the calyx 5 mm. long or less, if densely pubescent the hairs 0.5 mm. long or less, eglandular.

Corolla limb 1-1.2 cm. wide, nearly parted to the base; leaves generally narrowly elliptic, inequilateral.

Stem with spreading hairs; pedicels 1 cm. long or less; appendages of the calyx 2.5 mm. long or more. . . . . *L. amatitlanensis*.

Stem with appressed or subappressed hairs; pedicels 2-2.5 cm. long; appendages of the calyx 1 mm. long or less. . . . . *L. inconspicua*.

Corolla limb 2-3.5 cm. wide, shallowly lobed to lobed one-half way to the base; leaves generally ovate to lanceolate, equilateral.

Corolla limb 2 cm. wide; anthers coherent; leaves solitary; below 1,000 m., Caribbean lowlands. . . . . *L. stephanocalyx*.

Corolla limb 2.5-3.5 cm. wide; anthers free; leaves mostly in pairs; ranging from 2,200 to 3,900 m., mountains of Guatemala and Chiapas. . . . . *L. quichensis*.

### ***Lycianthes amatitlanensis*** (Coult. & Donn.-Sm.) Bitter, Abh.

Naturwiss. Vereine Bremen 24: 441. 1920. *Solanum amatitlanense* Coult. & Donn.-Sm. Bot. Gaz. 37: 420. 1904 (syntypes, Barranca de Eminencia, Guatemala, *Donn.-Sm. 1457*; Cubilquütz, Alta Verapaz, *Tuerckheim 7753 & 8488*).

Wet forests, 200-900 m., rarely higher; Petén; Alta Verapaz; Izabal; Chimaltenango; Huehuetenango; Escuintla. Mexico (Chiapas); Atlantic coast of Honduras. Panama.

Erect suffrutescent herbs or shrubs, 1-1.5 m. tall, simple or little branched, the stems hirsute; leaves in pairs, very unequal in size, sparsely hirsute above, densely so below, especially on the veins, the hairs pale yellow, the larger leaves in equilateral, elliptic or lanceolate to lance-oblong, 10-24 cm. long, 3-8 cm. wide, long acuminate, cuneate and unequal at the base, the petioles 6-10 mm. long, densely hirsute; smaller leaves lanceolate to suborbicular, 1-3 cm. long, 8-15 mm. wide, acute, subsessile; inflorescences consisting of 1-5 flowers; pedicels 6-10 mm. long, densely hirsute; calyx campanulate, 1.5-2 mm. long, densely hirsute, with 10 linear appendages, these 2.5-3 mm. long, subequal; corolla pale yellow or white, the limb 13-16 mm. wide, parted to near the base, the lobes lanceolate, 6-7 mm. long, pilose with multicellular hairs externally; stamens equal, the filaments 1.5 mm. long, the anthers 3-4 mm. long, acute; style 5-6 mm. long, exceeding the stamens by about 1 mm.; berry red, subglobose, glabrous, 5-6 mm. in diameter.

See comments under *Lycianthes inconspicua*.

**Lycianthes armentalis** J. L. Gentry, *Phytologia* 26: 269. 1973.

In advanced deciduous forest, below 1,000 m.; Petén. British Honduras. Southern Mexico, Yucatan Peninsula (type from Quintana Roo, *C. L. & A. A. Lundell 7800*).

A clambering shrub, the branches slender, 1-7 m. long, with short, stipitate-stellate hairs, a few shorter, simple hairs intermixed, the hairs reddish-brown to yellowish-brown; leaves mostly in pairs, unequal in size, similar in shape, elliptic to ovate-elliptic or ovate-lanceolate, sometimes suborbicular, sparsely and inconspicuously short stipitate-stellate pubescent above, densely short stipitate-stellate pubescent below, the hairs yellowish-brown, the larger leaves 4-6.5 (-14.5) cm. long, 2.5-4.5(-6) cm. wide, acute or acuminate, the base obtuse, the petioles 3-12 mm. long; inflorescences consisting of 3-5 flowers, the pedicels 10-16 mm. long, short stipitate-stellate pubescent, with a few shorter, simple hairs intermixed; calyx 3 mm. long, short stipitate-stellate pubescent, with 10 alternately subequal appendages, the long appendages 2.5-3.5 mm. long, the short ones 2-2.5 mm. long; corolla probably white, the limb 15 mm. wide, lobed to the middle, the lobes 3.5 mm. long, sparsely stellate-pubescent externally; stamens unequal, the filaments of the short stamens 1.5 mm. long, the fifth one 3 mm. long, the anthers 3.5-4 mm. long, sparsely stellate-pubescent abaxially or glabrous; style 7.5-8 mm. long, exceeding the long stamen; berry subglobose 7-9 mm. in diameter; seeds 2.2-3 mm. long.

This species has been confused with *Lycianthes sideroxyloides* Schlecht. in herbaria. It differs from that species by its longer calyx appendages, unequal stamens, and fewer flowers in the inflorescences.

**Lycianthes arrazolensis** (Coul. & Donn.-Sm.) Bitter, *Abh. Naturwiss. Vereine Bremen* 24: 388. 1920. *Solanum arrazolense* Coul. & Donn.-Sm. *Bot. Gaz.* 37: 421. 1904.

Moist thickets or forests, sometimes in mixed forests, 1,000-3,000 m.; Alta Verapaz; Chiquimula; Baja Verapaz; Guatemala (type from Arrazola, *Heyde & Lux 4736*); Sacatepéquez; Chimaltenango; Sololá; Quezaltenango; Huehuetenango; Suchitpéquez; San Marcos. Mexico. Honduras.

Erect or subscaudent shrubs, rarely herbaceous, 1-3.5 m. tall, often much branched, the young branches densely pilose, occasionally sparsely pilose or merely puberulent or pilose and puberulent; leaves in pairs or solitary, similar in shape, unequal in size, densely pilose above and below, more densely so below, sometimes velutinous, rarely sparsely pubescent, the larger leaves 6.5-16.5 cm. long, 3-7.5 cm. wide, acuminate, attenuate at the base, equal or unequal, the petioles 5-15(-20) mm. long; smaller leaves 3-8.5 cm. long, 1-3.5 cm. wide; inflorescences consisting of 3-15 flowers, the pedicels 5-20 mm. long; calyx campanulate, 2.5-3 mm. long, with 10 appendages, alternately subequal, the long appendages 1-2 mm. long, the short ones 0.5-1.5 mm. long; corolla white, the limb 1.2-2.5 cm. wide, scarcely lobed, the lobes 1-2 mm. long, densely pubescent externally; stamens unequal, the filaments of the short stamens 1.5-2 mm. long, the fifth one 3-4



FIG. 11. *Lycianthes barbatula*. A, habit,  $\times \frac{1}{2}$ ; B, flower,  $\times 2$ ; C, corolla dissected,  $\times 3$ ; D, calyx, style, and stigma,  $\times 3$ ; E, anther, abaxial view,  $\times 6$ .

mm. long, the anthers of the short stamens 2.5–3 mm. long, the fifth one 2.5–3.5 mm. long; style 7–8.5 mm. long, exceeding the longest stamen about 1 mm.; berry red, globose, 5–6 mm. in diameter; seeds 2–2.5 mm. long, entire.

*Lycianthes arrazolensis* can in most cases be separated from *L. tricolor* on the basis of the more densely pubescent leaves. However, a few specimens are difficult to place. The size and margin of the seeds have proven to be useful characters in separating these species. In *L. arrazolensis* the seeds are 2–2.5 mm. long and entire, whereas in *L. tricolor* the seeds are 3–4 mm. long and slightly notched.

**Lycianthes barbatula** Standl. & Steyerl. Field Mus. Bot. 23: 228. 1947.

Moist or wet thickets or forests, 1,200–2,650 m.; Chimaltenango (Volcán de Fuego); Suchitepéquez (type from Volcán de Santa Clara, *Steyermark 46653*). Endemic.

Shrubs 3–4.5 m. tall, the branches slender, glabrous; leaves thick-membranaceous, mostly in pairs, unequal in size and different in shape, glabrous above, the hairs in tufts in the axis of the mid-vein, sometimes along the mid-vein with long, pale brownish hairs, otherwise glabrous below, the larger leaves elliptic to elliptic-oblong, 5–18 cm. long, 2–6.5 cm. wide, acuminate or acute, short attenuate at the base, sometimes unequal, the petioles 5–20 mm. long; smaller leaves broadly ovate or suborbicular, 1–3 cm. long, 8–20 mm. wide, obtuse or rounded at the apex; inflorescences consisting of 3–6 flowers, the pedicels slender, 2–2.5 cm. long, glabrous; calyx broadly campanulate, 2–2.5 mm. long, glabrous, with 5(–7) linear, subequal appendages, 2–3 mm. long; corolla white, the limb 12 mm. wide, lobed not quite to the middle, glabrous, the lobes lanceolate, about 4 mm. long; stamens equal, the filaments 3 mm. long; anthers 3 mm. long; style 7.5 mm. long, exceeding stamens; berry white, globose, glabrous, nearly 1 cm. in diameter.

*Lycianthes barbatula* has its nearest relative in *L. orogenes* from which it is distinguished by the leaves with hairs in tufts in the axils of the mid-vein below, longer calyx appendages, and longer filaments. Both of these species are rather poorly known. Further collections may warrant the treatment of *L. orogenes* as a synonym of *L. barbatula*.

**Lycianthes ceratocalycia** (Donn.-Sm.) Bitter, Abh. Naturwiss. Vereine Bremen 24: 498. 1920. *Brachistus ceratocalycius* Donn.-Sm. Bot. Gaz. 48: 297. 1909.

Open areas in forests, 1,500–1,766 m., possibly higher; Alta Verapaz (type from near Cobán, *Tuerckheim II 2060*); Quiché; Huehuetenango. Endemic.

A straggling shrub 2 m. tall, the young branches inconspicuously pubescent with minute incurved or subappressed hairs, somewhat scurfy; leaves solitary or

in pairs, then unequal in size, glabrous above and below, the larger leaves narrowly elliptic or lanceolate, 7.5–12 cm. long, 2–3 cm. wide, acuminate, the base attenuate, sometimes inequilateral, the petioles 8–12 mm. long, puberulent; smaller leaves similar or different in shape, 3.5–5 cm. long; inflorescences consisting of 4–12 flowers, rarely solitary, the pedicels 1–2 cm. long, puberulent; calyx campanulate, 3–3.5 mm. long, glabrous, with 5–10 knob-like appendages, these 0.3–0.5 mm. long; corolla pale lavender, the limb 2–2.4 cm. wide, parted to near the base, the lobes lanceolate, 8–12 mm. long, puberulent or nearly glabrous externally; stamens equal, the filaments 3–3.5 mm. long, the anthers 4–5 mm. long, about 2 mm. wide, obtuse at the apex; style about 9 mm. long, exceeding the stamens by 2–3.5 mm.; berry unknown.

*Lycianthes ceratocalycia* is distinguished from other species of the genus in Guatemala by its somewhat scurfy young branches, nodular calyx appendages, broad anthers, and long filaments.

***Lycianthes chiapensis*** (Brandege) Standl. Field Mus. Bot. 11: 173. 1936. *Solanum chiapense* Brandege, Univ. Calif. Publ. Bot. 6: 192. 1915. *L. nyssifolia* Bitter, Fedde Repert. Sp. Nov. 20: 366. 1920 (type from Las Nubes, Suchitepéquez, *Bernoulli & Cario 2397*). *L. chiapensis* var. *sparsistellata* Standl. & Steyerl. Field Mus. Bot. 22: 274. 1940 (type from Cerro Tixixi, north of Jocotán, Chiquimula, *Steyermark 31555*), *syn. nov.*

Usually in dense wet forests, sometimes in mixed forests, 1,300–2,400 m.; Zacapa; Chiquimula; Quezaltenango; Huehuetenango; Suchitepéquez; San Marcos. Mexico (type from Finca Irlanda, Chiapas, *Purpus 7328*).

Vines or scandent shrubs, with short stipitate-stellate, sometimes furcate or branched hairs or essentially glabrous throughout, the slender branches to 6 m. long; leaves solitary or sometimes in pairs, unequal in size, similar or different in shape, usually more densely pubescent below, or glabrous, sometimes the hairs very inconspicuous, the larger leaves narrowly elliptic or lanceolate to lance-elliptic, 3.5–11 cm. long, 1.5–3(–4.5) cm. wide, acuminate or narrowly acute, acute or short attenuate at the base, equal or unequal, the petioles 5–20 mm. long; smaller leaves similar in shape or sometimes suborbicular, 2–5(–8) cm. long, 1–2(–3) cm. wide, acute or obtuse; inflorescences consisting of 2–3(–5) flowers, the pedicels 1.5–2.5 cm. long; calyx campanulate, 3–6 mm. long, with short stipitate-stellate and a few branched hairs or glabrous, with 10 alternately subequal appendages, the long appendages 1.5–2(–4) mm. long, the short ones somewhat lower on the calyx and 0.5–1.5(–3) mm. long; corolla white, the limb 2 cm. wide, lobed to about the middle, pubescent with minute stellate, branched and simple hairs externally; stamens unequal, the filaments of the short stamens 1.5 mm. long, the fifth 2.5 mm. long, the anthers 4.5–5 mm. long; style 7–10 mm. long, shorter than to exceeding the long stamen; berry orange-red, obovoid or subglobose, glabrous, 7–12 mm. in diameter, the seeds 3.5–4.5 mm. long, reticulate-foveate.

More material is required for a better understanding of this highly variable species. *Lycianthes nyssifolia* may prove to be a distinct species.

***Lycianthes ciliolata*** (Mart. & Gal.) Bitter, Abh. Naturwiss. Vereine Bremen 24: 410. 1920. *Solanum ciliolatum* Mart. & Gal. Bull. Acad. Brux. 12, pt. 1: 140. 1845. *L. ciliolata* var. *pratorum* Bitter, l. c. 411 (syntypes from Patal, Baja Verapaz, *Tuerckheim 1434 & II 2317*). *L. guatemalensis* Bitter, l. c. 419 (syntypes from Retalhuleu, *Bernoulli & Cario 2384*; San Sebastian, *Bernoulli & Cario 2404*, Retalhuleu). *Chile cerrano*.

Wet thickets or fields, sometimes in oak-pine woods, 2,400-2,800 m., sometimes lower; Baja Verapaz; Retalhuleu; Huehuetenango. Southern Mexico.

Plants herbaceous, 1 m. tall or less, the stem branched, sparsely pilose, the hairs multicellular and incurved; leaves solitary below, in pairs above, then unequal in size, similar in shape, pilosulous above, sparsely so below, the hairs multicellular, the larger leaves ovate to ovate-lanceolate or ovate-rhomboid, 4.5-12.5 cm. long, 2-6 cm. wide, acuminate or acute, the base attenuate, the petioles 5-15 mm. long, sparsely pilosulous, winged nearly to the base; smaller leaves 3-7 cm. long, 1.5-3.5 cm. wide; inflorescences consisting of a solitary flower, the pedicels sparsely pilosulous or glabrous, reflexed in age, 6-8 cm. long; calyx campanulate, 3.5 mm. long, pilosulous, 10-nerved, the 10 appendages linear-subulate, 5-8 mm. long; corolla white with lavender, the limb 2.5-4(-5) cm. wide, the lobes short, about 2 mm. long, puberulent externally; stamens unequal, the filaments of the short stamens 3-3.5 mm. long, the fifth one 6-7 mm. long, the short anthers 5-5.5 mm. long, the long one 5.5-6 mm. long; style 11 mm. long, slightly shorter than to barely exceeding the longest stamen; berry ellipsoid, 2-3.5 cm. long, apex acute.

*Lycianthes ciliolata* is most likely to be confused with *L. quichensis* in general aspect, but it is readily distinguished by the unequal stamens, ellipsoid fruits, and habit.

*Lycianthes guatemalensis* is known to us only from the original description and a photograph of a syntype. It appears to fall within the morphological range of *L. ciliolata*, however, further collecting may prove it to be a distinct species.

***Lycianthes connata*** J. L. Gentry, *Phytologia* 26: 271. 1973.

Cloud forest, 2,000-3,000 m.; Huehuetenango (type from the Sierra de los Cuchumatanes, Cruz de Limón, *Steyermark 49828*). Mexico (Chiapas).

Shrub 2-7 m. tall, the slender branches sparsely and inconspicuously pubescent, the hairs incurved or glabrous; leaves in pairs or solitary, mostly similar in



FIG. 12. *Lycianthes connata*. A, branch,  $\times \frac{1}{2}$ ; B, fruit,  $\times 2$ , and seeds,  $\times 3$ ; C, calyx,  $\times 2\frac{1}{2}$ ; D, dissected corolla,  $\times 2\frac{1}{2}$ ; E, flower and detail of anther,  $\times 2\frac{1}{2}$ .

shape, unequal in size, sparsely and inconspicuously pubescent above and below, the hairs incurved on the veins below or glabrous, the larger leaves elliptic, 7-15 (-26.5) cm. long, 3-4(-8) cm. wide, acuminate, attenuate at the base, equal or unequal, the petioles 3-10(-40) mm. long; smaller leaves 4-9 cm. long, 2-3.5 cm. wide; inflorescences consisting of 1-4 flowers, the pedicels slender, 2.5-5 cm. long; calyx campanulate, 2.5-3 mm. long, glabrous or sparsely pubescent, with 10 subulate-linear appendages, alternately subequal, connate at their bases, spreading or slightly reflexed, the long appendages 2.5-4 mm. long, the short ones 1-2 mm. long;

corolla white, the limb 2–3 cm. wide, glabrous externally, scarcely lobed, the lobes 2 mm. long; stamens unequal, the filaments of the short stamens 1–2 mm. long, the fifth one 2.5–3 mm. long, the anthers 4.5–5.5 mm. long; style 9.5–10.5 mm. long, exceeding the stamens by about 1.5 mm.; berry orange, globose, 8.5–10 mm. in diameter, the connate appendages strongly reflexed; seeds 2–2.5 mm. long.

A collection from Alta Verapaz, *Tuerckheim 3935*, has been tentatively placed here. It is morphologically similar to *Lycianthes conata* but differs in characters of the calyx appendages. This may prove to be a distinct taxon.

***Lycianthes cuchumatensis*** J. L. Gentry, *Phytologia* 26: 273. 1973.

1,500–2,600 m. Endemic. Huehuetenango (type from Cerro Huitz, Sierra de los Cuchumatanes, *Steyermark 48925*).

A vine, the young branches, petioles, pedicels, and calyces densely pubescent with ferruginous, stellate, short stipitate-stellate and branched hairs; leaves subcoriaceous, solitary, lanceolate to lance-elliptic, 5–10 cm. long, 2–3.5 cm. wide, acuminate, cuneate at the base, equal or unequal, moderately pubescent above, densely so below, especially on the veins, the petioles 5–10 mm. long; inflorescences consisting of 2–4 flowers, the pedicels 1 cm. long; calyx campanulate, 3.5 mm. long with 10 spreading, linear appendages, 1.5 mm. long; corolla limb 1.5 cm. wide, lobed to the middle, the lobes lanceolate, 4 mm. long, densely pubescent with minute stellate hairs externally; stamens equal, the filaments 1 mm. long, the anthers 3.5 mm. long, free, sparsely pubescent below; style 7 mm. long, exceeding the stamens by 1.5 mm.; berry subglobose, glabrous, about 7 mm. in diameter; seeds 2.5–3 mm. long.

Closely related to *Lycianthes limitanea*.

***Lycianthes gongylodes*** J. L. Gentry, *Phytologia* 26: 274. 1973.

Cloud forest, 2,600–3,000 m.; Huehuetenango (type from the Sierra de los Cuchumatanes, 4 miles east of San Mateo Ixatán on road to Barillas, *Breedlove 8771*). Endemic.

Shrubs 1.5–3.5 m. tall, the young branches sparsely puberulent; leaves solitary or in pairs, then similar in shape, unequal in size, puberulent above and below, more densely so below on the veins, the larger leaves elliptic to elliptic-ovate or ovate, 10.5–17.5 cm. long, 3.5–6.5 cm. wide, acuminate, the base shortly attenuate, equal or unequal, the petioles 1–2.5 cm. long; smaller leaves 7–10 cm. long, 3.5–4 cm. wide; inflorescences consisting of 4–8 flowers, the pedicels 1–1.5 cm. long; calyx campanulate, 3 mm. long, glabrous, with 10 knob-like appendages, 0.5 mm. long or less; corolla white, the limb 2 cm. wide, lobed to below the middle, the lobes 6 mm. long, ciliate, sparsely pubescent externally; stamens equal, the filaments 1 mm. long, the anthers 5 mm. long; style 7 mm. long, exceeding the stamens by 1 mm.; berry orange, subglobose, glabrous, about 8 mm. in diameter; seeds 2–2.5 mm. long, reticulate-foveate.



**Lycianthes gorgonea** Bitter, Fedde Repert. Sp. Nov. 20: 364. 1920. *L. cuspidata* (Morton) Standl. & Steyerl. Field Mus. Bot. 23: 18. 1943. *Solanum cuspidatum* Morton in Lundell, Contr. Univ. Mich. Herb. 4: 25. 1940 (type from Arenal-Valentin road, El Cayo District, British Honduras, *Lundell 6172*), *syn. nov.*

Moist or wet thickets, 200–335 m.; Petén (type from Sacluc, *Bernoulli & Cario 2357*); Alta Verapaz. British Honduras.

Erect or scandent shrubs, densely pubescent throughout with the hairs of varying lengths, at least some hairs glandular, the stems slender, 1–3 m. long or tall; leaves mostly in pairs, very unequal in size, different in shape, densely pubescent above and below, the larger leaves ovate-lanceolate, or lanceolate, 6–10 cm. long, 2–4 cm. wide, long acuminate, obtuse or acute at the base, sometimes unequal, the petioles 6 mm. long or less; smaller leaves broadly ovate or suborbicular, 1–3 cm. long, 1–1.8 cm. wide, obtuse or acute, the petioles 2–3 mm. long; inflorescences consisting of 1 or 2 flowers, the pedicels 2.5–3.5 cm. long, slender, densely pubescent; calyx campanulate, 2 mm. long, densely pubescent, with 10 filiform appendages, alternately subequal, densely pubescent, the longest appendages 11–15 mm. long, the shortest ones 9–12 mm. long; corolla white, the limb about 2.5 cm. wide, the lobes broad triangular, about 4 mm. long, sparsely pilose externally; stamens subequal, the filaments 1–1.5 mm. long, anthers coherent, 4–4.5 mm. long; style about 5.5 mm. long; berry red globose, 8–10 mm. in diameter, greatly surpassed by the accrescent calyx appendages.

*Lycianthes gorgonea* is distinguished from other members of the genus in Central America by the following combination of characters: densely pubescent throughout with pale, translucent, simple hairs of varying lengths, at least some hairs glandular (the glands often only discernible with difficulty); leaves mostly in pairs and unequal in shape and size; calyx appendages very long, greatly exceeding the fruits.

A species known only from the Caribbean lowlands.

**Lycianthes hypoleuca** Standl. Trop. Woods 9: 12. 1927.

In advanced forest, usually on limestone hillsides, 150–700 m.; Petén; Alta Verapaz. British Honduras (type from Orange Walk District, *Winzerling V-14*).

A scandent shrub or vine, sometimes an erect shrub, 5 m. tall, the branchlets slender, flexuous, dark reddish brown, when young sparsely tomentose with minute, whitish, stellate hairs; leaves solitary or in pairs, then similar in shape, somewhat smaller in size, green above and appearing glabrous but bearing scattered minute stellate hairs, the lower surface whitish or silvery, densely covered with a minute tomentum of appressed stellate hairs, elliptic or elliptic-ovate, mostly 5–7.5 cm. long, 2–3.5 cm. wide, acute to acuminate, attenuate at the base, the petioles slender, 1 cm. long or less; inflorescences consisting of mostly 2–4

flowers, sometimes only 1, the pedicels slender, 2-3 cm. long, sparsely and minutely stellate pubescent; calyx campanulate, 2.5-3 mm. long, sometimes slightly lobed, sparsely to densely pubescent with minute, stellate hairs, appendages absent; corolla white, the limb about 16 mm. wide, slightly lobed, the lobes lanceolate, the apex pubescent with minute brownish branched hairs externally; stamens equal, the filaments 1.5 mm. long, the anthers 3.5-4 mm. long; style 8.5 mm. long, exceeding stamens by 3-4 mm.; berry red, subglobose, glabrous, 7-8 mm. in diameter.

This species of the Caribbean lowlands can be readily distinguished from the other species of the genus in Central America by the whitish or silvery tomentum of stellate hairs on the lower surface of the leaves.

***Lycianthes inconspicua*** Bitter, Fedde Repert. Sp. Nov. 20:368. 1924. *Chiltepe de montaña*.

In forests, 1,300-1,870 m.; Quezaltenango (type from Santa María, *Bernoulli & Cario 2373*); San Marcos. Endemic.

Shrub 1.5-3.5 m. tall, the branches slender, with appressed and sub-appressed pale yellowish hairs; upper leaves in pairs, very unequal in size, sparsely strigillose above, hirsutulous below, especially on the veins, the hairs subappressed and pale yellow, the larger leaves lanceolate to broadly lanceolate or elliptic to elliptic-oblong, 3-20 cm. long, 1-4.5 cm. wide, acuminate, cuneate at the base, unequal, the petioles 2-10 mm. long; smaller leaves ovate to lanceolate or oblong, 1-7.5 cm. long, 5-25 mm. wide, acute or obtuse, subsessile; inflorescences consisting of 1-3 flowers, the pedicels slender, strigose, solitary, 2-2.5 cm. long; calyx campanulate, 1.5-3 mm. long, strigillose, the 10 appendages subulate-linear, unequal, the alternate ones subequal, 0.4-1 mm. long or appendages 5; corolla white, the limb 9-12 mm. wide, deeply lobed, the lobes lanceolate, 4.5-5 mm. long, sparsely pubescent with appressed and subappressed hairs externally; stamens equal, the filaments 1 mm. long, the anthers 2.5 mm. long; style 3.8-4.5 mm. long, slightly exceeding the stamens; berry red, subglobose, glabrous, about 8 mm. in diameter.

*Lycianthes inconspicua* is apparently related to *L. amatitlanensis*, and is distinguished from that species by the characters listed in the key. It is also found at somewhat higher elevations.

***Lycianthes lenta*** (Cav.) Bitter, Abh. Naturwiss. Vereine Bremen 24: 364. 1920. *Solanum lentum* Cav. Icon. 4: 4, t. 308. 1797. *L. variifolia* Standl. Field Mus. Bot. 4: 259. 1929 (type from Tower Hill, British Honduras, *Karling 13*), *syn. nov.*

Wet to dry thickets, often on rocky slopes, sometimes on sand dunes, near sea level to 1,000 m., rarely higher; Petén; Alta Verapaz; Izabal; Zacapa; El Progreso; Chiquimula; Jalapa; Guatemala; Quezaltenango; Huehuetenango; Jutiapa; Santa Rosa; Escuintla; Re-

talhuleu; San Marcos. British Honduras. Southern Mexico to Costa Rica. Cuba.

A woody vine or slender shrub, the young branches 2-3 m. long, covered with minute, sessile and short stipitate-stellate hairs; leaves solitary or in pairs, then unequal in size, similar in shape, the hairs short stipitate-stellate above and below, more dense and usually velvety and soft to the touch below, sometimes with a few simple and furcate hairs present with the stellate ones, the larger leaves usually ovate to ovate-deltoid or elliptic, sometimes suborbicular or obovate, 2.5-10(-14) cm. long, 1.5-4(-6) cm. wide, acute or sometimes obtuse, usually subcordate to nearly truncate or short attenuate at the base, equal or unequal, the petioles 5-25 mm. long; smaller leaves 2.5-6 cm. long, 1-2.5 cm. wide; inflorescences consisting of 2-6(-9) flowers, the pedicels 1-2 cm. long; calyx campanulate, 2-3.5 mm. long, the hairs sessile-stellate or short stipitate-stellate, the 10 appendages linear-subulate, 2-4 mm. long, alternately subequal; corolla purplish, the limb 2-3.5 cm. wide, shallowly lobed, densely stellate-pubescent externally; stamens unequal, the filaments of the short stamens 1-1.5 mm. long, the fifth one (2.5-)3.5-5.5 mm. long, the anthers of the short stamens 4-5.5 mm. long, the long one (3.5-)4.5-6 mm. long; style about 1 cm. long, exceeding the long stamen by 1.5 mm. to slightly shorter; berry red or orange, 8-12 mm. in diameter; seeds 2-2.5 mm. long, reticulate-foveate.

*Lycianthes lenta* is a wide ranging species; southern Mexico to Costa Rica and Cuba, being collected mostly below 1,000 m. It is quite variable in both leaf shape and pubescence. Bitter (1920) recognized six infraspecific taxa in his treatment of *Lycianthes*. It is confused sometimes with *L. sideroxyloides* Schlecht., a species not known to occur in Central America.

We have included here two collections from British Honduras, *Gentle 3506* and *Schipp 311*. They differ from *Lycianthes lenta* by their white flowers, somewhat larger leaves and more densely pubescent pedicels and calyx. These collections may represent an undescribed taxon.

Known in El Salvador by the names *manzana*, *montes*, *quaco*, and *quesillo*.

***Lycianthes limitanea*** (Standl.) J. L. Gentry, *Phytologia* 26: 275. 1973. *Solanum limitaneum* Standl. *Carnegie Inst. Wash. Publ.* 461: 85. 1935.

Moist or wet thickets or forests, 500-1,800 m.; Izabal; Huehuetenango. British Honduras (type from Camp 33, British Honduras-Guatemala boundary, *Schipp S-681*).

A large, woody vine, unarmed, 10 m. long or less, the thick branches, petioles, pedicels and calyces densely covered with reddish-brown, short stipitate-stellate and stipitate-branched hairs; leaves solitary or sometimes in pairs, similar in

shape, nearly equal in size, the larger leaves broadly ovate to ovate-elliptic, (6.5-)10-17.5 cm. long, (3-)6-9.5 cm. wide, acuminate, rounded at the base and equal, short stipitate-stellate pubescent, lustrous and asperous above, densely covered with reddish-brown, short stipitate-stellate hairs below, especially on the veins; petioles thick, 1-2.5 cm. long; inflorescences few-flowered; corollas unknown; fruiting pedicels thick, 1-2 cm. long; calyx in fruit 6-7 mm. long, 10-12 mm. wide, broadly campanulate, with 5 (?) appendages, 1-1.5 mm. long; fruit yellow, globose, 1-1.5 cm. in diameter, glabrous; seeds 3-3.5 mm. long.

*Lycianthes limitanea* is known from only fruiting specimens. It is closely related to *L. cuchumatanaensis* and is distinguished by the leaf shape and the much larger fruits.

**Lycianthes nitida** Bitter, Abh. Naturwiss. Vereine Bremen 24: 501. 1920. *Solanum calochromum* Blake, Contr. U. S. Natl. Herb. 24: 21. 1922 (type from along trail from Hacienda El Limón to El Paraíso, Copán, Honduras, Blake 7370).

Mostly wet lowland forests, 25-350 m., rarely higher; Izabal; Alta Verapaz (syntypes Cubilquitz, *Tuerckheim II 59* and *Donn.-Sm. 7637*). Huehuetenango. British Honduras. Atlantic coast of Honduras; Costa Rica.

An erect or scandent shrub, usually epiphytic, glabrous throughout, the branches 1-5 m. long; leaves subcoriaceous, lustrous above, in pairs, very unequal in size, different in shape, the larger leaves elliptic to oblong 12-26 cm. long, 4-8.5 cm. wide, acuminate or abruptly acuminate, cuneate and somewhat unequal at the base, sometimes inequilateral, the petioles 1.5-2.5 cm. long; smaller leaves obovate or suborbicular, mostly 4-7 cm. long, 3-5 cm. wide, rounded and often with a short abrupt apex; inflorescences consisting of several flowers, the pedicels 1.2-1.5 cm. long; calyx campanulate, 2-3 mm. long, appendages absent; corolla purple or lavender, sometimes pinkish, the limb 1.6-2.2 cm. wide, parted to near the base, the lobes lanceolate, 6-9.5 mm. long; stamens equal, the filaments about 1 mm. long, the anthers coherent, 6-7 mm. long; style about 1 cm. long; berry orange or red, globose, 6-8 mm. in diameter, glabrous.

*Lycianthes nitida* is characterized by its habit, large subcoriaceous and lustrous leaves that are very unequal in size and different in shape, and by the absence of calyx appendages.

**Lycianthes ocellata** (Donn.-Sm.) Morton & Standl. Field Mus. Bot. 22: 274. 1940. *Solanum sideroxyloides* var. *ocellatum* Donn.-Sm. Bot. Gaz. 14: 28. 1889. *L. sideroxyloides* subsp. *ocellata* Bitter, Abh. Naturwiss. Vereine Bremen 24: 405. 1920. *L. sideroxyloides* var. *transitoria* Bitter, l. c. (type from Pansamala, Alta Verapaz, *Tuerckheim 923*), *syn. nov.*

Wet forests or thickets, sometimes in wet pine forests, 1,260–1,500 m., Alta Verapaz (type from Pansamala, *Tuerckheim 1155*); Quiché; Huehuetenango. Endemic.

Shrub or vine, 3 m. tall, the young branches, petioles, pedicels and calyces densely pubescent with ferruginous, sessile-stellate, short stipitate-stellate and branched hairs; leaves subcoriaceous and lustrous, solitary, lanceolate to ovate, sometimes elliptic-ovate, 5–10.5 cm. long, 2.5–4.5 cm. wide, acuminate, rounded or cuneate at the base, equal, sparsely, short stipitate-stellate pubescent above and below, more densely so on the veins, the petioles 5–15 mm. long; inflorescences consisting of 6–12 flowers, the pedicels about 5 mm. long; calyx campanulate, 3 mm. long, with 10 thick, knob-like, black appendages alternately subequal in size, 0.5–1 mm. long; corolla limb 1.5 cm. wide, lobed to below the middle, the lobes lanceolate, 6 mm. long, densely pubescent with minute stellate hairs externally; stamens equal, the filaments 1 mm. long, the anthers 4 mm. long; style 7 mm. long, exceeding the stamens by 1.5 mm. long; berry subglobose, glabrous, about 7 mm. in diameter; seeds about 2.5 mm. long.

*Lycianthes ocellata* is distinguished from other species in Guatemala by the reddish, stellate pubescence and the black, knob-like calyx appendages.

Variety *transitoria* differs by its more densely pubescent leaves below. The stamens are somewhat unequal but this could be due to immaturity. Further collections may warrant the recognition of variety *transitoria* as a distinct species.

***Lycianthes orogenes*** Standl. & Steyerl. Field Mus. Bot. 23: 229. 1947.

Moist or wet forests or thickets, sometimes in mixed forest, 1,000–1,800 m., rarely higher; Sacatepéquez; Chimaltenango (type from Volcán Fuego, *Steyermark 52104*); Quezaltenango. Endemic.

Shrubs 1.5–3 m. tall or sometimes a small tree, glabrous throughout, the branches slender; leaves in pairs, unequal in size, mostly different in shape, membranaceous or thick-membranaceous, the larger leaves elliptic or oblong-elliptic, sometimes lance-elliptic, 7–19.5 cm. long, 3–5.5 cm. wide, acuminate, attenuate at the base, the petioles 1–2.5 cm. long; smaller leaves ovate to lance-ovate or elliptic, 3–5.5 cm. long, 2–3 cm. wide, acute, the petioles 5 mm. long or less; inflorescences consisting of 3–5 flowers, the pedicels slender, 2.5–3.5 cm. long; calyx campanulate, 2.5–3 mm. long, with 5 linear, subequal appendages, 1–1.5 mm. long; corolla white, the limb 7.5–8 mm. wide, lobed not quite to the middle, the lobes lanceolate, 2 mm. long; stamens equal, the filaments 1.5–2 mm. long, the anthers about 3.5 mm. long; style 6.5 mm. long, exceeding the stamens; berry green, globose, about 6 mm. in diameter.

Apparently closely related to *Lycianthes barbatula*. See comments under that species.

**Lycianthes purpusii** (Brandege) Bitter, Abh. Naturwiss. Vereine Bremen 24: 382. 1920. *Solanum purpusii* Brandege, Univ. Calif. Publ. Bot. 6: 62. 1914. *L. purpusii* var. *extensidentata* Bitter, Fedde Repert. Sp. Nov. 20: 365. 1924 (type from San Francisco Miramare, Quezaltenango, *Bernoulli & Cario 2334*). *L. vulpina* Standl. Field Mus. Bot. 4: 321. 1929 (type from Lancetilla Valley near Tela, Honduras, *Standley 54356*), *syn. nov.*

Moist or wet forests, 50–1,000 m.; Alta Verapaz; Izabal; Quezaltenango. British Honduras. Mexico (Chiapas). Atlantic coast of Honduras.

A scandent shrub or vine, 3–8 m. long, pubescent with stiff and spreading, reddish-brown or yellowish, long, stipitate furcate and variously branched hairs, simple hairs sometimes present among the branched ones; leaves in pairs or solitary, unequal in size, pubescence of furcate and simple hairs above, the hairs mostly short stipitate stellate and furcate below, the larger leaves elliptic or ovate, sometimes obovate, 9–18 cm. long, 4–8 cm. wide, acuminate, cuneate or rarely subcordate at the base, unequal; smaller leaves similar in shape, 1.5–3.5 cm. long, 1.5–2.5 cm. wide, subsessile or petiole to 5 mm. long; inflorescences consisting of 1–3 flowers, the pedicels slender, 1–2 cm. long; calyx campanulate, 2–2.5 mm. long, densely pubescent with simple, furcate and dichotomously branched hairs, the 10 linear appendages, 8–12 mm. long, subequal or unequal, accrescent in fruit; corolla white, the limb 2.5–3 cm. wide, scarcely lobed, the lobes 1–2 mm. long, externally pilosulous; stamens unequal, the filaments of the short stamens 1–1.5 mm. long, the fifth one 4–4.5 mm. long, the anthers of the short stamens coherent on adjacent sides, 4.5–5 mm. long, the long anther 5–6 mm. long; style about 11 mm. long, exceeding the long stamen by about 2 mm.; berry red or orange-red, globose, 1–1.5 cm. in diameter, exceeded by the accrescent calyx appendages.

*Lycianthes purpusii* is separated from other species in Guatemala by its reddish-brown or yellowish, furcate and dichotomously branched hairs, the shallowly lobed corolla limb, and the long calyx appendages.

**Lycianthes quichensis** (Coul. & Donn.-Sm.) Bitter, Abh. Naturwiss. Vereine Bremen 24: 428. 1920. *Solanum quichense* Coul. & Donn.-Sm. Bot. Gaz. 37: 422. 1904. *L. obliquifolia* Standl. Field Mus. Bot. 23: 101. 1940 (type from Volcán de Tacaná, Chiapas, *Matuda 2938*). *Chilete*; *coshel*; *coxel*; *flor de rosa*; *quilete*; *tomatillo blanco* (fide Aguilar).

Moist or wet forests or thickets, often in *Cupressus* or *Abies* forests, 2,200–3,900 m.; Baja Verapaz; Quiché; Huehuetenango; Sacatepéquez; Chimaltenango; Sololá; Totonicapán; Quezaltenango; San Marcos. Mexico (Chiapas).

An erect shrub 1-5 m. tall, much branched, the young branches pilose, the hairs multicellular, spreading or incurved; leaves membranaceous, in pairs, unequal in size, similar in shape or the leaves solitary, pilose, often more densely pubescent below, especially on the veins, ciliolate, the larger leaves lanceolate to ovate or elliptic, sometimes broadly ovate, 5-20(-25) cm. long, 2.5-8(-14) cm. wide, acuminate or acute, cuneate at the base, equal or unequal, the petioles 1-6 cm. long; smaller leaves 2.5-9 cm. long, 1.5-4 cm. wide; inflorescences consisting of 1-2 flowers, the pedicels pilose, 2-6 cm. long; calyx campanulate, 3.5-4 mm. long, pilose, 10-nerved, the 10 appendages linear-subulate, the alternate ones subequal, the long appendages 3-5 mm. long, the short ones 2-4 mm. long; corolla lavender to purple, sometimes blue, the limb 2.5-3.5 cm. wide, puberulent externally, scarcely lobed, the lobes about 1 mm. long; stamens equal, the filaments 2 mm. long, the anthers 5-6 mm. long; style 1-1.2 cm. long, exceeding stamens by 1-2 mm.; berry red or orange-red, subglobose, 8-10 mm. in diameter.

A shrubby, montane species of Chiapas and western Guatemala with large and brightly colored corollas.

**Lycianthes stephanocalyx** (Brandege) Bitter, Fedde Repert. Sp. Nov. 18: 315. 1922. *Solanum stephanocalyx* Brandege, Univ. Calif. Publ. Bot. 6: 374. 1917. *S. solitarum* Blake, Contr. U. S. Natl. Herb. 24: 21. 1922 (type from Río Mojanales, Izabal, Blake 7489). *L. solitaria* Standl. J. Wash. Acad. Sci. 17: 15. 1927, *syn. nov.* *S. hondurensis* Morton in Lundell, Contr. Univ. Mich. Herb. 4: 26. 1940 (type from Chalillo Crossing, El Cayo District, British Honduras, Lundell 6512). *L. hondurensis* Standl. & Steyerl. Field Mus. Bot. 23: 18. 1943, *syn. nov.*

Wet thickets, 150 m. or below; Izabal. British Honduras. Southern Mexico. Honduras.

An erect herb, sometimes suffrutescent, 1-3 m. tall, the young branches sparsely pubescent with small, incurved hairs, glabrate in age; leaves membranaceous, in pairs, unequal in size, similar or sometimes different in shape or the leaves solitary, pilosulous to nearly glabrous above, pubescent with incurved or spreading hairs below, ciliolate, the larger leaves elliptic to lance-elliptic or ovate to ovate-lanceolate, 5-15 cm. long, 2-5 cm. wide, acuminate, short attenuate or cuneate at the base, the petioles 0.5-2(-5) cm. long; smaller leaves 1.5-5 cm. long, 0.8-2.5 cm. wide; inflorescences consisting of a single flower, the pedicels slender, 2.5-5.5 cm. long, glabrous to sparsely pubescent; calyx campanulate, 2.5-3 mm. long, inconspicuously 10-ribbed, sparsely pubescent on the ribs, with 10 alternately subequal appendages, the longest appendages 5 mm. long, the shortest ones 3.5-4.5 mm. long, pubescent with incurved or spreading hairs; corolla white, the limb 2-2.5 cm. wide, lobed about one-half way to the base, glabrous; stamens equal, the filaments 1 mm. long, the anthers coherent, 6-6.5 mm. long; style 6-6.5 mm. long; berry red, subglobose, 5-6 mm. in diameter; seeds 1.5-2 mm. long.

*Lycianthes stephanocalyx* is a species of the Caribbean lowlands.

**Lycianthes synanthera** (Sendt.) Bitter, Abh. Naturwiss. Vereine Bremen 24: 499. 1920. *Solanum heteroclitum* Sendt. Flora 29: 193 [177]. 1846. *S. synantherum* Sendt. l. c. 194[178]. *Brachistus escuintlensis* Coult. Bot. Gaz. 16: 144. 1891 (type from Escuintla, Donn.-Sm. 2267). *S. mitratum* Greenm. in Donn.-Sm. Bot. Gaz. 37: 211. 1904. *L. heteroclita* Bitter, l.c. 494, *syn. nov.* *L. heteroclita* subsp. *coalescens* Bitter, l.c. 496 (syntypes from Alta Verapaz). *L. mitrata* Bitter, l.c. 500. *Bassovia escuintlensis* Standl. Contr. U.S. Natl. Herb. 23: 1304. 1924. *S. escuintlense* A. T. Hunziker, Kurtziana 5: 166. 1969. *L. escuintlensis* D'Arcy, Phytologia 25: 116. 1973, *syn. nov.* *Chilete dulce*; *chilete*.

Wet thickets or forests, just above sea level to 900 m., rarely higher; Petén; Alta Verapaz; Izabal; Quezaltenango; Huehuetenango; Retalhuleu; Escuintla; Santa Rosa. Based on material collected by Friedrichsthal supposedly in Guatemala, *Friedrichsthal 1292*. British Honduras. Southern Mexico to Costa Rica. Panama.

Erect herbs or shrubs, 1–3.5 m. tall, sometimes a small tree, the young branchlets inconspicuously puberulent; leaves solitary or in pairs, then unequal in size, similar in shape, minutely puberulent on the veins above and below, sometimes sparsely so, the larger leaves ovate-lanceolate to broadly ovate or elliptic, sometimes narrowly elliptic, 12–30 cm. long, 4.5–15 cm. wide, acuminate, the base attenuate, sometimes unequal, the petioles 1–7 cm. long, minutely puberulent; smaller leaves 3.5–18 cm. long, 2–10 cm. wide; inflorescences consisting of 4–12 flowers, the pedicels 1–2 cm. long, inconspicuously puberulent; calyx campanulate, 2–3 mm. long, appendages absent, sometimes inconspicuously 10-nerved; corolla white or lavender, the limb 1.5–3 cm. wide, parted to just below the middle, the lobes oblong-lanceolate, 6–9.5 mm. long, inconspicuously puberulent externally, pilose at the apex; stamens equal, the filaments 1.5–2 mm. long, the anthers coherent below or sometimes for their entire length or free, 5–6.5 mm. long; style 10–12.5 mm. long, exceeding stamens by 3–5 mm.; berry red or orange, subglobose, glabrous, 7–10 mm. in diameter.

A more thorough study is required for a better understanding of this complex. *Brachistus escuintlense* has been treated as a distinct species by D'Arcy (1973).

Called *quilete* in Chiapas.

**Lycianthes tricolor** (Sessé & Moc. ex Dun.) Bitter, Abh. Naturwiss. Vereine Bremen 24: 385. 1920. *Solanum tricolor* Moc. & Sessé ex Dun. in Poirer Encycl. Suppl. III. 756. 1813. *L. tricolor* var. *flavidipila* Bitter, l.c. 387 (syntypes from Volcán de Agua, *Lehmann 1486*; Santa María, *Raimann s. n.*, Guatemala), *syn. nov.* *L. tricolor* var. *primoaurata* Bitter, l.c. 388 (type from Volcán de Fuego, *Salvin s. n.*, Chimaltenango), *syn. nov.*



Wet thickets or forests, 1,800–2,500 m., sometimes higher; Quiché; Huehuetenango; Jalapa; Sacatepéquez; Chimaltenango; Sololá; Escuintla; San Marcos. Southern Mexico. El Salvador.

A vine or shrub, sometimes scandent, 1–3 m. tall, the young branches densely pubescent with incurved or appressed hairs, sometimes the hairs spreading and appressed; leaves in pairs or solitary, similar in shape, unequal in size, sparsely hirsutulous or pilosulous above and below, the hairs often pale yellowish, the larger leaves 6.5–15(–18.5) cm. long, 3–7(–9) cm. wide, acuminate or acute, the base short attenuate, equal or unequal, the petioles 5–25(–40) mm. long; smaller leaves 2.5–8(–11) cm. long, 1.5–3(–5) cm. wide; inflorescences consisting of 3–6(–10) flowers, the pedicels (1.5–)2–3 cm. long; calyx campanulate, 3 mm. long, with 10 alternately subequal appendages, the long appendages (1.5–)2.5–4 mm. long, the short ones (1–)2–3.5 mm. long; corolla white or purplish, the limb 1.5–2.5 cm. wide, densely pubescent externally, scarcely lobed, the lobes about 1 mm. long; stamens unequal, the filaments of the short stamens 1.5–2 mm. long, the fifth one 3.5–4 mm. long, the anthers 3.5–4 mm. long; style about 8 mm. long, exceeding the longest stamen by about 1 mm.; berry red, globose, about 1 cm. in diameter, the seeds 3–4 mm. long, slightly notched.

See comments under *Lycianthes arrazolensis*.

### *Lycianthes* sp.

Known only from the following collection (Huehuetenango, Paso del Boquerón, along Río Trapichillo, below La Libertad, 1,200–1,300 m., *Steyermark 51177*).

Shrub, 1–1.5 m. tall, the branches sparsely pubescent with appressed or subappressed hairs, glabrescent; leaves mostly in pairs, unequal in size, similar or different in shape, sparsely and inconspicuously pubescent above and below, the larger leaves 8–14.5 cm. long, 3–5 cm. wide, acuminate, long-attenuate at the base, the petioles 1–1.5 cm. long; smaller leaves 4.5–7 cm. long, 2–4.5 cm. wide; inflorescences consisting of 2 flowers, the pedicels 1.5–2 cm. long, sparsely pubescent with appressed hairs; immature fruiting calyx 3 mm. long, pubescent with appressed hairs, 10-nerved, the 10 appendages alternately subequal, the long ones 9.5–11 mm. long, the short ones 5–6.5 mm. long; berry immature, apparently globose.

This specimen seems to represent an undescribed species but we hesitate to describe it on inadequate material.

### LYCOPERSICON Miller

*Reference:* C. H. Muller, A revision of the genus *Lycopersicon*, U. S. Dept. Agr. Misc. Publ. No. 382. 29 pp. 1940.

Herbs; leaves alternate, odd-pinnate or sometimes bipinnate, petiolate, interstitial leaflets present, the leaflets shallowly lobed, serrate, crenate, or rarely entire, petiolulate; inflorescences cymose or racemose, lateral and opposite the leaves or internodal; pedicels articulate near or above the middle; calyx campanulate,

5-parted nearly to the base, the lobes lanceolate, often accrescent in fruit; corolla subrotate, yellow, the limb shallowly lobed or parted (in ours); stamens 5, rarely more, subsessile or with short filaments; anthers coherent, forming a tube around the style, the thecae elongate, apically appendaged with sterile tips, abaxially dehiscent by longitudinal slits; ovary bilocular, the ovules numerous, the disk inconspicuous; style elongate, included in the anther tube or exerted; stigma capitate; fruit a berry, globose, fleshy and juicy, usually red or yellow; seeds numerous (in ours), compressed, each enclosed in a mucilaginous sheath, nearly glabrous or pubescent; embryo curved.

A genus of about eight species; native of western South America. It is of great economic importance because it contains the common tomato, *Lycopersicon esculentum*. Only the following species is known in North America.

***Lycopersicon esculentum*** Miller, Gard. Dict. ed. 8. *Lycopersicon* No. 2, 1868. *Solanum lycopersicum* L. Sp. Pl. 185. 1753. *Tomate*; *Pix* (Quiché); *Pixb*, *Pixp* (Quiché, Poconchí); *Ixpix* (Chuje); *Xcoya* (Mame); *Pai'c* (Ixil); *Tomate de rinón*; *Icpic*.

A native of South America but now widely cultivated in nearly all parts of the world. It is grown in almost all inhabited parts of Guatemala except at higher elevations.

The tomato is one of the most important vegetables in Guatemala. They are added as flavoring to almost every kind of dish, and also cooked alone, or eaten in salads. At a pension in Quezaltenango a favorite dessert is made by boiling whole well-shaped tomatoes in thin syrup, in such a manner that each fruit preserves its shape.

***Lycopersicon esculentum* var. *cerasiforme*** (Dunal) A. Gray, Syn. Fl. 2, pt.1: 226. 1886. *L. cerasiforme* Dunal, Hist. Solan. 113. 1813. *Tomate*.

Dry or damp thickets, or in fields or waste ground, especially about dwellings, just above sea level to 2,500 m.; Zacapa; Chiquimula; Jalapa; El Progreso; Guatemala; Sacatepéquez; Quezaltenango; Jutiapa; Santa Rosa; Escuintla; Retalhuleu, also probably in most of the other departments. Mexico to Costa Rica. West Indies. South America.

An herb, the stems somewhat succulent, puberulent to pilose with jointed hairs and glandular-puberulent; leaves large, mostly 10–25 cm. long, petiolate, inconspicuously to densely puberulent; interstitial leaflets present; leaflets mostly 9, ovate to lanceolate, mostly 2–8 cm. long, 0.5–3 cm. wide, repand to parted, apex acute, petiolulate; inflorescence racemose; peduncle 1–3.5 cm. long, pilose with



FIG. 13. *Lycopersicon esculentum* var. *cerasiforme*. A, habit,  $\times \frac{1}{2}$ ; B, fruit,  $\times 1$  and  $\times 1\frac{1}{2}$ ; C, flower,  $\times 3\frac{1}{2}$ ; D, corolla showing connivent anthers,  $\times 3\frac{1}{2}$ ; E, stamen tube dissected showing sterile tips of the anthers,  $\times 3\frac{1}{2}$ ; F, calyx and pistil,  $\times 3\frac{1}{2}$ .

jointed hairs and glandular-puberulent; pedicels 5–15 mm. long, pilose with jointed hairs and glandular-puberulent; calyx deeply parted, the lobes 3.5–5 mm., lanceolate, accrescent in fruit, acute; corolla parted to below the middle, the lobes 5–6 mm. long, narrowly lanceolate, reflexed; anthers 5–6 mm. long; style included or exerted beyond the anther tube; fruit a berry, globose, red or yellow, mostly 1.5–2 cm. in diameter.

Variety *cerasiforme* differs from variety *esculentum* by its small cherrylike fruits, mostly 1.5–2 cm. in diameter. The fruits of this small tomato are abundant in all markets. They are utilized for flavoring food.

### MARGARANTHUS Schlechtendal

Herbs; leaves alternate, solitary or in pairs, entire, petiolate; inflorescences axillary, consisting of a single flower, the flowers pedicellate; calyx campanulate, 5-lobed, accrescent and inflated in fruit; corolla small, pentangular-urceolate, purplish or greenish-yellow, minutely 5-dentate; stamens 5; anthers longitudinally dehiscent; ovary bilocular, on a short gynophore, the ovules numerous, the disk inconspicuous; style filiform, included; stigma discoid; fruit a berry, entirely enclosed in the inflated calyx; seeds numerous, compressed; embryo strongly inwardly curved.

A genus consisting of only one species, ranging from the southwestern United States to Mexico, Honduras, and West Indies.

*Margaranthus solanaceus* Schlecht. Ind. Sem. Hort. Halensis 8. 1838.

Moist thickets and weedy fields, 800–1,000 m.; Southwestern United States; Mexico; (Dept. Morazán) Honduras; West Indies.

Annual herbs, erect or decumbent, the stems 1.5–4 dm. long, sometimes longer; leaves ovate to lanceolate, 2–6 cm. long, 0.5–1.5 cm. wide, acute or acuminate, the base unequal or equal, cuneate, generally glabrous, ciliate, the petioles 5–20 mm. long; flowers with recurved pedicels, 2–3 mm. long; calyx 1.5–2 mm. long, appressed-pubescent, the lobes about 0.5 mm. long, acute; corolla 3.5–4 mm. long, internally pubescent with multicellular hairs, the lobes minute; stamens included; filaments about 1 mm. long; anthers blue, 1–1.2 mm. long; berry ovoid, 6–10 mm. in diameter, included in the accrescent calyx, the calyx 1–1.5 cm. long; seeds about 2 mm. long, suborbicular, reticulate-foveate.

*Margaranthus* is closely related to *Physalis*. Fruiting specimens of *Margaranthus* cannot be distinguished from some of the small fruiting species of *Physalis*, however, the pentangular-urceolate corolla of *Margaranthus* is quite different from those of *Physalis*.

MARKEA L. C. Richard

*Merinthopodium* Donn.-Sm. Bot. Gaz. 33: 11. 1897.

*Reference:* J. Cuatrecasas, Notes on American Solanaceae. Fedde Repert. Spec. Nov. 61: 74-86. 1958.

Shrubs, mostly epiphytic, and often scandent, glabrous or pubescent, the hairs simple; leaves alternate, sometimes in pairs and entire, often coriaceous, petiolate; inflorescences cymose or sometimes the flowers solitary, often pendent on long cord-like peduncles, the flowers large; calyx campanulate, 5-parted; corolla funnel-form, white, yellow, green, or orange, sometimes red, the limb 5-lobed, the lobes valvate or imbricate in bud, the tube ampliate above; stamens 5, inserted below the middle of the corolla tube, exserted or included; filaments filiform, pubescent below; anthers oblong or linear, longitudinally dehiscent; ovary bilocular, the ovules numerous, the disk conspicuous or inconspicuous; style elongate, dilated above, included or exserted; stigma bilobed; fruit a berry, leathery, often almost dry; seeds numerous; embryo somewhat curved or almost straight.

About 20 species in the American tropics. A few more species are known from southern Central America.

Corolla 10 cm. long. . . . . *M. campanulata*.  
 Corolla 7.5 cm. long or less.

Inflorescence consisting of a cluster of flowers produced at the end of long pendent, cord-like peduncles.

Calyx 3-3.5 cm. long, membranaceous, the lobes lanceolate to narrowly lanceolate, the apex narrowly long attenuate . . . . . *M. internexa*.

Calyx 1.2-1.6 cm. long, subcoriaceous, the lobes oblong lanceolate, the apex acute or short-acuminate. . . . . *M. neurantha*.

Inflorescence cymose or rarely the flowers solitary, not produced at the end of long-pendent, cord-like peduncles.

Calyx 3.5-4 cm. long, 5-angled; pedicels 4-7.5 cm. long; branches hirsute, tuberculate in age. . . . . *M. uniflora*.

Calyx 1-1.5 cm. long, not angled; pedicels 0.5-1 cm. long; branches glabrous. *M. megalandra*.

**Markea campanulata** (Donn.-Sm.) Lundell, Phytologia 1: 339. 1939. *Merinthopodium campanulatum* Donn.-Sm. Bot. Gaz. 47: 257. 1909.

Known only from the type collected near Cobán, Alta Verapaz, 1,600 m., *Tuerckheim II 2391*. Endemic.

An epiphytic shrub (?), the leaves unknown, but said to be oval, coriaceous and acute; pedicels 8 cm. long, sparsely and inconspicuously pubescent; calyx 5.5 cm. long, coriaceous, 5-angled, parted to near the base, the lobes lanceolate, apex short acuminate; corolla greenish, 10 cm. long, glabrous externally, the tube 2.5 cm. long, the campanulate portion 5.2 cm. long, the lobes lanceolate, 2.2 cm. long; stamens short-exserted, inserted about 2.5 cm. above the base of the corolla; filaments 4.5 cm. long, densely villous at their bases; anthers 1.7 cm. long; style 8 cm. long; fruit unknown.

This is a poorly known species, described from incomplete material. The type collection consists of a single flower.

**Markea internexa** (Blake) Lundell, *Phytologia* 1: 340. 1939.  
*Merinthopodium internexum* Blake, *Contr. Gray Herb.* 52: 85. 1917.

Wet forests, 300–400 m.; Alta Verapaz (type from Cubilquitz, *Tuerckheim 8435*). Endemic. Known only from the type area.

An epiphytic shrub, the young branches densely or sparsely hispidulous, the bases of the hairs much swollen, becoming tuberculate in age; leaves subcoriaceous, elliptic to obovate, 9.5–18 cm. long, 4.5–6.5 cm. wide, glabrous above and below, apex abruptly acuminate, obtuse to acute at the base, the petioles 5–15 mm. long, glabrous or sparsely pubescent; flowers few, produced at the end of a long cord-like, pendent peduncle; peduncle 22.5–32 cm. long, densely hispidulous, the bases of the hairs much swollen, becoming tuberculate in age; pedicels slender below, thickened above, 3–4 cm. long, sparsely and inconspicuously puberulent; calyx 3–3.5 cm. long, membranaceous, parted to near the base, the lobes lanceolate to narrowly lanceolate, apex narrowly attenuate and puberulent; corolla probably greenish, 5.5–7 cm. long, 15-nerved, the nerves inconspicuously puberulent externally, the tube 2–2.5 cm. long, the campanulate portion 2.5–3.5 cm. long, the lobes triangular, 1 cm. long, acute; stamens short-exserted, attached about 1 cm. above the base of the tube; filaments 3.5 cm. long, villosulous at their bases, the staminal traces villosulous; anthers 1 cm. long; style equalling the stamens; fruit unknown.

**Markea megalandra** (Dunal) D'Arcy, *Phytologia* 25: 116. 1973.  
*Metternichia megalandra* Dunal in DC. *Prodr.* 13, pt. 1: 595. 1852.  
*Markea leucantha* Donn.-Sm. *Bot. Gaz.* 31: 116. 1901. *Merinthopodium leucanthum* Blake, *Contr. Gray Herb.* 52: 77. 1917, *syn. nov.*

In moist or wet forests, 1,360 m.; Alta Verapaz. Costa Rica. Panama. Northern South America.

An epiphytic shrub, the branches stout, glabrous; leaves coriaceous, often lustrous, elliptic to obovate, mostly 6.5–15 cm. long, 2.5–6.5 cm. wide, inconspicuously glandular-punctate above, inconspicuously glandular-punctate and punctate below, apex acute to obtuse or rounded, sometimes abruptly short-acuminate, acute or obtuse to nearly rounded at the base, the petioles stout, 5–10 (–15) mm. long, glabrous; inflorescences consisting of flowers clustered at the ends of leafy branches, the flowers often very numerous; pedicels stout, 5–10 mm. long, pilosulous, sometimes densely so; calyx coriaceous, 1–1.5 cm. long, parted to just below the middle or to near the base, the lobes oblong-lanceolate or lanceolate, 6–10 mm. long, pilosulous, the hairs sometimes sparse, short-acuminate; corolla white or yellow, 5–6.5 cm. long, 5-nerved, glabrous externally, the tube about 7 mm. long, the campanulate portion 3–4.5 cm. long, the lobes rounded, 1.2–1.5 cm. long; stamens exserted, inserted about 6 mm. above the base of the corolla tube; filaments 3.5–4 cm. long, densely villous at their bases; anthers 5–6 mm. long; style 4–5 cm. long; fruit leathery, 1–1.5 cm. long; seeds numerous, 2.5–3 mm. long.

*Markea megalandra* is evidently rare in Guatemala, but abundant in the mountains of Costa Rica. It is a very beautiful plant when in full flower. The flowers are strongly fragrant.



C. E. Exxon, del.

B. Meise, Lith. Boston.

FIG. 14. *Markea neurantha*. Plate I from the Botanical Gazette for the year 1897, used by permission of the University of Chicago. Magnifications may be calculated from the description.

**Markea neurantha** Hemsley, Biol. Cent.-Am. Bot. 2: 429. 1882.  
*Merinthopodium neuranthum* Donn.-Sm. Bot. Gaz. 23: 12, t. 1. 1897.  
*M. leptesthemum* Blake, Contr. Gray Herb. 52: 86. 1917 (type from Toledo, British Honduras, Peck 508).

Wet or moist forests, 65 m. or less, Izabal, *Steyermark 39458*.  
British Honduras. Honduras. Costa Rica.

An epiphytic shrub, the branches scarred by the prominent leaf scars, hispidulous, the bases of the hairs much swollen, becoming tuberculate in age or sometimes glabrous; leaves subcoriaceous, elliptic to obovate, 10–25 cm. long, 3–8 cm. wide, glabrous above and below, apex abruptly long acuminate, acute to short attenuate at the base, the petioles 1–4 cm. long, glabrous; flowers few, produced at the end of a long cord-like, pendent peduncle; peduncle 10–70 cm. long, rarely shorter, glabrous (in ours) or hispidulous, the bases of the hairs much swollen, becoming tuberculate in age, the rachis scarred by the prominent pedicel scars, sometimes branched, hispidulous; pedicels slender below, thickened above, 1–3.5 cm. long, puberulent or nearly glabrous; calyx 1.2–2 cm. long, subcoriaceous, puberulent to nearly glabrous, parted nearly to the base, the lobes oblong, 1–1.4 cm. long, apex acute or short acuminate; corolla green or yellowish-green, 3.5–5 cm. long, 15-nerved, inconspicuously puberulent and glandular externally, the tube 2–3.5 cm. long, the lobes oblong-lanceolate, 0.8–1.5 cm. long, acute or obtuse, the sinuses of the corolla lobes bilobulate or lobulate; stamens short-exserted, attached about 3 mm. above the base of the tube; filaments 2–3.5 cm. long, densely villous at the base and for about one-third their length; anthers 7.5–8.5(–12) mm. long; style 3–3.5 cm. long; fruit 1.5–1.8 cm. long, ovoid; seeds 2 mm. long.

*Markea neurantha* has been collected only a few times in Guatemala and British Honduras but it is very common in Costa Rica. Collectors have often called this epiphytic shrub a large tree because they failed to note the true source of the long, pendent, cord-like peduncles.

**Markea uniflora** Lundell, Phytologia 1: 340. 1939.

In wet forests, 2,000–3,000 m.; San Marcos, southeast slopes of Volcán de Tacaná, *Steyermark 36465*. Mexico (Chiapas), the type from Ciquihuite, Volcán de Tacaná, 2,800 m., *Matuda 2816*.

An epiphytic scandent shrub, the young branches hirsute, the hairs multicellular and with the basal cell swollen, the branches becoming tuberculate in age; leaves coriaceous, elliptic or obovate-elliptic, 4–12 cm. long, 2–6 cm. wide, inconspicuously glandular, glabrate in age above, hirsute mostly on the veins and inconspicuously punctate and glandular-punctate below, apex acute to obtuse or nearly rounded, obtuse or short attenuate at the base, the petioles 5–15 mm. long, sparsely hirsute; inflorescences consisting of a solitary flower or in open few-flowered cymes; pedicels 4–7.5 cm. long, sparsely hirsute, slender at the base, thickened above; calyx 3.5–4 cm. long, coriaceous, 5-angled, parted to below the middle, the lobes lanceolate, 2.5–3 cm. long, sparsely and very inconspicuously glandular, apex



acute or very short acuminate; corolla pale green, 7.5 cm. long, 5-nerved, the nerves pilose externally, the tube 2 cm. long, the campanulate portion 3.5 cm. long, the lobes ovate, 2 cm. long, acute or rounded; stamens short-exserted, inserted 2 cm. above the base of the corolla; filaments 4 cm. long, densely villous at their bases; anthers about 1.5 cm. long; style about 6 cm. long; ovary glabrous, said to be trilocular, multiovulate; fruit unknown.

### MELANANTHUS Walpers

*Microschwenckia* Hemsley, Biol. Cent.-Am. Bot. 2: 438, t. 57A. 1882.

Herbs; leaves alternate, sometimes fasciculate, entire, sessile; inflorescence racemose or spike-like, the flowers small and inconspicuous; calyx tubular, 5-lobed; corolla tubular, purplish-black, the lobes 3-lobulate with the median lobule linear, the 2 shorter lateral lobules only slightly fused with the adjoining lateral lobes of each adjacent corolla lobe, thus the corolla appearing to be 15-lobed, but actually 5-lobed; stamens 4, didynamous, the 2 lower ones sometimes sterile, included; anthers free, longitudinally dehiscent; filaments filiform, inserted below the middle of the corolla tube; ovary unilocular, uniovulate, the disk cupular; style smooth and slender, included; stigma capitate; capsule septical and tardily dehiscent, ovate, oblique, glabrous and tuberculate; 1-seeded; embryo straight.

A genus of about five species, ranging from southern Mexico to Honduras, Cuba, and Brazil.

**Melananthus guatemalensis** (Benth.) Solereder, Ber. Deutsch. Bot. Ges. 9: 84. 1891. *Microschwenckia guatemalensis* Benth. ex Hemsl. Biol. Cent.-Am. Bot. 2: 438, t. 57A. 1882. *Schwenckia oxycarpa* Robinson, Proc. Am. Acad. 45: 400. 1910 (type from near the Sibun River, British Honduras, Peck 417A), *syn. nov.*

Grassy plains or fields, sometimes in oak or pine forests, 800–1,500 m.; Jalapa; Jutiapa (type from Llanos de Jutiapa, Bernoulli 716); Huehuetenango. British Honduras. Southern Mexico. Honduras. Cuba and Brazil.

Slender annual plants, 1–3.5 dm. tall, stem pubescent with inwardly curved hairs; leaves linear or narrowly elliptic, glabrous, only the midvein conspicuous, 5–15 mm. long, 2 mm. wide or less, acute; inflorescence racemose or spike-like, the flowers subsessile; calyx 1–1.5 mm. long, puberulent, the lobes less than 0.5 mm. long; corolla purplish-black, 2.5–3 mm. long, the tube slender, 0.5 mm. wide; anthers 2-celled; filaments 0.7–1.2 mm. long; style 1.5 mm. long; capsule hard, 2–2.5 mm. long, acute.

*Melananthus* is most likely to be confused with *Schwenckia* when in flower, however, they can be readily distinguished in fruit. In *Melananthus* the capsule is ovoid, oblique and acute, tuberculate, and with 1 seed whereas in *Schwenckia* the capsule is globose, equal



FIG. 15. *Melananthus guatemalensis*. A, habit,  $\times \frac{1}{2}$ ; B, flower,  $\times 10$ ; C, corolla lobes, detail,  $\times 20$ ; D, mature fruit,  $\times 10$ . *Nicandra physalodes*. E, habit,  $\times \frac{1}{2}$ ; F, fruiting calyx,  $\times \frac{1}{2}$ .

and obtuse, smooth and with numerous seeds. *Melananthus* appears to be anomalous in the Solanaceae but see Solereder in Ber. Deutsch. Bot. Ges. 9: 65-84, t. 13. 1891.

### NICANDRA Adanson, nom. cons.

Herbs, generally glabrous throughout; leaves alternate, coarsely sinuate-dentate or shallowly lobed, petiolate; inflorescences axillary, consisting of a single flower, the flowers pedicellate; calyx 5-parted, angulate, accrescent and reticulate in fruit, the lobes cordate-sagittate at their bases; corolla broadly campanulate, pale blue, the limb nearly entire to shallowly lobed, plicate in bud; stamens 5, included; filaments inserted near the base of the corolla tube, densely pubescent on the dilated bases; anthers ovate-oblong, longitudinally dehiscent; ovary on a short gynophore, 3-5-locular, the ovules numerous, the disk entire; style thick and elongate, included; stigma subglobose with 3-5 prominent stigmatic areas; fruit a berry, 3-5-locular, enclosed in the accrescent calyx; seeds numerous, compressed; embryo strongly curved.

A monotypic genus, probably a native of Peru now widely dispersed in temperate and tropical areas of both hemispheres.

**Nicandra physalodes** (L.) Gaertn. Fruct. Semin. Pl. 2: 237. 1791. *Atropa physalodes* L. Sp. Pl. 181. 1753. *Miltomate de culebra*; *miltomate de monte*; *tolcic* (Quechí); *tomate de culebra*; *tomatillo*.

Moist fields or thickets or in waste ground, often in cafetales, 900-1,800 m., occasionally higher; Huehuetenango; Chimaltenango; Sacatepéquez; Quiché, Alta Verapaz; Santa Rosa; Jalapa; Chiquimula. Eastern United States; Mexico to Costa Rica; West Indies; northern South America. Probably a native of Peru.

Plants to 1 m. tall, occasionally more, glabrous throughout or sometimes sparsely pilose; leaves usually ciliate, ovate to broadly ovate, mostly 7-25 cm. long, 3-10 cm. wide, acute or acuminate, attenuate at the base, the petiole 1-5 cm. long, sometimes narrowly winged; flowers solitary, cernuous, the pedicels 1-2 cm. long; calyx 1-2.5 cm. long, parted to near the base, the lobes ovate-cordate, acuminate at the apex, sagittate at the base; corolla blue or pale blue, 1.5-3 cm. long, the limb 2.5-3.5 cm. broad, nearly entire to shallowly lobed; filaments 5-6 mm. long; anthers 3.5-4 mm. long, apiculate; style 6-7 mm. long; berry 1-2 cm. in diameter, globose; seeds 1.5-1.8 mm. long, compressed, suborbicular, reticulate-foveate.

*Nicandra* is very similar to *Physalis* in general appearance. However, it can be distinguished by the blue corollas and sagittate bases of the calyx lobes.

Called *miltomate* and *huevo de tortuga* in El Salvado.

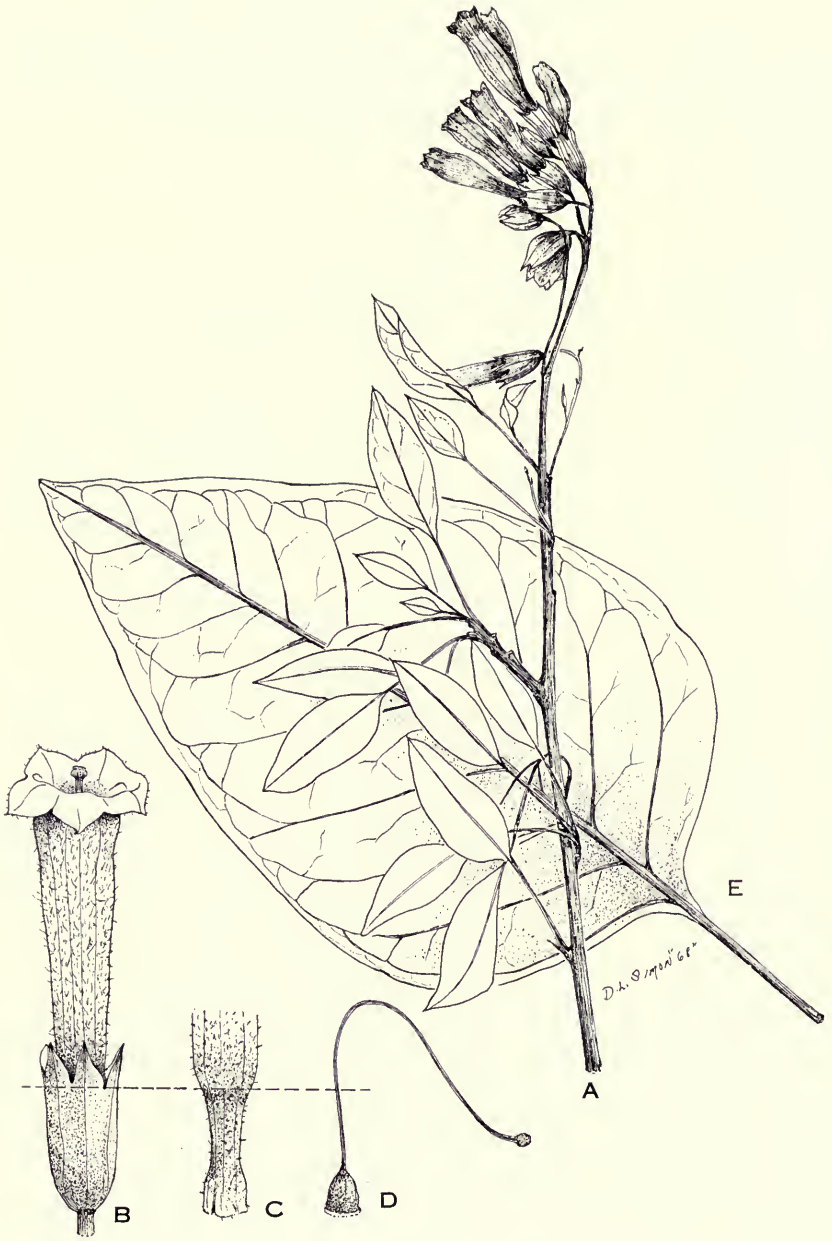


FIG. 16. *Nicotiana glauca*. A, habit,  $\times \frac{1}{2}$ ; B, flower,  $\times 1\frac{1}{2}$ ; C, corolla, lower part,  $\times 1\frac{1}{2}$ ; D, pistil,  $\times 1\frac{1}{2}$ ; E, cauline leaf,  $\times 1$ .

## NICOTIANA L.

*Reference:* T. H. Goodspeed, *The Genus Nicotiana*, Chron. Bot. 16: 1-535. 1954.

Herbs, rarely shrubs, or small trees, often viscid-glandular or sometimes glabrous; leaves alternate, entire, sessile or petiolate; inflorescence a panicle or false raceme, the flowers pedicellate; calyx tubular, 5-lobed, usually accrescent in fruit; corolla tubular or salverform, white to red, or yellow, the limb 5-lobed, the lobes convolute-plicate in bud; stamens 5, variously inserted on the corolla tube; anthers longitudinally dehiscent; ovary bilocular, the ovules numerous, the disk prominent; style filiform and smooth; stigma capitate, slightly grooved; fruit a capsule, septical, the valves bifid, smooth and glabrous; seeds numerous; embryo straight.

Species about 65, chiefly in the Americas, a few in Australia and the Pacific Islands. Only the following taxa are known in Central America, but several others are native in Mexico and the southwestern United States.

Shrubs or small trees; glabrous throughout; leaves long petiolate. . . . *N. glauca*.  
Herbs; pubescent with usually viscid-glandular hairs; middle and upper leaves sessile.

Corolla tube 3-4 mm. wide above; stamens inserted near the mouth of the corolla tube, the filaments short, 1 mm. long or less; leaves clasping to auriculate, not decurrent. . . . *N. plumbaginifolia*.

Corolla tube 7-12 mm. wide above; stamens inserted below the middle of the corolla tube, the filaments long and slender; lower leaves decurrent.

*N. tabacum*.

***Nicotiana glauca*** Graham, *Edinburgh New Philos. Journ.* 5: 175. 1828. *Tabacon*.

A native of South America which has become naturalized in Mexico. Known only from cultivated plants in Guatemala but to be expected as an escape. El Salvador; Honduras.

Shrub or small tree, 3-10 m. tall, glabrous; leaves ovate to elliptic or oblong-elliptic, glaucous, 4-12(-38) cm. long, 2-8(-22) cm. wide, apex acute, the base cuneate, sometimes unequal; petioles 3-6(-10) cm. long; inflorescence paniculate, flowers lax; pedicels 3-10 mm. long; calyx 1-1.5 cm. long, the lobes 2-3 mm. long, acute and much shorter than the tube; corolla yellowish, tubular, 3-3.5 cm. long, villosulous externally, the limb narrow, nearly circular; stamens subequal, extending almost to the mouth of the tube; filaments glabrous, about 2.5 cm. long, attached below the middle of the tube, geniculate just above the point of attachment; capsule 7-10 mm. long, included or slightly exceeding the calyx; seed somewhat angular, laterally compressed, wavy reticulate, about 0.5 mm. long.

***Nicotiana plumbaginifolia*** Viviani, *Elench. Pl. Hort. Dinegro*, 26, t. 5. 1802.

Wet sand along rivers or in waste places, sea level to 1,500 m.; Izabal; Jalapa; Guatemala; Sacatepéquez; Quiché; Escuintla. United States (Florida Keys). Mexico. West Indies. South America.

Annual, 0.3–1 m. tall, the stem slender, sparsely viscid-pilose, becoming rough in age; leaves sparsely viscid-pilose, the basal leaves obovate or oblanceolate, 1–2 dm. long, the lower ones rotund-ovate, sessile, the margin undulate, apex abruptly acuminate, usually twisted, the base clasping to clasping-auriculate, the upper cauline leaves reduced, lanceolate to linear-lanceolate, margin strongly undulate, auriculate; inflorescence a false raceme, occasionally somewhat paniculate; pedicels 3–7 mm. long; calyx 8–12 mm. long, 10-ribbed, lobed to the middle or more deeply so, the lobes unequal, 4–8 mm. long, linear-subulate; corolla vesperine, salverform, the limb lavender or pink, deeply lobed, the lobes ovate, acute, the tube pale green or purplish, long and slender, 2.5–3.5 cm. long, 1.5–2 mm. wide, ampliate above to 3–4 mm. wide; stamens unequal, attached just below the mouth of the tube, four nearly sessile, the fifth stamen about 3 mm. lower on the tube; filaments glabrous, about 1 mm. long or less, shorter than the anthers; capsule 8–11 mm. long, narrowly ovoid, about the same length as the calyx; seeds round-elliptic, wavy-reticulate, about 0.5 mm. long.

**Nicotiana tabacum** L. Sp. Pl. 180. 1753. *Tabaco*; *tabaco bobo*; *cutz, cuutz* (Maya); *iic* (Alta Verapaz); *jic* (Quiché); *mai, met* (Quechí, Tzental); *si'cal* (Ixil); *si'ch* (Aguacateca); *sii'c* (Mame, Chuje).

Cultivated in almost all regions of Guatemala, occasionally escaping cultivation. Believed to be a native of western South America, but introduced into Central America and Mexico in pre-Columbian times.

Annual 1–3 m. tall, viscid throughout, the stems thick, branches few, leaves ovate to elliptic or obovate, the larger ones at least 5 dm. long, decurrent, sessile and amplexicaul, apex acuminate or acute; panicle with several branches; pedicels 5–15 mm. long; calyx 12–18 mm. long, the lobes 4–8 mm. long, narrowly acute, unequal, shorter than the calyx tube; corolla salverform, the limb white, pink or red, lobed or pentagonal, the tube pale greenish-cream, pink or red, 3.5–4.5 cm. long, 3–5 mm. wide below, ampliate above to 7–12 mm. wide; stamens unequal, attached below the middle of the tube, the anthers of the two longer pairs near the mouth of the corolla or slightly exerted, the fifth stamen shorter than either pair; filaments 2.5–3.5 cm. long, greatly exceeding the anthers in length, pubescent below; capsule 1.5–2 cm. long, narrowly elliptic or ovoid, surpassing or included in the calyx; seeds spherical or broadly elliptic, 0.5 mm. long, wavy-reticulate.

## PETUNIA Jussieu

*Reference:* R. E. Fries. 1911. Die Arten der Gattung *Petunia*. Kongl. Svenska Vetenskapsakad. Handl. 46.

Herbs, viscid-pubescent, the stems branched and often decumbent; leaves alternate or in pairs, entire, sessile or subsessile; inflorescences axillary, consisting

of a single flower, the flowers large and showy, long pedicellate; calyx campanulate, deeply 5-lobed; corolla salverform or funnellform, slightly zygomorphic, variously colored, often variegated and sometimes double, 5-lobed, the lobes plicate in bud, the tube ampliate above; stamens 5, 4 didynamous, the fifth one shorter than either pair; filaments filiform, subequally inserted below the middle of the corolla tube, glabrous; anthers longitudinally dehiscent; ovary bilocular, the ovules numerous, the disk prominent, carnosae; style filiform and smooth; stigma capitate and slightly grooved; fruit a capsule, septicidal, the valves bifid, equalling or surpassed by the calyx; seeds numerous; embryo curved or almost straight.

About 30 species, mostly in South America. Only one species (*P. parviflora*) is native to North America and apparently does not reach Central America.

### *Petunia hybrida* Hort. *Petunia*.

Commonly cultivated in almost all parts of Guatemala. Occasionally escaping from cultivation and becoming established in some areas. This is the showy cultivated *Petunia*. It is a putative hybrid derived from *P. axillaris* (Lam.) B.S.P. x *P. violacea* Lindl.

Annual herbs; leaves ovate to elliptic, 3-6 cm. long, 1.5-4 cm. wide, acute, the base cuneate; pedicels 2-6 cm. long; calyx 1.2-1.5 cm. long, the lobes 10-13 mm. long, obtuse and unequal, more than 2 times as long as the calyx tube; corollas variously colored, often variegated, sometimes double, the limb 3.5-5 cm. wide, the lobes obtuse, the tube 2.5-4 cm. long; stamens with two long pairs, the fifth one shorter than either pair; filaments somewhat geniculate at the base; style 2.5-3.5 cm. long; capsule 1-1.5 cm. long, glabrous, the seeds 0.6 mm. long or less, subglobose or ovoid, reticulate-foveate.

Dr. Paul C. Standley, who originated this flora, professed to despise *Petunias* and often tried to interest his listeners in a society for the extermination of *Petunias*, all *Petunias*.

## PHYSALIS L.

*References:* U. T. Waterfall, A taxonomic study of the genus *Physalis* in North America North of Mexico. *Rhodora* 60: 107-114; 128-142; 152-173. 1958; *Physalis* in Mexico, Central America, and the West Indies, l. c. 69: 82-120; 203-239; 319-329. 1967.

Herbs or rarely shrubs; leaves alternate, sometimes in pairs, entire to sinuately lobed, petiolate; inflorescences axillary, consisting of a single flower or sometimes with few to several flowers in axillary fascicles, the flowers pedicellate; calyx campanulate or sometimes tubular-campanulate, 5-lobed, much accrescent in fruit; corolla subrotate to campanulate-rotate, or campanulate, rarely tubular-campanulate, mostly yellowish, often with 5 dark, contrasting spots near the mouth of the corolla tube, the mouth densely pubescent or sometimes glabrous or somewhat glandular; the limb mostly shallowly 5-parted, the lobes mostly plicate in bud; sta-

mens 5; filaments filiform or broad; anthers oblong to linear-oblong, or lanceolate, longitudinally dehiscent, yellow to blue, violet or greenish-blue, or sometimes so tinged; ovary bilocular, the ovules few to many; style filiform, exerted or included; stigma capitate to nearly truncate; fruit a berry, included in the inflated calyx, rarely tightly invested by the calyx, sometimes on a short gynophore, the fruiting calyx 5- or 10-angled or -ribbed or teretish, much enlarged and inflated around the fruit, often invaginated basally; seeds few to many, laterally compressed; embryo curved.

About 100 species mostly in the New World tropics, especially in Mexico and Guatemala, also extending into temperate regions, a few in the Old World. A few other species are known from other parts of Central America.

The treatment presented here differs in some respects from that proposed by Waterfall in 1967.

*Physalis* is a difficult genus that requires further study. *Physalis melanocystis* (Robinson) Bitter var. *cernua* (Donn.-Sm.) Waterfall and *P. schraderiana* Bernh. = *Athenaea viscosa* (Schrader) Fern. have been placed in *Athenaea*. See comments under *Athenaea* and *Margaranthus*.

Corolla limb 5-lobed, the limb lobed one-half way to the base or more; flowers (1-) 2-6 in the leaf axils.

Plants shrubs; leaves with a few furcate and branched hairs below; Caribbean lowlands, below 500 m. .... *P. porphyrophysa*.

Plants herbs, sometimes suffrutescent; leaves with simple hairs; montane forest, 1,300-2,850 m.

    Calyx lobes prominent, the lobes 2.5-10 mm. long. .... *P. amphitricha*.

    Calyx nearly truncate to shallowly and broadly lobed, the lobes 1 mm. long or less. .... *P. calidaria*.

Corolla limb nearly entire to 5-angled, the limb lobed less than one-half way to the base; flowers solitary (in ours).

Corolla tubular-campanulate, the flowers 18-19 mm. long; filaments 8-9 mm. long. .... *P. campanula*.

Corolla subrotate to campanulate, the flowers 2-15 mm. long; filaments 0.5-5 mm. long.

    Fruiting calyces strongly 5-angled or 5-ribbed.

    Fruiting calyces glabrous or essentially so.

    Fruiting calyces 1-2 cm. long, 0.6-1.5 cm. wide, the lobes 1-2 mm. long; corolla limb narrow, 2-3 mm. wide.

    Leaves succulent, the blades of the larger leaves 1.5-2.5 cm. long; petioles 5-10 mm. long; fruiting calyces 1-1.3 cm. long, 0.6-0.8 cm. wide. .... *P. carnosa*.

    Leaves not succulent, the blades of the larger leaves 3-6 cm. long; petioles 10-35 mm. long; fruiting calyces 1.5-2 cm. long, 1.2-1.5 cm. wide. .... *P. minuta*.

    Fruiting calyces 2.5-5.5 cm. long, 2-3 cm. wide, the lobes 4-13.5 mm. long; corolla limb broad, 10-20 mm. wide.

    Corolla maculations prominent; fruiting calyces usually gradually terminated apically 2.5-4 cm. long, the lobes 4-6 mm. long; 1,000 m. and below. .... *P. cordata*.



Corolla maculations inconspicuous, their edges often diffuse; fruiting calyces usually abruptly beaked, (3-) 3.5-5.5 cm. long, the lobes (8-) 10-13.5 mm. long; 1,500-2,500 m., rarely lower. *P. porrecta*.

Fruiting calyces pubescent, the hairs sometimes short and inconspicuous.

Fruiting calyces densely pubescent with grayish, short hairs; gynophore and inside of fruiting calyx capitate-glandular. . . . . *P. ignota*.

Fruiting calyces variously pubescent but not densely pubescent with grayish, short hairs; gynophore and inside of fruiting calyx not capitate-glandular except sometimes in *P. pubescens*.

Fruiting calyx lobes narrow, subulate and long-acuminate, 10-15 mm. long.

Stems, petioles, and pedicels with at least a few long hairs 1.5-3.5 mm. long (in ours); corolla limb 10-15 mm. wide; flowering pedicels 10-75 mm. long . . . . . *P. maxima*.

Stems, petioles and pedicels with short hairs, the hairs less than 1 mm. long; corolla limb 6-8 mm. wide; flowering pedicels 2-4 mm. long . . . . . *P. nicandroides*.

Fruiting calyx lobes broader, ovate or deltoid to lanceolate or triangular, 2-6.5 mm. long.

Corolla immaculate or the spots not strongly contrasting.

*P. hylophila*.

Corolla maculate, the spots strongly contrasting with the surrounding corolla limb.

Fruiting calyces narrow, about twice as long as wide; montane forests, 2,500-2,900 m. . . . . *P. angustiphysa*.

Fruiting calyces broad, as long as wide to 1.5 times longer than wide; 1,000 m. and below.

Leaf blades thin, more or less translucent when dry; corolla limb 6-8 mm. wide, the throat glabrous or nearly so; fruiting calyces 1.2-2.5 cm. long, 1-1.5 cm. wide, the lobes ovate to deltoid, the apex acute, 3-3.5 mm. long . . . . *P. hirsuta*.

Leaf blades thick, opaque; corolla limb 8-15 mm. wide, the throat densely pubescent; fruiting calyces 2-4 cm. long, 1.2-3 cm. wide, the lobes triangular to narrowly lanceolate, the apex narrowly acute to acuminate, (3.5-) 4.5-6.5 mm. long.

*P. pubescens*.

Fruiting calyx 10-ribbed, 10-angled or teretish.

Corolla 2-7 mm. long, the limb narrow, 1.5-5.5 mm. wide; anthers small, 0.4-1.5 mm. long; fruiting calyces 0.5-2 cm. long, 0.5-1.5 cm. wide.

Corolla 2-3 mm. long, the limb 1.5-2 mm. wide; anthers 0.4-0.6 mm. long; fruiting calyces 0.5-1 cm. long, 0.5-0.6 cm. wide. . . . *P. microcarpa*.

Corolla 5-7 mm. long, the limb 4.5-5.5 mm. wide; anthers 1.2-1.5 mm. long; fruiting calyces 1-2 cm. long, 1-1.5 cm. wide. . . . *P. lagascae*.

Corolla (6-) 8-15 mm. long, the limb broad, 7-24 mm. wide; anthers large, 2-4 mm. long; fruiting calyces 2-3.5 cm. long, 1.5-2.5 cm. wide.

Stems and fruiting calyces evenly and densely pubescent. . . . *P. lassa*.

Stems and fruiting calyces glabrous to sparsely pubescent.

Corolla immaculate or with spots light colored and not strongly contrasting; fruiting pedicels 20-40 mm. long . . . . . *P. angulata*.

Corolla strongly maculate, the spots sometimes confluent basally; fruiting pedicels 3.5-20 mm. long.

Fruiting pedicels 3.5-8 (-12) mm. long; anthers blue or yellowish with blue margins, 2.5-3 mm. long, often contorted after dehiscence; filaments 2 mm. long. . . . . *P. philadelphica*.

Fruiting pedicels 10-20 mm. long; anthers yellowish, sometimes with a slight bluish tinge, 3-4 mm. long, relatively straight after dehiscence; filaments 2-5 mm. long. . . . . *P. gracilis*.

**Physalis amphitricha** (Bitter) Standl. & Steyerm. Field Mus. Bot. 23: 229. 1947. *Saracha amphitricha* Bitter, Fedde Repert. Sp. Nov. 20: 362. 1924. *P. amica* Standl. & Steyerm. Field Mus. Bot. 23: 231. 1947 (type from between La Vega ridge along Río Vega and northeast slopes of Volcán Tacaná, to 3 mi. from Guatemala-Mexico boundary, in vicinity of San Rafael, San Marcos, *Steyermark 36175*), *syn. nov.* *Flor de miltomate* (Quezaltenango).

Dense, moist or wet forests or mixed forests, sometimes on white sand slopes, 1,300–2,700 m.; Quezaltenango (type collected between San Martín, Sacatepéquez and Las Mercedes, *Bernoulli & Cario 2335*); San Marcos. Southern Mexico (Chiapas).

Herb 1–3 m. tall, branched, stem usually herbaceous, sometimes suffrutescent, glabrous or nearly so or sometimes covered with multicellular hairs, glabrescent in age; leaves mostly entire or shallowly sinuate, elliptic to ovate or lanceolate, the larger leaves mostly 6–20 cm. long, 3–8 cm. wide, the apex acuminate or long acuminate, the base short attenuate or acute to obtuse, pubescence of short, multicellular hairs above and below, the petioles 1–4 cm. long; inflorescence consisting of (1–)2–5 flowers, sometimes only one maturing a fruit, the pedicels 8–20 mm. long, thickened above; flowering calyx 7–13.5 mm. long, mostly glabrous, or sometimes densely pubescent with short, multicellular hairs, the lobes ovate to lanceolate, 2.5–10 mm. long; corolla yellowish or greenish-yellow, the limb 25–35 mm. wide, the lobes ovate or lanceolate, 9.5–15 mm. long, marked with greenish-purple spots near their bases, or rarely without prominent maculations, the corolla tube, throat and the base of the corolla lobes densely pubescent; filaments 3.5–5 mm. long; anthers bluish to purplish, 3–4 mm. long; fruiting calyx 5-ribbed, 5.5 cm. long, 3.5 cm. wide, glabrous or essentially so, reticulate-veined, strongly inflated, the pedicels 17 mm. long; berry about 10 mm. in diameter.

*Physalis amphitricha* (Bitter) Standl. & Steyerm., *P. calidaria* Standl. & Steyerm., and *P. porphyrophyssa* Donn.-Sm. are members of an apparently natural group of species characterized by the deeply lobed corolla limb, the lobes valvate in bud, and the inflorescence consisting of mostly axillary fascicles. Another taxon, *P. melanocystis* (Robinson) Bitter var. *cernua* (Donn.-Sm.) Waterfall, included in this group by Waterfall is treated under the genus *Athenaea*. See comments under *Athenaea*.

**Physalis angulata** L. Sp. Pl. 1: 183. 1753.

Known in our area from only two collections from British Honduras; 1,000 m. or below. Eastern to Central United States. Mexico. El Salvador; Nicaragua; Costa Rica. Panama. West Indies. South America. Old World tropics.

Herbs 1 m. tall or less, often much branched, the stems glabrous or nearly so; leaves coarsely sinuate-dentate or sometimes entire, ovate to ovate-lanceolate,

the larger leaves mostly 6.5–15 cm. long, 2.5–8 cm. wide, the apex acuminate, the base acute or obtuse, sparsely pubescent on the veins, otherwise glabrous above and below, the petioles (1–)2.5–5 cm. long; flowers solitary, the pedicels 10–12 mm. long; flowering calyx 3–4 mm. long, pubescent with appressed hairs, the lobes deltoid or triangular, 1.5 mm. long; corolla yellowish, 6–8 mm. long, the limb 7–11 mm. wide, immaculate or with indistinct spots, somewhat pubescent in the mouth of the corolla tube; filaments 2.5–3 mm. long; anthers bluish or violet, 1.5–2.5 mm. long; fruiting calyx 10-angled or 10-ribbed, 2.5–3 cm. long, 2–2.5 cm. wide, sparsely pubescent on the veins with short hairs or essentially glabrous, reticulate, the pedicels 20–40 mm. long; berry 10–12 mm. in diameter.

*Physalis angulata* L. has been separated by Waterfall into three varieties. We apparently have only variety *angulata* in our area.

***Physalis angustiphysa*** Waterfall, *Rhodora* 69: 228. 1967.

Known in Guatemala only from the type, La Sierra (Tujimach), across the river from San Juan Atitlán, Sierra de los Cuchumatanes, 2,500–2,900 m., Huehuetenango, *Steyermark* 51977. Mexico.

Herb 1 m. tall, the stems densely pubescent with long, multicellular hairs of varying length, some capitate-glandular; leaves sinuately lobed, ovate to broadly ovate, the larger leaves 4–9.5 cm. long, 2–4.5 cm. wide, the apex acute, the base rounded, densely pubescent with long, multicellular hairs, some hairs capitate-glandular above and below, the petioles 1–3 cm. long; flowers solitary, the pedicels 5–6.5 mm. long; flowering calyx 3–5 mm. long, densely pubescent, the lobes lanceolate, 2–2.5 mm. long; corolla yellow, 8–9 mm. long, the limb 12–14 mm. wide, maculate; filaments 3–4 mm. long; anthers violaceous, 2–2.5 mm. long; fruiting calyx 5-angled, 2.4–2.8 cm. long, 1–1.8 cm. wide, reticulate, pubescent, the pedicels 7.5–10 mm. long; berry about 6 mm. in diameter.

***Physalis calidaria*** Standl. & Steyererm. *Field Mus. Bot.* 23: 231. 1947. *P. chimalteca* Standl. & Steyererm. l.c. 232 (type from slopes of Volcán de Acatenango, above Las Calderas, Chimaltenango, *Standley* 61803), *syn. nov.*

Wet forests, 2,300–2,850 m.; Chimaltenango; Quiché; Quezaltenango (type from Fuentes Georginas, western slope of Volcán de Zunil, Quezaltenango, *Standley* 67488). Southern Mexico (Chiapas).

Herb 0.5–2 m. tall, possibly suffrutescent below, the stems glabrous or pubescent with short, brownish, incurved hairs, glabrescent in age; leaves entire or with a few angulate lobes, ovate to lance-elliptic or elliptic, the larger leaves 8–20 cm. long, 4–9 cm. wide, the apex acuminate, the base acute or obtuse, sometimes short attenuate, a few scattered, multicellular hairs above, more densely pubescent, especially on the veins below, the petioles 1–3 cm. long; inflorescence consisting of (1–)2–5 flowers, often only one maturing a fruit, the pedicels 8–16 mm. long, thickened above; flowering calyx 3–10 mm. long, glabrous except for the ciliolate margin or densely pubescent throughout, nearly truncate to shallowly and broadly lobed, the lobes 1 mm. long or less; corolla greenish-yellow or pale yellow, the limb

20–35 mm. wide, maculate, the lobes ovate, the corolla tube, throat and the base of the corolla lobes densely pubescent; filaments 3–5 mm. long; anthers 2.5–3 mm. long; fruiting calyx 2.5–5 cm. long, 2–3 cm. wide, 10-angled, glabrous, reticulate-veined, strongly inflated; berry 8–10 mm. in diameter.

*Physalis chilalteca* Standl. & Steyererm. has been separated from a closely related species, *P. calidaria* Standl. & Steyererm., based upon its essentially glabrous calyx. It is treated here as a synonym of *P. calidaria*.

***Physalis campanula* Standl. & Steyererm. Field Mus. Bot. 23: 18. 1943.**

Dry banks along stream, 2,200–2,500 m.; San Marcos (type from along Quebrada Canjulá, between Sibinal and Canjulá, Volcán Tacaná, *Steyermark 36067*). Endemic. Known only from the type collection.

A branching herb, the stems covered with spreading, multicellular hairs of varying lengths, some capitate-glandular, glabrescent in age; leaves entire or shallowly sinuately lobed, ovate, the larger leaves mostly 5–12 cm. long, 3–5 cm. wide, the apex acuminate or acute, the base rounded, pubescence of multicellular hairs, some capitate-glandular above and below, the petioles 1–4.5 cm. long; flowers solitary, the pedicels 20 mm. long; flowering calyx 10–11 mm. long, densely pubescent with multicellular hairs, some capitate-glandular, the lobes triangular, 3.5–5 mm. long, long acuminate; corolla tubular-campanulate, pale yellow, immaculate, the tube 18–19 mm. long, pubescent below the middle, slightly ventricose above, the limb obscurely dentate; filaments 8–9 mm. long; anthers bluish, about 3 mm. long; fruiting calyx (only one approaching maturity) 25 mm. long, 15 mm. wide, densely pubescent with multicellular hairs, some capitate-glandular, the pedicels 25–30 mm. long; berry about 10 mm. in diameter.

*Physalis campanula* Standl. & Steyererm. may be separated from all other members of the genus in Central America by its tubular-campanulate corolla.

***Physalis carnosa* Standl. & Steyererm. Field Mus. Bot. 23: 19. 1943.**

On sand dunes along the coast, 1–2 m.; San Marcos (type from Ocos, *Steyermark 37766*). Endemic. Known only from the type collection.

A much branched herb, prostrate or decumbent, the stems 15–20 cm. long, pubescence of minute, incurved and appressed hairs, glabrescent in age; leaves succulent, entire or shallowly sinuately lobed, mostly ovate to ovate-oblong or elliptic, the larger leaves 12–28 mm. long, 7–12 mm. wide, the apex acute, the base obtuse, nearly glabrous above and below, the hairs minute, incurved and appressed, the petioles 5–10 mm. long; flowers solitary, the pedicels 2.5–3 mm. long; flowering calyx 2–3 mm. long, pubescent with minute, incurved and appressed

hairs, the lobes narrowly triangular, 0.5–1 mm. long, acute; corolla 3–4 mm. long, long, probably immaculate; filaments about 1.5 mm. long; anthers bluish-green, 0.8–1.2 mm. long; fruiting calyx 5-angled, 1–1.3 cm. long, 0.6–0.8 cm. wide, reticulate, inconspicuously pubescent, the pedicels 4–5 mm. long; berry about 5 mm. in diameter.

*Physalis carnos*a Standl. & Steyerl., *P. lagascae* Roem. & Schult., *P. microcarpa* Urban & Ekman, and *P. minuta* Griggs represent the species with relatively small fruiting calyces, 0.5–2 cm. long, 0.5–1.5 cm. wide, that occur or are likely to occur in Guatemala.

***Physalis cordata*** Miller, Gard. Dict. ed. 8, *Physalis* no. 14. 1768.

Wet thickets or rocky river banks, sometimes on sand dunes, 1,000 m. and below; Izabal; Jutiapa; Santa Rosa; Escuintla; Retalhuleu; San Marcos. Mexico to Costa Rica. Panama and West Indies.

Herb 1.5 m. tall or long, erect or sometimes decumbent, the stems pubescent with very short, incurved and inconspicuous hairs; leaves coarsely sinuate-dentate or entire, ovate, the larger leaves 4–18 cm. long, 2.5–8 cm. wide, the apex acuminate or acute, the base obtuse to subcordate or nearly truncate, pubescent with very short and inconspicuous hairs, these more prominent on the veins above and below, the petioles 2.5–9 cm. long; flowers solitary, the pedicels 5–10 mm. long; flowering calyx 5–6 mm. long, pubescent with short, incurved hairs, the lobes narrowly triangular, about 3 mm. long; corolla yellowish, 5–10 mm. long, the limb maculate, 10–20 mm. wide, pubescent internally; filaments 1.5–2 mm. long; anthers bluish or greenish-blue, about 2 mm. long; fruiting calyx 5-angled, reticulate, 2.5–4 cm. long, 2–2.5 cm. wide, glabrous, the pedicels 10–25 mm. long; berry 6–15 mm. in diameter.

*Physalis cordata* Miller had not been recognized in American floras since its description until the work of Waterfall in 1967. Most of the material in herbaria has been identified as *P. turbinata* Medic. The length of the fruiting calyx lobes has proven to be a useful character in separating this species from *Physalis porrecta* Waterfall.

***Physalis gracilis*** Miers, Ann. Mag. Nat. Hist. ser. 2, 4: 37. 1849. *P. luteoanthera* Waterfall, Rhodora 69: 113. 1967 (type from lower south facing slopes of Volcán Santa María, *Steyermark 33726*), *syn. nov.* *Bombita* (Izabal); *kop* and *miltomate* (Alta Verapaz).

Moist or wet thickets or forests, sometimes in wet pine forests, just above sea level to 1,500 m., rarely higher; Petén; Alta Verapaz; Izabal; Baja Verapaz; Guatemala; Quezaltenango; Huehuetenango; Escuintla; Suchitupéquez; Retalhuleu; San Marcos. British Honduras. Mexico to Costa Rica.

Herbs 1 m. tall or less, erect to decumbent or procumbent, the stems pubescent with long, multicellular hairs, sometimes nearly glabrous; leaves entire to undulate or shallowly angulately lobed, ovate to broadly ovate, the larger leaves 4-16 cm. long, 2.5-8 cm. wide, the apex acute or acuminate, the base obtuse or rounded, sometimes subcordate, pubescent with multicellular hairs or sometimes nearly glabrous above and below, the petioles 1-6 cm. long; flowers solitary, the pedicels 7-15(-20) mm. long; flowering calyces 5-10 mm. long, pubescent with usually spreading hairs, sometimes glabrous, the lobes ovate-deltoid, 2-3 mm. long; corolla yellow or greenish-yellow, 10-13 mm. long, the limb 12-24 mm. wide, maculate; filaments 2-5 mm. long; anthers yellowish, sometimes with a slight bluish tinge, 3-4 mm. long; fruiting calyx 10-ribbed to nearly terete, 2-3 cm. long, 1.5-2.5 cm. wide, sparsely pubescent, reticulate, the pedicels 10-20 mm. long; berry 8-15 mm. in diameter.

The characters that distinguish *Physalis gracilis* Miers and *P. philadelphica* Lam. are subject to some overlap, but they appear to be distinct species.

**Physalis hirsuta** Dunal in DC., Prodr. 13, pt. 1: 445. 1852. *P. leptophylla* Robinson & Greenm. Proc. Am. Acad. 29: 389. 1894, *syn. nov.*

Moist thickets or brushy rocky slopes, 400-660 m.; Zacapa; Chi-quimula. Mexico.

Herb 0.5-1 m. tall, the stems pubescent with multicellular hairs of varying lengths, at least some capitate-glandular; leaves thin, entire or rarely with a few shallow lobes, ovate, 6-16 cm. long, 2.5-6 cm. wide, the apex acuminate, the base rounded, ciliate, sparsely pubescent with short multicellular hairs, these mostly on the veins or nearly glabrous above and below, the petioles 2-8 cm. long; flowers solitary, the pedicels 3-4.5 mm. long; flowering calyx 2.5-4 mm. long, densely pubescent with spreading hairs, the lobes ovate to deltoid, 1-2.5 mm. long; corolla yellowish or cream-colored, 6-8.5 mm. long, the limb maculate, 6-8 mm. wide, glabrous or nearly so internally; filaments 2-3 mm. long; anthers bluish, rarely yellowish in age, 1-1.5 mm. long; fruiting calyx thin, 5-angled, the angles usually not prominent, 1.2-2.5 cm. long, 1-1.5 cm. wide, pubescent with spreading hairs, the pedicels 4-5(-9) mm. long; berry 5-9 mm. in diameter, sessile or subsessile.

We are following D'Arcy (*personal communication*) in the application of this name.

**Physalis hylophila** Standl. J. Wash. Acad. Sci. 14: 243. 1924.

Wooded slopes. Mexico. El Salvador. To be expected in Guatemala.

Herb 1 m. tall or less, the stems pubescent with multicellular hairs of varying lengths, at least some capitate-glandular; leaves entire or with a few irregular sinuate teeth, ovate, 3.5-6.5 cm. long, 2-2.5 cm. wide, the apex acuminate, the base rounded, pubescent with multicellular hairs, at least some capitate-glandular

above and below, the petioles 1–2.5 mm. long; flowers solitary, the pedicels 3–5 mm. long; flowering calyx 3–5.5 mm. long, densely pubescent with glandular hairs, the lobes ovate or deltoid, about 1 mm. long; corolla yellowish, 6–7 mm. long, the limb immaculate or with spots not strongly contrasting, 7–8 mm. wide, glabrous internally; filaments 3–4 mm. long; anthers yellowish, greenish-yellow or bluish tinged, about 1 mm. long; fruiting calyx 5-angled, the angles not prominent, 1.4–1.6 cm. long, 1–1.2 cm. wide, pubescent with spreading hairs, the pedicels 3–5 mm. long; berry about 6 mm. in diameter.

*Physalis hylophila* Standl. may prove to be a synonym of *P. hirsuta* Dunal.

**Physalis ignota** Britton, Mem. Torrey Bot. Club 16: 100. 1920. *P. pentagona* Blake, Contr. U.S. Natl. Herb. 24: 20. 1922 (type from Los Amates, Izabal, *Blake 7313*). *Soplón* (Jutiapa).

Damp or moist thickets, sometimes on gravelly or rocky slopes, 45–900 m.; Izabal; Zacapa; Jalapa; Chiquimula; Jutiapa; San Marcos. El Salvador to Costa Rica. Panama and West Indies.

Herb 1 m. tall or less, the stems mostly densely covered with grayish, short and spreading, multicellular hairs; leaves entire or repand, ovate, the larger leaves 5–18 cm. long, 3.5–8 cm. wide, the apex acuminate, the base obtuse or acute, pubescent with short, multicellular hairs, more dense on the veins above and below, the petioles 2–6 cm. long; flowers solitary, the pedicels 3–8 mm. long; flowering calyx 4.5–6 mm. long, densely pubescent with short, spreading hairs, the lobes narrowly lanceolate or triangular, 2–3 mm. long; corolla yellowish, 6–10 mm. long, the limb immaculate, 5–10 mm. wide, sparsely pubescent internally; filaments 2–2.5 mm. long; anthers yellow or bluish tinged, 2–2.5 mm. long; fruiting calyx strongly 5-angled, reticulate, 3–5 cm. long, 2.5–3.5 cm. wide, mostly densely covered with grayish, short and spreading, multicellular hairs, the pedicels 8–15 mm. long; berry 10–15 mm. in diameter, on a gynophore 1–2 mm. long, capitate-glandular.

*Physalis ignota* Britton can be separated from all other species of the genus in Guatemala by the large and strongly 5-angled fruiting calyces and the stems, pedicels, and fruiting calyces densely pubescent with grayish, short hairs.

**Physalis lagascae** Roem. & Schult. Syst. Veg. 4: 679. 1819. *P. micrantha* Link, Enum. Hort. Berol. 1: 181. 1821. *P. parviculea* Blake, Contr. U. S. Natl. Herb. 24: 20. 1922 (type from Los Amates, Izabal, *Blake 7318*).

Grassy slopes, 900–1,500 m.; Izabal; Chiquimula. Mexico. El Salvador; Honduras. Panama and Martinique.

Herb 1.5 m. tall or less, erect, the stems pubescent with long, multicellular hairs; leaves entire or slightly repand, ovate to lanceolate, the larger leaves 2–10 cm. long, 1–3.5 cm. wide, apex acuminate or narrowly acute, the base obtuse, rounded or sometimes acute, pubescent with relatively long hairs above and

below, the petioles 0.5–2.5 cm. long; flowers solitary, the pedicels 2–5 mm. long; flowering calyx 3–4 mm. long, pubescent with long, spreading hairs, the lobes deltoid, 0.6–1.5 mm. long; corolla 5–7 mm. long, maculate, the spots usually not conspicuous, sometimes appearing immaculate, pubescent internally; filaments 1.5 mm. long; anthers bluish or violet, 1.2–1.5 mm. long; fruiting calyx 10-ribbed, 1.2–2 cm. long, 1–1.5 cm. wide, sparsely pubescent with long spreading hairs mostly on the ribs, often the ribs with widely spaced small teeth or enations produced mostly by the base of the hairs, the pedicels 3–5 mm. long; berry 5–7 mm. in diameter.

***Physalis lagascae* var. *glabrescens*** Schulz in Urban, Sym. Antill. 6: 147. 1906.

Moist fields or thickets, sometimes in rocky thickets, 200–850 m.; Zacapa; Jutiapa; Santa Rosa. Mexico. El Salvador to Costa Rica. Panama and Cuba.

Variety *glabrescens* differs from variety *lagascae* by being glabrous or nearly glabrous.

*Physalis lagascae* Roem. & Schult. is often confused with *Margaranthus*. The fruiting calyces are similar but the corollas are very distinctive. See comments under *Margaranthus*.

***Physalis lassa*** Standl. & Steyerl. Field Mus. Bot. 23: 19. 1943. *Tomatillo* (Huehuetenango).

In damp oak forests or in grassy thickets, 250–2,000 m.; Baja Verapaz; Zacapa (type from between Jalapa and Montaña Miramundo, *Steyermark* 32868); Guatemala; Chimaltenango; Huehuetenango; Jalapa. Mexico.

Herbs 1 m. tall or less, the stems densely covered with multicellular hairs, sometimes most of the hairs capitate-glandular; leaves entire or sometimes repand, ovate, the larger leaves 3.5–9 cm. long, 2–4 cm. wide, the apex acute or acuminate, the base rounded or subcordate, mostly densely pubescent with multicellular hairs, sometimes most of the hairs capitate-glandular above and below, the petioles 1–2.5 cm. long; flowers solitary, the pedicels 5–8 mm. long; flowering calyx 8–10 mm. long, pubescent with spreading, multicellular hairs, sometimes most of the hairs capitate-glandular, the lobes ovate or ovate-lanceolate, 2.5–5 mm. long; corolla yellowish, 10–15 mm. long, the limb 12–15 mm. wide, maculate, pubescent in the mouth of the corolla tube; filaments 2.5–3 mm. long; anthers bluish, 2.5–4 mm. long; fruiting calyx 10-ribbed or slightly 10-angled, 2.5–3.5 cm. long, 1.5–2.5 cm. wide, evenly pubescent, sometimes densely so, reticulate, the pedicels 10–15 mm. long; berry 10–15 mm. in diameter.

The pubescence is variable in this species. The type and a few additional collections have eglandular hairs, whereas two collections, *Steyermark* 29545 and 50638 have mostly glandular hairs. These two collections may prove to be worthy of subspecific rank.



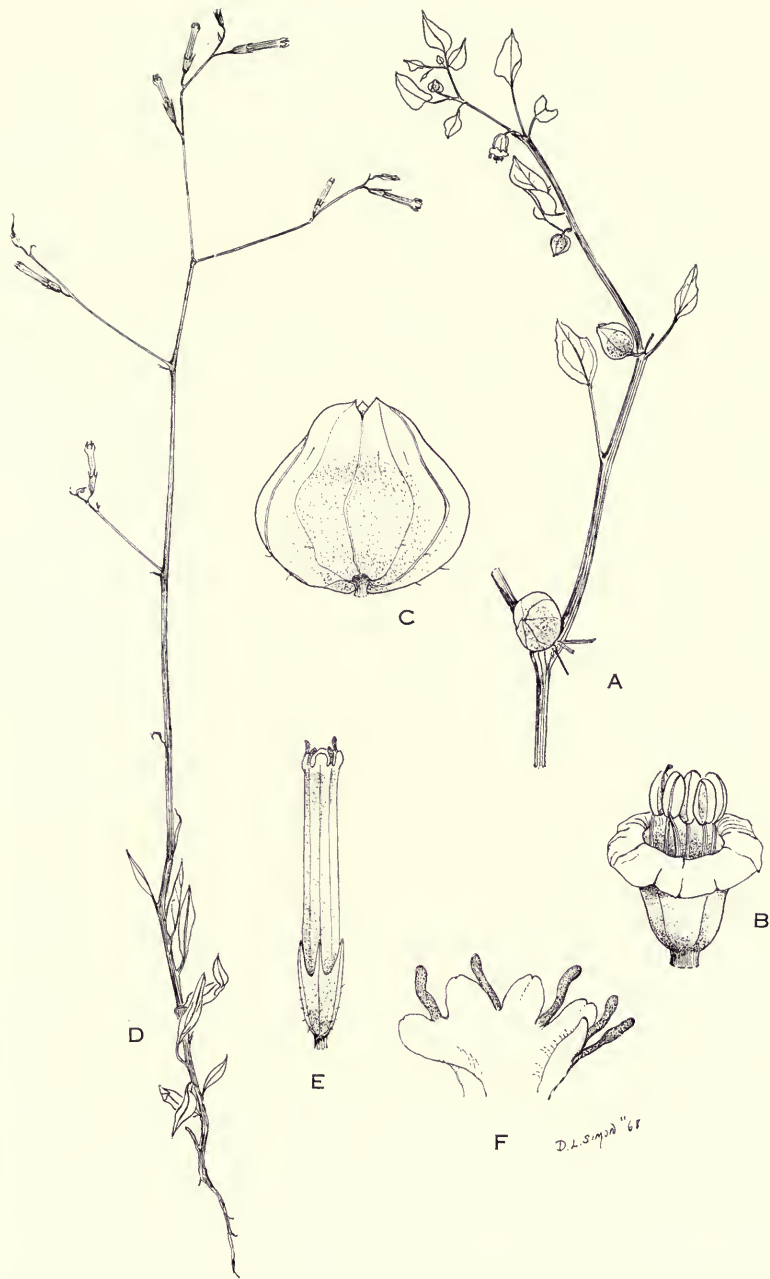


FIG. 17. *Physalis lagascae* var. *glabrescens*. A, habit,  $\times \frac{1}{2}$ ; B, flower,  $\times 4$ ; C, fruiting calyx,  $\times 2$ . *Schwentkia americana*. D, habit,  $\times \frac{1}{2}$ ; E, flower,  $\times 3$ ; F, corolla lobes, detail,  $\times 5$ .

**Physalis maxima** Miller, Gard. Dict. ed. 8, *Physalis* no. 15. 1768.

Dry slopes or moist thickets, 600–1,200 m.; Jalapa; Baja Verapaz; Guatemala; Jutiapa; Escuintla. Mexico. Honduras; Nicaragua; Costa Rica.

Herb 1.5 m. tall or less, the stem pubescent with short spreading hairs, at least some capitate-glandular, more robust hairs 1.5–3.5 mm. long present (in ours) in addition to the shorter ones on the stem, petioles, and pedicels; leaves coarsely sinuate-dentate to shallowly angulately-lobed or sometimes entire, ovate, the larger leaves mostly 8–30 cm. long, 5–14 cm. wide, the apex acuminate, the base rounded to cordate, pubescent with multicellular hairs above and below, the petioles 3–12 cm. long; flowers solitary, the pedicels 10–25(–75) mm. long, often with long hairs; flowering calyx 5–8 mm. long, often pubescent with long, spreading hairs, the lobes subulate, long-acuminate, 3–6 mm. long; corolla white or whitish, 6–8 mm. long, the limb slightly to moderately maculate, 10–15 mm. wide, pubescent internally; filaments 2.5–4 mm. long; anthers yellow or slightly bluish-tinged, 2.5–3 mm. long; fruiting calyx strongly 5-angled, reticulate, 4–6 cm. long, 2.5–4 cm. wide, pubescent, the pedicels 20–30(–80) mm. long; berry 10–20 mm. in diameter.

*Physalis maxima* Miller is closely related to *P. nicandroides* Schlecht., especially variety *attenuata* Waterfall. It can be separated in most cases from that variety by the long hairs on the stem, petioles, and pedicels and by the wider corolla limb. Some specimens are difficult to place.

The name *Physalis maxima* Miller had not been used in floristic work since its original description until Waterfall's treatment in 1967. Prior to that time, most of the specimens were identified as *P. nicandroides* Schlecht.

**Physalis microcarpa** Urban & Ekman in Urban, Pl. Haitiensis, Arkiv Bot. 21A(5): 59. 1927. *Miltomate de culebra* (Jutiapa).

In moist thickets, 300–850 m.; Zacapa; Chiquimula; Jutiapa. El Salvador; Honduras. West Indies.

Herb 0.4 m. tall or less, slightly to much branched, erect or sometimes nearly prostrate, the stems with short, incurved hairs; leaves entire or slightly repand, lanceolate to lance-ovate, the larger leaves 1.5–6 cm. long, 0.5–2 cm. wide, the apex acuminate, sometimes long acuminate, the base obtuse, rounded or acute, pubescent with short, incurved hairs above and below, the petioles 0.4–2 cm. long; flowers solitary, the pedicels 0.5–2 mm. long; flowering calyx 1.2–2 mm. long, pubescent with appressed hairs, the lobes deltoid or ovate, 0.4–0.6 mm. long; corolla 2–3 mm. long, immaculate, slightly pubescent internally; filaments 0.5–0.7 mm. long; anthers bluish or violet, sometimes yellowish (perhaps due to fading), 0.4–0.6 mm. long; fruiting calyx nearly terete, slightly 10-ribbed, 0.5–1 cm. long, 0.5–0.6 mm. wide, sparsely pubescent with relatively short hairs, the pedicels 3–4 mm. long; berry 3–4.5 mm. in diameter.

In addition to the characters in the key, *Physalis microcarpa* Urban & Ekman differs from *P. lagascae* Roem. & Schult. by the shorter hairs on the fruiting calyx and the somewhat narrower fruiting calyx lobes. *Physalis lagascae* often has widely spaced small teeth or enations produced mostly by the base of the hairs on the ribs of the fruiting calyx.

***Physalis minuta*** Griggs, *Torreyia* 3: 138. 1903.

Sandy fields or a weed in cultivated fields, 850 m. or below. Mexico. Honduras; Nicaragua; Costa Rica. Panama. To be expected in Guatemala.

Herb 0.4 m. tall or less, erect, the stem pubescent with short, incurved hairs; leaves entire or slightly repand, ovate to lanceolate, the larger leaves 3.5–9 cm. long, 1.5–3.5 cm. wide, the apex acuminate or acute, the base obtuse or acute, pubescent with very short, incurved hairs mostly on the veins above and below, the petioles 1–3.5 cm. long; flowers solitary, the pedicels 3–6 mm. long; flowering calyx 2–3 mm. long, pubescent with appressed hairs, the lobes triangular, 1–1.5 mm. long; corolla 4–5.5 mm. long, immaculate or with slightly contrasting spots, pubescent internally; filaments about 1.5 mm. long; anthers bluish tinged or yellowish, 1–2 mm. long; fruiting calyx 5-angled, 1.5–2 cm. long, 1.2–1.5 cm. wide, minutely and sparsely pubescent, the pedicels 4–10 mm. long; berry about 8 mm. in diameter.

*Physalis minuta* Griggs is restricted apparently to the Pacific slope in Central America.

***Physalis nicandroides*** Schlecht. *Linnaea* 19: 311. 1846.

Moist thickets or brushy hillsides, often on rocky slopes, sometimes in cultivated ground, 850–1,830 m.; Guatemala; Chimaltenango; Quiché; Jutiapa. Mexico. Honduras; Costa Rica.

Herb 1–2 m. tall, the stems, petioles, and pedicels glandular-pubescent, the hairs less than 1 mm. long; leaves coarsely sinuate-dentate to shallowly angulately-lobed, ovate, the larger leaves 6.5–20 cm. long, 3–10 cm. wide, the apex acute or acuminate, the base acute to subcordate, glandular-pubescent above and below, the petioles 2–6.5 cm. long; flowers solitary, the pedicels 2–4 mm. long; flowering calyx 5–6.5 mm. long, glandular-pubescent with spreading hairs, the lobes subulate, long-acuminate, 3–4.5 mm. long; corolla white, greenish-white or yellowish, 4–8 mm. long, the limb maculate, but often faded, 6–8 mm. wide, pubescent internally; filaments 2–2.5 mm. long; anthers blue tinged to yellowish, 1.5–2 mm. long; fruiting calyx strongly 5-angled, reticulate, 3–4.5 cm. long, 2–4 cm. wide, pubescent, the pedicels short and thick, 5–10 mm. long, (1–)1.5–1.7 mm. thick; berry 12–20 mm. in diameter.

***Physalis nicandroides* var. *attenuata*** Waterfall, *Rhodora* 69: 235. 1967.

Damp or wet thickets, sometimes on rocky slopes, 350–1,300 m., rarely higher; Zacapa; Chiquimula; Jalapa; Sacatepéquez; Huehuetenango; Jutiapa; Santa Rosa. Mexico. Honduras; Costa Rica.

Variety *attenuata* differs from variety *nicandroides* by its longer and more slender fruiting pedicels, 10–25 mm. long, 0.5–1 mm. thick.

***Physalis philadelphica*** Lam., Encycl. Method. Bot. 2: 101. 1786. *P. philadelphica* Lam. forma *pilosa* Waterfall, Rhodora 69: 214. 1967 (type from Finca la Alameda near Chimaltenango, Chimaltenango, Standley 79899), *syn. nov. Miltomate; Miltomate Santo Tomás* (Chimaltenango); *tomatillo* (Jutiapa).

Moist or damp thickets or fields, often a weed in cultivated ground, sometimes in pine-oak forests; just above sea level to 1,830 m., rarely higher; Alta Verapaz; Izabal; Chiquimula; Jalapa; Guatemala; Baja Verapaz; Sacatepéquez; Chimaltenango; Sololá; Quiché; Huehuetenango; Jutiapa; Escuintla. Mexico. El Salvador; Costa Rica. Panama and West Indies.

Herb 1 m. tall or less, the stems sparsely pubescent with mostly short hairs to glabrous; leaves coarsely sinuate-dentate or dentate, sometimes entire, ovate to ovate-lanceolate, the larger leaves mostly 3.5–12.5 cm. long, 1.5–6 cm. wide, the apex acuminate, the base acute or obtuse, glabrous or sometimes with a few hairs on the veins above and below, the petioles mostly 2–5 cm. long; flowers solitary, the pedicels 3–7.5 mm. long; flowering calyx 3.5–6.5 mm. long, pubescent with spreading, multicellular hairs, the lobes ovate, 1.5–3 mm. long; corolla yellowish, 8–12 mm. long, the limb 10–18 mm. wide, maculate; filaments about 2 mm. long; anthers blue or yellowish with bluish margins, usually strongly contorted after dehiscence, 2.5–3 mm. long; fruiting calyx 10-ribbed, 2–3 cm. long, 2–2.5 cm. wide, glabrous or sometimes sparsely pubescent, reticulate, the pedicels 3.5–8 mm. long; berry 15–20 mm. in diameter, often nearly filling the fruiting calyx.

There has been a great deal of confusion in the application of a name for this species and its synonymy. *Physalis ixocarpa* Brotero ex Horn. and *P. aequata* Jacq. f. ex Nees were treated as synonyms of *P. philadelphica* Lam. by Waterfall in 1967. However, recent work by Fernandes (Bol. Soc. Brot. 44: 343–366, 10 plates, 1970) indicates that the two names cannot be applied to *P. philadelphica* but represents a separate species not known to occur in the New World.

See comment under *Physalis gracilis* Miers.

Miltomates (the name is Nahuatl, signifying cornfield tomato) are cultivated frequently in Guatemala for its edible fruit. Large quantities of the fruits are also gathered from spontaneous plants that occur as weeds in vegetable gardens and cornfields. They are

used mostly for flavoring food, just as tomatoes. Preserves and similar sweet dishes are also prepared from them.

***Physalis porphyrophysa* Donn.-Sm. Bot. Gaz. 61: 377. 1916.**

In moist forests, 200–400 m.; Petén; Zacapa (type from the vicinity of Zacapa, *Pittier 1754*). Southern Mexico (Chiapas).

A shrub 0.5–6 m. tall, the young stems densely pubescent with short, antrorsely curved and appressed, mostly simple hairs, glabrescent; leaves entire to slightly undulate, lanceolate to elliptic, the larger leaves 5–15 cm. long, 2–7 cm. wide, the apex acuminate, the base short attenuate, pubescence of simple, short and mostly incurved hairs above, the hairs short and mostly incurved, simple and with a few furcate and branched hairs among the simple ones below, the petioles 1–3 cm. long; inflorescences consisting of (1–)2–6 flowers, often only one maturing a fruit, the pedicels 5–10 mm. long, filiform, only slightly thickened above; flowering calyx 4–5 mm. long, pubescence of short, incurved hairs, the lobes triangular, about 2 mm. long; corollas yellowish, 6.5–7.5 mm. long, the limb 8.5–9.5 mm. wide, maculate; filaments 2.5–3 mm. long; anthers yellowish, about 3 mm. long; fruiting calyx 10-ribbed, 2.5–4 cm. long, 1.8–2.5 cm. wide, and strongly invaginated at the base, sometimes purplish at maturity, pubescence of short incurved hairs, the pedicels 6–12 mm. long; berry 12–15 mm. in diameter, sessile or on a short gynophore 1.5 mm. long or less.

Some collectors have described the habit of *Physalis porphyrophysa* Donn.-Sm. as subscaudent. Part of the material cited by Waterfall (1967) in *P. melanocystis* var. *cernua* has been included in this species.

***Physalis porrecta* Waterfall, Rhodora 69: 237. 1967. *Miltomate*.**

Moist or wet thickets, sometimes moist dense forests, 1,550–2,500 m., rarely lower; Chiquimula; Sacatepéquez; Chimaltenango; Quezaltenango; San Marcos. Mexico. Costa Rica.

Herb 1.5 m. tall or less, the stems sparsely pubescent with short, multicellular hairs, these usually confined to one side of the stem, glabrescent in age or sometimes more or less evenly pubescent, with some of the hairs capitate-glandular; leaves mostly broadly dentate or entire, ovate to ovate-lanceolate, the larger leaves mostly 5–12 cm. long, 4–7 cm. wide, the apex acuminate, the base obtuse or acute, pubescent with multicellular hairs above and below, more sparsely pubescent below, the petioles (2–)3–7 cm. long; flowers solitary, the pedicels 4–5 mm. long; flowering calyx 5–7 mm. long, pubescent with multicellular hairs, the lobes lanceolate, 2.5–4 mm. long; corolla pale yellow or greenish-yellow, 7–10 mm. long, the limb 12–15 mm. wide, maculate, these usually inconspicuous, edges of the maculations often diffuse; filaments 2–4 mm. long; anthers yellow to bluish or greenish-blue, about 2 mm. long; fruiting calyx 5-angled, (3–)3.5–5.5 cm. long, 2–3 cm. wide, glabrous, reticulate, usually abruptly beaked, the pedicels 10–16 mm. long; berry 12–15 mm. in diameter.

**Physalis pubescens** L. Sp. Pl. 1: 183. 1753. *Miltomate*.

Moist or wet thickets or fields, open rocky places, sometimes along rivers, 30–1,000 m.; Petén; Alta Verapaz; Izabal; Zacapa; Baja Verapaz; Guatemala; Chiquimula; Huehuetenango; Jutiapa; Santa Rosa. British Honduras. Eastern United States. Mexico to Costa Rica. Panama and West Indies. South America. A widespread pantropical species.

Herb 2 m. or less tall, the stems pubescent with relatively long, multicellular hairs, these sometimes glandular, sometimes glabrate; leaves coarsely sinuate-dentate to entire, ovate, the larger leaves 6–16 cm. long, 2–8 cm. wide, the apex acuminate, the base rounded to subcordate, truncate or acute, pubescent with spreading, multicellular hairs above and below, the petioles 2–7(–10) cm. long; flowers solitary, the pedicels 3–6 mm. long; flowering calyx 3.5–6 mm. long, densely pubescent with spreading hairs, the lobes narrowly lanceolate or triangular, rarely ovate-deltoid, 1.5–3.5 mm. long; corolla yellowish, 6–12 mm. long, the limb maculate, 8–15 mm. wide, pubescent internally; filaments 2–3 mm. long; anthers bluish or violet, 1.5–3 mm. long; fruiting calyx 5-angled, reticulate, 2–4 cm. long, 1.2–3 cm. wide, pubescent with spreading hairs, the pedicels 5–15 mm. long; berry 10–18 mm. in diameter, sessile or on a gynophore 1–2 mm. long, often capitate-glandular.

Some of the specimens placed here have been identified as *Physalis turbinata* Medic. by Waterfall.

**SCHWENCKIA** L.

Herbs; leaves alternate, entire, short petiolate; inflorescence paniculate or racemose, bracteate or bracts absent, the flowers small; calyx tubular, 5-lobed; corolla tubular, reddish-purple or purplish-green, the lobes somewhat 3-lobulate with the median lobule clavate, the 2 shorter lateral lobules fused completely or almost so with the adjoining lobes of each adjacent corolla lobe, thus the corolla appearing to be 10-lobed but actually 5-lobed; fertile stamens 2, included, with 3 or 2 staminodes; anthers coherent, longitudinally dehiscent; filaments dilated below and ciliate; ovary bilocular, the ovules numerous, the disk cupular; style smooth and slender, included or exerted; stigma capitate; capsule septicial, smooth and glabrous; seeds numerous and angulate; embryo straight.

About 20 species, only one additional species in Central America, the others chiefly Brazilian.

**Schwenckia americana** L. Syst. Veg. 60. 1774.

Dry rocky open hillsides or open thickets, sometimes in brushy pine forests, near sea level to 1,500 m., sometimes higher; Zacapa; Jalapa; Jutiapa; Chiquimula. British Honduras. Southern Mexico. Honduras; El Salvador; Costa Rica. Panama. Cuba and South America. Africa.

Slender annual plants, 2.5–6 dm. tall, stem often densely pubescent with inwardly curved hairs; leaves oblong to linear-lanceolate or elliptic, mostly 2–3.5 cm. long, 0.5–2 cm. wide, reduced upwards, hirsutulous, the lateral veins conspicuous in the larger leaves, acute, attenuate at the base; petioles 0.7 mm. long or less; flowers on filiform pedicels about as long as the calyx; calyx about 4.5 mm. long, sparsely pubescent or glabrous, the lobes 1–1.5 mm. long, acute; corolla reddish-purple or dark purple and greenish, 10–13 mm. long, the tube slender, about 1 mm. wide; filaments about 7.5 mm. long, pubescent below, the staminodes 3 mm. long; style 10.5–11 mm. long; capsule 3.5–4 mm. long, obtuse, slightly exceeding the accrescent calyx; seeds angulate, rugulose and somewhat muricate, less than 1 mm. long.

There is some tendency for the plants in British Honduras to have narrower leaves than in typical *Schwenckia americana*. The name *S. americana* var. *angustifolia* Schmidt is available for this narrow-leaved form of the species.

See additional comments under *Melananthus*.

#### SOLANDRA Swartz, nom. cons.

Scandent shrubs, sometimes epiphytic, glabrous or pubescent, the hairs simple or branched; leaves alternate and entire, petiolate, subcoriaceous or membranaceous; inflorescences pseudoterminal, consisting of a single flower, the flowers very large and showy; calyx tubular or campanulate, 2–5 lobed or parted; corolla funnelliform, white or yellowish, the limb 5-lobed, the lobes imbricate in bud, the tube widely ampliate above; stamens 5, inserted at the point where the corolla tube widens, exserted; filaments glabrous or pubescent at their bases, the staminal traces villous; anthers oblong, longitudinally dehiscent; ovary partly inferior, tetralocular, the ovules numerous, the disc inconspicuous; style filiform, exserted; stigma capitate and dilated; fruit a large, leathery berry; seeds numerous; embryo strongly curved.

A genus of seven or eight species, all in tropical America. Two or three more species may occur in southern Central America.

*Solandra grandiflora* Swartz, Vet. Akad. Handl. Stockh. 8: 300, t. 11. 1787. *Ingerto de montaña* (Guatemala).

Wet or damp forests or on cliffs, 1,170–3,000 m.; Alta Verapaz; Guatemala; Chimaltenango; San Marcos; Suchitupéquez. Southern Mexico. El Salvador; Honduras; Costa Rica. Panama and West Indies.

An epiphytic or sometimes terrestrial scandent shrub, the branches thick, glabrous; leaves subcoriaceous, lustrous, broadly elliptic to elliptic-ovate or obovate, 10–22 cm. long, 4.5–10 cm. wide, glabrous above, glabrous below or pubescent along the edge of the mid-vein or with tufts of hairs in the axis of the mid-vein below, apex acuminate or sometimes acute, short attenuate or acute at the base; petioles 3.5–9 cm. long, glabrous; inflorescence pseudoterminal, consisting



FIG. 18. *Solandra grandiflora*. Habit and flower,  $\times \frac{1}{2}$ .



of a solitary flower; pedicels thick, 0.8–2 cm. long, glabrous; calyx 6.5–8 cm. long, glabrous, 5-angled, slightly lobed to parted nearly to the base, the lobes usually unequal, the longer ones oblong, apex short acuminate; corolla yellowish, 19–25 cm. long, the tube 16–19.5 cm. long, the lobes subrotund to ovate-rotund, 3.5–5 cm. long, erose and entire, apex rounded; stamens inserted near the middle of the tube, exserted; filaments 9–11 cm. long, glabrous, curved in the upper portion holding the anthers suberect; anthers 10–12 mm. long; style exserted, 18–21 mm. long; ovary tetralocular; fruit ovate-globose, 4.5–5 cm. long, 4–5 cm. wide at the base, acute; seeds numerous, 5 mm. long.

We are recognizing only one species in Guatemala. However, further collecting and study may warrant the recognition of one or possibly two additional species. The material placed here has been identified as *Solandra nitida* Zucc. in Roem. in herbaria.

*Solandra grandiflora* is planted often as an ornamental in Guatemala. The large fruits, often found in great abundance on the ground, are said to be edible.

Called *copa de oro* in Honduras.

## SOLANUM L.

*References:* M. F. Dunal in A. DC. Prodr. 13, pt. 1, *Solanum*, pp. 27–387. 1852. D. S. Correll, Section *Tuberarium* of the Genus *Solanum* of North America and Central America, Agr. Monogr. U.S.D.A. No. 11, 1–243. 1952. C. B. Heiser, Jr., The *Solanum nigrum* complex in Costa Rica, *Ceiba* 4: 293–299. 1955. D. S. Correll, The Potato and its Wild Relatives, Texas Research Foundation, 606 pp. 1962. J. G. Hawkes, A revision of the tuber-bearing Solanums, 2 ed., Scottish Plant Breed. Sta. Rec. 76–181. 1963. K. P. Roe, A revision of *Solanum* sect. *Brevantherum* (Solanaceae) in North and Central America, *Brittonia* 19: 353–373. 1967; A revision of *Solanum* section *Brevantherum* (Solanaceae) l.c. 24: 239–278. 1972. J. Edmonds (née Gray), A synopsis of the taxonomy of *Solanum* Sect. *Solanum* (*Maurella*) in South America, *Kew Bull.* 27: 95–114. 1972.

Herbs, shrubs, small trees, or vines, armed with prickles or unarmed; glabrous or pubescent, the hairs often variously stellate or branched; leaves alternate, sometimes in pairs, simple and entire to parted or odd-pinnate; inflorescences simple or compound cymes, sometimes umbelliform or racemose, these pseudo-terminal, lateral and opposite the leaves, or internodal, or axillary; calyx campanulate, 5-lobed; corolla subrotate, white, yellow, violaceous, or purple, the lobes plicate or valvate in bud; stamens 5, inserted near the base of the corolla tube; filaments filiform or broad; anthers oblong or attenuate, dehiscent by two terminal pores or slits, these often continued as longitudinal introrse slits part way down the thecae; ovary bilocular, the ovules numerous, the disc inconspicuous; stigma

capitate, entire or obscurely bilobed; fruit a berry, usually globose and fleshy, sometimes ovoid or ellipsoid; seeds numerous, compressed, orbicular or subreniform; embryo strongly curved or spiral.

A genus of some 1,500 species comprising over one-half of the species in the family, chiefly in tropical and subtropical regions in both hemispheres. There are other numerous species known from Mexico and southern Central America. An economically important genus because it includes all of the cultivated potatoes. *Solanum* also contains some of the most poisonous members of the family, however, a few species produce edible fruits.

*Solanum* is one of the largest genera of plants, as well as one of the most difficult taxonomically. The large number of species partly explains some of the problem. The genus is in need of a taxonomic revision and would provide a lifetime work for some industrious person. The total number of names to consider in such a revision is over 3,000.

The treatments cited above by Correll and Roe have been most helpful in the preparation of the manuscript. We have followed their work with some modifications.

Anthers long attenuate, the pores small; plants nearly always armed with prickles.

Plants vines or rarely erect shrubs; branches armed with mostly short and strongly recurved prickles.

Leaves glabrous or inconspicuously puberulent, the hairs simple.

Stamens equal in length; leaves entire . . . . . *S. cobanense*.

Stamens unequal in length; at least the lower leaves pinnatifid or odd-pinnate.

Corolla blue to lavender, the limb 3.5–5.5 cm. wide, scarcely lobed to nearly entire; branches, leaves, and inflorescences nearly always glabrous . . . . . *S. wendlandii*.

Corolla white, the limb less than 2 cm. wide, lobed to below the middle; branches, leaves, and inflorescences pubescent, the hairs very short. *S. molinarum*.

Leaves stellate-pubescent, the hairs sometimes sparse and inconspicuous.

Leaves sessile or subsessile, broadly cuneate at their bases, covered with short, stipitate-stellate hairs above; plants shrubs . . . . . *S. jamaicense*.

Leaves petiolate, acute to short attenuate at their bases, covered with sessile-stellate hairs above, sometimes sparsely pubescent; plants vines or sometimes shrubs.

Young branches densely covered with reddish hairs, the hairs mostly with the central ray greatly exceeding the lateral ones; long, stipitate-stellate (bristle-like) hairs absent; calyx lobes 5 mm. long or more, lanceolate to lance-oblong, pubescent internally; plants shrubs.

*S. erythrotichum*.

Young branches sparsely to densely covered with yellowish or yellowish-brown hairs, the hairs with the rays subequal; long, stipitate-stellate (bristle-like) hairs often present on the branches; calyx lobes 3 mm. long or less, linear-oblong or caudate, glabrous internally; plants vines.

Leaves entire to shallowly angulately-lobed; stems mostly densely stellate-pubescent, often covered with long, stipitate-stellate (bristle-like) hairs; anthers 6-11 mm. long; ovary and style pubescent. . . . . *S. lanceifolium*.

Leaves sinuately-lobed to deeply parted; stems glabrate, bearing a few stellate hairs when young, long, stipitate-stellate (bristle-like) hairs absent; anthers 3.5-4 mm. long; ovary and style glabrous. *S. houstonii*.

Plants erect shrubs or small trees, sometimes herbs; branches armed with straight, often long prickles, rarely a few prickles slightly recurved or the branches sometimes unarmed.

Leaves with simple hairs above.

Leaves with simple hairs above and below; fruit ovoid and abruptly contracted at the apex into a short neck (mammillate) . . . . *S. mammosum*.

Leaves with at least some stellate hairs below; fruit globose.

Stems and petioles with at least some of the long, eglandular hairs 1.5-2 mm. in length; seeds with a prominent wing . . . . *S. quinqueangulare*.

Stems and petioles with short and mostly glandular hairs, the hairs nearly always less than 1 mm. in length; seeds without a wing. *S. globiferum*.

Leaves with stellate hairs above.

Plants herbs, 1 m. tall or less; calyx densely armed with prickles.

Leaves shallowly lobed to deeply parted, densely pubescent above and below; corolla purplish-white; stamens subequal in length; fruit not enclosed by the calyx. . . . . *S. campechiense*.

Leaves bipinnatifid, sparsely pubescent to nearly glabrous above; corolla yellow; stamens unequal in length; fruit enclosed by the close fitting calyx. . . . . *S. cornutum*.

Plants shrubs or sometimes small trees, (0.5-) 1-5 m. tall; calyx unarmed.

Branches covered with reddish hairs.

Branches sessile-stellate pubescent, the hairs mostly with the central ray greatly exceeding the lateral ones; ovary densely stellate-pubescent throughout. . . . . *S. erythrotrichum*.

Branches covered with long, stipitate-stellate (bristle-like) hairs, the rays subequal; ovary sparsely stipitate-glandular pubescent apically. . . . . *S. hispidum*.

Branches covered with whitish, grayish or sometimes yellowish-brown hairs.

Fruit densely stellate-pubescent, the hairs very conspicuous; calyx lobes densely stellate-pubescent internally; anthers subsessile.

Branches covered with yellowish-brown hairs, at least some of the hairs long stipitate-stellate; leaf lobes mostly 5-7; prickles commonly with broad bases. . . . . *S. tequilense*.

- Branches covered with whitish or grayish, sessile-stellate hairs, at least some of the hairs glandular; leaf lobes mostly 9 or more; prickles commonly with slender bases. . . . . *S. hirtum*.
- Fruit glabrous; calyx lobes glabrous internally or sparsely pubescent apically; anthers with filaments 1 mm. long or more.
- Corolla purplish; branches long, stipitate-stellate pubescent, the hairs whitish or grayish; montane species. . . . . *S. hartwegii*.
- Corolla white; branches sessile-and/or short stipitate-stellate pubescent, the hairs mostly yellowish-brown; lowland species.
- Leaves entire; plants unarmed; pedicels and calyces eglandular; fruit lustrous, 5-7.5 mm. in diameter; inflorescences consisting of bifurcate cymes. . . . . *S. blodgettii*.
- Leaves sinuately lobed to deeply parted, sometimes subentire; plants nearly always armed with prickles; pedicels and calyces often glandular; fruit dull, 10-14 mm. in diameter; inflorescences consisting of mostly simple or furcate cymes. . . . . *S. torvum*.
- Anthers short, oblong or ellipsoid, the pores large; plants always unarmed.
- Leaves simple.
- Pubescence of entirely simple hairs or the plants glabrous.
- Plants herbaceous (rarely suffrutescent), not scandent.
- Corolla limb only shallowly lobed. . . . . *S. muricatum*.
- Corolla limb parted to near the base.
- Pedicels articulate at or near the middle; pseudostipules present at the base of the petioles, rarely absent in *S. clarum*.
- Anthers rounded and dorsally auriculate at their bases; filaments often connate forming a column; plants nearly always epiphytic. . . . . *S. morelliforme*.
- Anthers cordate or dorsally lobulate at their bases; filaments free or somewhat connate; plants terrestrial.
- Leaves truncate or cordate at their bases; anthers dorsally 3- to 5-lobulate at their bases; pseudostipular leaves ovate or absent. . . . . *S. clarum*.
- Leaves shortly attenuate at their bases; anthers dorsally cordate at their bases; pseudostipular leaves auriform. . . . . *S. bulbocastanum*.
- Pedicels articulate at their bases; pseudostipules absent.
- Calyx densely hirsute, the calyx lobes much accrescent in fruit, one-half to as long as the fruit; inflorescences sessile or nearly so; filaments and style glabrous. . . . . *S. deflexum*.
- Calyx pilosulous, the calyx lobes only slightly accrescent in fruit; inflorescences long-pedunculate; filaments and style pubescent.
- Anthers 1.5-2 mm. long; corolla limb 5-7.5 mm. wide; sepals reflexed in fruit; lowland species, rarely found above 1,500 m. . . . . *S. americanum*.
- Anthers (2.5-)-3-4 mm. long; corolla limb 6.5-10(-16) mm. wide; sepals spreading to slightly ascending in fruit; ranging from 1,500-3,900 m. . . . . *S. nigrescens*.
- Plants shrubs or small trees, rarely scandent.
- Leaves with the hairs in tufts in the axils of the mid-vein below, sometimes the tufts of hairs inconspicuous. . . . . *S. nudum*.
- Leaves glabrous or pubescent below but the hairs not in tufts in the axils of the mid-vein below.
- Young branches, leaves, peduncles, and pedicels densely covered with a whitish or yellowish closely appressed tomentum, the nature of the hairs discernable only with difficulty. . . . . *S. nigricans*.
- Young branches and leaves glabrous or pubescent, not densely covered with an appressed tomentum, the nature of the hairs easily discernable.

Corolla violet, the limb 24–30 mm. wide; anthers 5–6 mm. long, broad; pedicels articulate at their bases to just above the middle; scandent shrubs. . . . . *S. dulcamaroides*.

Corolla white, the limb 6–15 mm. wide; anthers 1.5–4 mm. long, slender; pedicels articulate at their bases; erect shrubs.

Filaments free or only slightly connate at their bases, less than 0.5 mm. long; leaves 3–9 cm. long, 1–2.5 cm. wide, the apex obtuse or sometimes acute. . . . . *S. diphyllum*.

Filaments connate one-half their entire length or more, 0.5–1 mm. long; leaves mostly 10–27 cm. long, 2.5–12 cm. wide, the apex acuminate or acute.

Inflorescences inconspicuously puberulent throughout; pedicels 5–7 mm. long, puberulent; leaves broadest mostly above the middle; principal lateral veins of the largest leaves 6–8 in number; plants below 1,000 m. . . . . *S. rovirosanum*.

Inflorescences glabrous throughout; pedicels 10–15 mm. long, glabrous; leaves broadest mostly at or below the middle; principal lateral veins of the largest leaves 9–17 in number.

Corolla limb 15 mm. wide; anthers 3–4 mm. long; inflorescences mostly furcate; plants above 2,000 m. . . . . *S. fontium*.

Corolla limb 7–8 mm. wide; anthers 2–2.5 mm. long; inflorescences simple; plants below 1,000 m.

*S. tuerckheimii*.

Pubescence of stellate (the rays radiating from a central point) or branched (rays along their stalks or dichotomously branched) hairs; simple hairs occasionally present in addition to the compound ones.

Leaves with hairs in tufts in the axils of the mid-vein below or the hairs confined to the edge of the mid-vein and the bases of the lateral veins, sometimes the hairs generally dispersed but not so on the mid-vein, sometimes sparsely pubescent.

Leaves with hairs in mostly conspicuous tufts in the axils of the mid-vein below; calyx lobes rounded and short-caudate; corolla limb 12.5–15 mm. wide. . . . . *S. aligerum*.

Leaves with the hairs mostly along the edge of the mid-vein below, the hairs not in conspicuous tufts in the axils of the mid-vein; calyx lobes triangular or oblong; corolla limb 8–12 mm. wide.

*S. cervantesii*.

Leaves evenly pubescent below and sometimes more densely so on the veins but the hairs not confined to the edge of the mid-vein nor as tufts in the axils of the mid-veins.

Receptacle conspicuously swollen in bud and flower, often discernable in fruit. . . . . *S. hazenii*.

Receptacle not swollen.

Leaf bases long attenuate, decurrent along the entire length of the petiole or nearly so, sometimes decurrent only one-half the length of the petioles.

Stellate hairs of the young stems, petioles and peduncles at least partly with many rays, usually greatly exceeding 12, the hairs often with rays along their stalks; leaves mostly 8–15 cm. wide.

Pedicels very short, rarely more than 1 mm. long; leaves at least 2 dm. long, 1 dm. wide; leaves with the apices acuminate.

*S. brevipedicellatum*.

Pedicels 2 mm. long, usually longer; leaves often smaller than above, 3–11 cm. wide; leaves with the apices acute or acuminate.

*S. atillanum*.

Stellate hairs of the young stems, petioles and peduncles with few rays, usually less than 12; leaves mostly 2–8 cm. wide.

- Stems, peduncles, pedicels, and calyces with partly long stipitate-stellate hairs; calyx visibly glandular at 10× magnification.  
*S. umbellatum.*
- Stems, peduncles, pedicels, and calyces with sessile or short, stipitate-stellate hairs; calyx not visibly glandular at 10× magnification.  
Leaves 2-3 cm. wide, the petioles 2-5 mm. long. . . . .*S. asperum.*  
Leaves 4.5-9 cm. wide, the petioles mostly 10-15 mm. long.  
*S. rugosum.*
- Leaf bases rounded or obtuse to nearly truncate or attenuate, rarely decurrent to one-half the length of the petioles.
- Young leaves, peduncles, and pedicels densely covered with whitish or yellowish closely appressed, branched hairs, the branching of the hairs discernable only with difficulty. . . . .*S. nigricans.*
- Young leaves, peduncles, and pedicels sparsely to densely covered with stellate (rays radiating from a central point) or branched (rays along their stalks) hairs, the nature of the hairs easily discernable.
- Leaves densely covered with minute and closely appressed stellate-like scales below, the nature of the hairs discernable only with difficulty at 10× magnification, the surface smooth to the touch. . . . .*S. lepidotum.*
- Leaves covered with stellate hairs below, the nature of the hairs easily discernable with the naked eye, the surface velvety to slightly asperous to the touch.
- Pubescence almost entirely of branched hairs; principal lateral veins of the larger leaves 20 or more; corolla purple to lavender. . . . .*S. muenschleri.*
- Pubescence mostly of stellate hairs, sometimes a few branched hairs among the stellate ones; principal lateral veins of the larger leaves 5-8(-11); corolla white, rarely lavender.
- Inflorescences subsessile, the peduncle 0.3 cm. long or the inflorescences sessile.
- Leaves with long acuminate apices, the upper surface with at least some of the stellate hairs with the central ray much longer than the lateral rays; calyx lobes much accrescent in fruit, nearly as long as to slightly exceeding the mature fruit, the lobes stellate-pubescent internally. . . . .*S. cordovense.*
- Leaves with acute apices, the upper surface with simple and stellate hairs, the rays subequal in length; calyx lobes slightly accrescent in fruit, only about one-third the length of the mature fruit, the lobes glabrous internally. . . . .*S. huehuetecum.*
- Inflorescences pedunculate, the peduncles 1.5-12 cm. long.  
Petioles short, 0.2-0.5 cm. long; inflorescences lateral, borne below the foliage on divergent peduncles.  
*S. schlechtendalianum.*
- Petioles long, 1-10 cm. long; inflorescences pseudoterminal, borne above the foliage on erect peduncles.  
Leaf bases rounded to nearly truncate or acute; flower buds turbinoid. . . . .*S. erianthum.*
- Leaf bases long or short attenuate, the blade decurrent on the petiole; flower buds subglobose to oblong.  
*S. chiapasense.*
- Leaves pinnate or very rarely simple in part in *S. seaforthianum.*  
Inflorescences axillary. . . . .*S. trizygum.*  
Inflorescences pseudoterminal, or lateral and internodal, or opposite the leaves.

Pedicels articulate at or near the middle.

Terminal leaflets obovate or broadly elliptic, much larger than the lateral ones, the apices abruptly acuminate or acute; fruit globose or ovoid, rounded at the apex; plants often forming a rosette. . . . *S. demissum*.

Terminal leaflets lanceolate to narrowly elliptic or lanceolate-oblong, about the same size as the lateral ones, the apices long acuminate or narrowly acute; fruit ellipsoid or ovoid-cylindrical, acute at the apex, plants not forming rosettes.

Leaves (at least some) with numerous and prominent interstitial leaflets. . . . . *S. agrimonifolium*.

Leaves without interstitial leaflets or rarely present, then few in number, minute and inconspicuous. . . . . *S. oxycarpum*.

Pedicels articulate at or near their bases.

Corolla limb scarcely lobed.

Plants with spreading hairs; leaves without interstitial leaflets, the terminal leaflet usually much larger than the lateral ones.

*S. fraxinifolium*.

Plants with appressed hairs; leaves with few interstitial leaflets, the terminal leaflet usually not much larger than the lateral ones.

*S. suaveolens*.

Corolla limb parted more than one-half way to the base.

Leaflets always 3. . . . . *S. phaseoloides*.

Leaflets 5-15, rarely a few of the leaves with 3 leaflets or the leaves simple in part.

Leaves with interstitial leaflets; stem herbaceous, not rooting at the nodes. . . . . *S. canense*.

Leaves without interstitial leaflets; stem woody, climbing and rooting at the nodes, rarely without roots at the nodes as in *S. seaforthianum*.

Corolla limb 18-22 mm. wide, the flowers showy; stems not rooting at the nodes; pseudostipular leaves absent. . . . *S. seaforthianum*.

Corolla limb 6-13 mm. wide, the flowers not showy; stems rooting at the nodes; pseudostipular leaves nearly always present.

Anthers apiculate to aristate and puberulent at their apices; leaflets nearly always 7-11. . . . . *S. skutchii*.

Anthers rounded and retuse and glabrous at their apices; leaflets 5, rarely 3.

Style much exceeding the stamens.

Filaments connate their entire length; young stems densely pubescent. . . . . *S. connatum*.

Filaments connate not more than one-half their length; young stems mostly glabrous to sparsely pubescent.

*S. inscendens*.

Style about equal to or shorter than the stamens.

Peduncle and rachis sparsely pubescent to essentially glabrous; pedicels with appressed hairs or glabrous.

*S. appendiculatum*.

Peduncle and rachis densely pubescent; pedicels with spreading or subappressed hairs. . . . . *S. tacanense*.

***Solanum agrimonifolium*** Rydb. Bull. Torrey Bot. Club 51: 154. 1924. *Tisbotch*; *papa de marrana*.

Wet forests or cloud forests, alpine thickets, shaded barrancos or stream banks, 1,900-3,400 m.; Quezaltenango; San Marcos; Huehuetenango. Southern Mexico.

Plants herbaceous erect or ascending, 2.5–12 dm. tall, nearly glabrous to densely pubescent, the stem angular, simple or branched, often purple-tinged, non-tuber-bearing or sometimes with small ellipsoid tubers; leaves odd-pinnate, 1–3.5 dm. long; interstitial leaflets usually numerous, sessile; leaflets 9–15, elliptic-lanceolate to narrowly lanceolate, 1.5–12 cm. long, 0.5–3.5 cm. wide, the apex narrowly acute to long acuminate, rarely obtuse, the base oblique, rounded to cuneate, sessile or with a short winged petiolule, the lowermost pair of leaflets much reduced; pseudo-stipular leaves present; inflorescence pseudoterminal, becoming lateral and opposite the leaves, few-to many-flowered, laxly cymose or sometimes racemose; peduncles 3–10.5 cm. long; pedicels 1–3.5 cm. long, articulate at or somewhat above the middle; calyx 6–12 mm. long, glabrous or pubescent, parted to well below the middle, the lobes ovate-lanceolate to lanceolate, acute or long acuminate; corolla bright purple to lavender or rarely whitish, the limb mostly 2–2.5 cm. wide, very shallowly lobed, the lobes 1.5–3 mm. long, puberulent; filaments 1–2 mm. long, glabrous or sometimes pubescent; anthers 3.5–5.5 mm. long; style 7–8 mm. long, exceeding the stamens; fruit ellipsoid-conic, acute, pale green, 2.5–4 cm. long, up to 1.3 cm. in diameter near the base.

***Solanum aligerum*** Schlecht. *Linnaea*. 19: 301. 1845. *Seconillo* (Quezaltenango).

Wet cloud forests or in mixed forests or in moist sandy forests, 2,400–3,100 m.; Quiché; Chimaltenango; Huehuetenango; Quezaltenango. Southern Mexico. El Salvador and Honduras.

An unarmed shrub or tree, 1.5–10 m. tall, the branches glabrous; leaves oblong-elliptic to narrowly elliptic, sometimes lanceolate, mostly 7.5–20 cm. long, 2–4 cm. wide, the apex acuminate or narrowly acute, the base attenuate or sometimes long attenuate, glabrous or sometimes pilosulous above, the hairs in tufts in the axils of the mid-vein and dispersed along the edge of the mid-vein and sometimes near the mid-vein below, the hairs branched, sometimes simple hairs present; petioles 1–1.5 cm. long; inflorescence pseudoterminal, becoming lateral and opposite the leaves, cymose, more or less elongate or broader at the base, few-to many-flowered; peduncles short, 1–3 cm. long; pedicels 8–14 mm. long; calyx 2–2.5 mm. long, sometimes cleft down one side, the lobes short, 0.5–1 mm. long, rounded and short-caudate, ciliate and internally pilosulous and glandular; corolla white, the limb 12.5–15 mm. wide, parted to below the middle, the lobes 5–6 mm. long, ciliate and apically pilosulous; filaments about 0.5 mm. long; anthers 3–3.5 mm. long; style 6–6.5 mm. long, glabrous; ovary glabrous; fruit globose, 7–10 mm. in diameter, black; seeds 3 mm. long.

*Solanum aligerum* Schlecht. and *S. cervantesii* Lagasca are closely related. They are distinguished by the pubescence on the adaxial side of the leaves, calyx lobes, and, in general, by the inflorescence. The corollas of *S. aligerum* are somewhat broader than in *S. cervantesii*.

***Solanum americanum*** Miller, *Gard. Dict.* ed. 8. *Solanum* no. 5. 1768. *S. nodiflorum* Jacq. *Icon. Pl. Rar.* 2: 288. 1786. *Hierba*



*mora* (Chimaltenango; Jutiapa); *macúy* (Alta Verapaz); *quilete* (Santa Rosa).

Damp thickets or forests, open hillsides or field, a common weed of cultivated and waste ground, 350–1,500 m., rarely higher; Petén; Alta Verapaz; Zacapa; Baja Verapaz; Sacatepéquez; Chimaltenango; Huehuetenango; Jutiapa; Santa Rosa; Escuintla; Retalhuleu; San Marcos. British Honduras. Western United States. Mexico to Costa Rica. Panama and West Indies. South America.

A perennial or annual herb, erect or decumbent, 1 m. tall or less, the young stems pilosulous to nearly glabrous, the hairs incurved; leaves in pairs or solitary, different in size, similar in shape, entire or sinuate-dentate, lanceolate to ovate, the larger leaves 3.5–14 cm. long, 1.5–5.5 cm. wide, the apex narrowly acute or acuminate, the base attenuate, sparsely to densely pilosulous or glabrous above and below; petioles 5–30 mm. long; inflorescences lateral and internodal, subumbelliform or racemiform, few to several-flowered; peduncles 5–25 mm. long; pedicels 5–10 mm. long, fruiting pedicels reflexed; calyx 1–2 mm. long, lobed to the middle, the lobes ovate to oblong, acute or obtuse, reflexed in fruit; corolla white, the limb 5–7.5 mm. wide, parted to near the base, the lobes 2–3 mm. long, externally papillate; filaments 0.3–0.5 mm. long, ciliate; anthers 1.5–2 mm. long; style 2.5–3.5 mm. long, exceeding the stamens, the lower one-half densely pubescent; ovary glabrous; fruit globose, 4–8 mm. in diameter, black at maturity; seeds about 1 mm. long.

*Solanum americanum* Miller and *S. nigrescens* Mart. & Gal. are members of section *Morella* (*Maurella* Nees). The species in this section are morphologically similar and very difficult to distinguish. As a result, authors vary widely in their treatments of some members of this section.

All of the material included in this species has been identified as either *S. nodiflorum* Jacq. or *S. nigrum* L. We are following Edmonds (née Gray) in placing *S. nodiflorum* in the synonymy of *S. americanum*. *Solanum nigrum* L., sensu stricto, is not known to occur in Guatemala, and probably not anywhere in Central America. Edmonds (1972) did not find any specimens in South America that could be referred to *S. nigrum* L., sensu stricto. See Edmonds (J. Arnold Arbor. 52: 635. 1972) for the differences separating *S. americanum* from *S. nigrum* L., sensu stricto.

In Guatemala the young foliage is used as one of the common pot herbs and is consumed in large quantities. It is found in most of the markets.

Called *bocano* in British Honduras and *mora* in Honduras and El Salvador. See comments under *S. nigrescens* Mart. & Gal.

**Solanum appendiculatum** H. & B. ex Dunal, Solan. Syn. 5. 1816. *Mapix; tomatillo*.

Wet forests or cloud forests, in mixed or coniferous forests; 2,000–3,500 m., rarely lower; Alta Verapaz; Chiquimula; Jalapa; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quezaltenango; Totonicapán; Huehuetenango; Suchitepéquez; San Marcos. South-central Mexico.

A climbing or sometimes trailing woody vine, the stems rooting at the nodes, non-tuber-bearing; young branches densely pubescent to nearly glabrous, becoming glabrous with age; leaves odd-pinnate, 4–10(–15) cm. long, pubescent to essentially glabrous above and below; petioles 1–3.5(–9) cm. long; interstitial leaflets absent; leaflets 5, rarely 3, lanceolate to elliptic, rarely oblanceolate or ovate, mostly 1–5 cm. long, 1–2.5 cm. wide, the apex acute to acuminate, petiolule to 5 mm. long, the lowermost pair of leaflets reduced, the terminal leaflet larger than the lateral ones; pseudostipular leaves present; inflorescence pseudoterminal on leafy branches, becoming lateral and opposite the leaves, cymose-paniculate; peduncle 5–20 mm. long, sparsely pubescent to glabrous with age; pedicels 5–8 mm. long, glabrous to sparsely pubescent with appressed hairs, articulate at their bases; calyx 2–2.5 mm. long, pubescent to glabrous with age, divided to about the middle, the lobes broadly ovate, acute or obtuse, apiculate, marginate; corolla white, rarely light blue, the limb deeply lobed to near the base, the lobes 3–5 mm. long, elliptic-lanceolate, obtuse to acute; filaments about 0.5 mm. long, pubescent; anthers 2–3 mm. long; style equal to or shorter than the stamens; fruit globose, red, about 1 cm. in diameter.

Closely related to *Solanum inscendens* Rydb.

We have followed Correll (1962) in recognizing five species of Series *Appendiculata* as occurring in Guatemala, *S. appendiculatum* H. & B. ex Dunal, *S. connatum* Correll, *S. inscendens* Rydb., *S. skutchii* Correll, and *S. tacanense* Lundell. They are separated mostly by minor morphological differences. Further collecting and study, especially of *S. connatum* and *S. tacanense*, may result in a reappraisal of the present treatment.

**Solanum asperum** L. C. Rich. Cat. Pl. in Act. Soc. Hist. Nat. Paris 1: 107. 1792. *S. salviifolium* Lam. Tabl. Encycl. Meth. 2: 14. 1793, non auct.

Moist forests, in open places or in secondary growth, near sea level; British Honduras. Panama. Trinidad, south to Brazil.

An unarmed shrub or small tree 1–6 m. tall, the young branches ferruginous, densely stellate-pubescent, the hairs sessile and short stipitate-stellate; leaves narrowly elliptic or lanceolate, 10–17 cm. long, 2–3 cm. wide, the apex acuminate, the base long attenuate, decurrent along entire length of the petiole or nearly so, sparsely to moderately sessile-stellate pubescent and asperulous above, densely pubescent below, the hairs ferruginous, sessile and short-stipitate stellate; petioles short, 2–5 mm. long; axillary leaves absent; inflorescence cymose, pseudoterminal,

becoming lateral, dichotomously branched, long pedunculate, the peduncle 4–13 cm. long; pedicels 2–6 mm. long, pubescent, the hairs sessile and short-stipitate stellate; flower buds obovoid to ellipsoid; calyx lobed to the middle, the lobes 1.5–3 mm. long, glabrous or stellate-pubescent within, densely stellate-pubescent externally; corolla white, the limb 1–1.2 cm. wide, parted to below the middle, the lobes 4–5 mm. long; filaments 0.5–1.5 mm. long; anthers 2–3 mm. long; ovary and lower half of style densely stellate-tomentose; fruit yellow, 8–10 mm. in diameter, stellate-pubescent; seeds 1.5–2 mm. long.

**Solanum atitlanum** Roe, *Brittonia* 19: 364. 1967.

Dry thickets, edge of fields and barrancas, 1,000–2,000 m.; Jalapa; Guatemala; Sololá (type from 3 miles east of Panajachel, *Roe et al.* 773); Sacatepéquez; Santa Rosa. Honduras. Nicaragua.

An unarmed shrub or small tree, 1–10 m. tall, the young branches stellate-pubescent, the hairs sessile and short stipitate-stellate, with many rays, often with many rays along their stalks; leaves ovate to elliptic or obovate, mostly 8–30 long, 3–11 cm. long, the apex acute or acuminate, the base long attenuate nearly the entire length of the petiole, asperulous to velutinous, the hairs mostly simple and sessile or short stipitate-stellate and with few rays above, the hairs sessile or short stipitate-stellate, rays few and many, whitish below; petioles stellate-pubescent, the hairs sessile or short stipitate-stellate, the rays few; axillary leaves present on recent growth of young plants; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncle 4–9 cm., the hairs with few or many rays, some with rays along their stalks; pedicels 2–7 mm. long, the hairs sessile and short stipitate-stellate, with few and many rays; flower buds globose to ellipsoid; calyx lobed to the middle or slightly below, the lobes lanceolate-ovate to ovate, 1.7–5 mm. long, stellate-pubescent within; corolla violet, the limb 1–1.5 cm. wide, parted to below the middle, the lobes 4–6 mm. long; filaments 1 mm. long or less; anthers 2.5–3.7 mm. long; ovary stellate-tomentose; style stellate-tomentose; fruit 9–12 mm. in diameter, pubescence persistent; seeds 1.8–2.5 mm. long.

**Solanum blodgettii** Chapm. *Fl. South. U.S.* 349. 1860. *S. decurtatum* Standl. & Steyerl. *Field Mus. Bot.* 23: 20. 1943 (type from Lago de Yaxha, Petén, *Lundell 2012*), *syn. nov.*

Low forest; Petén. British Honduras. Southern Florida. Bahamas. Southern Mexico.

An unarmed shrub about 1 m. tall, the young branches, petioles, peduncles and calyces densely stellate-pubescent, the hairs yellowish or grayish, sessile to short-stipitate; leaves entire, solitary, elliptic-oblong or oblong, 7–16.5 cm. long, 2.5–5.5 cm. wide, the apex acute or obtuse, sometimes acuminate, the base obtuse, green and asperous, the hairs sessile or subsessile-stellate above, densely stellate-tomentose and grayish below; petioles 1–2 cm. long; inflorescences pseudoterminal, becoming lateral and internodal or opposite the leaves, dichotomously cymose, several to many-flowered; peduncles short, 1.5–3 cm. long; pedicels 4–6 mm. long; calyx 2–2.5 mm. long, parted to the middle, the lobes ovate, narrowly acute or

mucronate; corolla white, the limb 12–16 mm. wide, divided to near the base, the lobes 5–7.5 mm. long, densely stellate-pubescent externally; filaments 1 mm. long; anthers 4.5–5.5 mm. long, linear, scarcely narrowed upward; style 6.5–8.5 mm. long, glabrous; ovary glabrous; fruit globose, 5–7.5 mm. in diameter, red, lustrous; seeds 2–2.5 mm. long.

***Solanum brevipedicellatum*** Roe, Brittonia 19: 361. 1967.  
*Palito tabaco de montaña* (Quezaltenango).

Moist forests or in secondary growth thickets, 1,500–1,800 m.; Chimaltenango; Sololá; Quezaltenango (type from 4 km. north of Santa María planta eléctrica, *Roe et al.* 741). Mexico (Chiapas).

An unarmed shrub or small tree, 2–12 m. tall, the young branches stellate-pubescent, the hairs sessile and short stipitate-stellate, mostly with many rays, an occasional plant with some long stipitate-stellate hairs; leaves ovate to broadly ovate, mostly 24–40 cm. long, 10–26 cm. wide, the apex acuminate, the base long attenuate, asperulous and with simple, sessile or short stipitate-stellate hairs, some of the hairs with many rays above, densely to sparsely pubescent below, the hairs sessile and short stipitate-stellate; petioles 3.5–6.5 cm. long, the hairs with many rays; axillary leaves usually present; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncles 5–13 cm. long, the stellate hairs with many rays; pedicels very short, 1 mm. long or less, the stellate hairs with many rays; flower buds elongated; calyx lobed to the middle or nearly so, the lobes lanceolate-ovate, 1.2–2.5 mm. long, stellate-pubescent within; corolla white or violet, the limb 1.5–2 cm. wide, parted to below the middle, the lobes 6–8 mm. long; filaments 1.8–2 mm. long; anthers 3–4.5 mm. long; ovary stellate-tomentose; style stellate-tomentose; fruit yellow, 10 mm. in diameter, pubescence persistent; seeds 2–2.5 mm. long.

***Solanum bulbocastanum*** Dunal in Poir. Encycl. Suppl. 3: 749. 1814.

Dry slopes and thickets, 1,350–2,300 m.

Plants herbaceous slender or stout, usually grayish green, erect to spreading, 3–10 dm. tall, densely pubescent throughout with multicellular, erect-spreading hairs to rarely subglabrous, stoloniferous and tuber-bearing, tubers globose to ellipsoid, clear white to creamy white, 7 cm. long or less; stem simple or much branched; leaves simple, broadly ovate to ovate-lanceolate or narrowly elliptic-lanceolate, 4–15 cm. long, 2–6 cm. wide, the apex obtuse to acute or shortly acuminate, the base shortly attenuate; petioles 5 cm. long or less; pseudostipular leaves present; inflorescence pseudoterminal, becoming lateral and opposite the leaves, cymose, mostly few- to many-flowered; peduncles short, 3 cm. long or less; pedicels 5–10 mm. long, articulate at about or slightly below the middle; calyx 3–4.5 mm. long, the lobes short, rarely to about 2.5 mm. long, obtuse to acute; corolla white to light yellow or greenish-yellow, the limb 1.2–1.5 cm. wide, parted to well below the middle, the lobes 5–7 mm. long, ovate-lanceolate or lanceolate, subobtuse or acute, densely pilosulous at the margins; stamens equal, the filaments 1–2 mm. long, often somewhat connate; anthers 4–6 mm. long, cordate at their bases; style

7–11 mm. long, glabrous, exceeding the stamens, sometimes only slightly so; fruit globose, greenish, about 1 cm. in diameter.

**Solanum bulbocastanum** var. **glabrum** Correll, Agr. Monogr. U.S.D.A. No. 11, 79, t. 53 & 54. 1952.

Guatemala; Huehuetenango. South central Mexico.

Variety *glabrum* differs from the typical variety in that the pedicel above the articulation and the calyx are glabrous; the corolla is usually less deeply lobed; and the corolla lobes are somewhat broader. It is distinguished from variety *partitum* by the more shallowly lobed corolla limb and the style evidently longer than the stamens.

**Solanum bulbocastanum** var. **partitum** Correll, Agr. Monogr. U.S.D.A. No. 11, 83, t. 55. 1952. *S. bulbocastanum* subsp. *partitum* Hawkes, Scottish Plant Breed. Sta. Rec. 95. 1963. *Yerba mora*.

Baja Verapaz (type from Patal, *Tuerckheim II2316*); Guatemala; Sololá; Huehuetenango. Mexico (Chiapas).

Variety *partitum* is characterized by the deeply lobed corolla limb cleft nearly to the base. Also, the pedicel above the articulation and the calyx are glabrous.

**Solanum campechiense** L. Sp. Pl. 187. 1753. *S. guanicense* Urban, Symb. Ant. 1: 399. 1899.

In damp thickets or on river banks just above sea level to 50 m., Petén; Escuintla. British Honduras. Mexico (Chiapas) to Costa Rica. West Indies.

Plants annual, mostly 2–6 dm. tall, the stems and calyces armed with numerous, long, straight, yellowish prickles, densely to sparsely stellate-pubescent among the prickles, the hairs sessile and stipitate-stellate; leaves shallowly lobed to deeply parted, the lobes angulate, shallowly lobate or undulate-dentate, the leaves 4–24.5 cm. long, 2.5–14 cm. wide, the apex acute or obtuse, the base cordate to truncate, sessile stellate-pubescent and prickly above and below; petioles 1–8 cm. long, stellate-pubescent and commonly with prickles; inflorescences lateral and internodal, 1–3 flowered; peduncles 1–1.5 cm. long, prickly, stellate-pubescent; pedicels 7–10 mm. long, stellate-pubescent and usually prickly; calyx 6.5–9 mm. long, densely prickly and stellate-pubescent, deeply parted, the lobes lanceolate, acute or acuminate; corolla purplish-white, the limb 20–25 mm. wide, shallowly lobed, the lobes externally sessile stellate-pubescent; filaments 2–2.5 mm. long; anthers 9.5–15.5 mm. long; style 13.5–18 mm. long, glabrous; ovary glabrous; fruit globose, glabrous, 1–1.5 cm. in diameter, the accrescent calyx nearly as long as the mature fruit; seeds 2 mm. long.

Called *huevos-de-gato* in El Salvador.

**Solanum canense** Rydb. Bull. Torrey Bot. Club 51: 174. 1924.

Usually along rivers and streams, near sea level to rarely up to 1,000 m.; Santa Rosa (Volcán de Tecuamburro, *Standley 78562*); Honduras; Nicaragua. Panama. Western Venezuela and Colombia to Ecuador.

Plants herbaceous, weak and straggly, 4–15 dm. tall, the stems slender, somewhat angular, simple or branched, nearly glabrous to sparsely pilosulous, apparently non-tuber-bearing; leaves odd-pinnate, 1–3.5 dm. long, nearly glabrous to strigose; petioles 5 cm. long or less; interstitial leaflets numerous (rarely absent) with short slender petiolules; leaflets 9–15, elliptic-lanceolate to narrowly lanceolate, 1.5–11 cm. long, 0.5–2.5 cm. wide, the apex acuminate to long-acuminate, rounded to somewhat cordate at the oblique base, the lowermost pair of leaflets much-reduced; petiolules slender, 2–12 mm. long; pseudostipular leaves present; inflorescence pseudoterminal, becoming lateral and internodal, several-flowered, bifurcate, cymose; peduncles slender, 4–13 cm. long, rarely 3-forked near the summit; pedicels slender, 5–10 mm. long, articulate at their bases; calyx 1.5–2.5 mm. long, the lobes short rounded or apiculate, less than 1 mm. long; corolla white, the limb 10–15 mm. wide, parted to about or just below the middle, the lobes ovate-lanceolate to triangular-lanceolate, acute; filaments about 1 mm. long; anthers 2–3.5 mm. long, cordate at their bases; style 4–4.5 mm. long, slightly exceeding the stamens; fruit globose to broadly ellipsoid, green, striped with pale or dark green, 1.5–2.5 cm. long.

**Solanum cervantesii** Lagasca, Nov. Gen. & Sp. 10. 1816. *Fruta de schara* (Chimaltenango); *seconcillo* and *veneno* (Quezaltenango).

Moist forests or thickets, sometimes in dry thickets or open rocky hillsides or oak forests, 2,000–3,150 m.; Baja Verapaz; Guatemala; Chimaltenango; Quezaltenango; Totonicapán; Quiché; Huehuetenango; San Marcos. Southern Mexico. El Salvador and Honduras.

An unarmed shrub or small tree, 1–5 m. tall, often much branched, the branches glabrous or puberulent; leaves lanceolate to oblong-elliptic or narrowly elliptic, rarely oblanceolate, mostly 7–20 cm. long, 2–4 (–6.5) cm. wide, the apex narrowly acute or acuminate, the base long attenuate, sparsely pilosulous to glabrous above, pubescent along the edges of the mid-vein and the lateral veins near the mid-vein, the hairs branched or furcate, simple hairs often present below; petioles 1–3 cm. long; inflorescences pseudoterminal becoming lateral and opposite the leaves, dichotomously cymose, more or less flat-topped, several-flowered; peduncles long, 5–7 cm. long; pedicels slender, 5–8 mm. long; calyx 2–3 mm. long, the lobes 0.5–1 mm. long, triangular or oblong, pilosulous and glandular internally, acute and apically pilosulous externally; corolla white, the limb 8–12 mm. wide, lobed to the middle or just below, the lobes 2.5–5 mm. long, ciliate, and apically pilosulous; filaments about 1 mm.; anthers 2–3 mm. long; style 4–5 mm. long, glabrous; ovary glabrous; fruit globose, 5–10 mm. in diameter, black; seeds 3–3.5 mm. long.

See comments under *Solanum aligerum* Schlecht.

***Solanum chiapasense*** Roe, *Brittonia* 19: 367. 1967.

Thickets, 1,000–2,100 m.; Huehuetenango. Mexico (Chiapas) type from 4 miles southwest of Las Rosas, *Roe et al.* 986.

An unarmed shrub or small tree, 1–4 m. tall, the young branches stellate-pubescent, the hairs sessile and short stipitate-stellate, with few or many rays; leaves ovate, lanceolate-ovate or elliptic, mostly 12–30 cm. long, 5–15 cm. wide, the apex acute to attenuate, the base attenuate, asperous to velutinous, the hairs simple and sessile-stellate, with few rays above, densely stellate-pubescent, the hairs sessile and short stipitate-stellate, with few or many rays below; petioles 2.5–8 cm. long; axillary leaves usually absent; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncle 4–10 cm. long, the hairs sessile or stipitate-stellate, with many or few rays; pedicels 2–5 mm. long, pubescent, the stellate hairs with many or few rays; flower buds subglobose to oblong; calyx lobed to the middle, the lobes triangular to ovate, 1.5–4.3 mm. long, glabrous or occasionally pubescent within; corolla white or violet, the limb 12–20 mm. wide, parted to below the middle, the lobes 5–7.5 mm. long; filaments about 1.5 mm. long; anthers 3–4.5 mm. long; ovary pubescent; style glabrous or stellate-pubescent; fruit yellow, 12–14 mm. in diameter, glabrescent; seeds 1.7–2.5 mm. long.

***Solanum clarum*** Correll, *Contr. Texas Res. Found.* 1: 10, *t.* 4. 1950.

Cloud forests and alpine areas, commonly under junipers and pines, 3,100–3,800 m.; Totonicapán; Quezaltenango (type from Volcán Santa María, *Skutch* 858); Huehuetenango. Mexico (Chiapas).

Plants erect, small, herbaceous, 1.5–2.5 dm. tall, sparsely pubescent throughout, stoloniferous and tuber-bearing, the tubers small, ellipsoid, apparently purplish, less than 2 cm. long; stem simple or branched; leaves simple, ovate, 1.5–8.5 cm. long, 1–3.5 cm. wide, the apex obtuse to acute, the base truncate to cordate; petioles 5–45 mm. long; pseudostipular leaves present; inflorescence pseudoterminal, becoming lateral and opposite the leaves, a short branched cyme, few-flowered; peduncle 1–7 cm. long; pedicels 5–10 mm. long, articulate about or slightly below the middle; calyx 3–4 mm. long, purple-tinged, the lobes short, about 1 mm. long, triangular-ovate, obtuse to subacute; corolla purple at the tip of the lobes, becoming white toward the base, parted to below the middle, the lobes 8–10 mm. long, broadly lanceolate, acute to subobtuse; stamens equal, the filaments about 1 mm. long, glabrous, connate below the middle; anthers free, 3–4 mm. long, dorsally minutely 3- to 5-lobulate at their bases; style puberulent, 7–8 mm. long, exceeding the stamens; fruit (immature) broadly ovoid, 1.3 cm. long.

Similar to *S. morelliforme* Bitter & Muench in general aspect but distinguished from it by the anthers which are 3- to 5-lobulate dorsally at their bases and the terrestrial habit.

***Solanum cobanense*** J. L. Gentry, *Phytologia* 26: 276. 1973. *Cyphomandra aculeata* Donn.-Sm. *Bot. Gaz.* 57: 423. 1914 (type from near Cobán, Alta Verapaz, *Lehmann* 1334).

Dense wet forests or wet thickets, 1,400–2,600 m.; Alta Verapaz; Zacapa; Huehuetenango. Endemic.

A woody vine, glabrous throughout, the branches armed with small recurved prickles, the prickles sometimes numerous; leaves entire, subcoriaceous, solitary, prickly below mostly on the mid-vein, lanceolate to lance-oblong or elliptic, mostly 10–18 cm. long, 3–5.5 cm. wide, the apex acuminate or long acuminate, the base obtuse to acute, glabrous above and below; petioles prickly, mostly 2.5–5 cm. long, glabrous; inflorescences pseudoterminal becoming lateral, few-flowered; peduncles 4.5 cm. long, glabrous; pedicels 25–35 mm. long, glabrous; calyx unarmed, subcoriaceous, glabrous, 3–3.5 mm. long, the lobes 1–1.5 mm. long, rounded and mucronate; corolla dark purple, the limb about 23 mm. wide, parted nearly to the base, the lobes about 10 mm. long, glabrous; filaments 2–2.5 mm. long; anthers 6.5 mm. long; style glabrous, 6–6.5 mm. long, shorter than the stamens; ovary glabrous; fruit glabrous, 7.5 cm. in diameter at the base, 6 cm. long, broadly ovate; seeds 4.5–5 mm. broad, white.

The treatment of this species has been confused. It was described as a species of *Cyphomandra* and later placed in herbaria under *Solanum purulense* Donn.-Sm., which proves to be a synonym of *S. lanceifolium* Jacq.

***Solanum connatum*** Correll, Agr. Monogr. U.S.D.A. No. 11, 25, t. 11 & 12. 1952.

On wooded slopes and epiphytic on trees, 2,500–3,000 m., apparently endemic in San Marcos (type from between San Rafael at northeast portion of Volcán Tacaná and Guatemala-Mexico line, *Steyermark 36294*).

A woody, unarmed, non-tuber-bearing vine, the young stems and branches densely pubescent, the hairs spreading; leaves odd-pinnate, 5.5–12 cm. long, densely pilose above and below, glabrescent with age; petioles 1.5–4 cm. long; interstitial leaflets absent; leaflets 5, elliptic to elliptic-oblanceolate or elliptic-obovate, 1–6.5 cm. long, 0.5–2.5 cm. wide, the apex acute to shortly and abruptly acuminate, the petiolules subsessile to 1 cm. long, the lowermost pair of leaflets reduced, the terminal leaflet larger than the lateral ones; pseudostipular leaves present or absent; inflorescence pseudoterminal, becoming lateral and opposite the leaves, cymose; peduncle very short, 6 mm. long or less, densely pubescent with brownish-yellow hairs; pedicels 5–7 mm. long, articulate at their bases, sparsely pubescent to glabrescent; calyx 1.5–2 mm. long, the lobes short, triangular and acute; corolla probably white, the limb about 8 mm. wide, parted to below the middle, the lobes about 3 mm. long, broadly ovate, obtuse; filaments about 1 mm. long, pubescent, united their entire length; anthers about 2 mm. long; style 5 mm. long, much exceeding the stamens; fruit globose, apparently red, about 1 cm. in diameter.

*Solanum connatum* Correll is closely related to *S. tacanense* Lundell. The united filaments and the style exceeding the stamens separate it from that species.



The following sterile collection, *Steyermark 36834*, as pointed out by Correll (1962) probably represents a new species closely related to *S. connatum*. The specimen has typically seven leaflets.

***Solanum cordovense*** Sessé & Mociño Fl. Mex. ed. 2, 51. 1894. *S. lundellii* Standl. Field Mus. Bot. 8: 42. 1930 (type from Roaring Creek, British Honduras, *Lundell 324*), *syn. nov. S. edwardsii* Standl. Trop. Woods 37: 31. 1934 (type from Temagua, Honduras, *Edwards P-639*), *syn. nov.*

Moist or wet thickets or forests, 200–800 m.; Alta Verapaz; British Honduras. Southern Mexico. Honduras. Nicaragua. Costa Rica.

A slender, unarmed shrub, 1–5 m. tall, the young branches densely stellate-pubescent, the hairs sessile or short stipitate-stellate, yellowish or brownish yellow, sometimes glandular; leaves ovate-oblong to lance-oblong or elliptic-oblong, 6–14.5 cm. long, 2.5–5 cm. wide, the apex long acuminate, the base oblique, stellate-pubescent, the hairs sessile, at least some with the central ray greatly exceeding the others in length, sometimes giving the appearance of simple hairs above, the hairs sessile or stipitate-stellate, velutinous and more densely pubescent below; petioles short, 2–7 mm. long; inflorescences lateral and internodal, cymose, sessile or short-pedunculate; pedicels 1–2 cm. long, densely stellate-pubescent, often glandular; calyx 5–6 mm. long, cleft nearly to the base, accrescent in fruit, densely sessile stellate-pubescent, at least some hairs with the central ray greatly exceeding the others in length giving the appearance of simple hairs, the central ray often glandular, the lobes oblong or elliptic, acute or obtuse, stellate-pubescent internally; corolla white, the limb about 1.5 cm. wide, parted to near the base, the lobes about 6.5 mm. long, a little longer than the calyx lobes, glabrous internally, stellate-pubescent externally; filaments about 1 mm. long; anthers 2.5–3.5 mm. long; style 5–6.5 mm. long, exceeding the stamens; fruit globose, 6–8 mm. in diameter, sparsely stellate-pubescent or glabrous, the accrescent calyx nearly as long as to slightly exceeding the mature fruit; seeds 2.5–3 mm. long.

*Solanum extensum* Bitter, a species of Nicaragua, Costa Rica, and Panama, is closely related to *S. cordovense* Sessé & Mociño.

***Solanum cornutum*** Lam. Tab. Encycl. Meth. Bot. 2: 25. 1797.

In wet thickets or weedy fields, 900–1,450 m.; Mexico. Honduras (Dept. Morazan). To be expected in Guatemala.

Plants herbaceous, 0.3–1 m. tall, the stems armed with numerous, long and straight, yellowish prickles, covered with short, glandular and eglandular hairs among the prickles, occasionally with a few stellate hairs intermixed, glabrate in age; leaves bipinnatifid, the lobes entire to shallowly angulately-lobed, the leaves 5–20 cm. long, 2.5–10.5 cm. wide, prickly, glandular and sparsely sessile stellate-pubescent, the stellate hairs with the central ray greatly exceeding the lateral ones above, glandular and sessile stellate-pubescent below; petioles 1–7 cm. long,

prickly; inflorescences lateral and internodal, 3-6 flowered; peduncles 1-2 cm. long, prickly; pedicels 4-6 mm. long, prickles rarely present; calyx 5-7.5 mm. long, receptacle and lower part of calyx covered with prickles of varying lengths and sessile stellate-pubescent, the hairs with the central ray greatly exceeding the lateral ones, parted to near the base, the lobes lanceolate to oblong-lanceolate, somewhat unequal in length, stellate-pubescent, prickles absent; corolla yellowish, slightly zygomorphic, the limb 2 cm. wide, shallowly lobed, externally sessile stellate-pubescent; stamens unequal, the filaments of the short stamens 2-2.5 mm. long, the fifth one 2-3 mm. long, the anthers of the short stamens 6-8 mm. long, the fifth one much enlarged and incurved, 12-12.5 mm. long, sparsely villous; style 13-15 mm. long; ovary glabrous; fruit globose, 7-9 mm. in diameter, enclosed by the close fitting and prickly calyx, the calyx often adherent to the berry; seeds 2-2.5 mm. long.

We have not seen specimens of *Solanum cornutum* Lam. from Guatemala. It is included in the "Flora" because of its likely occurrence in the country.

***Solanum deflexum*** Greenm. Proc. Am. Acad. Sci. 32: 301. 1897.

In open forests or on brushy rocky slopes, 660-1,800 m.; Chiquimula; Jutiapa. Southern Mexico. Honduras to Costa Rica.

A slender, erect or ascending herb, mostly 1-3 dm. tall, simple or much branched, the stems with long spreading and short recurved hairs, the shorter hairs inconspicuous and sometimes sparse; leaves solitary or in pairs, subequal in size, similar in shape, the larger leaves ovate to lanceolate or elliptic-lanceolate, 2-8.5 cm. long, 0.5-3.5 cm. wide, the apex acute or sometimes acuminate, the base rounded to short attenuate or sometimes subcordate, hirsute above and below, the hairs sometimes subappressed; petioles 5-25 mm. long; inflorescences lateral and internodal, 1-4 flowered, umbelliform, sessile or the peduncles 2-3 mm. long; pedicels hirsute, 7-14 mm. long, deflexed in fruit; calyx 1.5-2 mm. long, densely hirsute, parted to near the base, the lobes lanceolate or oblong, acute or obtuse; corolla white, the limb 7-8.5 mm. wide, shallowly lobed, the lobes hirsute and papillate externally; filaments 0.5 mm. long; anthers 1.5-2 mm. long; style 2.5-3 mm. long, glabrous, exceeding the stamens; ovary glabrous; fruit globose, 5-8 mm. in diameter; seeds 2.5-3 mm. long.

*Solanum deflexum* Greenm. is distinguished from other species in Guatemala by its anthers, simple leaves, habit, hirsute pubescence, and the sessile or nearly sessile inflorescences.

***Solanum demissum*** Lindl. J. Roy. Hort. Soc. 3: 69,70. 1848. *S. alpicum* Standl. & Steyerl. Field Mus. Bot. 23: 232. 1947 (type from Cerro Chemal, Huehuetenango, *Steyermark* 50303). *Papa*.

Wet forests, alpine areas or on limestone outcrops, 2,250-3,700 m.; Sacatepéquez; Huehuetenango. South-central Mexico.

Plants herbaceous, varying from a rosette to a much-branched spreading or ascending habit, commonly grayish-green, rarely up to 6 dm. tall, densely pubescent

to essentially glabrous, tuber-bearing, the tubers 6 cm. long or less, usually ellipsoid or panduriform, white or purple-tinged; leaves odd-pinnate 4.5-15(-30) cm. long, interstitial leaflets present or absent; leaflets 5-9, usually 7, sessile or essentially so, ovate to elliptic, the apex obtuse to acute, the base rounded to cuneate and slightly oblique; lateral leaflets 1-6 cm. long, 0.5-2.5 cm. wide; terminal leaflet larger than the lateral leaflets; inflorescence pseudoterminal, becoming lateral and opposite the leaves, laxly cymose-paniculate; peduncle 5-30 mm. long; pedicels 1-2 cm. long, articulate about or well above the middle; calyx 4-8 mm. long, lobed to above or about the middle, the lobes ovate to triangular-lanceolate, acute; corolla violet to purplish, the limb usually 20 mm. in diameter, shallowly lobed; filaments about 1 mm. long; anthers 3-5 mm. long; style 9 mm. long or less, exceeding the stamens; fruit globose to ovoid, green, sometimes with white specks, 1-2.5 cm. long.

The fully ripened fruits have the odor of mango, papaya and, in some, wild strawberry.

*Solanum demissum* Lindl. is usually found at high elevations where it is characteristically a rosette type of plant. At lower elevations it often assumes an upright or bushy habit.

This species is considered to be of potential value in the production of blight and frost resistant strains in our cultivated potato.

### ***Solanum diphyllum* L. Sp. Pl. 184. 1753.**

Damp thickets or forests, 325 m. or lower; Santa Rosa; Escuintla; Suchitpéquez; San Marcos. Mexico to Nicaragua.

An unarmed shrub, 1-2 m. tall, glabrous throughout or nearly so, leaves solitary or in pairs, unequal in size, different or similar in shape, the larger leaves narrowly elliptic to oblanceolate or elliptic-oblong, sometimes ovate-lanceolate or lanceolate, 3-9(-15.5) cm. long, 1-2.5(-4) cm. wide, the apex obtuse or sometimes acute, equal and attenuate at the base, glabrous above and below; petioles short, 2-5 mm. long, sometimes winged to the base; inflorescences lateral and opposite the leaves, cymose, simple, few-to several-flowered; peduncles short, 1-5(-15) mm. long; calyx 1 mm. long, lobed to the middle, the lobes rounded and apiculate, obtuse or acute; corolla white to greenish-white, the limb 6-7 mm. wide, parted to near the base, the lobes 2.5-3 mm. long, inconspicuously ciliate; filaments about 0.3 mm. long; anthers 1.5 mm. long; style 2.5-3 mm. long, glabrous, exceeding the stamens; ovary glabrous; fruit globose, 6-8 mm. in diameter, black; seeds 3-3.5 mm. long.

Apparently closely related to *Solanum nudum* H. B. K. and sometimes difficult to distinguish from it. *Solanum nudum* has the leaves nearly always with a tuft of hairs in the axils of the mid-vein below and the leaf apices acuminate or narrowly acute, whereas *S. diphyllum* L. has glabrous leaves and the leaf apices mostly obtuse or acute.

***Solanum dulcamaroides* Dunal in Poir. Encycl. Suppl. 3: 751. 1814. *S. macrantherum* Dunal, Solan. Syn. 16. 1816.**

Huehuetenango (Sierra de los Cuchumatanes, probably about 3,200 m., *Johnston 1978*). Southern Mexico.

A scandent, unarmed shrub, the branches pilosulous to glabrous; leaves ovate to ovate-lanceolate, 5.5–14.5 cm. long, 2–5 cm. wide, the apex acuminate, the base cuneate to rounded or sometimes subcordate, pilosulous above and below, especially so on the veins to glabrous or essentially so; petioles long and slender, 2–4.5 cm. long; inflorescences pseudoterminal, becoming lateral and opposite the leaves, laxly cymose and widely paniculately disposed, several-flowered, pilosulous to glabrous; peduncles 2–4 cm. long, pilosulous to glabrous; pedicels 1–2.5 cm. long, articulate at their bases to just above the middle, pilosulous to glabrous; calyx 2–3 mm. long, broadly campanulate, sparsely pilosulous to glabrous, the lobes apiculate, densely pilosulous; corolla violet, the limb 24–30 mm. wide, parted to near the base, the lobes 10–13 mm. long, marginally pilosulous; filaments 2 mm. long; anthers very broad, 5–6 mm. long; style greatly exceeding the stamens, 1–1.4 cm. long, glabrous; ovary glabrous; fruit globose, scarlet, about 10 mm. in diameter.

*Solanum dulcamaroides* Dunal is to be confused only with *S. seaforthianum* Andr. in Guatemala and is distinguished from that species by the broad anthers, simple leaves throughout, and the pedicels articulate at their bases to slightly above the middle.

***Solanum erianthum*** D. Don, Prodr. Fl. Nepal. 96. 1825. *S. verbascifolium* sensu auct., non L., 1753. *Hediondilla* (fide Aguilar); *tabaquillo*.

Moist or dry thickets, in fields or along river banks, often in second growth, 5–2,000 m.; Petén, Izabal; Chiquimula; Jalapa; Chimaltenango; Huehuetenango; Santa Rosa; Escuintla; San Marcos. British Honduras. Southern Florida and Texas. Mexico south to Costa Rica. Panama. West Indies. Galapagos Islands. Adventive in the Old World.

An unarmed shrub or small tree, 2–8 m. tall, the young branches densely stellate-pubescent, the hairs sessile and short stipitate-stellate, with many rays and often with many rays along their stalks; leaves entire, ovate to ovate-elliptic, rarely lance-oblong, mostly 10–25 cm. long, 3–12 cm. wide, the apex acuminate, the base rounded to nearly truncate or acute, velutinous and with simple and sessile to short stipitate-stellate hairs above, simple hairs absent below; petioles 1–10 cm. long; axillary leaves absent; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncle 3–12 cm. long; pedicels 2–10 mm. long, densely stellate-pubescent, the hairs partly short stipitate-stellate with many rays and often with many rays along their stalks; flower buds turbinoid; calyx lobed to the middle, the lobes ovate, 2.5–4 mm. long, stellate-pubescent within; corolla white, the limb 1–1.5 cm. wide, parted to below the middle, the lobes 4–6 mm. long; filaments 1–1.5 mm. long; anthers 2.3–3 mm. long; ovary densely stellate-tomentose; style glabrous or sometimes sparsely stellate-pubescent; fruit yellow, 1–1.2 cm. in diameter, stellate-pubescent; seeds 1.5–2 mm. long.

***Solanum erythrotrichum*** Fern. Proc. Am. Acad. Sci. 35: 561. 1900. *Kaqi paxl* (Quechí) Cobán; *tomatillo* (Alta Verapaz).

Moist thickets or wet forests, sometimes along river banks, 1,000–1,450 m.; Petén; Alta Verapaz (type from Cobán, *Tuerckheim* 1381); Chimaltenango; British Honduras. Honduras.

A shrub or small tree, 1.5–5 m. tall, the branches armed with few to many prickles, these slightly recurved or spreading, mostly broad-based, the young branches, peduncles and pedicels densely stellate-pubescent, the hairs ferruginous and mostly with the central ray greatly exceeding the lateral ones; leaves solitary, entire, ovate, sometimes elliptic or elliptic-oblong, 9–22(–25) cm. long, 4.5–10(–14) cm. wide, the apex acuminate or acute, the base rounded, subcordate or acute, sometimes unequal, moderately covered with asperous, sessile-stellate hairs above, the hairs grayish, densely sessile or subsessile stellate-pubescent below; petioles 2–4 cm. long, the hairs ferruginous, the central ray greatly exceeding the lateral ones and with the rays subequal; inflorescences lateral and internodal, racemose, few-flowered; peduncles 2–4.5 cm. long; pedicels 5–6 mm. long, erect in fruit, the hairs with the central ray greatly exceeding the lateral ones and with the rays subequal; calyx 6–7 mm. long, densely stellate-pubescent externally, moderately so internally, parted nearly to the base, the lobes lanceolate or lance-oblong, narrowly acute; corolla white, or sometimes lavender, the limb 20–23.5 mm. wide, parted to near the base, the lobes 8–10 mm. long, densely sessile stellate-pubescent externally; filaments 1–1.5 mm. long; anthers 5.5–7 mm. long; style 7–8.5 mm. long, lower one-half sparsely stellate-pubescent; ovary densely stellate-pubescent, the hairs sessile-stellate with the central ray greatly exceeding the lateral ones and with the rays subequal; fruit globose, 1–1.5 cm. in diameter, stellate-pubescent, sometimes sparsely so; seeds 4–4.5 mm. long.

There are apparently two forms of *Solanum erythrotrichum* Fernald. The common form in Guatemala has most of the hairs with the central ray greatly exceeding the lateral ones on the young branches, petioles, peduncles, and pedicels. A few specimens, *Molina* 253 and 298 and *Standley* 78365, have the rays of the hairs predominantly subequal. The form with the subequal rays is more common in Honduras and may prove to be worthy of varietal rank.

*Solanum erythrotrichum* is apparently closely related to *S. acrescens* Standl. & Mort. and *S. rubidum* Standl. & Mort. of Costa Rica.

Called *friega plato* and *lava platos* in Honduras.

***Solanum fontium*** Standl. & Steyerem. Field Mus. Bot. 23: 234. 1944. *Hediondilla* (Huehuetenango); *kaqi sakyol* (Quechí) Alta Verapaz.

Wet forests, 2,100–2,850 m.; Chimaltenango; Huehuetenango; Quezaltenango (type from Fuentes Georginas, western slope of Volcán de Zunil, *Standley* 67473); San Marcos. Mexico (Chiapas).

An unarmed shrub, 1.5–3.5(–6.5) m. tall, nearly glabrous throughout; leaves mostly in pairs, unequal in size but similar in shape, the larger leaves elliptic to oblong-elliptic or oblanceolate or ovate-elliptic, mostly 10–26 cm. long, 2.5–8.5 cm. wide, the apex acuminate or sometimes acute, the base equal or unequal and cuneate or short attenuate, glabrous above, sometimes inconspicuously and sparsely puberulent along the margin of the mid-vein below; petioles 1–3 cm. long; inflorescences lateral, opposite the leaves or internodal, cymose, mostly furcate, several-flowered, glabrous; peduncles short, 3.5–20 mm. long; pedicels 1–1.5 cm. long; calyx 2–3 mm. long, the lobes short, 0.5–1 mm. long, rounded and short-apiculate, internally glandular; corolla white, the limb 15 mm. wide, parted to near the base, the lobes 6 mm. long, apically pilosulous; filaments connate their entire length or nearly so, 1 mm. long; anthers 3–4 mm. long; style shorter than the stamens, 2.5–3 mm. long, glabrous; ovary glabrous; fruit globose, about 10 mm. in diameter, black.

It seems probable that some earlier name will be found for this species.

**Solanum fraxinifolium** Dunal in DC. Prodr. 13, pt. 1: 39. 1852. *S. grossularia* Bitter, Fedde Repert. Sp. Nov. 10: 537. 1912.

In thickets 2,000–2,600 m.; Alta Verapaz; Zacapa. Nicaragua. Costa Rica. Panama. Northern Colombia and western Venezuela.

Plants herbaceous vine-like, decumbent, trailing or climbing, apparently non-tuber-bearing, mostly densely pilose throughout with spreading hairs, sometimes merely puberulent, 15 dm. or more in length, the stems slender, somewhat angular, branched or sometimes simple, the hairs unequal in length; leaves odd-pinnate, 7–23 cm. long; petioles 1.5–5 cm. long; interstitial leaflets absent or rarely present; leaflets 5–7; elliptic-lanceolate to ovate-lanceolate or elliptic, 1–9 cm. long, 0.5–4.5 cm. wide, the apex obtuse to long acuminate, rounded to subcordate at the oblique base, subsessile or short petiolulate, the lowermost pair of leaflets much reduced, terminal leaflet larger than the lateral ones; pseudostipular leaves present; inflorescence lateral and internodal or opposite the leaves, racemose, usually laxly 6–10 flowered; peduncles 3–7 cm. long; pedicels slender, 7–12 mm. long, articulate at or near the base; calyx 4–6 mm. long, divided to below the middle, the lobes lanceolate or broadly rounded, abruptly acuminate to acute; corolla white, the limb 13–20 mm. wide, shallowly lobed, pilosulous on the outside; filaments about 1 mm. long, free or partially connate, glabrous or sparsely pilosulous; anthers 3–4 mm. long; style 6–7 mm. long, exceeding the stamens; fruit ovoid to ovoid-ellipsoid, somewhat compressed, green with darker green or purplish stripes, 1.5–2 cm. long, 1–1.5 cm. in diameter.

**Solanum globiferum** Dunal in DC. Prodr. 13, pt. 1: 251. 1852. *Chichito de raton* (Huehuetenango).

Dry or moist thickets or in pine-oak forests, sometimes in open rocky places, 850–1,650 m.; Petén; Baja Verapaz; Jalapa; Guatemala; Chimaltenango; Huehuetenango; Jutiapa; Santa Rosa; Escuintla. British Honduras. Southern Mexico to Nicaragua. Martinique.

Plants herbaceous or suffrutescent, 1.5 m. tall or less, the branches densely pubescent, the hairs simple, short and mostly glandular, armed with a few, broad-based, yellowish, somewhat recurved prickles and with numerous short, slender, spreading or somewhat reflexed ones; leaves armed with prickles, broadly ovate, sinuate to shallowly lobed or angulately-lobed, mostly 7.5–30 cm. long, 4.5–20 cm. wide, the apex acute, the base cordate, densely pubescent with simple hairs, the hairs long and soft, some of the hairs glandular above, densely pubescent with simple, glandular and eglandular hairs and sessile-stellate hairs intermixed below; petioles mostly 3–12 cm. long, densely pubescent with short glandular and eglandular hairs, the hairs sometimes almost entirely glandular, armed with prickles; inflorescences lateral and internodal, umbelliform, sessile or subsessile, mostly 1–3 flowered; pedicels lax, 5–10 mm. long, armed, densely pubescent, the hairs short, glandular and eglandular, the hairs sometimes almost entirely glandular; calyx 2–3 mm. long, densely pubescent, the hairs glandular and eglandular, often with prickles, parted nearly to the base, the lobes lanceolate, sometimes pubescent internally; corolla white, the limb 13.5–20 mm. wide, parted nearly to the base, the lobes 5.5–8.5 mm. long, pubescent with long hairs externally or rarely glabrous; filaments about 1 mm. long; anthers 6–7 mm. long; style slender, glabrous, 7–7.5 mm. long; ovary pubescent with simple glandular and eglandular hairs or only glandular ones; fruit pale yellow, glabrous, 2–2.5 cm. in diameter, globose; seeds 2.5–3 mm. long, wing absent.

Called *huevo de gato* and *huistomate* in El Salvador and *chichiqua*, *comida de culebra*, *manzanita*, and *tomate* in Honduras.

The correct name for this species may be *Solanum chloropetalum* Schlecht.

See comments under *Solanum quinquangulare* Roem. & Schult.

***Solanum hartwegii*** Benth. Pl. Hartweg. 68. 1839. *S. laurifolium* sensu auct., non Miller 1768. *Flor de pajalkish* and *limpia-plato* (Quezaltenango); *friega-plato* (Jalapa); *huiz* (Sacatepéquez); *kakaquish* and *lava-plato* (Huehuetenango); *kakisacyol* and *kaki-paxl* (Quecchi) Alta Verapaz.

Moist or wet thickets, often on dry brushy hillsides, frequently in oak or pine forests, 1,200–3,200 m., Alta Verapaz; Baja Verapaz; Zacapa; Chiquimula; Jalapa; El Progreso; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quiché; Totonicapán; Quezaltenango; Huehuetenango; Jutiapa; San Marcos. British Honduras. Mexico to Costa Rica. Martinique.

A shrub, 0.5–3.5 m. tall, the branches densely covered with a whitish or grayish stellate-tomentum, the hairs weak, long stipitate-stellate, sparsely armed with short, straight prickles or the prickles absent; leaves solitary, subentire to shallowly lobed, ovate to ovate-elliptic or ovate-lanceolate, 12–25 cm. long, 8–15 cm. wide, the apex narrowly acute to acute, the base rounded to cordate, unequal or equal, sparsely to densely short stipitate stellate-pubescent or sometimes nearly glabrous, especially in age, rarely with prickles above, densely stellate-tomentose, the hairs

whitish to grayish and stipitate-stellate, also with a few prickles on the mid-vein below; petioles 2-3(-5) cm. long, densely stellate-tomentose pubescent, the hairs whitish to grayish and stipitate-stellate; inflorescences lateral and internodal, cymose-corymbose, many-flowered, densely stellate-tomentose pubescent, the hairs long stipitate-stellate and whitish to grayish; peduncles short, 5-20 mm. long; pedicels short and stout, 5-10 mm. long; calyx (4.5-)6-8 mm. long, sessile and long stipitate stellate-pubescent, the lobes (1.5-)4-5 mm. long, linear; corolla bright to pale purple, the limb (25-)30-35 mm. wide, lobed about one-half to slightly more than one-half way to the base, the lobes (7-)10-12 mm. long, ovate, apex acuminate, densely sessile and short stipitate stellate-pubescent externally, the hairs sessile-stellate on the mid-vein internally; filaments 2-2.5 mm. long; anthers (5-)6-7.5 mm. long; style 9.5-10.5 mm. long, the base covered with stipitate-glandular or sessile-stellate and stipitate-glandular hairs; ovary covered with stipitate-glandular or sessile-stellate and stipitate-glandular hairs; fruit globose, 1-1.5 cm. in diameter; seeds 2-3 mm. broad.

*Solanum hartwegii* is distinguished from other species in Guatemala by the anthers, habit, whitish to grayish, long stipitate-stellate hairs, and the purple corolla.

The name *Solanum laurifolium* Miller has been applied to this species. However, a recent examination of the type by W. G. D'Arcy has shown that species to be a synonym of *S. subinerme* Jacq.

I have included here a collection (from the Sierra de los Cuchumatanes, Huehuetenango, *Steiermark 51626*) which is densely stellate pubescent throughout. The stem and inflorescences are covered with relatively long, stipitate-stellate hairs. The hairs are reddish-brown except for the grayish lower surface of the undulate to parted leaves.

***Solanum hazenii* Britton, Bull. Torrey Bot. Club 48: 338. 1922.**

Moist or dry thickets, 400-600 m.; Zacapa; Chiquimula. Western Mexico, south to Costa Rica. Panama. West Indies. Northern South America.

An unarmed shrub or small tree, 1-6 m. tall, the young branches densely stellate-pubescent, the hairs sessile and short stipitate-stellate with many rays, often with many rays along their stalks; leaves entire, ovate to ovate-elliptic or elliptic, sometimes obovate, mostly 10-28 cm. long, 3-12 cm. wide, the apex acute to acuminate, the bases short or long attenuate, asperous to finely veitinous, the hairs simple and sessile or subsessile stellate-pubescent above, densely pubescent, the hairs mostly subsessile to short stipitate-stellate below; petioles 1-7 cm. long; axillary leaves present or absent; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncle 4-15 cm. long; pedicels 3-8 mm. long, stellate-pubescent; flower buds orbicular, the base swollen; calyx cleft to near the base, the lobes ovate, 2.5-4 mm. long, stellate-pubescent internally; corolla white, the limb 10-15 mm. wide, parted to below the middle, the



lobes 4–6 mm. long; filaments 1–1.3 mm. long; anthers 2–3 mm. long; ovary glabrous or with occasional stellate hairs; style glabrous or sparsely stellate-pubescent; fruit yellow, 8–10 mm. in diameter, glabrescent; seeds 1.5–2.2 mm. long.

**Solanum hirtum** Vahl, *Symb. Bot.* 2: 40. 1791; *Icon. Pl. Am. t. 21.* 1798.

Wet thickets or forests, 200–600 m.; Petén; Zacapa; Chiquimula. British Honduras. Mexico to Costa Rica. Panama. West Indies. Northern South America.

A shrub, 1–2 m. tall, densely armed with straight and commonly slender prickles, the young branches, petioles, and pedicels densely covered with whitish or grayish, sessile-stellate hairs, the central ray glandular (at least some) and greatly exceeding the lateral ones, the rays subequal on some of the hairs; leaves solitary, sinuate-lobate, broadly ovate, mostly 10–20 cm. long, 5.5–10 cm. wide, the apex obtuse, the base cordate, soft to the touch, sessile stellate-pubescent, the hairs often with the central ray greatly exceeding the lateral ones, a few simple hairs usually present, the young leaves often conspicuously glandular above, densely covered with grayish, sessile to short stipitate-stellate hairs below; petioles armed with prickles, mostly 2.5–8 cm. long; inflorescences lateral and internodal, umbelliform, subsessile; pedicels 10–13 mm. long; calyx 9–9.5 mm. long, densely stellate-pubescent externally, the hairs sessile and short stipitate-stellate, parted nearly to the base, the lobes reflexed in fruit, lanceolate or ovate, acuminate or acute, densely sessile stellate-pubescent, the hairs with the central ray glandular and much exceeding the lateral ones internally; corolla white, the limb 25–30 mm. wide, parted nearly to the base, the lobes 10–12 mm. long, densely stellate-pubescent, the hairs sessile and short stipitate-stellate externally, glabrous internally; anthers subsessile, 7–7.5 mm. long; style 9–9.5 mm. long, glabrous; ovary densely stellate-pubescent, the hairs with the central ray greatly exceeding the lateral ones, glandular or eglandular; fruit globose, orange-red to red, 1.5–2 cm. in diameter, densely stellate-pubescent; seeds 1.5–2.5 mm. long.

Called *shumpa* in British Honduras, *putbalam* in Yucatan, and *huevo de gato* in Honduras.

Both *Solanum hirtum* Vahl and *S. tequilense* Gray are readily distinguished from other members of the genus in Guatemala by their large, densely stellate-pubescent, orange-red to red fruits.

See comments under *S. tequilense* Gray.

**Solanum hispidum** Pers. *Syn. Pl.* 1: 228. 1805. *Huiz* (Sacatepéquez); *kakisacyol*, and *kaqi paxl* (Quechí, Alta Verapaz); *limpia-plato* (Quezaltenango).

Moist or wet thickets, sometimes in oak or oak-pine forests or in fields, 1,200–2,500 m.; Alta Verapaz; Izabal; Chiquimula; Baja Verapaz; El Progreso; Sacatepéquez; Chimaltenango; Quiché; Que-

zaltenango; Huehuetenango; Santa Rosa; San Marcos. Southern Mexico to Costa Rica. Panama. Peru.

A shrub or small tree, 1-5 m. tall, armed with few prickles, rarely unarmed, the prickles mostly stout and broad based, the young branches, petioles, peduncles and pedicels densely covered with mostly stout, ferruginous, long stipitate-stellate (bristle-like) hairs; leaves solitary, ovate to elliptic or oblong-elliptic, sinuately-lobed to lobed or often pinnatifid, rarely entire, mostly 15-30 cm. long, 10-20 cm. wide, the apex narrowly acute to acute, the base unequal or equal, rounded or obtuse, sometimes subcordate, asperous and sometimes bearing a few prickles, covered with sessile-stellate hairs, the terminal ray exceeding the lateral ones in at least some of the hairs above, sessile to stipitate stellate-pubescent below; petioles 2-5 cm. long; inflorescences lateral and internodal, few-flowered, densely stellate-pubescent; peduncles 3-15(-30) mm. long; pedicels 5-10 mm. long; calyx 5-9 mm. long, densely stellate-pubescent, parted nearly to the base, the lobes linear or lanceolate and long attenuate; corolla white, the limb 20-28 mm. wide, divided to well below the middle, the lobes 7.5-12 mm. long, densely stellate-pubescent externally, sparsely stellate-pubescent along the mid-vein internally; filaments 2-3 mm. long; anthers 6.5-8 mm. long; style 9-13.5 mm. long, glabrous; ovary sparsely pubescent apically, the hairs stipitate-glandular; fruit globose, 10-14 mm. in diameter, glabrous; seeds 2-3 mm. long.

*Solanum hispidum* Pers. is in most cases distinguished readily from other members of the genus in Guatemala by the prominent reddish or reddish-brown, long stipitate-stellate hairs covering most parts of the plant.

***Solanum houstonii*** Dunal, Hist. Solan. 243. 1813. *S. tampicense* Dunal in DC. Prodr. 13, pt. 1: 284. 1852.

Damp thickets, swampy ground or open places, just above sea level to 35 m.; Escuintla (near San José, *Standley 64257*); British Honduras. Southern Mexico. West Indies.

A small, woody vine, the stems glabrate, bearing a few minute, sessile-stellate hairs when young, sparsely to densely armed with prickles, the prickles short and recurved; leaves in pairs or solitary, sinuately-lobed to parted, the larger leaves oblong to lance-oblong, 5.5-16 cm. long, 2.2-5.5 cm. wide, the apex acute, the base attenuate, prickly below and often on the mid-vein above, sparsely pubescent throughout, the hairs sessile-stellate and often with the central ray much longer than the lateral ones above, the hairs sessile-stellate and with subequal rays below; petioles glabrous or sessile stellate-pubescent, 5-15 mm. long, often armed with a few long prickles; inflorescences lateral and opposite the leaves, cymose, sessile or subsessile; pedicels glabrous or sparsely sessile stellate-pubescent, 5-8 mm. long, recurved in age; calyx 1.5-2 mm. long, the lobes mucronate, shallowly lobed in age, nearly always armed with prickles, glabrous or sometimes sparsely sessile stellate-pubescent; corolla white to yellowish-white, the limb 12-14 mm. wide, parted nearly to the base, the lobes 5-6 mm. long, ciliate and sparsely sessile stellate-pubescent externally; filaments about 1 mm. long; anthers 3.5-4 mm. long; style

5-6 mm. long, glabrous; ovary glabrous; fruit globose, red, 8-8.5 mm. in diameter; seeds 2-2.5 mm. long.

In Guatemala *Solanum houstonii* Dunal is to be confused only with *S. lanceifolium* Jacq.

Called *sosumba* in British Honduras.

***Solanum huehuetecum*** Standl. & Steyerl. Field Mus. Bot. 23: 234. 1947. *Yerba mora*.

Known only from the type, Huehuetenango, above Democracia on trail towards Jutal, 1,000 m., *Steyerl. 51039*. Endemic.

A small, unarmed, suffrutescent herb, about 3 dm. tall, the branches slender, sparsely to moderately stellate-pubescent, the hairs sessile or short stipitate; leaves ovate to lanceolate or lance-elliptic, 2.5-6 cm. long, 1-2 cm. wide, the apex acute, the base short attenuate, the hairs short stipitate-stellate above and below, simple hairs also present above; petioles slender, 5-15 mm. long; inflorescences lateral and opposite the leaves or internodal, sessile or subsessile, cymose, few-flowered; pedicels slender, about 2 cm. long, sparsely stellate-pubescent; calyx about 2.5 mm. long, sparsely stellate-pubescent, parted to the middle, the lobes ovate, acute; corolla white, 7-8 mm. long, lobed to the middle, the lobes apically stellate-pubescent externally, otherwise glabrous; filaments connate to one-half or almost their entire length, about 1 mm. long; anthers about 3 mm. long; style 3.5 mm. long, glabrous; ovary glabrous; fruit globose, about 6 mm. in diameter.

A collection, *Steyerl. 51278*, made near the type locality of *Solanum huehuetecum* Standl. & Steyerl. has been included here. The specimen is more densely pubescent, leaf bases rounded to subcordate, and the filaments only connate at the base. It also suggests *S. lignescens* Fern. of southern Mexico.

***Solanum inscendens*** Rydb. Bull. Torrey Bot. Club 51: 175. 1924. *S. ovandense* Lundell, Amer. Midl. Nat. 29: 490. 1943 (type from Mount Ovando, Chiapas, Mexico, *Matuda 4182*).

In mixed or pine-juniper forests, or cloud forests, commonly climbing on trees, 2,400-3,768 m.; Baja Verapaz; Guatemala; Chimaltenango; Quezaltenango; Huehuetenango; San Marcos. South-central Mexico.

A woody, non-tuber-bearing vine, up to 4 m. long or more, the stems rooting at the nodes; young branches densely pubescent to essentially glabrous; leaves odd-pinnate, 3-10 cm. long, pubescent to essentially glabrous above and below; petioles 1-4 cm. long; interstitial leaflets absent; leaflets 5, ovate to elliptic, the apex acute to acuminate, 1.5-5.5 cm. long, 0.5-1.5 cm. wide, shortly petiolulate or subsessile, the lowermost pair of leaflets reduced or sometimes minute, the terminal leaflet somewhat larger than the lateral ones; pseudostipular leaves present; inflorescence pseudoterminal on leafy branches, becoming lateral and

internodal, cymose-paniculate; peduncle usually short, rarely 30 mm. long; pedicels 5-10 mm. long, articulate at their bases, sparsely pubescent; calyx about 2 mm. long, shallowly lobed, the lobes short, triangular-ovate, acute to apiculate, about 0.5 mm. long; corolla white, the limb 6-10 mm. wide, deeply lobed to near the base, the lobes 2-4 mm. long, elliptic to lanceolate, obtuse to acute; filaments about 0.5 mm. long, pubescent, slightly connate below; anthers 2-2.5 mm. long; style 5-7 mm. long, conspicuously exceeding the stamens, curved with age, fruit globose, about 1 cm. in diameter.

*Solanum inscendens* Rydb. is closely allied to *S. appendiculatum* H. & B. ex Dunal.

**Solanum jamaicense** Miller, Gard. Dict. ed. 8. *Solanum* no. 17. 1768.

Moist or wet thickets or in pastures, just above sea level to 900 m.; Petén; Alta Verapaz; Izabal. British Honduras; Southern Mexico; Honduras. Nicaragua. Costa Rica. Panama. West Indies. South America.

An erect shrub, 1-3.5 m. tall, the branches densely pubescent, covered with short stipitate or sometimes subsessile-stellate hairs, these often yellowish or yellowish-brown, armed with numerous short, recurved prickles; leaves sessile or subsessile, in pairs or some solitary, angulately-lobed to subentire, rarely entire, broadly ovate to elliptic or oblong-elliptic, often rhomboid, the subopposite leaves similar in shape, different in size, the larger leaves 6-20 cm. long, 3.5-10 cm. wide, the apex narrowly acute or long acuminate, the base broadly cuneate and decurrent, often bearing a few prickles, densely pubescent above and below, the hairs short stipitate-stellate, usually more densely pubescent below; inflorescences lateral and internodal, sessile or subsessile, umbelliform, several-flowered; pedicels 5-8 mm. long, stipitate stellate-pubescent, often with a few prickles; calyx 2.5-3 mm. long, stipitate stellate-pubescent, often with a few prickles; corolla white, the limb 12-12.5 mm. wide, parted nearly to the base, the lobes 5-5.5 mm. long, oblong-lanceolate to narrowly lanceolate, the hairs sessile and short stipitate-stellate externally; filaments 0.5-1 mm. long; anthers 3.5-4.5 mm. long; style 5.5-6.5 mm. long, the hairs stipitate-glandular below, sometimes with a few sessile stellate hairs in addition to the glandular ones; ovary stipitate-glandular pubescent, sometimes with a few sessile stellate hairs in addition to the glandular ones; fruit globose, red, 7.5-8.5 mm. in diameter, glabrous; seeds 1.5 mm. broad.

*Solanum jamaicense* Miller shows little variation throughout its range. It is distinguished from other species of the genus in Guatemala by its anthers, strongly recurved prickles, sessile or subsessile and broadly cuneate leaves, lateral and internodal and sessile inflorescences and the stipitate-stellate hairs on the leaves.

A common weedy shrub of the Caribbean coast region.

Called *friega plato* and *tomate del diablo* in Honduras.

***Solanum lanceifolium*** Jacq. Coll. Bot. 2: 286. 1789. *S. scabrum* Vahl, Eclog. Am. 1: 22. 1796, non *S. scabrum* Miller. *S. enoplocalyx* Dunal in DC. Prodr. 13, pt. 1: 222. 1852, *syn. nov.* *S. donnell-smithii* Coult. Bot. Gaz. 16: 144. 1891 (type from Concepcion, Escuintla, *Donn.-Sm.* 2261), *syn. nov.* *S. purulense* Donn.-Sm. Bot. Gaz. 52: 52. 1911, *syn. nov.* *Kishtan del monte* (San Marcos); *manzanilla de montaña* (Suchitepéquez); *tomatillo* (Jutiapa).

Wet or moist thickets or forests, sometimes in dry thickets, 50–1,650 m.; Petén; Alta Verapaz; Izabal; El Progreso; Sololá; Guatemala; Quezaltenango; Jutiapa; Santa Rosa; Escuintla; Suchitepéquez; Retalhuleu; San Marcos. British Honduras. Southern Mexico to Costa Rica. Panama. West Indies. Northern South America.

A woody vine, trailing over shrubs or small trees, the branches armed with short, stout, broad-based, recurved prickles, also densely covered with sessile to short stipitate-stellate hairs or long, stout, stipitate-stellate (bristle-like) hairs, these unequal in length, sometimes sparsely stellate-pubescent; leaves shallowly angulately-lobed to entire, in pairs, similar in shape, slightly different in size, ovate or elliptic to oblong, sometimes obovate, 10–22 cm. long, 4.5–10 cm. wide, the apex acuminate to narrowly acute or acute, the base acute to short attenuate, stellate-pubescent, the hairs sessile-stellate, the central ray much exceeding the lateral ones, occasionally with a few prickles above, stellate-pubescent, the hairs sessile-stellate, the rays nearly subequal, prickly along the mid-vein below; petioles 1.5–3.5 cm. long, sessile and short stipitate stellate-pubescent, armed with prickles; inflorescences lateral and internodal, cymose; peduncles unarmed, 1–2.5 cm. long, the hairs long stipitate-stellate, unequal in length or short stipitate to sessile-stellate; pedicels 5–8 mm. long, the hairs unequal, long stipitate-stellate or short to sessile-stellate, often with a few prickles; calyx 3–4 mm. long, densely armed with prickles, densely stellate-pubescent, the hairs long stipitate-stellate or sessile and short stipitate-stellate, the lobes linear-oblong or caudate, 2–3 mm. long, the calyx splitting in age; corolla pale purple or white, the limb 22–27 mm. wide, parted nearly to the base, the lobes 10–12.5 mm. long, lance-oblong, densely sessile stellate-pubescent externally, the hairs sessile-stellate on the mid-vein internally; filaments 1 mm. long; anthers 6–11 mm. long; style 9–11.5 mm. long, lower one-half to three-fourths sessile stellate-pubescent, the central ray exceeding the lateral ones, or rarely with stipitate-glandular hairs; ovary apically sessile stellate-pubescent or rarely with stipitate-glandular hairs; fruit globose, orange, 12–15 mm. in diameter; seeds 3 mm. broad.

Called *huevo de gato* and *tomate del diablo* in Honduras and *tomatillo* in British Honduras.

*Solanum lanceifolium* Jacq. is characterized by its high degree of variability, especially as to pubescence. Part of the material included here may prove to be *Solanum subinermis* Jacq.

**Solanum lepidotum** H. & B. ex Dunal, Solan. Syst. 17. 1816. *Hoja blanca* (San Marcos); *hoja huaco* (Quezaltenango).

Wet forests, 150–1,000 m., sometimes higher; Alta Verapaz; Suchitépéquez; Huehuetenango; Quezaltenango; San Marcos. British Honduras. Southern Mexico. Costa Rica. Panama to northern South America.

A shrub or small tree, unarmed, 1–6 m. tall, the young branches, petioles and peduncles, grayish, densely covered with minute, closely appressed stellate-like scales and stellate hairs; leaves mostly solitary, sometimes in pairs and then very unequal in size but similar in shape, the larger leaves lance-oblong to elliptic-oblong, sometimes elliptic, mostly 7–15 cm. long, 3–7 cm. wide, the apex acuminate or long acuminate sometimes abruptly so, the base obtuse or rounded, rarely short attenuate, essentially glabrous or with a few scattered, minute, stellate hairs, smooth to the touch above, densely covered with minute and closely appressed whitish or grayish stellate-like scales below; petioles 5–10(–15) mm. long; inflorescences pseudoterminal, becoming lateral and opposite the leaves, dichotomously cymose, many-flowered; peduncles 2.5–8.5 cm. long; pedicels 5 mm. long, densely stellate-tomentose; calyx 2–2.5 mm. long, densely stellate-tomentose, parted to the middle, the lobes ovate, acute; corolla white, the limb 7 mm. wide, parted to near the base, the lobes 3 mm. long, densely stellate-tomentose externally; filaments short, about 0.5 mm. long; anthers 1.5–2 mm. long; style 3 mm. long, with a few scattered stellate hairs; ovary glabrous; fruit globose, 7–8 mm. in diameter, black, glabrous; seeds 3 mm. long.

*Solanum lepidotum* is most likely to be confused with *S. schlechtendalianum* but can be distinguished by the glabrous ovary and the closely appressed stellate-like scales on the lower surface of the leaves.

**Solanum mammosum** L. Sp. Pl. 187. 1753. *Cantu* (Quecchí, signifying yellow breast); *chichigua* (Chiquimula); *chichita* (Petén); *tetereta* (Jutiapa).

Dry or moist thickets or fields, often in waste ground, 150–1,500 m., but in cultivation at much higher elevations; Petén; Alta Verapaz; Chiquimula; Jalapa; Huehuetenango; Jutiapa; Santa Rosa. British Honduras. Southern Mexico. El Salvador. Honduras. Nicaragua. Costa Rica. Panama. West Indies. South America.

Plants herbaceous or suffrutescent, 1.5 m. tall or less, armed with numerous slender or broad-based, yellowish, straight or partly recurved prickles, the branches stout, densely pubescent with long, simple hairs, the hairs soft and multicellular and stipitate-glandular; leaves armed with prickles, ovate to broadly ovate, shallowly lobed, mostly 10–25 cm. long, 8–18 cm. wide, the apex acute, the base cordate to subcordate or nearly truncate, densely pilose above and below, the hairs simple; petioles mostly 4–10 cm. long, densely long pilose and with stipitate-glandular hairs, armed with prickles; inflorescences lateral and internodal, cymose, sessile or subsessile, mostly 1–4 flowered; pedicels 9–14.5 mm. long, densely pilose and with stipitate-glandular hairs; calyx 4–5 mm. long, unarmed, densely pilose

and with stipitate-glandular hairs, parted nearly to the base, the lobes narrowly lanceolate to linear; corolla violaceous, the limb 24–28 mm. wide, parted nearly to the base, the lobes pilose externally; filaments 1–1.5 mm. long; anthers 8.5–10 mm. long; style stout, about as long as the stamens, apparently developing late in some flowers, the lower part glandular; ovary glandular; fruit bright yellow, glabrous, 2.5–4.5 cm. broad, 3–6.5 cm. long, ovoid and abruptly contracted at the apex into a short neck (mammillate); seeds 3.5–4 mm. long.

Called *chichihua* in Honduras and Nicaragua.

This is one of the best known plants in Guatemala because of its connection with the pilgrimage each January to the Sanctuary of Esquipulas, most famous church of Central America. The church is visited each year by many tens of thousands of *romeros* or pilgrims from Mexico and Central America and even from more distant regions. One meets many pilgrims on the roads before and after the celebration, most of whom travel on foot, thus acquiring greater merit. They are easily recognized because the women wear decorations of these *chichita* fruits. The men have their hats decorated with Spanish moss (*Tillandsia usneoides* L.). The word *chichihua* and its variations, used generally in Mexico and Central America for women's breasts, is derived from a Nahuatl word having the same significance, and alludes to the shape of the fruit. Since a great many of the women who go to Esquipulas do so because of a belief that it will result in bearing a child, the connection between the *Solanum* fruit and pilgrimage is rather obvious. The custom is probably a very old one. All over Guatemala one sees the dry fruits used as decorations in the humblest dwellings, a souvenir of an earlier pilgrimage. The seeds are often planted about dwellings far above the elevations at which the plants grow naturally, as a further indication that people of that home have made the pilgrimage. It may be noted that pilgrims to another famous church, at San Felipe, near Antigua, carry branches of the pepper tree, *Schinus molle* L. Branches of *Solanum mammosum* L. with the brilliant yellow fruits are often used about Guatemala City as Christmas decorations. The fruits sometimes are used in domestic medicine as a remedy for colds, but their use is rather dangerous as there is a belief, probably well based, that they are poisonous.

***Solanum melongena*** L. Sp. Pl. 186. 1753. *Berenjena*; egg-plant.

A native of Asia, now cultivated in moist warm or warm-temperate countries for its edible fruits. Planted in various parts of Guatemala at middle and lower elevations. The eggplant, so widely

used as a vegetable in the United States, is not very popular in Central America. The fruits are usually smaller than those produced in the United States.

**Solanum molinarum** J. L. Gentry, *Phytologia* 26: 276. 1973.

Brushy rocky hillside or shaded quebrada, 350–1,480 m.; Zacapa; Chiquimula; Jalapa. Honduras (type from edge of Humuya River bank, vicinity El Edén, Comayagua Valley, Comayagua, A. & A. A. *Molina*).

A small vine, the branches slender, puberulent, armed with numerous, short and recurved prickles; leaves pinnate, 8–20 cm. long, pubescent with very short hairs above and below, armed with prickles; petioles 1.5–4 cm. long; leaflets 5–7, lanceolate to lance-ovate, 1.5–8 cm. long, the lowermost pair reduced, the terminal leaflet larger than the lateral ones, the apex acuminate; inflorescence cymose, lateral and internodal, paniculately disposed, few-flowered, rachis puberulent; peduncle 3–5.5 cm. long, puberulent and armed with prickles; pedicels 7–8.5 mm. long, sparsely and inconspicuously pubescent and unarmed; calyx unarmed, 2–2.5 mm. long, lobed about one-half way to the base, the lobes rounded, glabrous; corolla white, the limb 12–16 mm. wide, lobed to below the middle, the lobes 5.5–7 mm. long, acute; stamens unequal, four of the filaments 1.5 mm. long, the fifth one 2.5 mm. long, the anthers 3.5 mm. long; style glabrous, 5 mm. long; ovary glabrous; fruit globose, mottled with light and dark green. 2.2–2.8 cm. in diameter; seeds 3.5–4.5 mm. long.

**Solanum morelliforme** Bitter & Muench, *Fedde Repert. Sp. Nov.* 12: 154, *t.* 2. 1913.

Usually epiphytic on *Quercus* spp., sometimes on walls or boulders, rarely terrestrial, 1,600–2,800 m.; Chimaltenango; Quezaltenango; Huehuetenango. East-central Mexico (type from Chiapas, Gueytepec, *Muench s.n.*).

Plants herbaceous, nearly always epiphytic, laxly ascending or pendent, usually about 3 dm. tall, glabrous or essentially so, stoloniferous and tuber-bearing, the tubers small, often numerous, globose or ellipsoid to obovoid, commonly purplish, 1–3 cm. long, 1–1.5 cm. in diameter; stem slender, purplish, simple or branched, fistulose; leaves simple, ovate-lanceolate to narrowly lanceolate, 2.5–14 cm. long, 1–4 cm. wide, the apex acute to acuminate, often attenuate, the base oblique, shortly attenuate to somewhat rounded; petioles 5–40 mm. long; pseudostipular leaves present or absent; inflorescence pseudoterminal, becoming lateral and opposite the leaves, laxly cymose, mostly 15-flowered; peduncle slender, 2–4.5 cm. long; pedicels slender, 9–17 mm. long, articulate at about the middle; calyx 1.5–2 mm. long, the lobes short, toothlike and acute; corolla white, the limb about 10 mm. wide, parted to near the base, the lobes about 6 mm. long, lanceolate, acuminate, ciliate; stamens equal, the filaments 1–1.5 mm. long, glabrous, often united to form a column; anthers coherent, 3–5 mm. long, forming a column about the style,



rounded and somewhat dorsally auriculate at their bases; style about as long as the stamens; fruit globose, green or yellowish green, apiculate, 5-7 mm. in diameter.

*Solanum morelliforme* Bitter & Muench is most likely to be confused with *S. clarum* Correll from which it is distinguished by the epiphytic habit, and the rounded and dorsally auriculate bases of the anthers.

***Solanum muenschleri*** Standl. & Steyererm. Field Mus. Bot. 22: 275. 1940.

Damp thickets or open rocky hillsides, sometimes in *Juniperus* forests or in mixed forests, 2,500-3,500 m.; Chimaltenango; Sololá (type from near Santa María, *Muenschler 12360*); Totonicapán; Huehuetenango; San Marcos. Endemic.

An unarmed shrub, 1-3 m. tall, the young branches, petioles, peduncles, pedicels, and calyces densely pubescent, the hairs yellowish, mostly with rays along their stalks (branched); leaves lanceolate to narrowly lanceolate, rarely narrow oblong-lanceolate or narrowly elliptic, 6-15(-20) cm. long, 1-2.5(-4) cm. wide, the apex narrowly acute, the base rounded or obtuse, pubescent above, more densely so below, velutinous, the hairs branched and minute, the lateral veins conspicuous; petioles 1-2.5(-4) cm. long; inflorescences pseudoterminal, becoming lateral and opposite the leaves, cymose and paniculately disposed or racemose, much shorter than the leaves, several to many-flowered, short pedunculate to nearly sessile; pedicels 8-10 mm. long; calyx 3.5-4 mm. long, parted to the middle, the lobes lanceolate or ovate, acute; corolla purple to lavender, the limb 12.5-15 mm. wide, densely pubescent externally, parted to just below the middle, the lobes 3.5-5 mm. long; filaments about 1 mm. long; anthers 2.5-3 mm. long; style 4.5-6 mm. long, the lower one-half densely covered with branched hairs; ovary apically pubescent; fruit globose, 7-10 mm. in diameter, black, lustrous, glabrous or sometimes sparsely pubescent apically; seeds 2-3 mm. broad.

***Solanum muricatum*** Ait. Hort. Kew. 1: 250. 1789. *S. guatemalense* Hort., Bitter, Fedde Repert. Sp. Nov. 12: 444. 1913. *Pepino*; *petito*.

Cultivated in temperate and cool regions for its edible fruit, occasionally escaping cultivation, 1,000-2,700 m.; Alta Verapaz; Jalapa; Guatemala; Sacatepéquez; Quezaltenango. Mexico to Costa Rica. Panama. Peru, Bolivia, Colombia, Ecuador, and Chile.

An erect or ascending herb, sometimes with a woody base, up to 1 m. tall or more, non-tuber-bearing; stem glabrous or nearly so, branched or sometimes simple; leaves simple (in ours), lanceolate to elliptic-lanceolate, mostly 8-18 cm. long, 1.5-3 cm. wide, the apex obtuse or acute to acuminate, the base rounded or shortly attenuate, with appressed or subappressed hairs; petioles long, 3-7 cm. long; inflorescences pseudoterminal, becoming lateral and internodal, few to many-flowered; peduncle forked once or simple, 5-8 cm. long; pedicels 5-15 mm. long,

articulate at or near the base; calyx 4–7 mm. long, divided to about or below the middle, the lobes irregular and unequal, lanceolate, acute; corolla violet-purple or white marked with purple, the limb 40 mm. wide or less, shallowly lobed, the lobes broadly rounded, apiculate at the apex, externally strigose; stamens equal, the filaments about 1.5 mm. long, glabrous; anthers 4.5–6 mm. long; style papillose, 5–9 mm. long, slightly exceeding the stamens; fruit ovoid to ellipsoid, pendent, white or pale green and purple-variegated, up to about 10 cm. long and 6 cm. in diameter.

*Solanum muricatum* Ait. is believed to be a native of the Andean region, but now is probably known only in cultivation or sometimes as an escape from cultivation.

The green fruits are cooked and eaten, the ripe ones eaten raw. Fruits of the cultivated plants are usually seedless.

Distinguished from the other simple leaved species in our area with short, oblong anthers and large apical pores, by the simple hairs, habit, and the shallowly lobed corolla limb.

***Solanum nigrescens*** Mart. & Gal. Bull. Acad. Brux. 12, pt.1: 140. 1845. *Hierba mora* (Quezaltenango); *macuy* (Sacatepéquez).

Wet thickets or forests or in mixed forests or on dry brushy hillsides, sometimes a weed of cultivated fields, 1,500–3,900 m.; Chiquimula; El Progreso; Sacatepéquez; Sololá; Quezaltenango; Huehuetenango; Escuintla; San Marcos. Southern Mexico. Costa Rica.

A sprawling or erect herb, 1–1.5 m. tall, sometimes 3.5 m., the young stems pilosulous, sometimes sparsely so, the hairs spreading or incurved; leaves in pairs or solitary, different in size, similar in shape, entire or sinuate-dentate, ovate to ovate-lanceolate, rarely broadly ovate, the larger leaves 3–15(–18) cm. long, 1.5–6.5(–10.5) cm. wide, the apex acuminate to narrowly acute, the base attenuate, pilosulous or villosulous above and below, sometimes sparsely so with age; petioles 5–35 mm. long; inflorescences lateral and internodal, racemiform or subumbelliform, few-to several-flowered; peduncles 1–3 cm. long; pedicels 6–10 mm. long, fruiting pedicels reflexed; calyx 1–1.5 mm. long, slightly accrescent in fruit, shallowly lobate, the lobes ovate and acute or obtuse; corolla white or purplish with a dark spot at the base of each corolla lobe, the limb 6.5–10(–16) mm. wide, parted to near the base, the lobes (2.5–)3.5–4(–7) mm. long, externally pilosulous; filaments 0.5–1(–2) mm. long, ciliate; anthers (2.5–)3–4 mm. long; style (4–)5–5.5 mm. long, exceeding the stamens, the lower one-half densely pubescent; ovary glabrous; fruit globose, 4.5–7 mm. in diameter; seeds 1–1.5 mm. long.

The material included in this species was determined by Heiser (1955) as *S. amethystinum* (Kuntze) Heiser and *S. leonii* Heiser. He also suggested at this time that *S. amethystinum* may prove to be only a subspecies of *S. douglasii* Dunal. In a recent study of Edmonds (1972), *S. douglasii* is treated as a synonym of *S. nigrescens*.

A more intensive study might reveal the presence of a third species, *S. macrotonum* Bitter, in Guatemala.

See comments under *S. americanum*.

***Solanum nigricans*** Mart. & Gal. Bull. Acad. Brux. 12, pt. 1: 134. 1845. *S. vernicinitens* Bitter, Fedde Repert. Sp. Nov. 18: 58. 1922 (type from Cobán, Alta Verapaz; *Tuerckheim* 745), *syn. nov. Aurella* (Quezaltenango).

Wet thickets or dense wet forests, often in *Abies* or *Cupressus* forests, sometimes in open pine-oak forests, 1,200–2,700 m.; Alta Verapaz; Zacapa; Baja Verapaz; Jalapa; Guatemala; Chimaltenango; Sololá; Quiché; Totonicapán; Quezaltenango; Huehuetenango; Suchitpéquez; San Marcos. Southern Mexico. Honduras.

An unarmed shrub or small tree, 1–6 m. tall, the young branches, leaves, peduncles, and pedicels densely covered with whitish or yellowish, closely appressed, branched hairs, the branching of the hairs discernible only with difficulty, soon glabrescent; leaves solitary, firm, the lateral veins prominent, elliptic to narrowly elliptic or elliptic-ovate, rarely ovate or obovate, (3–)6–15 cm. long, (1–)2–5.5 cm. wide, the apex acuminate, the base short attenuate or cuneate; petioles 5–15 mm. long; inflorescences lateral and opposite the leaves, cymose, several-flowered; peduncles very short, 2–5(–10) mm. long, sparsely pubescent or glabrescent; pedicels 1–2 cm. long, sparsely pubescent or glabrescent; calyx densely pubescent to glabrous, 1–1.5 mm. long, the lobes rounded and apiculate, obtuse; corolla white, the limb 12.5–14 mm. wide, parted to near the base, the lobes 5–6 mm. long, papillate marginally and apically; filaments 0.5 mm. long; anthers 3–3.5 mm. long; style exceeding the stamens, 5.5–6 mm. long; ovary glabrous; fruit globose, black, 1–1.5 cm. in diameter; seeds 3.5–5 mm. long.

A common shrub of the western Highlands, sometimes forming dense thickets.

*Solanum nigricans* Mart. & Gal. has the younger stages of the branches, leaves, and inflorescences densely covered with whitish or yellowish, appressed hairs. The branches of the hairs are discernible only with difficulty.

***Solanum nudum*** H.B.K. Nov. Gen. & Sp. Pl. 3: 33. 1818. *S. parcebarbatum* var. *minorifrons* Bitter, Fedde Repert. Sp. Nov. 18: 52. 1922 (type from near Finca Sepacuite, Alta Verapaz, *Cook & Griggs* 146). *Hediondilla* (Quezaltenango); *sakyol* (Alta Verapaz).

Damp or wet forests or thickets, sometimes in oak-pine forests or wet pine forests, 1,000–2,500 m. or sometimes lower; Petén; Alta Verapaz; Izabal; Baja Verapaz; Chiquimula; El Progreso; Guatemala; Sacatepéquez; Chimaltenango; Quiché; Quezaltenango; Hue-

huetenango; Santa Rosa; Escuintla; Suchitepéquez; San Marcos. British Honduras. Southern Mexico. Honduras to Costa Rica. Panama.

An unarmed shrub, 1-3.5 m. tall, sometimes a tree of 6 m., the branches sparsely pilosulous or glabrous; leaves solitary or in pairs, unequal in size, different or similar in shape, the larger leaves narrowly elliptic to elliptic or ovate-elliptic, sometimes ovate or rarely elliptic-oblong, 8-15(-20) cm. long, (2.5-)4-7 cm. wide, the apex mostly acuminate or narrowly acute, the base short attenuate, glabrous above, the hairs in tufts in the axils of the mid-vein, sometimes sparsely and inconspicuously so, sometimes hairs along the margins of the mid-vein, rarely glabrous below; petioles 1-1.5 cm. long; inflorescences lateral and opposite the leaves, cymose, simple, few-to several-flowered; peduncles short, 1.5-2.5 (-10) mm. long; calyx 1-2 mm. long, lobed to the middle, the lobes ovate or rounded, and apiculate or shallowly lobate, glabrous or pilosulous apically, rarely sparsely pilosulous; corolla white, the limb 8.5-10 mm. wide, parted to near the base, the lobes 3-4 mm. long, inconspicuously ciliate with papillae; filaments about 0.5 mm. long, sometimes connate one-half to nearly their entire length; anthers 2-2.5 mm. long; style 4-5 mm. long, glabrous, exceeding the stamens; ovary glabrous; fruit globose, 7-10 mm. in diameter, black; seeds 3-3.5 mm. long.

Called *yerba de barrer* in British Honduras and *chillo* and *cordoncillo* in Honduras.

This is a very common shrub in many parts of Guatemala being most plentiful at middle elevations. The leaves are used in Alta Verapaz by the Indians to treat sores.

See comments under *S. diphyllum* L.

**Solanum oxycarpum** Schiede in Schlecht. Hort. Hal. 1: 5, t. 3. 1841.

Usually in rain or cloud forests, 2,500-3,000 m.; El Progreso (*Steyermark 43672*). Southern Mexico. Costa Rica. Panama.

Plants herbaceous, ascending or nearly erect, 1.5-9 dm. tall, the stem glabrous or sparsely pubescent, non-tuber-bearing or occasionally with tubers up to 6 cm. long, 2 cm. in diameter; leaves odd-pinnate 6-26(-32) cm. long; interstitial leaflets absent or rarely with several minute ones; leaflets 7-10, rarely 5 or 13, ovate-lanceolate to narrowly lanceolate or elliptic-lanceolate, 2-9 cm. long, 1-3.5 cm. wide, the apex acute to long acuminate or rarely obtuse, the base broadly rounded to cuneate, sessile or with a short-winged petiolule, the lowermost pair of leaflets often much reduced; pseudostipular leaves present; inflorescence pseudoterminal, becoming lateral and opposite the leaves, cymose, few-to many-flowered; peduncle 4-10 cm. long; pedicels slender, 1.5-2.5 cm. long, articulate at or somewhat above the middle (rarely below the middle); calyx 3-7 mm. long, sparsely pubescent to glabrous, lobed to about the middle, the lobes ovate to elliptic or narrowly lanceolate, acute to acuminate, rarely nearly obtuse; corolla pale or deep purple, occasionally white, the limb 15-22(-30) mm. wide, shallowly lobed, the lobes 2.5-4 mm. long, densely pubescent; filaments 1-1.5 mm. long, glabrous or rarely puberulent;

anthers 3-5 mm. long; style 5-8 mm. long, exceeding the stamens, puberulent below; fruit ovoid-cylindric, acute, usually about 2 cm. long, 0.7 cm. in diameter.

The inclusion of *S. oxycarpum* Schiede in the "Flora" is based upon a collection (*Steyermark 43672*) from El Progreso. The specimen is in fruit and difficult to place but appears to be a form of this species, Correll (1962).

***Solanum phaseoloides*** Polak. *Linnaea* 41: 585. 1877. *S. olivaeforme* Donn.-Sm. *Bot. Gaz.* 14: 28. 1889. (type from Panasamalá, Alta Verapaz, *Donn.-Sm. 1226*).

Wet thickets or moist forests, sometimes on dry slopes, 280-1,500 m.; Alta Verapaz; Izabal; Quezaltenango; Suchitepéquez; Retalhuleu; San Marcos. British Honduras. Mexico (Chiapas). Costa Rica.

Plants herbaceous, creeping, rooting at the nodes, glabrous throughout or essentially so; leaves trifoliolate and pinnate, long petiolate; leaflets 3, short petiolulate, ovate to lanceolate or elliptic, 2-6.5 cm. long, 1-3.5 cm. wide, the apex acute or obtuse, the base unequal, short-petiolulate, sparsely pilosulous, more densely so on the veins or essentially glabrous above, glabrous below; pseudostipular leaves absent; inflorescences lateral and internodal or opposite the leaves, cymose, 3-7 flowered; peduncle (1-)2-4(-10) cm. long; pedicels slender, 1-2.5 cm. long; calyx 1.5-2 mm. long, glabrous or pilosulous, parted to about the middle, the lobes rounded or triangular; corolla white, the limb 10-16 mm. wide, parted to near the base, the lobes 4-7.5 mm. long, ciliate and apically pilosulous, otherwise glabrous; filaments 1 mm. long; anthers 2-2.5 mm. long; style 2.5-3.5 mm. long, equalling to exceeding the stamens; fruit ovoid-conic, 2-3 cm. long.

***Solanum quinquangulare*** Willd. ex Roem. & Schult. *Syst. Veg.* 4: 699. 1819. *S. ciliatum* sensu auct., non Lam. *S. aculeatisimum* sensu auct., non Jacq. *Ixtú* (Quecchí) Alta Verapaz.

Moist thickets or wet forests, sometimes in pine forests or in pastures, 1,260-1,800 m.; Petén; Alta Verapaz; Baja Verapaz; Chimaltenango. Southern Mexico. Honduras. Nicaragua. Costa Rica.

Plants herbaceous or somewhat suffrutescent, 0.5-1.5 m. tall, the branches pubescent with simple hairs, the hairs long and eglandular, and intermixed with short glandular ones, armed with numerous, straight or somewhat reflexed prickles; leaves armed with prickles, broadly ovate or round-ovate, shallowly lobed to parted, mostly 10-30 cm. long, 7-20 cm. wide, the apex acute, the base cordate to subcordate or nearly truncate, pubescent above with simple hairs, the hairs long, moderately spaced, pubescent below with sessile-stellate and simple hairs, the simple hairs commonly confined to the veins; petioles mostly 6-10 cm. long, the hairs long and short glandular, armed with prickles; inflorescences lateral and

internodal, umbelliform, mostly 3-5 flowered; peduncles 2.5-20 (-35) mm. long, sometimes sessile, commonly armed with prickles, the hairs long and short glandular; pedicels 6-10 mm. long, commonly armed with prickles, the hairs long and short glandular; calyx 2-3 mm. long, sparsely pilose, prickly or unarmed, parted about one-half way to the base, the lobes ovate; corolla white, the limb 11.5-15 mm. wide, parted nearly to the base, the lobes 4.5-6 mm. long, pubescent with long hairs externally; filaments about 1 mm. long; anthers 4.5-5 mm. long; style slender and glabrous, about 6.5 mm. long; ovary pubescent with simple glandular and eglandular hairs; fruit red, globose, 1-1.5 cm. in diameter; seeds compressed, 3-3.5 mm. wide, broadly winged.

*Solanum quinquangulare* Roem. & Schult. and *S. globiferum* Dunal can be easily separated by their very different seed morphology and pubescence of their stems and petioles. The leaves of *S. globiferum* are much more densely pubescent and usually not as deeply lobed as those of *S. quinquangulare*.

*Solanum ciliatum* Lam., a species often confused with *S. quinquangulare*, has glabrous leaves below, large seeds and fruits, and the stems only pilose, whereas in *S. quinquangulare* the leaves are pubescent below with sessile-stellate and simple hairs, smaller seeds and fruits and the stems hirsute or pilose and nearly always with short glandular hairs.

The specimens placed in this species have been identified in herbaria as *S. aculeatissimum* and *S. ciliatum*.

***Solanum rovirosanum*** Donn.-Sm. Bot. Gaz. 48: 297. 1909. *S. nacoticosmum* Bitter, Fedde Repert. Sp. Nov. 18: 55. 1922 (type from above Jacaltenango, Huehuetenango, C. & E. Seler 2627), *syn. nov.* *S. schippii* Standl. Publ. Carnegie Inst. Wash. 461: 85. 1935 (type from Machaca, British Honduras, *Schipp* 5584), *syn. nov.*

Open forests, 15-350 m.; Petén; Alta Verapaz. British Honduras. Southern Mexico.

An unarmed shrub, 1 m. tall, mostly glabrous throughout; leaves elliptic-obovate to obovate or oblanceolate, rarely elliptic, mostly 10-27 cm. long, 4.5-12 cm. wide, the apex acute or sometimes acuminate, the base equal and short attenuate, glabrous above and below; petioles 5-10(-15) mm. long; inflorescences opposite the leaves or internodal, cymose, furcate, several-flowered, inconspicuously puberulent throughout; peduncles stout, 1-3 cm. long; pedicels short, 5-7 mm. long, puberulent; calyx 2-2.5 mm. long, puberulent, the lobes short, 0.5 mm. long, rounded and short-apiculate, obtuse; corolla white, the limb 12 mm. wide, parted to near the base, the lobes 5 mm. long, pilosulous apically; filaments connate their entire length, 1 mm. long; anthers 2.5-3 mm. long; style exceeding the stamens, 5-5.5 mm. long, sparsely puberulent near the base; ovary puberulent; fruit globose, about 8 mm. in diameter, inconspicuously and sparsely puberulent.

*Solanum rovirosanum* Donn.-Sm. is closely related to *S. fontium* Standl. & Steyerl. It is a plant of the Atlantic lowlands.

*Solanum nacoicosmum* Bitter is tentatively treated here as a synonym.

***Solanum rugosum*** Dunal in DC. Prodr. 13, pt. 1: 108. 1852.  
*Huevo de paloma.*

Moist or wet forests, in forest clearings and along river banks, just above sea level to 165 m.; Izabal. British Honduras. Honduras to Costa Rica. West Indies. Panama to Brazil.

An unarmed shrub or small tree, 1-9 m. tall, the young branches sparsely sessile stellate-pubescent; leaves entire, elliptic, obovate or oblong, 10-30 cm. long, 4.5-9 cm. wide, the apex acuminate, the base long attenuate, decurrent along the entire length of petiole or nearly so, asperous and sessile stellate-pubescent above and below; petioles mostly 1-1.5 cm. long; axillary leaves absent; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncle 5-15 cm. long; pedicels 2-10 mm. long, the hairs sessile stellate-pubescent; flower buds globose to nearly ellipsoid; calyx lobed to the middle, the lobes 1-2 mm. long, sparsely to densely stellate-pubescent internally, densely stellate-pubescent externally; corolla white, the limb about 15 mm. wide, parted to below the middle, the lobes about 6 mm. long; filaments 1-1.5 mm. long; anthers 2.5-3 mm. long; ovary glabrous to sparsely stellate-pubescent; style glabrous or sparsely stellate-pubescent; fruit yellow, about 1 cm. in diameter, glabrescent or sparsely stellate-pubescent; seeds 1.5-2 mm. long.

***Solanum schlechtendalianum*** Walp. Repert. Bot. 3: 61. 1844-45. *S. gentlei* Lundell, Contr. Univ. Mich. Herb. 8: 84. 1942 (type from Swasey Branch, Monkey River, Toledo District, British Honduras, *Gentle 3944*). *Matej* (Cobán, Quechí).

Wet thickets or forests, sometimes in pine forests, also collected in Manicaria Swamps (Izabal), just above sea level to 1,650 m.; Alta Verapaz; Izabal; Baja Verapaz; Huehuetenango; Santa Rosa. British Honduras. Southern Mexico. Honduras to Costa Rica. Panama. Cuba.

A shrub or small tree, unarmed, 1.5-5 m. tall, the young branches, petioles, peduncles, pedicels and calyces densely stellate-pubescent, the hairs grayish or sometimes yellowish-brown, sessile and short stipitate-stellate; leaves solitary or in pairs, then very unequal in size and different in shape, the larger leaves ovate to ovate-elliptic or ovate-oblong, mostly 7-16 cm. long, 3-7 cm. wide, the apex acuminate, the base rounded or obtuse, rarely subcordate, sparsely to moderately sessile stellate-pubescent and often asperulous above, densely stellate-tomentose and grayish with sessile and short-stipitate hairs of two different lengths and velutinous below; petioles short, 2-5 mm. long, rarely to 15 mm. long; smaller leaves broadly elliptic to suborbicular, 1-3 cm. long, 1-2.5 cm. wide, obtuse; petioles 2-3 mm. long; inflorescences pseudoterminal becoming lateral and opposite the leaves,

dichotomously cymose, sometimes simple, several-flowered; peduncles short, 1.5–3.5 cm. long; pedicels 4–8 mm. long; calyx 2–2.5 mm. long, parted to the middle or scarcely lobed, the lobes rounded and short-caudate; corolla white, the limb 8.5–14 mm. wide, parted to just below the middle or divided to near the base, the lobes 3–6 mm. long, densely stellate-tomentose externally; filaments short, about 0.5 mm. long; anthers 2–2.5 mm. long; style 3.5–6 mm. long, glabrous; ovary stellate-tomentose; fruit globose, 7–8 mm. in diameter, black, sparsely stellate-pubescent or essentially glabrous; seeds 2–2.5 mm. broad.

**Solanum seaforthianum** Andr. Bot. Repos. 8, t. 504. 1808. *S. seaforthianum* var. *disjunctum* Schulz in Urban, Symb. Ant. 6: 169. 1909. *Colación* (Santa Rosa); *colación blanca* (Guatemala); *lágrimas de la virgen* (Petén).

Cultivated as an ornamental in Guatemalan gardens and becoming naturalized in wet or damp thickets at 850–1,400 m.; Petén; Jalapa; Quezaltenango; Huehuetenango; Jutiapa; Santa Rosa; Retalhuleu. Southern Mexico. British Honduras. Honduras to Costa Rica. Panama and West Indies. Venezuela, Colombia and Peru.

An unarmed, woody vine, essentially glabrous throughout; leaves long petiolate, odd-pinnate or pinnatifid, sometimes simple and entire, 5–12 cm. long; interstitial leaflets absent; leaflets 5–7, lanceolate to ovate or elliptic, 1.5–6 cm. long, 0.5–2 cm. wide, the apex acute or acuminate, sessile or short-petiolate; pseudostipular leaves absent; inflorescence pseudoterminal, becoming lateral and internodal or opposite the leaves, laxly paniculate, many-flowered; pedicels 1–1.5 cm. long; calyx 1 mm. long, glabrous, inconspicuously lobed, the lobes minute; corolla purple or white, the limb 18–22 mm. wide, parted to near the base, the lobes 8–10 mm. long, ciliate and pilosulous apically, otherwise glabrous; filaments 1.5–3 mm. long, one slightly longer than the others; anthers 3–3.5 mm. long; style 8–10 mm. long, much exceeding the stamens; fruit red, globose, 5–8 mm. in diameter; seeds 3–3.5 mm. long.

*Solanum seaforthianum* Andr. is one of the common ornamental vines of Central America.

Called *Josefina* in El Salvador.

**Solanum skutchii** Correll, Contr. Texas Res. Found. 1: 4, t. 1. 1950. *Chumuchumutella* (San Marcos).

Wet forests or cloud forests or mixed forests, sometimes on stony banks or along streams, 915–2,850 m.; Alta Verapaz; Jalapa; Guatemala; Chimaltenango; Quiché (type from Nebaj, *Skutch 1772*); Sololá; Quezaltenango; San Marcos. Northeastern Mexico to Nicaragua.

A climbing or trailing, non-tuber-bearing, woody vine, up to 7.5 m. long or more, the stems rooting at the nodes, the young branches pubescent becoming glabrous with age; leaves odd-pinnate, 2.5–12(–22) cm. long, pubescent to essen-



tially glabrous above and below; petioles mostly 1–6 cm. long; interstitial leaflets absent; leaflets 7–11, very rarely 5, elliptic to elliptic-oblong, elliptic-oblancheolate or elliptic-obovate, sometimes lanceolate to elliptic-lanceolate, 1–9 cm. long, 0.5–2 (–3) cm. wide, the apex acute to shortly acuminate, petiolule to 5 mm. long, the lowermost pair of leaflets reduced, the terminal leaflet generally somewhat larger than the lateral ones; pseudostipular leaves present; inflorescence almost always axillary or pseudoterminal on leafy branches, racemose or cymose-paniculate; peduncle 5 mm. long or less, rarely to 3.5 cm. long; pedicels (5–)10–25 mm. long, articulate at their bases, glabrous; calyx 2.5–4 mm. long, nearly truncate to shallowly lobed, the lobes ovate, rounded and apiculate, conspicuously marginate; corolla white, the limb 10–13 mm. wide, parted to near the base, the lobes 4–5.5 mm. long, elliptic-lanceolate, prominently reflexed at maturity, acute; filaments about 1 mm. long, sparsely pubescent or glabrous, united for more than half their length; anthers 3–4 mm. long, apiculate to aristate and puberulent at the apex; style 8 mm. long, much exceeding the stamens; fruit ovoid to globose, orange-red to orange, about 1.5 cm. in diameter.

*S. skutchii* Correll is related to *S. inscendens* Rydb.

It is reported that the leaves are boiled and eaten as a pot-herb in San Marcos.

***Solanum suaveolens*** Kunth & Bouché, Ind. Sem. Hort. Berol. 14. 1848. *S. belizense* Lundell, Mich. Univ. Herb. Contr. 7: 48. 1942 (type from near Vaca, El Cayo, British Honduras, *Gentle* 2319).

In thickets and forested areas or in *milpa* clearings, usually below 1,000 m.; Petén. British Honduras. Southcentral Mexico. Costa Rica. North and northwestern South America.

Plants lax and straggly, usually about 4 dm. tall, more or less strigose throughout, the stems weak, somewhat angular, apparently non-tuber-bearing; leaves odd-pinnate, 5–17 cm. long, densely strigose above and below; petioles 2–4 cm. long; interstitial leaflets few or absent, subsessile to shortly petiolate; leaflets 7–13, usually 9, lanceolate to elliptic-lanceolate, 2–9.5 cm. long, 0.5–2 cm. wide, the apex acute to long acuminate, the base oblique, rounded to broadly cuneate, sessile or with a slender petiolule, the lowermost pair of leaflets much reduced, 1 cm. long or less; pseudostipular leaves present; inflorescence lateral and internodal, racemose, several-flowered; peduncles simple, 4.5–10.5 cm. long; pedicels filiform, 5–10 mm. long, articulate at their bases; calyx 2.5–3.5 mm. long, strigose to nearly glabrous, divided to about the middle, the lobes ovate to ovate-lanceolate or narrowly lanceolate, acute to acuminate; corolla white or yellowish, fragrant, the corolla limb mostly 8–12 mm. wide, shallowly lobed; filaments 0.5–1 mm. long, sometimes slightly connate; anthers about 3 mm. long; style about 3.5 mm. long, slightly exceeding the stamens, puberulent; fruit ovoid to globose, green striped with dark purplish green, about 2 cm. long, 1.5 cm. in diameter.

*Solanum suaveolens* Kunth & Bouché is readily distinguished from *S. fraxinifolium* Dunal by the appressed hairs on the stem, peduncle, pedicels, and calyx. The pubescence of *S. fraxinifolium* is spreading.

**Solanum tacanense** Lundell, Amer. Midl. Nat. 29: 490. 1943.

Creeping on tree trunks, 2,100–2,400 m.; San Marcos (*Standley 68611*). Mexico (type from Volcán de Tacaná, Chiapas, *Matuda 2958*). Apparently endemic in the mountains of southern Mexico and western Guatemala.

A woody or rarely somewhat herbaceous, unarmed vine, the stems rooting at the nodes, non-tuber-bearing, the young branches densely pubescent, the hairs brownish-yellow; leaves odd-pinnate, 2–14 cm. long, generally sparsely pubescent above and below, more densely so on the veins; rachis densely pubescent with brownish-yellow hairs; petioles 4.5 cm. long or less; interstitial leaflets absent; leaflets 5, elliptic-lanceolate to elliptic or obovate-lanceolate, 1–6.5 cm. long, 0.5–2.5 cm. wide, the apex nearly obtuse to short acuminate, the petiolules subsessile to 1 cm. long; terminal leaflets larger than the lateral leaflets; pseudostipular leaves present; inflorescence pseudoterminal on leafy branches, cymose-paniculate; peduncle 3.5 cm. long or less, densely pubescent with brownish-yellow hairs; pedicels 5–7 mm. long, articulate at their bases, sparsely pubescent, the hairs spreading or subappressed; calyx about 2 mm. long, shallowly lobed, the lobes triangular, obtuse and apiculate, about 0.5 mm. long; corolla probably white, the limb about 9 mm. wide, parted to below the middle, the lobes about 3.5 mm. long, ovate to oblong-lanceolate, obtuse to nearly acute; filaments about 1 mm. long, pubescent; anthers 2–2.5 mm. long; style about 2 mm. long, shorter than the stamens; fruit globose, red, about 1 cm. in diameter.

*Solanum tacanense* Lundell is closely related to *S. connatum* Correll. It can be separated from that species by the shorter style and the filaments only slightly connate at their bases.

**Solanum tequilense** Gray, Proc. Am. Acad. Sci. 22: 441. 1887. *S. hirtum* sensu auth., non Vahl 1798. *Coyol de chucho*; *coyol de gato* (Retalhuleu), *lava de platos* (Santa Rosa).

Wet thickets, sometimes on dry brushy plains or rocky hillsides, near sea level to 900 m.; Petén; Izabal; Chimaltenango; Jutiapa; Santa Rosa; Escuintla; Retalhuleu. British Honduras. Mexico to Costa Rica. Panama. Ecuador.

An herb or shrub, 1–1.5 m. tall, densely armed with straight and commonly broad-based prickles, the young yellowish-brown branches, petioles, pedicels, and calyces densely stellate-pubescent, the hairs sessile and short stipitate-stellate, some hairs long stipitate-stellate; leaves solitary, sinuate-lobate to shallowly lobed, broadly ovate to oblong or elliptic, 15–45 cm. long, 4–15 cm. wide, the apex acute or obtuse, the base cordate to subcordate or obtuse, soft to the touch, the hairs sessile-stellate, often with the central ray greatly exceeding the lateral ones above, densely covered with yellowish or grayish, sessile to short stipitate-stellate hairs below; petioles 4–15 cm. long, armed with prickles; inflorescences lateral and internodal, subsessile, umbelliform; pedicels 8–10 mm. long; calyx about 7.5 mm. long, parted nearly to the base, the lobes ovate, acute, sparsely sessile stellate-pubescent inter-

nally, some hairs with the central ray greatly exceeding the lateral ones; corolla white, the limb about 30 mm. wide, parted nearly to the base, the lobes 12 mm. long, densely stellate-pubescent externally, some hairs long stipitate-stellate; anthers subsessile, about 8.5 mm. long; style 9 mm. long, glabrous; ovary densely stellate-pubescent, the hairs with the central ray greatly exceeding the lateral ones; fruit globose, orange-red to red, 2-2.5 cm. in diameter, densely stellate-pubescent; seeds 3-3.5 mm. long.

Called "wild tomato" in British Honduras and *huevo de gato* in El Salvador.

*Solanum tequilense* Gray is closely related to *S. hirtum* Vahl. It has at least some of the hairs long stipitate-stellate on the young branches, petioles, and pedicels, the young branches yellowish, brown, the leaf lobes mostly 5-7 and the plants commonly with broad-based prickles. In comparison, in *S. hirtum* Vahl the young branches, petioles, and pedicels have sessile-stellate hairs with the central ray glandular (on at least some of the hairs) and greatly exceeding the lateral ones, the young branches whitish or grayish, the leaf lobes mostly 9 or more and the plants commonly with slender-based prickles. There are a few intermediate specimens that are difficult to place.

See comments under *S. hirtum* Vahl.

***Solanum torvum*** Swartz, Prodr. Veg. Ind. Occ. 47. 1788. *S. ferrugineum* Jacq. Hort. Schoenb. 3: 46, t. 334. 1798, *syn. nov.* *S. verapazense* Standl. & Steyerl. Field Mus. Bot. 22: 276. 1940 (type from Santa Rosa, Baja Verapaz, *Standley 69756*), *syn. nov.* *S. mayanum* Lundell, Contrib. Univ. Mich. Herb. 8: 85. 1942 (type from ridge near Cowpen, Swasey Branch, Toledo District, British Honduras, *Gentry 3976*), *syn. nov.* *Huiz* (Guatemala, Quezaltenango, Sacatepéquez); *huevo de gato* (Jalapa); *lava platos* (Huehuetenango, Suchitepéquez); *pajch* (Alta Verapaz).

Dry or wet thickets, sometimes in pine-oak forests, often in second growth, just above sea level to 1,500 m., rarely higher; Petén; Alta Verapaz; Izabal; Zacapa; Chiquimula; Jalapa; El Progreso; Baja Verapaz; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quiché; Quezaltenango; Huehuetenango; Jutiapa; Santa Rosa; Escuintla; Suchitepéquez; Retalhuleu; San Marcos. British Honduras. Mexico to Costa Rica. Panama and West Indies. South America.

A shrub, 1-5 m. tall, the branches short stipitate-stellate and/or sessile stellate-pubescent, the hairs yellowish-brown or sometimes reddish-brown, armed with straight prickles, sometimes with a few slightly recurved ones, rarely unarmed; leaves subentire to deeply parted, solitary or sometimes in pairs, similar in shape,

different in size, ovate to oblong or elliptic, 6-25 cm. long, 4.5-18 cm. wide, the apex acuminate or acute, the base mostly unequal, rounded or cuneate, sometimes truncate or subcordate, sessile stellate-pubescent above, the hairs short stipitate-stellate and sessile-stellate below, sometimes prickly above and below; petioles 1.5-6(-7.5) cm. long; inflorescences lateral and internodal; peduncles 1-1.5(-3) cm. long, the hairs short stipitate-stellate and sessile-stellate; pedicels 6-12 mm. long, the hairs mostly simple and sessile-stellate, often with the central ray of the stellate hairs exceeding the lateral ones, at least some of the hairs glandular or completely eglandular; calyx 3-6 mm. long, pubescence like the pedicels, the lobes 1-2.5 mm. long, linear or subulate, the calyx splitting in age, the lobes 2-5 mm. long, lanceolate to ovate-lanceolate, the apex mucronate; corolla white, the limb 18-30 mm. wide, lobed to the middle or just below, the lobes 5-12 mm. long, densely stellate-pubescent externally; filaments 1-1.5 mm. long; anthers 5.5-7.5 mm. long; style 8-11 mm. long, glabrous or sparsely glandular at the base; ovary sparsely glandular; fruit globose, 10-14 mm. in diameter, the fruiting pedicels erect or sometimes recurved; seeds 2-2.5 mm. broad, inconspicuously reticulate.

This species is a very common weedy shrub of the Pacific lowlands of Guatemala, as well as in other parts of the country.

The *Solanum torvum* complex has proven to be one of the most difficult groups in the preparation of this genus for the "Flora." We have treated it as a single polymorphic species. The proper elucidation of the "taxa" in this complex will require a more detailed study. A study of this kind will probably necessitate some changes in the present treatment. W. D'Arcy (*personal communication*) has treated the elements of this complex, *sensu stricto*. Unrecognized juvenile forms may be part of the problem in this complex (see K. Roe, *Sida* 2(5): 381-385. 1966).

The names, *Solanum ochraceo-ferrugineum* (Dunal) Fern. and *S. diversifolium* Schlecht. non H. & B., have been applied to the eglandular material placed in this species.

Called *susumba* in British Honduras.

**Solanum trizygum** Bitter, Fedde Repert. Sp. Nov. 11: 470. 1912. *Candelaria* (Quezaltenango; San Marcos); *palo de agua* (Huehuetenango); *tzikin-itá* (Huehuetenango).

Moist or wet dense forests, sometimes along streams, 900-2,000 m.; Alta Verapaz; Baja Verapaz; Quezaltenango; Huehuetenango; San Marcos. Costa Rica. Colombia and Venezuela.

Plants herbaceous, erect, 1 m. tall or less, simple or sparsely branched, the stem somewhat succulent, glabrous or nearly so; leaves odd-pinnate, 1.5-3 dm. long; interstitial leaflets absent; leaflets 7-11, lanceolate to oblong-lanceolate or elliptic, (5-)8-15 cm. long, 1.5-3.5 cm. wide, the apex long acuminate, the base rounded to nearly cordate and unequal, short-petiollulate, sparsely pilosulous above,



FIG. 19. *Solanum torvum*. A, habit and leaves,  $\times \frac{1}{2}$ ; B, corolla dissected,  $\times 2$ ; C, calyx and pistil,  $\times 2$ ; D, mature fruit,  $\times 2$ .

especially on the veins, glabrous below; pseudostipular leaves absent; inflorescences axillary, cymose, often in pairs, 7-9 flowered; peduncle 1 cm. long or less; pedicels 5-10 mm. long, articulate at their bases; calyx 1.5-2 mm. long, glabrous, parted to the middle, the lobes rounded and short apiculate; corolla pale green, greenish-yellow or white, parted to near the base, 10-12 mm. wide, the lobes 4-5 mm. long, internally glabrous, ciliate and apically pilosulous; filaments about 1 mm. long; anthers 2 mm. long; style 4-5 mm. long, exceeding the stamens; fruit ovoid-conic, 1.5-2.5 cm. long.

*Solanum trizygmum* Bitter can be separated from all other *Solanums* with compound leaves in Guatemala by its axillary inflorescences, ovoid-conic fruits, and lack of pseudostipular leaves.

***Solanum tuberosum*** L. Sp. Pl. 185. 1753, *sensu cult.* *Caxlán*; *papa*; *paps* (Quechí); *puntas de papa*; *sis*.

The cultivated potato is a native of South America, probably from the Andes of Bolivia and Peru. It was probably introduced into Central America after the Spanish conquest. The potato is grown in the mountains in Guatemala. A large part of the Guatemalan potatoes are grown by the Indians, whose methods of cultivation are often considerably different from those practiced in the United States. For instance, the plants are sometimes left for two or three years, the tubers being removed as they form, without destroying the plant. The quality of the potatoes varies greatly, but in general they are small, and of poor quality when placed on the table. Medium-sized potatoes can be purchased in some of the markets, but the majority of the tubers are about as large as walnuts, and many of them no larger than cherries. One can imagine the large amount of time required to peel such small potatoes, for all of them are peeled, not scraped. It is rarely, if ever, that they are cooked with skins.

Potatoes are one of the important food crops of Guatemala. Costa Rica is the only other Central American country in which they are grown in quantity. They are carried on men's backs from the producing regions, especially by the Quiches of Totonicapán and San Francisco El Alto, to remote parts of the country, such as Guatemala, Cobán, and Zacapa. Potatoes are said to be the only crop grown in the highest inhabited parts of the Cuchumatanes.

Starch extracted from potatoes is sold in small white balls or cubes and is often mistaken for marshmallows by the tourists, to the amusement of the market people.

In Guatemala it is a common practice to gather the tender sprouts of *puntas de papa* and use them as a pot herb.

**Solanum tuerckheimii** Greenm. in Donn.-Sm. Bot. Gaz. 37: 212. 1904.

Wet forests, 200–600 m.; Alta Verapaz (type from Cubilquütz, *Tuerckheim 8492*); Huehuetenango. Endemic.

An unarmed shrub, 2.5–3.5 m. tall, glabrous throughout; leaves solitary or sometimes in pairs, unequal in size but similar in shape, the larger leaves narrowly elliptic to elliptic-oblong, 10–20 cm. long, 2.5–7 cm. wide, the apex acuminate or acute, the base unequal or equal, cuneate or short attenuate; petioles 1–2 cm. long; inflorescences lateral and opposite the leaves or internodal, cymose, simple, several-flowered; peduncles short and slender, 5 mm. long; pedicels slender, 1–1.5 cm. long; calyx 1.5–2 mm. long, lobed to the middle, the lobes rounded and apiculate, obtuse; corolla probably white, the limb 7–8 mm. wide, parted to near the base, the lobes 2.5 mm. long; filaments connate one-half their length or more, 0.5 mm. long; anthers 2–2.5 mm. long; style exceeding the stamens, 3.5 mm. long, glabrous; ovary glabrous; immature fruit globose.

**Solanum umbellatum** Miller, Gard. Dict. ed. 8. *Solanum* No. 27. 1768. *Lava platos; mayté* (Quechí); *tobaco de montaña; tabaquillo*.

Dry or moist thickets or in fields or along river banks, 75–2,000 m.; Petén; Alta Verapaz; Izabal; Chiquimula; Jutiapa; Quezaltenango; Huehuetenango; Santa Rosa; Escuintla; Suchitupéquez; Retalhuleu; San Marcos. British Honduras. Mexico to Costa Rica. Panama. West Indies. Northern South America.

An unarmed shrub or small tree, 1–6 m. tall, the young branches covered with sessile and subsessile-stellate hairs, some long stipitate-stellate hairs also present; leaves entire, elliptic, lanceolate or oblanceolate, mostly 7–25 cm. long, 2.5–8 cm. wide, the apex acuminate, the base long attenuate, decurrent along the entire length of the petiole or nearly so, asperous and sessile stellate-pubescent above, densely sessile and stipitate stellate-pubescent below; petioles short; axillary leaves present or absent; inflorescence cymose, pseudoterminal, becoming lateral, dichotomously branched, long pedunculate, the peduncle 3–12 cm. long; pedicels 3–6 mm. long, some of the hairs long stipitate-stellate; flower buds ellipsoid or globose; calyx lobed to the middle or slightly below, the lobes lanceolate to oblong, 2–3 mm. long, glabrous or with a few stipitate-glandular hairs internally, partly long stipitate stellate-pubescent externally; corolla white, the limb 10–15 mm. wide, parted to below the middle, the lobes 4–6 mm. long; filaments 0.5–1 mm. long; anthers 2–3.5 mm. long; ovary glabrous or sparsely stellate-pubescent; style glabrous; fruit yellow, 8–11 mm. in diameter, glabrous; seeds 1.2–2 mm. long.

Called *friega-plato* and *palo de chincho* in Honduras.

**Solanum wendlandii** Hook. f. Bot. Mag. 113, t. 6914. 1887. *S. mazatenangense* Coult. & Donn.-Sm. Bot. Gaz. 37: 421. 1904 (based on Guatemalan material, 6 syntypes cited), *syn. nov.* *S. unguis-cati*

Standl. Field Mus. Bot. 4: 320. 1929 (type from Honduras), *syn. nov.* *Ixtán* (Petén, fide Lundell) Santa Rosa and Retalhuleu; *Quixtán* (Guatemala); *Quishta* (San Marcos).

Wet or moist forests or thickets, sometimes in dry thickets, 200–2,850 m.; often cultivated for ornament; Petén; Zacapa; Chiquimula; Guatemala; Sacatepéquez; Quezaltenango; Jutiapa; Santa Rosa; Retalhuleu; Suchitepéquez; San Marcos. Southern Mexico to Costa Rica. West Indies. Northern South America.

A woody vine, the branches glabrous or rarely inconspicuously puberulent, sparsely to densely armed with short, recurved prickles; leaves glabrous or rarely inconspicuously puberulent above and below, mostly armed with prickles on the mid-vein below, the upper leaves entire, ovate or elliptic, or 3-lobate, the apex acuminate, the base rounded to short attenuate or the upper and lower leaves pinnatifid or rarely pinnate, mostly 9–22.5 cm. long, 4.5–9.5 cm. wide, the petioles long, mostly 3–5 cm. long, commonly armed with short, recurved prickles; inflorescences pseudoterminal, becoming lateral and opposite the leaves, corymbose-paniculate, several-flowered; peduncle (1.5–) 4–11 cm. long; pedicels 8.5–30 mm. long, occasionally with one to few prickles; calyx unarmed, 3.5–9 mm. long, shallowly lobed or deeply parted, the lobes rounded and mucronate or oblong, rounded and mucronate at the apex, puberulent apically; corolla large and showy, lavender to blue, the limb 35–55 mm. wide, very shallowly lobed to nearly entire, the lobes abruptly acuminate, glabrous or sometimes puberulent externally; stamens unequal, four of the filaments 1–1.5 mm. long, the fifth 2.5–4 mm. long, the four shorter stamens with the anthers 6.5–9 mm. long, the longer stamen with the anther 7.5–9.5 mm. long; style glabrous, 9.5–12 mm. long; ovary glabrous; fruit ovoid, yellowish, 3.5–4 cm. in diameter.

*Solanum wendlandii* can be distinguished from other members of the genus in Guatemala by its anther shape, habit, broad and shallowly lobed to nearly entire corolla limb, unequal stamens and nearly always glabrous throughout.

*Solanum wendlandii* Hook. f. is said to be introduced in most Central American countries, being native only in Costa Rica. It was, in fact, described from plants grown in England from seed sent from Costa Rica. In Guatemala the plant is frequent in the central and western mountain forests, but it is likely to be overlooked because the flowers are among the branches of the taller trees. It is common in cultivation in almost all parts of the country, and often is found in hedges, where it has escaped from cultivation. The plant is rather attractive because of the large and showy corollas that are commonly produced in abundance. The large fruits are eaten and the young shoots are sometimes cooked in stews. The local name, *Ixtán*, is used as the name of a village in Retalhuleu.

Called *Elisa* in El Salvador.



## WITHERINGIA L'Heritier

*Sicklera* Sendtner, Flora 29: 178(194). 1846.

*Reference:* A. T. Hunziker, Estudios sobre Solanaceae. V. Contribucion al conocimiento de *Capsicum* y generos afines (*Witheringia*, *Acnistus*, *Athenaea*, etc.). Kurtziana 5: 101-179. 1969.

Herbs or shrubs; leaves alternate, in pairs or sometimes solitary, entire or sometimes angulately lobed, petiolate; inflorescences consisting of axillary fascicles or sometimes in long-pedunculate, few-flowered clusters, the flowers pedicellate; calyx campanulate, truncate, or 5-dentate, or 5-lobed, not at all to much accrescent in fruit; corolla subrotate, narrowly campanulate, or funnellform, yellow or greenish-yellow, or sometimes purple, the mouth of the corolla tube mostly pubescent, the limb 5-parted, the lobes valvate or sometimes induplicate-valvate in bud; stamens (4-5); filaments filiform or broad, exserted or included, mostly pubescent; anthers oblong, longitudinally dehiscent, mostly apiculate; ovary bilocular, the ovules numerous, the disc inconspicuous; style slender or sometimes broad, exserted or included; stigma entire or emarginate; fruit a berry, globose or oblong, the fruiting calyx little or not at all accrescent to much accrescent and surpassing the fruit; seeds laterally compressed; embryo curved.

A genus of some 15 species all in tropical America. Most of the species are found in Central America. The work by Hunziker (1969) greatly improved the generic limits of *Athenaea* and *Capsicum*. We have accepted Hunziker's work for the most part.

Inflorescences consisting of only 2-3 pedicellate flowers or the inflorescences long-pedunculate; corolla throat glabrous, the filaments sometimes glabrous.

Branches densely pubescent; inflorescences consisting of 2-3 pedicellate flowers, peduncle absent. . . . . *W. physocalycia*.

Branches glabrous; inflorescences long-pedunculate. . . . . *W. cuneata*.

Inflorescences consisting of axillary fascicles; corolla throat and filaments densely pubescent.

Calyx truncate, the margin entire, scarcely or not at all accrescent in fruit.

Plants pubescent, generally so throughout; larger leaves broad, mostly 1.5-2 times as long as wide; corolla mostly tetramerous. . . . . *W. solanacea*.

Plants glabrous throughout; larger leaves narrow, mostly 2.5 to 3 times as long as wide; corolla pentamerous. . . . . *W. meiantha*.

Calyx 5-lobed or 5-dentate, little to much accrescent in fruit.

Leaves acute or obtuse to nearly truncate at their bases. . . . *W. stramonifolia*.

Leaves cordate at their bases.

Pubescence of long, glandular hairs, at least some of the hairs 1 mm. long or more; corolla marked with purple. . . . . *W. nelsonii*.

Pubescence of short, eglandular hairs, the hairs less than 1 mm. long; corolla not marked with purple. . . . . *W. affinis*.

*Witheringia affinis* (Morton) A. T. Hunziker, Kurtziana 5: 162. 1969. *Athenaea affinis* Morton, Contr. Univ. Mich. Herb. 4: 24. 1940. *Capsicum lundellii* Morton, Contr. Univ. Mich. Herb. 4:

25. 1940 (type from Cohune Ridge, El Cayo District, British Honduras, *Lundell 6453*).

In secondary forest, British Honduras (type from Cohune Ridge, El Cayo District, British Honduras, *Lundell 6452*).

A shrub, 2-6 m. tall, villousulous throughout with eglandular, multicellular hairs; leaves in pairs, similar in shape, different in size, villousulous above and below, the hairs more dense on the veins, the larger leaves broadly ovate, 17-20 cm. long, 9.5-11.5 cm. wide, the apex acuminate, the base cordate, the petioles 2-7 cm. long, villousulous; inflorescences consisting of 7-10 flowers, the pedicels 1.2-2 cm. long, villousulous; calyx about 3 mm. long, villousulous, shallowly lobed, much accrescent in fruit; corolla pentamerous, narrowly campanulate, yellow, 8-12 mm. long, villousulous at the mouth of the corolla tube, the corolla limb parted to near the base; stamens inserted below the middle of the corolla tube; filaments villousulous at their bases, about 0.5 mm. long; anthers about 2 mm. long, apiculate; berry globose, red, about 5 mm. in diameter, nearly included in the accrescent calyx.

*Witheringia affinis* is a poorly known species being represented by only two collections. One of the collections represents the type of *Capsicum lundellii*. The flowers of both *W. affinis* and *C. lundellii* are very similar but the fruiting calyces are quite different. In *W. affinis* the fruiting calyx is enlarged and encloses the fruit except at the top, whereas in *C. lundellii* the fruiting calyx is not as strongly accrescent. *Capsicum lundellii* has been placed in this species until further collections are available for study.

***Witheringia cuneata*** (Standl.) A. T. Hunziker, Kurtziana 5: 118. 1969. *Lycianthes cuneata* Standl. Field Mus. Bot. 4: 260. 1929.

In moist thickets, 30-150 m.; known in Guatemala from the following collection, Río Bonito, Cerro San Gil, Izabal, *Steyermark 41657*. Nicaragua, Costa Rica. Panama. Northern South America.

A shrub, 2.5 m. tall, the branches glabrous; leaves entire, in pairs, glabrous above, puberulent on the veins below, the paired leaves very different in size and shape, the larger leaves elliptic to elliptic-oblong, 19-23 cm. long, 8.5-16 cm. wide, the apex long acuminate, the base acute or rounded, the petiole short, 0.5 cm. long, puberulent; smaller leaves elliptic, 7-14.5 mm. long, 8.5-16 mm. wide, sessile; inflorescence pedunculate, the peduncle 12 mm. long, glabrous, with 2 flowers, the pedicels 7.5 mm. long, glabrous; calyx 1.5 mm. long, truncate, coriaceous, glabrous except for the sparsely ciliolate margin; corolla pentamerous, funnelform or narrowly campanulate, creamy white, 8.5 mm. long, the mouth of the corolla tube glabrous, the corolla limb parted to near the base, glabrous externally; stamens inserted at the mouth of the corolla tube; filaments glabrous, 0.5 mm. long; anthers 2.5 mm. long, minutely apiculate; style 5 mm. long; berry globose, dark violet, about 8 mm. in diameter; seeds 3-3.5 mm. long.

*Witheringia cuneata* differs from the other Guatemalan species by its pedunculate inflorescence, the paired leaves, very different in size and shape and the glabrous corolla throat and glabrous filaments.

The description was taken from only the cited Guatemalan collection with the exception of the fruit and seeds. This collection differs from the southern element of the species by the smaller leaves of a pair being different in shape and wider than long, the leaves puberulent on the veins below and the shorter corolla lobes. It is tentatively placed in *W. cuneata* until further collections are available for study.

***Witheringia meiantha*** (Donn.-Sm.) A. T. Hunziker, Kurtziana 5: 147. 1969. *Brachistus meianthus* Donn.-Sm. Bot. Gaz. 57: 424. 1914. *Capsicum meianthum* Standl. & Steyerl. Field Mus. Bot. 22: 273. 1940. *Capsicum silvigaudens* Standl. & L. Wms. Ceiba 3: 57. 1952. *Witheringia solanacea* L'Herit. var. *silvigaudens* A. T. Hunziker, Kurtziana 5: 146. 1969, *syn. nov.*

Moist or wet thickets or forests, sometimes in wet mixed forests, 1,200–1,650 m.; Alta Verapaz (syntype Pansamalá, *Tuerckheim 1134*); Baja Verapaz (syntype near Panzal, *Tuerckheim 3936*); Quezaltenango; San Marcos. Honduras. Nicaragua. Costa Rica. Panama.

An herb or shrub, 1–5 m. tall, glabrous throughout or nearly so; leaves entire, in pairs, rarely solitary, glabrous above and below, the paired leaves different in size and shape, the larger leaves narrowly elliptic to elliptic, 10.5–22 cm. long, 3.5–6.5(–9) cm. wide, the apex acuminate, the base short-attenuate or obtuse, the petioles 1–4 cm. long; smaller leaves ovate to ovate-elliptic, 4.5–8 cm. long, 2.5–3.5 cm. wide, the petioles 0.5–1 cm. long; inflorescences consisting of (2–)4–12 flowers, the pedicels 8–18 mm. long, glabrous; calyx (1.5–)1.8–2 mm. long, truncate, glabrous or sometimes ciliate; corolla pentamerous, narrowly campanulate or subrotate, greenish-yellow or yellow, 5–10 mm. long, densely villousulous at the mouth of the corolla tube, the corolla limb parted to near the base, papillate-puberulent externally; stamens inserted just below the mouth of the corolla tube; filaments villousulous, 1 mm. long; anthers 2–2.5 mm. long, apiculate; style 5–7 mm. long; berry globose, red, 5–5.5 mm. in diameter; seeds 1.5–2 mm. long.

***Witheringia nelsonii*** (Fern.) A. T. Hunziker, Kurtziana 5: 160. 1969. *Athenaea nelsonii* Fern. Proc. Am. Acad. Sci. 35: 567. 1900. *Capsicum viscidum* Standl. Carnegie Inst. Publ. 461: 84. 1935 (type from Oaxactum, Petén, *Bartlett 12690*). *A. viscida* (Standl.) Standl. & Steyerl. Field Mus. Bot. 23: 18. 1943. *Yerba moro macho* (Huehuetenango).

In wet forests, 500–2,000 m.; Petén; Alta Verapaz; Huehuetenango. Southern Mexico (type from between Tumbala and El Salto, Chiapas, *Nelson 3395*).

A shrub, 2.5–3.5 m. tall, densely villous throughout with glandular, multicellular hairs; leaves entire, undulate or slightly sinuate lobed, mostly in pairs, similar in shape, different in size, glandular-villous above and below, the larger leaves broadly ovate, 14–28 cm. long, 7–14 cm. wide, the apex acuminate, the base cordate, the petioles long, 4–9 cm. long, glandular-villous; inflorescences consisting of (3–)5–8(–15) flowers, the pedicels 1.5–2 cm. long, glandular-villous; calyx 4.5–5 mm. long, glandular-villous, shallowly lobed, the lobes triangular, 1.5–2 mm. long, acute or obtuse, the calyx much accrescent in fruit; corolla narrowly campanulate, yellow, 10–16 mm. long, marked with purple, villousulous at the mouth of the tube, the corolla limb parted to near the base; stamens inserted about the middle of the corolla tube; filaments villousulous on the lower one-half, about 1.5 mm. long; anthers 2–2.5 mm. long, apiculate; style 5.5–6.5 mm. long; berry globose, red, 6–8 mm. in diameter, included in the accrescent calyx; seeds 1–1.4 mm. long.

A fruiting collection, *Tún 246*, from Petén has been tentatively placed here until more material is available for study. It is very similar to *Witheringia nelsonii* except that the fruiting calyx is not strongly accrescent.

The plants have a fetid odor. They are used in domestic medicine in Huehuetenango.

***Witheringia physocalyca*** (Donn.-Sm.) J. L. Gentry, *Phytologia* 26:278. 1973. *Brachistus physocalycius* Donn.-Sm. *Bot. Gaz.* 40: 8. 1905. *Athenaea physocalyca* Standl. & Steyerl. *Field Mus. Bot.* 23: 18. 1943.

Wet forests, 50–500 m.; Petén; Alta Verapaz (type from Cubilquitz, *Tuerckheim 8553*). Endemic.

A shrub, 1–1.5 m. tall, the branches densely pubescent, the hairs hirsutulous, incurved or slightly so, at least some of the hairs greatly swollen at their bases; leaves in pairs, very unequal in size and different in shape, glabrous above, hirsutulous below, the larger leaves inaequilateral, lanceolate to lance-oblong or narrowly elliptic, 13.5–22 cm. long, 4–6.5 cm. wide, the apex narrowly long-acuminate, the base acute; petioles 0.5–1.2 cm. long, hirsutulous; smaller leaves nearly rotund to broadly ovate or elliptic-oblong, 1.5–6.5 cm. long, 1–3.5 cm. wide, the apex obtuse; inflorescences consisting of 2–3 flowers, the pedicels 4–6 mm. long, glabrous or sparsely hirsutulous; calyx 3 mm. long, much accrescent in fruit, very sparsely hirsutulous, the lobes denticulate or the calyx nearly truncate; corolla pentamerous, funnelform, white, 12 mm. long, glabrous, the lobes 3 mm. long; filaments 3 mm. long, villousulous on the lower one-half or glabrous; anthers 2 mm. long, apiculate; style 9 mm. long; berry globose, 7 mm. in diameter, nearly included in the accrescent calyx; seeds 2 mm. long.

*Witheringia physocalycia* is readily distinguished from the other species in Guatemala by the characteristic pubescence on the branches.

This species was placed in *Acnistus* by A. T. Hunziker, in herb., in 1962, but we feel that the correct placement is in *Witheringia*. The generic limits of *Acnistus* require further study.

***Witheringia solanacea*** L'Herit. Sert. Angl. 33, t. 1. 1788. *Witheringia macrophylla* H.B.K. ex Dunal, Solan. Syn. 1. 1816. *Sicklera solanacea* Sendt. Flora 29: 179(195). 1846. *Brachistus solanaceus* Hemsley, Biol. Centr.-Amer. Bot. 2: 424. 1882. *Bassovia macrophylla* Coulter, Bot. Gaz. 16: 145. 1891. *Solanum peckii* Blake, Contr. Gray Herb. 52: 87. 1917 (type from Monkey River, British Honduras, Peck 585). *Capsicum macrophyllum* Standl. J. Wash. Acad. Sci. 17: 16. 1927. *Tomatillo* (Quezaltenango).

Wet or moist thickets or moist forests, 1,400 m. and below; Petén; Alta Verapaz; Izabal; Sacatepéquez; Chimaltenango; Quezaltenango; Escuintla; Suchitepéquez; Retalhuleu. Southern Mexico to Costa Rica. Panama and West Indies. South America.

Herb or shrub, 0.5-4 m. tall, the branches pubescent with simple, short multicellular hairs (in ours) or glabrescent, rarely a few bifid hairs intermixed; leaves entire, in pairs, rarely solitary, pubescent with short, multicellular hairs above and below, sometimes sparsely pubescent, more dense on the veins below, the paired leaves different in size, similar or slightly different in shape, the larger leaves elliptic to ovate-elliptic or ovate, 12-32 cm. long, 5.5-12 cm. wide, the apex acuminate, the base acute or obtuse, sometimes rounded, the petioles 2-7 cm. long; smaller leaves 5.5-12 cm. long, 2.5-6.5 cm. wide, the petioles 0.5-1.5 cm. long; inflorescences consisting of 10-40 flowers, the pedicels 8-12 mm. long, pubescent with short, multicellular hairs; calyx 0.5-1.5(-2) mm. long, truncate, pubescent with short, multicellular hairs; corolla mostly tetramerous or pentamerous, narrowly campanulate or subrotate, yellow or greenish-yellow, 5-6 mm. long, densely villousulous at the mouth of the corolla tube, the corolla limb parted to near the base, papillate-puberulent externally; stamens inserted above the middle of the corolla tube; filaments villousulous, 1-1.5 mm. long; anthers 2-2.5(-3) mm. long, apiculate; style 4.5-6 mm. long; berry globose, red, 4.5-6.5 mm. diameter; seeds 1-1.5(-2) mm. long.

This is the most wide-ranging species in *Witheringia*. Three collections, two from Izabal, *Steyermark 38209* and *Jones & Facey 3259*, and one from (Chiapas) Mexico, *Clarke 303*, are suggestive of *W. asterotricha*. However, these specimens lack the branched hairs of that species.

***Witheringia stramonifolia*** H.B.K. Nov. Gen. Sp. 3: 13. 1818. *Brachistus stramonifolius* Miers, Ann. Mag. Nat. Ser. II, 3(16): 263.



FIG. 20. *Witheringia stramonifolia*. A, habit,  $\times \frac{1}{2}$ ; B, fruiting inflorescence,  $\times 1\frac{1}{2}$ ; C, flower,  $\times 3$ ; D, part of dissected corolla showing stamens,  $\times 4$ ; E, calyx and style,  $\times 3$ .

1849. *Capsicum stramonifolium* Kuntze, Rev. Gen. 2: 450. 1891. *Bassovia donnell-smithii* Coulter, Bot. Gaz. 16: 145. 1891 (syntypes, Guatemala, Dept. Guatemala, *Donn.-Sm.* 2270; Duenas, Sacatepéquez, *Donn.-Sm.* 2258). *B. stramonifolia* Standl. Contr. U.S. Natl. Herb. 23: 1303. 1924. *Athenaea locuples* Standl. & Steyerl. Field Mus. Bot. 22: 375. 1940 (type from above Finca El Porvenir, San Marcos, *Steyerl.* 37953). *Chile cimarrón* (Chimaltenango); *tolocic* Quechí, (Alta Verapaz); *tomatillo* (Sacatepéquez).

In moist or wet mixed forests or thickets, sometimes in cafetales, 300–2,000 m.; Petén; Alta Verapaz; El Progreso; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quiché; Quezaltenango; Huehuetenango; Santa Rosa; Escuintla. Mexico. El Salvador. Honduras. Costa Rica. Panama.

Herb or shrub, 1–6(–10) m. tall, the branches densely to sparsely covered with short, multicellular hairs, the hairs erect or subappressed, rarely glandular; leaves entire or often repand to shallowly angulately lobed, solitary or sometimes in pairs, then similar in shape, different in size, the leaves lanceolate to broadly ovate, 7.5–30 cm. long, 2–15 cm. wide, sparsely to densely pubescent with short, multicellular hairs, apex acuminate, base acute or obtuse to nearly truncate, the petioles long, 2.5–9 cm., pubescent with short, multicellular hairs; inflorescences consisting of 5–15 flowers, sometimes more, the pedicels 1–2.5 cm. long, pubescent with short, multicellular hairs, glandular hairs rarely present; calyx 1.5–3(–4) cm. long, pubescent with short, multicellular hairs, glandular hairs rarely present, rarely parted more than one-half way to the base, the lobes denticulate to broadly deltoid, 0.2–1.5(–2.5) mm. long, little to much accrescent in fruit; corolla pentamerous, narrowly campanulate to subrotate, yellow or sometimes greenish-yellow, 7–10 mm. long, densely villousulous at the mouth of the tube, the corolla limb parted to near the base, the lobes papillate-puberulent internally, densely pubescent with short, multicellular hairs externally; stamens inserted about the middle of the corolla tube; filaments villousulous on the lower one-half, 1–1.5 mm. long; anthers 2.5–3 mm. long, generally not apiculate; style 5.5–6.5 mm. long; berry globose, red, 5–5.5 mm. in diameter, the accrescent calyx rarely covering more than one-half of the fruit; seeds 1–1.5 mm. long.

*Witheringia stramonifolia* is a variable species, with the leaf margin, calyx lobes, and the accrescent calyx showing the greatest variability. It is often weedy, growing in cafetales and thickets. The young leaves are sometimes cooked and eaten as a vegetable.











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