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Page(s): Page 293, Page 294, Page 295, Page 296, Page 297, Page 298, Page 299, Page 300, Page 301, Page 302

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The sweet fruit is edible, and is used in some regions in making confectionery and medicine.

VITACEAE. Grape Family

Scandent shrubs, usually with copious watery sap, the stems nodose or articulate; leaves alternate, petiolate, simple or digitately 3-5-foliolate or pedate, rarely bipinnate, the petiole articulate at the base with the stem and thickened, often dilated into a membranaceous stipule; flowers regular, perfect or unisexual, small, usually greenish, the inflorescence commonly cymose-paniculate or racemose, the peduncles often tendril-bearing; calyx small, entire or with 4-5 teeth or lobes; petals 4-5, free or coherent, valvate, in anthesis spreading-recurved or sometimes coherent and caducous; stamens 4-5, opposite the petals, inserted at the base of the disk or between its lobes, the filaments subulate; anthers free or connate, short, 2-celled, introrsely dehiscent; disk various in form, sometimes none; ovary usually immersed in the disk, 2-6-celled, the cells 1-2-ovulate; style short, conic, subulate, or none, the stigma capitate or discoid; ovules 1-2 in each cell, ascending, anatropous; fruit baccate, 1-6-celled; seeds erect, with osseous testa; endosperm cartilaginous, sometimes ruminant; embryo short, the cotyledons oval, the radicle very short, inferior.

About 11 genera, chiefly in tropical regions, except for the genus *Vitis*. Only the following groups are found in Central America.

- Leaves digitately 5-foliolate.....*Parthenocissus*.
- Leaves simple or 3-foliolate.
 - Petals coherent and deciduous as a cap. Leaves simple.....*Vitis*.
 - Petals free, spreading.
 - Petals 4; disk 4-lobate; leaves simple or 3-foliolate.....*Cissus*.
 - Petals 5; disk 5-lobate; leaves simple.....*Ampelocissus*.

AMPELOCISSUS Planchon

Reference: C. L. Lundell, Mexican and Central American species of *Ampelocissus*, Carnegie Inst. Wash. Publ. 478: 214-216. 1937.

Scandent shrubs with tendrils; leaves simple in the American species, resembling those of *Vitis*, the peduncles usually tendril-bearing; flowers small, cymose or corymbose, sometimes paniculate, monoecious-polygamous; calyx cupular, usually 5-lobate; petals generally 5, spreading in anthesis; stamens 5, inserted at the base of the disk, this annular, erect, vertically 5-10-sulcate; ovary immersed in the disk, 2-celled, the cells 2-ovulate; style short, conic, the stigma minute; berries 2-3-seeded.

About 45 species, only three of which are American. One other has been described from Costa Rica.

Ovary of the staminate flower more or less spinulose-papillose; pedicels mostly 2-3 mm. long or more and often much longer than the flowers; petals 2.5-3 mm. long.....*A. Erdwendbergii*.

Ovary of the staminate flower glabrous; pedicels about 1.5 mm. long, usually not exceeding the flower but sometimes elongate; petals 2 mm. long. . *A. acapulcensis*.

Ampelocissus acapulcensis (HBK.) Planch. in DC. Monogr. Phan. 5: 403. 1887. *Vitis acapulcensis* HBK. Nov. Gen. & Sp. 7: 230. 1825.

Frequent in dry thickets, 1,400 meters or less; Zacapa (Sierra de las Minas); Escuintla; Retalhuleu. Southern Mexico; Salvador.

A small or large, woody vine, arising from a large fleshy root, the stems scandent over shrubs and trees or often prostrate upon the ground, when young usually laxly floccose-tomentose but soon becoming quite glabrous and polished; leaves on petioles 1-5 cm. long, broadly ovate-cordate, 6-16 cm. long, acute, dentate, sometimes shallowly 3-lobate, when young very densely floccose-tomentose, especially beneath; flowers small, dark red, in very dense or lax panicles, the pedicels glabrous or pilose, the branches of the cymes densely floccose-tomentose or glabrous; petals acute, glabrous; fruiting panicles often very large and heavy, as much as 25 cm. broad; fruit wine-colored, globose, 1.5-2.5 cm. in diameter or even larger.

Called "uva" and "uva silvestre" in Salvador. The large fruit is handsome and of appetizing appearance but it is quite inedible, being sour and unpleasantly flavored. In Salvador it is sometimes utilized for making vinegar. The plant is abundant in the hot dry thickets about Champerico.

Ampelocissus Erdwendbergii Planch. in DC. Monogr. Phan. 5: 404. 1887. *Uva*.

Petén (La Libertad). Southern Mexico.

A woody vine, the stems rather persistently floccose-tomentose; leaves on petioles 6.5 cm. long or less, broadly ovate-cordate, 6-15 cm. wide, sometimes shallowly lobate, acute or acuminate, irregularly dentate, green above, hispidulous and somewhat floccose-tomentose, at least when young, densely covered beneath with a brown floccose tomentum; inflorescences small or large, lax and open or rather dense, the pedicels usually glabrous, slender, 2-3 mm. long; berries subglobose, when dry only 5-10 mm. wide; seeds obcordate, 5 mm. long.

None of the characters used by Lundell in his key to species seem to be constant, and it is questionable whether the American species are three or really one. It is quite possible, although not at all certain, that *A. Erdwendbergii* is a distinct species, separable from *A. acapulcensis* primarily by its small fruits. The reputed characters of pubescence and petal size are particularly unstable.

CISSUS L.

Plants mostly scandent, herbaceous or usually woody, often tendril-bearing; flowers commonly perfect, small, green or red, 4-parted, cymose-corymbose, usually

opposite the leaves, sometimes appearing axillary; petals finally spreading, rarely somewhat connate; disk 4-lobate, adnate to the base of the ovary; ovary 2-celled, the cells 2-ovulate; style subulate; berry 1-4-seeded, not edible; seeds ovoid or obtusely trigonous.

About 200 species, widely distributed in tropical regions. One or two other Central American species are known.

Leaves 3-foliolate.

Leaflets small, 1.5-3.5 cm. long, glabrous.....*C. Martiniana*.

Leaflets all or mostly 4-10 cm. long, often pubescent.

Leaflets sparsely or densely hirsute or tomentose beneath.

Leaflets obtuse, the venation conspicuously reticulate.....*C. salutaris*.

Leaflets acuminate, the venation not conspicuously reticulate.

C. rhombifolia.

Leaflets glabrous or essentially so.

Terminal leaflet sessile or essentially so; venation of the leaflets prominent and closely reticulate.....*C. erosa*.

Terminal leaflet long-petiolulate; venation neither prominent nor closely reticulate.....*C. microcarpa*.

Leaves simple, often lobate.

Larger or lower leaves conspicuously palmate-lobate, glabrous or essentially so.

C. gossypifolia.

Larger and lower leaves not at all lobate.

Berries about 12 mm. long; leaves glabrous or nearly so.....*C. biformifolia*.

Berries 6-8 mm. long; leaves usually pubescent, sometimes glabrous.

Leaves thick and succulent, the pubescence of rather stiff, spreading hairs; teeth spreading or at least not incurved, not or scarcely subulate-tipped; base of the leaf blade usually truncate or rounded.*C. sicyoides*.

Leaves thin, scarcely succulent, the pubescence none or of few long slender weak hairs; teeth subulate-tipped, appressed or incurved; base of the leaf blade usually conspicuously cordate.....*C. cacuminis*.

Cissus biformifolia Standl. Field Mus. Bot. 4: 225. 1929.

C. cardiophylla Standl. op. cit. 226. *Vitis lanceolata* Watson, Proc. Amer. Acad. 21: 462. 1886, not *Cissus lanceolata* Malme, 1901 (type from Río Dulce and Río Chocón, Izabal, *Sereno Watson* 46).

Wet forest or thickets, at 1,800 meters or less; Alta Verapaz; Izabal; Huehuetenango. British Honduras; Honduras; Costa Rica; Panama.

A large or small, woody vine, glabrous throughout or nearly so, the branches not winged, bearing numerous elevated lenticels; leaves long-petiolate, broadly ovate to lance-oblong, 23 cm. long and 13 cm. wide or smaller, acute or acuminate, cordate to rounded at the base, rather thick when dried, with conspicuous, elevated and reticulate venation, repand-denticulate; flowers bright dark red, in small or large, often dense cymes; berries about 12 mm. long in the dry state, much larger than those of other Central American species, dull purple.

Cissus cacuminis Standl. in Yuncker, Field Mus. Bot. 17: 375. 1938.

Wet thickets or forest, 1,200–1,900 meters; Chiquimula; Jalapa; Chimaltenango; Quezaltenango; Huehuetenango. Honduras, the type from the region of Siguatepeque, Dept. Comayagua.

A large woody vine, the branches slender, brownish, subterete, glabrous or sparsely pilose; leaves on petioles 1.5–4.5 cm. long, thin when dried and not very fleshy when fresh, ovate or broadly ovate, mostly 5–10 cm. long and 3–5 cm. wide, acute or acuminate, usually shallowly cordate at the base, closely serrate with slender-tipped, appressed or incurved teeth, sparsely villous above at first but soon glabrate, beneath sparsely pilose with long weak hairs or glabrate, 5-nerved at the base, the upper lateral nerves about 3 pairs; cymes slender-pedunculate, lax, many-flowered, about 3 cm. wide, the branches villous; flowers green or yellowish, slender-pedicellate; calyx 1 mm. broad, undulate, the petals slightly more than 1 mm. long; berries subglobose, 8 mm. in diameter (when dry).

This is a forest species and not a weedy vine like *C. sicyoides*, to which it is closely related. It seems quite distinct from that species, and ampler material probably will strengthen the apparent differences.

Cissus erosa L. Rich. Act. Soc. Hist. Nat. Paris 1: 106. 1792.

Wet thickets, at sea level; Izabal. Southern Mexico; West Indies; South America.

A small or large vine, the slender stems glabrous or sparsely pilose, not winged; leaves 3-foliolate, on long or short petioles; leaflets all sessile, lanceolate to oblong-ovate, mostly 5–10 cm. long, acute or short-acuminate, rounded to acute at the base, undulate to serrulate, subcoriaceous and lustrous when dried, the veins prominent and reticulate; cymes long-pedunculate, the flowers and pedicels bright red; berry globose or globose-ovoid, about 6 mm. long; seeds ovoid, 5 mm. long.

Cissus gossypiifolia Standl. Field Mus. Bot. 8: 23. 1930 (type from Honey Camp, Orange Walk, British Honduras, *C. L. Lundell* 25). *C. formosa* Standl. loc. cit. (type from Suitun, Yucatan, *Gaumer* 23389).

Moist or wet forest or thickets, 1,300 meters or lower; Huehuetenango (Paso del Boquerón, below La Libertad, *Steyermark* 51208). British Honduras; Campeche; Tabasco; Yucatan.

A small or large, woody vine, the young branches glabrous or nearly so; leaves long-petiolate, very variable in shape, the larger and lower ones 9–15 cm. long and often fully as wide, truncate or shallowly cordate at the base, shallowly 3–5-lobate, the lobes acute or abruptly acute, entire or serrate, the upper and smaller leaves ovate to broadly elliptic, not lobate, acute or short-acuminate, entire or serrulate, glabrous or nearly so; cymes pedunculate, dense or lax and many-flowered, the flowers bright red; calyx truncate; petals obtuse, 1.8 mm. long; berries obovoid, about 6 mm. long when dry, bright red.

Cissus Martiniana Woodson & Seibert, Ann. Mo. Bot. Gard. 24: 191. 1937.

Wet forest, 1,500–3,000 meters; El Progreso; Zacapa; San Marcos; Huehuetenango. Honduras; Salvador; Chiapas; Costa Rica; Panama.

A small vine, usually creeping closely on tree trunks, glabrous throughout or nearly so, the stems not winged, emitting roots at the nodes; leaves long-petiolate, small, the petioles often pink or reddish; leaflets mostly 1.5–3.5 cm. long, sessile, rhombic to broadly oval or elliptic, rounded to acute at the apex, acute or acuminate at the base, coarsely crenate, rather thin and pale green when dried, not or scarcely succulent; cymes small and few-flowered, sparsely pilose; berries subglobose, 5–6 mm. long, white at maturity.

This is a plant of deep wet cool forests.

Cissus microcarpa Vahl, Eclog. Amer. 1: 16. 1796.

Moist or dry forest or thickets, 900 meters or lower; Izabal (?); Santa Rosa; Suchitepéquez; Retalhuleu; Quezaltenango. Southern Mexico; British Honduras and probably extending into Petén; Honduras; Nicaragua; Panama; West Indies; South America.

A small or large, woody vine, glabrous throughout or nearly so; larger branches often narrowly 4-winged; leaves long-petiolate, 3-foliolate; leaflets drying rather thin, obliquely ovate or rhombic to broadly elliptic, mostly 4–10 cm. long and acute or acuminate, obliquely rounded to acuminate at the base, mucronate-serrate; cymes many-flowered, shorter than the opposing leaves, long-pedunculate, lax or dense, the flowers usually deep red; berries ovoid-globose, 6–8 mm. long, purple or dark red.

In Central America this species has been much confused with *C. rhombifolia*, and has been reported from Honduras and British Honduras under that name.

Cissus rhombifolia Vahl, Eclog. Amer. 1: 11. 1796. *Comemano*.

Dry to wet thickets, 1,200 meters or less; Petén; Alta Verapaz; Izabal; Jutiapa; Santa Rosa; Escuintla; Guatemala; Retalhuleu. Southern Mexico; Honduras and Salvador to Panama; West Indies; South America.

A small or large, woody vine, often climbing over tall trees, the stems thick and soft, usually narrowly 4-winged, the young branches villous, often densely so; leaves long-petiolate, 3-foliolate; leaflets fleshy when fresh, drying thick, obliquely ovate or rhombic to broadly elliptic, acute or acuminate, generally rounded or very obtuse at the base, serrate or serrulate, usually rather densely villous on both surfaces, rarely glabrate, 4–10 cm. long; inflorescences mostly large and dense, long-pedunculate, the flowers deep bright red, the pedicels villous; petals often hirtellous; fruit black at maturity.

Called "picamano" in Honduras; "uva cimarrona," "comemano" (Salvador); "xtabcanil" (Yucatan, Maya). The species is somewhat variable, especially as regards quantity of pubescence. In the wet forests of the Atlantic lowlands the vine is often conspicuous and showy, especially along the main railway line, where the brilliant red inflorescences are abundant, and easily noted from a moving train.

Cissus salutaris HBK. Nov. Gen. & Sp. 5: 225. 1821. *Coralillo*; *Bejuco de pollo* (fide Aguilar).

Moist thickets or open forest, 1,650 meters or less; Petén; Chiquimula; Jalapa; Jutiapa; Quiché. Southern Mexico; Honduras; Panama; northern South America.

A small or large, woody vine, the young stems not winged, slender, sparsely or densely hispidulous; leaves on long or short petioles, 3-foliolate; leaflets rather thick when dried and conspicuously reticulate-veined, the lateral ones sessile, the terminal narrowed to a slender petiolule, obovate to oblong, usually broadest above the middle, 4.5–9 cm. long, narrowly rounded to subacute at the apex, acuminate to very obtuse at the base, crenate-serrate, thinly or densely hispidulous or hirsute, especially beneath; cymes long-pedunculate, often longer than the opposing leaves, hispidulous or villous, the flowers deep bright red, the pedicels pilose.

Cissus sicyoides L. Syst. Nat. ed. 10. 2: 897. 1759. *Vitis sicyoides* Morales in Poey, Repert. 1: 206. 1866. *Comemano*; *Sanaltodo*; *Bejuco de gallina*.

Common or abundant in dry to wet thickets and forest, 1,200 meters or less; Petén; Alta Verapaz; Izabal; Zacapa; El Progreso; Chiquimula; Jalapa; Jutiapa; Santa Rosa; Escuintla; Guatemala; Suchitepéquez; Retalhuleu; San Marcos. Mexico; British Honduras to Salvador and Panama; West Indies; South America.

Often a very large, woody vine, frequently climbing over tall trees, the stems thick and tough, very flexible; leaves simple, on long or short petioles, oblong-ovate to rounded-ovate, often very asymmetric, 4–16 cm. long, obtuse to acuminate, rounded to cordate at the base, coarsely or finely serrate, usually densely pubescent but sometimes almost glabrous; cymes small or large, pedunculate, usually dense and shorter than the opposing leaves, sometimes lax and open, pubescent; flowers green or yellowish green; fruit globose-obovoid, black at maturity, 1-seeded, about 6 mm. long in the dry state.

Called "picamano" in Honduras and "bejuco loco" in Tabasco. This is one of the most common and widely distributed of tropical American plants. It exhibits a great deal of variation in pubescence and leaf form, as a result of which numerous varieties have been

named. Perhaps someone may find a basis for separating satisfactorily some of these forms, but with present material the lines of division are vague. The plant emits many long aerial roots that dangle loosely from the tree branches or sometimes strike root in the ground. If the main stem is cut, the upper part of the plant continues to grow. The stems and roots are tough, and often are used as cordage, and in Costa Rica baskets are made from them. When cut they yield a copious watery sap, which is generally believed to cause blisters upon the skin, although we have never seen this demonstrated. The leaves macerated in water give a suds like that of soap, which sometimes is utilized for washing clothes. In Guatemala the sap is applied as a remedy for gangrene. In Salvador a decoction of the crushed stems and wood ashes is applied to wounds of cattle. It is said to change the color of their hair, which later resumes its natural color. The inflorescences frequently are greatly deformed by a smut, *Mycosyrinx Cissi* (DC.) Beck, so much so that it resembles a strange parasitic plant. This diseased form was made the type of a new genus of flowering plants, *Spondylantha*, by Presl.

PARTHENOCISSUS Planchon

Woody vines, the tendrils with adhesive tips by which the plants usually are attached closely to the supporting tree trunk or other object, the bark close, lenticellate, the pith white; leaves deciduous, digitately compound in the American species, long-petiolate, the leaflets coarsely dentate; flowers perfect or rarely polygamous, in pedunculate compound cymes opposite the leaves, often densely aggregate at the ends of the branchlets and forming panicles; calyx minute; petals normally 5, spreading; style short and thick; disk indistinct; ovary 2-celled, the cells 2-ovulate; fruit a 1-4-seeded, dark blue or bluish black berry.

About 10 species, in North America and eastern and southern Asia. Only the following is found in Central America.

Parthenocissus quinquefolia (L.) Planch. in DC. Monogr. Phan. 5: 448. 1887. *Hedera quinquefolia* L. Sp. Pl. 202. 1753. *Tripas de iguana*.

Thickets along streams, 1,300-1,500 meters; Huehuetenango (Río Azúl below Jacaltenango; between San Andrés and San Marcos). Southern Canada and eastern and southern United States; Mexico.

A large woody vine, glabrous throughout or nearly so or often rather copiously pubescent; tendrils usually numerous and with dilated disk-like tips that adhere tightly to any object that they touch, aerial roots often present; leaves long-petiolate, the normally 5 (3 on young tips) leaflets membranaceous, petiolulate,

oval to oblong-ob lanceolate, 5–15 cm. long, acute or acuminate, attenuate to the base, coarsely dentate, at least above the middle, deep green above, usually glabrous, somewhat paler beneath, glabrous or more or less pilose; panicles small or rather large, many-flowered; berries blue, about 6 mm. in diameter, containing 2–3 seeds; pedicels and branches of the panicle usually bright red in fruit.

Usually called "Virginia creeper" in the United States, where the vine is much planted to cover the sides of buildings. It is probably the most common ornamental vine of the United States, although much inferior to the true or English ivy (*Hedera*), which is not hardy in the colder parts of North America. The plant was found to be common along the Río Azúl in the Cuchumatanes, but it was noted in only one locality between San Andrés and San Marcos. It has not been reported previously from Central America and its occurrence in Guatemala is quite unexpected, since the nearest Mexican locality at which it has been collected is about 600 miles distant (in the State of Mexico). In the Guatemalan specimens the leaflets are very sparsely pilose beneath on the nerves and veins.

VITIS L. Grape

Woody vines, often very large, scandent by tendrils borne opposite the leaves, or the tendrils sometimes arising from the peduncles; flowers small, polygamodioecious, the staminate flowers similar to the perfect ones but with longer stamens and an abortive ovary; calyx cupular, repand-dentate; petals 5, valvate, coherent by their tips to form a deciduous cap; stamens 5; hypogynous glands 5, adnate to the base of the ovary, more or less united; ovary 2-celled, the cells 2-ovulate; ovules erect from the base of the cell, anatropous; fruit baccate, usually edible, 2-celled, pulpy; seeds more or less pyriform, usually narrowed at the base into a beak, the face 2-foveolate.

About 60 species, chiefly in temperate regions of the Northern Hemisphere. Only two species are native in Central America.

Branches of the panicles floccose-tomentose, sparsely or usually not at all hispidulous; leaves, at least when young, pale beneath, densely floccose-tomentose, the tomentum usually persistent and often very dense in age... *V. tiliifolia*.

Branches of the inflorescence without floccose tomentum, viscid-hispidulous; leaves green beneath, the tomentum very sparse, consisting of only a few, long, slender, scarcely matted hairs..... *V. Bourgaeana*.

Vitis Bourgaeana Planch. in DC. Monogr. Phan. 5: 368. 1887.
 ?*V. vulpina* L. var. *yzabalana* Wats. Proc. Amer. Acad. Sci. 21: 463. 1886 (type from lake shore near Izabal, *Watson* 48; not seen but the description seems to suggest this, rather than *V. tiliifolia*).
Tusuj (Quecchí); *Tusub cam* (Quecchí, fide Dieseldorff).

Moist or wet thickets, sometimes in pine forest, 1,450 meters or less; Petén(?); Alta Verapaz; Izabal(?); Huehuetenango. British Honduras; southern Mexico.

A small or large vine, the stems terete, somewhat floccose-tomentose when young but soon glabrate, often short-pilose or hispidulous; tendrils intermittent, at each second node, furcate; leaves on long, slender, often hispidulous petioles, the blades thin, rounded-ovate, mostly 5–10 cm. long, cuspidate-acuminate, sometimes shallowly 3-lobate, rarely deeply 3–5-lobate, repand-denticulate or serrulate, truncate or shallowly cordate at the base, green above and more or less puberulent or minutely hispidulous, beneath green and scarcely paler, bearing sparse, long, scarcely matted hairs or almost glabrous, often hispidulous on the nerves; flowers yellowish green, very fragrant, paniculate, the panicles rather lax, long and narrow, often exceeding the leaves, the branches not at all floccose-tomentose but hispidulous or villosulous and sometimes more or less viscid, the flowers slender-pedicellate; berries small, 4 mm. long when dry, very acid, purple-black at maturity.

In Central America this species seems to be quite limited in distribution. When growing it is easily differentiated from *V. tiliifolia* by its much smaller leaves, which lack the abundant tomentum of the lower leaf surface that usually is so conspicuous in *V. tiliifolia*. It was believed at first that the Guatemala plant represented an undescribed species, but it seems to agree well with forms of the Mexican *V. Bourgaeana*, described from the region of Orizaba, Veracruz, and the range is a natural one. The vine is common in the pine forests surrounding Cobán.

Vitis tiliifolia Humb. & Bonpl. ex Roem. & Schult. Syst. Veg. 5: 320. 1819. *V. caribaea* DC. Prodr. 1: 634. 1824. *Uva*; *Paac* (Cacchiquel); *Bejuco de agua*; *Uva de pájaro*.

Common in wet to dry forest or thickets, 1,700 meters or lower, often in pine-oak forest, most plentiful at lower elevations; Baja Verapaz; El Progreso; Zacapa; Chiquimula; Jalapa; Jutiapa; Santa Rosa; Escuintla; Guatemala; Sacatepéquez; Chimaltenango; Huehuetenango; Suchitepéquez; Retalhuleu; Quezaltenango; San Marcos. Mexico; British Honduras to Salvador and Panama; West Indies; Colombia.

A small or often a very large vine with thick stems, the young branches densely floccose-tomentose, becoming glabrate, subterete; leaves thin, rounded-ovate, mostly 8–18 cm. long, abruptly acuminate, often shallowly or deeply 3–5-lobate, finely or coarsely dentate, when young floccose-tomentose above but in age glabrate, beneath usually covered with a dense, close or very lax, grayish or brownish tomentum, this generally persistent in age; flowers greenish yellow, fragrant, the panicles pedunculate, narrow, lax or dense, the branches abundantly floccose-tomentose or in age glabrate, the flowers slender-pedicellate; fruit purple-black, 6–8 mm. in diameter, usually very sour.

Called "bejuco de agua" and "water-wise" (withe?) in British Honduras. Known in Salvador as "uva montés" and "uvilla." This has been reported from Guatemala as *V. aestivalis* Michx., a species of the United States. *Vitis tiliifolia* is a well-known water vine of Central America, that is, from sections of the stem there may be obtained considerable quantities of watery sap that may be drunk in place of water, a fact of which advantage often is taken in regions where surface water is lacking. The tough stems are used for temporary cordage in gathering firewood and for other purposes. The fruit, even when fully ripe, is too acid to be palatable, but it is utilized sometimes for making vinegar.

***Vitis vinifera* L. Sp. Pl. 202. 1753. Uva; Parra; Vid; European grape.**

Probably native in the region of the Caucasus and the Caspian Sea, and in western India; now grown in many parts of the earth for its delicious fruit, from which many kinds of wine are prepared; planted extensively in western North America, especially in California; also in Mexico. In Guatemala at the present time, as in other parts of Central America, the grape is little grown, but scattered vines may be found in fincas of the mountains and foothills. In order to produce well, apparently they must be carefully tended. The climate of most regions seems unsuited for them, and they have many insect and other enemies, especially leaf-cutting ants. Good Malaga grapes are produced in very small quantities in the central region, and are seen sometimes in the markets. Substantial quantities of grapes are imported from California. Soon after the conquest the European grape was introduced into Spanish America and flourished in many regions, particularly Mexico, Chile, and Argentina. Important wine industries were developed, but these were discouraged or suppressed by the Spanish government, to protect the wines produced in Spain. One region of Guatemala was formerly famous for its grapes and wine, not only in Guatemala but far outside its boundaries. At San Gerónimo, Baja Verapaz, the Dominican friars planted many hundreds of acres of vines, which thrived under irrigation, and supplied grapes for great quantities of wine, but the industry vanished for political and religious reasons, and the lands are now occupied by sugar cane, from which rum is produced.

TILIACEAE. Linden Family

Trees or shrubs, rarely herbs, the pubescence often of branched hairs; leaves alternate, rarely opposite, simple; stipules geminate or none; flowers small or

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[Begin Page: Page 293]

STANDLEY AND STEYERMARK: FLORA OF GUATEMALA 293

The sweet fruit is edible, and is used in some regions in making confectionery and medicine.

VITACEAE. Grape Family

Scandent shrubs, usually with copious watery sap, the stems nodose or articulate; leaves alternate, petiolate, simple or digitately 3-5-foliolate or pedate, rarely bipinnate, the petiole articulate at the base with the stem and thickened, often dilated into a membranaceous stipule; flowers regular, perfect or unisexual, small, usually greenish, the inflorescence commonly cymose-paniculate or racemose, the peduncles often tendril-bearing; calyx small, entire or with 4-5 teeth or lobes; petals 4-5, free or coherent, valvate, in anthesis spreading-recurved or sometimes coherent and caducous; stamens 4-5, opposite the petals, inserted at the base of the disk or between its lobes, the filaments subulate; anthers free or connate, short, 2-celled, introrsely dehiscent; disk various in form, sometimes none; ovary usually immersed in the disk, 2-6-celled, the cells 1-2-ovulate; style short, conic, subulate, or none, the stigma capitate or discoid; ovules 1-2 in each cell, ascending, anatropous; fruit baccate, 1-6-celled; seeds erect, with osseous testa; endosperm cartilaginous, sometimes ruminant; embryo short, the cotyledons oval, the radicle very short, inferior.

About 11 genera, chiefly in tropical regions, except for the genus

Vitis. Only the following groups are found in Central America.

Leaves digitately 5-foliolate Parthenocissus.

Leaves simple or 3-foliolate.

Petals coherent and deciduous as a cap. Leaves simple Vitis.

Petals free, spreading.

Petals 4; disk 4-lobate; leaves simple or 3-foliolate Cissus.

Petals 5; disk 5-lobate; leaves simple Ampelodes

AMPELOCISSUS Planchon

Reference: C. L. Lundell, Mexican and Central American species
of Ampelocissus, Carnegie Inst. Wash. Publ. 478: 214-216. 1937.

Scandent shrubs with tendrils; leaves simple in the American species, resembling those of Vitis, the peduncles usually tendril-bearing; flowers small, cymose or corymbose, sometimes paniculate, monoecious-polygamous; calyx cupular, usually 5-lobate; petals generally 5, spreading in anthesis; stamens 5, inserted at the base of the disk, this annular, erect, vertically 5-10-sulcate; ovary immersed in the disk, 2-celled, the cells 2-ovulate; style short, conic, the stigma minute; berries 2-3-seeded.

About 45 species, only three of which are American. One other has been described from Costa Rica.

Ovary of the staminate flower more or less spinulose-papillose; pedicels mostly 2-3 mm. long or more and often much longer than the flowers; petals 2.5-3 mm. long A. Erdwendbergii.

[Begin Page: Page 294]

294 FIELDIANA: BOTANY, VOLUME 24

Ovary of the staminate flower glabrous; pedicels about 1.5 mm. long, usually not exceeding the flower but sometimes elongate; petals 2 mm. long . . A. acapulcensis.

Ampelocissus acapulcensis (HBK.) Planch, in DC. Monogr.

Phan. 5: 403. 1887. *Vitis acapulcensis* HBK. Nov. Gen. & Sp. 7: 230. 1825.

Frequent in dry thickets, 1,400 meters or less; Zacapa (Sierra de las Minas); Escuintla; Retalhuleu. Southern Mexico; Salvador.

A small or large, woody vine, arising from a large fleshy root, the stems scandent over shrubs and trees or often prostrate upon the ground, when young usually laxly floccose-tomentose but soon becoming quite glabrous and polished; leaves on petioles 1-5 cm. long, broadly ovate-cordate, 6-16 cm. long, acute, dentate, sometimes shallowly 3-lobate, when young very densely floccose-tomentose, especially beneath; flowers small, dark red, in very dense or lax panicles, the pedicels glabrous or pilose, the branches of the cymes densely floccose-tomentose or glabrous; petals acute, glabrous; fruiting panicles often very large and heavy, as much as 25 cm. broad; fruit wine-colored, globose, 1.5-2.5 cm. in diameter or even larger.

Called "uva" and "uva silvestre" in Salvador. The large fruit is handsome and of appetizing appearance but it is quite inedible, being sour and unpleasantly flavored. In Salvador it is sometimes utilized for making vinegar. The plant is abundant in the hot dry thickets about Champerico.

Ampelocissus Erdwendbergii Planch, in DC. Monogr. Phan.

5: 404. 1887. Uva.

Pete"n (La Libertad). Southern Mexico.

A woody vine, the stems rather persistently floccose-tomentose; leaves on petioles 6.5 cm. long or less, broadly ovate-cordate, 6-15 cm. wide, sometimes shallowly lobate, acute or acuminate, irregularly dentate, green above, hispidulous and somewhat floccose-tomentose, at least when young, densely covered beneath with a brown floccose tomentum; inflorescences small or large, lax and open or rather dense, the pedicels usually glabrous, slender, 2-3 mm. long; berries sub-globose, when dry only 5-10 mm. wide; seeds obcordate, 5 mm. long.

None of the characters used by Lundell in his key to species seem to be constant, and it is questionable whether the American species are three or really one. It is quite possible, although not at all certain, that *A. Erdwendbergii* is a distinct species, separable from *A. acapulcensis* primarily by its small fruits. The reputed characters of pubescence and petal size are particularly unstable.

CISSUS L.

Plants mostly scandent, herbaceous or usually woody, often tendril-bearing;
flowers commonly perfect, small, green or red, 4-parted, cymose-corymbose, usually

[Begin Page: Page 295]

STANDLEY AND STEYERMARK: FLORA OF GUATEMALA 295

opposite the leaves, sometimes appearing axillary; petals finally spreading, rarely somewhat connate; disk 4-lobate, adnate to the base of the ovary; ovary 2-celled, the cells 2-ovulate; style subulate; berry 1-4-seeded, not edible; seeds ovoid or obtusely trigonous.

About 200 species, widely distributed in tropical regions. One or two other Central American species are known.

Leaves 3-foliolate.

Leaflets small, 1.5-3.5 cm. long, glabrous *C. Martiniana*.

Leaflets all or mostly 4-10 cm. long, often pubescent.

Leaflets sparsely or densely hirsute or tomentose beneath.

Leaflets obtuse, the venation conspicuously reticulate *C. salutaris*.

Leaflets acuminate, the venation not conspicuously reticulate.

C. rhombifolia.

Leaflets glabrous or essentially so.

Terminal leaflet sessile or essentially so; venation of the leaflets prominent

and closely reticulate *C. erosa*.

Terminal leaflet long-petiolulate; venation neither prominent nor closely

reticulate *C. microcarpa*.

Leaves simple, often lobate.

Larger or lower leaves conspicuously palmate-lobate, glabrous or essentially so.

C. gossypifolia.

Larger and lower leaves not at all lobate.

Berries about 12 mm. long; leaves glabrous or nearly so *C. biformifolia*.

Berries 6-8 mm. long; leaves usually pubescent, sometimes glabrous.

Leaves thick and succulent, the pubescence of rather stiff, spreading hairs;

teeth spreading or at least not incurved, not or scarcely subulate-

tipped; base of the leaf blade usually truncate or rounded. *C. sicyoides*.

Leaves thin, scarcely succulent, the pubescence none or of few long slender

weak hairs; teeth subulate-tipped, appressed or incurved; base of the

leaf blade usually conspicuously cordate *C. cacuminis*.

Cissus biformifolia Standl. Field Mus. Bot. 4: 225. 1929.

C. cardiophylla Standl. op. cit. 226. *Vitis lanceolata* Watson, Proc. Amer. Acad. 21 : 462. 1886, not *Cissus lanceolata* Malme, 1901 (type from Rio Dulce and Rio Chocon, Izabal, Sereno Watson 46).

Wet forest or thickets, at 1,800 meters or less; Alta Verapaz; Izabal; Huehuetenango. British Honduras; Honduras; Costa Rica; Panama.

A large or small, woody vine, glabrous throughout or nearly so, the branches not winged, bearing numerous elevated lenticels; leaves long-petiolate, broadly ovate to lance-oblong, 23 cm. long and 13 cm. wide or smaller, acute or acuminate, cordate to rounded at the base, rather thick when dried, with conspicuous, elevated and reticulate venation, repand-denticulate; flowers bright dark red, in small or large, often dense cymes; berries about 12 mm. long in the dry state, much larger than those of other Central American species, dull purple.

[Begin Page: Page 296]

296 FIELDIANA: BOTANY, VOLUME 24

Cissus cacuminis Standl. in Yuncker, Field Mus. Bot. 17: 375. 1938.

Wet thickets or forest, 1,200-1,900 meters; Chiquimula; Jalapa; Chimaltenango; Quezaltenango; Huehuetenango. Honduras, the type from the region of Siguatepeque, Dept. Comayagua.

A large woody vine, the branches slender, brownish, subterete, glabrous or sparsely pilose; leaves on petioles 1.5-4.5 cm. long, thin when dried and not very fleshy when fresh, ovate or broadly ovate, mostly 5-10 cm. long and 3-5 cm. wide, acute or acuminate, usually shallowly cordate at the base, closely serrate with slender-tipped, appressed or incurved teeth, sparsely villous above at first but soon glabrate, beneath sparsely pilose with long weak hairs or glabrate, 5-nerved at the base, the upper lateral nerves about 3 pairs; cymes slender-pedunculate, lax, many-flowered, about 3 cm. wide, the branches villous; flowers green or yellowish, slender-pedicellate; calyx 1 mm. broad, undulate, the petals slightly more than 1 mm. long; berries subglobose, 8 mm. in diameter (when dry).

This is a forest species and not a weedy vine like *C. sicyoides*, to which it is closely related. It seems quite distinct from that species, and ampler material probably will strengthen the apparent differences.

Cissus erosa L. Rich. Act. Soc. Hist. Nat. Paris 1: 106. 1792.

Wet thickets, at sea level; Izabal. Southern Mexico; West Indies; South America.

A small or large vine, the slender stems glabrous or sparsely pilose, not winged ; leaves 3-foliolate, on long or short petioles; leaflets all sessile, lanceolate to oblong-ovate, mostly 5-10 cm. long, acute or short-acuminate, rounded to acute at the base, undulate to serrulate, subcoriaceous and lustrous when dried, the veins prominent and reticulate; cymes long-pedunculate, the flowers and pedicels bright red; berry globose or globose-ovoid, about 6 mm. long; seeds ovoid, 5 mm. long.

Cissus gossypiifolia Standl. Field Mus. Bot. 8: 23. 1930 (type

from Honey Camp, Orange Walk, British Honduras, C. L. Lundell

25). *C. formosa* Standl. loc. cit. (type from Suitun, Yucatan, Gaumer 23389).

Moist or wet forest or thickets, 1,300 meters or lower; Huehuetenango (Paso del Boqueron, below La Libertad, Steyermark 51208).

British Honduras; Campeche; Tabasco; Yucatan.

A small or large, woody vine, the young branches glabrous or nearly so; leaves long-petiolate, very variable in shape, the larger and lower ones 9-15 cm. long and often fully as wide, truncate or shallowly cordate at the base, shallowly 3-5-lobate, the lobes acute or abruptly acute, entire or serrate, the upper and smaller leaves ovate to broadly elliptic, not lobate, acute or short-acuminate, entire or serrulate, glabrous or nearly so; cymes pedunculate, dense or lax and many-flowered, the flowers bright red; calyx truncate; petals obtuse, 1.8 mm. long; berries obovoid, about 6 mm. long when dry, bright red.

[Begin Page: Page 297]

STANDLEY AND STEYERMARK: FLORA OF GUATEMALA 297

Cissus Martiniana Woodson & Seibert, Ann. Mo. Bot. Gard.

24: 191. 1937.

Wet forest, 1,500-3,000 meters; El Progreso; Zacapa; San Marcos;

Huehuetenango. Honduras; Salvador; Chiapas; Costa Rica;

Panama.

A small vine, usually creeping closely on tree trunks, glabrous throughout or nearly so, the stems not winged, emitting roots at the nodes; leaves long-petiolate, small, the petioles often pink or reddish; leaflets mostly 1.5-3.5 cm. long, sessile, rhombic to broadly oval or elliptic, rounded to acute at the apex, acute or acuminate at the base, coarsely crenate, rather thin and pale green when dried, not or scarcely succulent; cymes small and few-flowered, sparsely pilose; berries subglobose, 5-6 mm. long, white at maturity.

This is a plant of deep wet cool forests.

Cissus microcarpa Vahl, *Eclog. Amer.* 1: 16. 1796.

Moist or dry forest or thickets, 900 meters or lower; Izabal (?); Santa Rosa; Suchitepe'quez ; Retalhuleu; Quezaltenango. Southern Mexico; British Honduras and probably extending into Peten; Honduras; Nicaragua; Panama; West Indies; South America.

A small or large, woody vine, glabrous throughout or nearly so; larger branches often narrowly 4-winged; leaves long-petiolate, 3-foliolate; leaflets drying rather thin, obliquely ovate or rhombic to broadly elliptic, mostly 4-10 cm. long and acute or acuminate, obliquely rounded to acuminate at the base, mucronate-serate; cymes many-flowered, shorter than the opposing leaves, long-pedunculate, lax or dense, the flowers usually deep red; berries ovoid-globose, 6-8 mm. long, purple or dark red.

In Central America this species has been much confused with *C. rhombifolia*, and has been reported from Honduras and British Honduras under that name.

Cissus rhombifolia Vahl, *Eclog. Amer.* 1: 11. 1796. Comemano.

Dry to wet thickets, 1,200 meters or less; Peten; Alta Verapaz;

Izabal; Jutiapa; Santa Rosa; Escuintla; Guatemala; Retalhuleu.

Southern Mexico; Honduras and Salvador to Panama; West Indies;

South America.

A small or large, woody vine, often climbing over tall trees, the stems thick and soft, usually narrowly 4-winged, the young branches villous, often densely so; leaves long-petiolate, 3-foliolate; leaflets fleshy when fresh, drying thick, obliquely ovate or rhombic to broadly elliptic, acute or acuminate, generally rounded or very obtuse at the base, serrate or serrulate, usually rather densely villous on both surfaces, rarely glabrate, 4-10 cm. long; inflorescences mostly large and dense, long-pedunculate, the flowers deep bright red, the pedicels villous; petals often hirtellous; fruit black at maturity.

[Begin Page: Page 298]

298 FIELDIANA: BOTANY, VOLUME 24

Called "picamano" in Honduras; "uva cimarrona," "comemano" (Salvador); "xtabcanil" (Yucatan, Maya). The species is somewhat variable, especially as regards quantity of pubescence. In the wet forests of the Atlantic lowlands the vine is often conspicuous and showy, especially along the main railway line, where the brilliant red inflorescences are abundant, and easily noted from a moving train.

Cissus salutaris HBK. Nov. Gen. & Sp. 5: 225. 1821. Coralillo;
Bejuco de polio (fide Aguilar).

Moist thickets or open forest, 1,650 meters or less; Peten; Chiquimula; Jalapa; Jutiapa; Quiche". Southern Mexico; Honduras; Panama; northern South America.

A small or large, woody vine, the young stems not winged, slender, sparsely or densely hispidulous; leaves on long or short petioles, 3-foliolate; leaflets rather thick when dried and conspicuously reticulate-veined, the lateral ones sessile, the terminal narrowed to a slender petiolule, obovate to oblong, usually broadest above the middle, 4.5-9 cm. long, narrowly rounded to subacute at the apex, acuminate to very obtuse at the base, crenate-serrate, thinly or densely hispidulous or hirsute, especially beneath; cymes long-pedunculate, often longer than the opposing leaves, hispidulous or villous, the flowers deep bright red, the pedicels pilose.

Cissus sicyoides L. Syst. Nat. ed. 10. 2: 897. 1759. Vitis
sicyoides Morales in Poey, Repert. 1: 206. 1866. Comemano;
Sanaltodo; Bejuco de gallina.

Common or abundant in dry to wet thickets and forest, 1,200 meters or less; Peten; Alta Verapaz; Izabal; Zacapa; El Progreso; Chiquimula; Jalapa; Jutiapa; Santa Rosa; Escuintla; Guatemala; Suchitepequez; Retalhuleu; San Marcos. Mexico; British Honduras to Salvador and Panama; West Indies; South America.

Often a very large, woody vine, frequently climbing over tall trees, the stems

thick and tough, very flexible; leaves simple, on long or short petioles, oblong-ovate to rounded-ovate, often very asymmetric, 4-16 cm. long, obtuse to acuminate, rounded to cordate at the base, coarsely or finely serrate, usually densely pubescent but sometimes almost glabrous; cymes small or large, pedunculate, usually dense and shorter than the opposing leaves, sometimes lax and open, pubescent; flowers green or yellowish green; fruit globose-obovoid, black at maturity, 1-seeded, about 6 mm. long in the dry state.

Called "picamano" in Honduras and "bejuco loco" in Tabasco.

This is one of the most common and widely distributed of tropical American plants. It exhibits a great deal of variation in pubescence and leaf form, as a result of which numerous varieties have been

[Begin Page: Page 299]

STANDLEY AND STEYERMARK: FLORA OF GUATEMALA 299

named. Perhaps someone may find a basis for separating satisfactorily some of these forms, but with present material the lines of division are vague. The plant emits many long aerial roots that dangle loosely from the tree branches or sometimes strike root in the ground. If the main stem is cut, the upper part of the plant continues to grow. The stems and roots are tough, and often are used as cordage, and in Costa Rica baskets are made from them. When cut they yield a copious watery sap, which is generally believed to cause blisters upon the skin, although we have never seen this demonstrated. The leaves macerated in water give a suds like that of soap, which sometimes is utilized for washing clothes. In

Guatemala the sap is applied as a remedy for gangrene. In Salvador a decoction of the crushed stems and wood ashes is applied to wounds of cattle. It is said to change the color of their hair, which later resumes its natural color. The inflorescences frequently are greatly deformed by a smut, *Mycosyrinx Cissi* (DC.) Beck, so much so that it resembles a strange parasitic plant. This diseased form was made the type of a new genus of flowering plants, *Spondylantha*, by Presl.

PARTHENOCISSUS Planchon

Woody vines, the tendrils with adhesive tips by which the plants usually are attached closely to the supporting tree trunk or other object, the bark close, lenticellate, the pith white; leaves deciduous, digitately compound in the American species, long-petiolate, the leaflets coarsely dentate; flowers perfect or rarely polygamous, in pedunculate compound cymes opposite the leaves; often densely aggregate at the ends of the branchlets and forming panicles; calyx minute; petals normally 5, spreading; style short and thick; disk indistinct; ovary 2-celled, the cells 2-ovulate; fruit a 1-4-seeded, dark blue or bluish black berry.

About 10 species, in North America and eastern and southern Asia. Only the following is found in Central America.

Parthenocissus quinquefolia (L.) Planch, in DC. Monogr.

Phan. 5: 448. 1887. *Hedera quinquefolia* L. Sp. Pl. 202. 1753. Tripos de iguana.

Thickets along streams, 1,300-1,500 meters; Huehuetenango (Rio Azul below Jacaltenango; between San Andre's and San Marcos).

Southern Canada and eastern and southern United States; Mexico.

A large woody vine, glabrous throughout or nearly so or often rather copiously pubescent; tendrils usually numerous and with dilated disk-like tips that adhere tightly to any object that they touch, aerial roots often present; leaves long-petiolate, the normally 5 (3 on young tips) leaflets membranaceous, petiolulate,

[Begin Page: Page 300]

300 FIELDIANA: BOTANY, VOLUME 24

oval to oblong-oblongate, 5-15 cm. long, acute or acuminate, attenuate to the base, coarsely dentate, at least above the middle, deep green above, usually glabrous, somewhat paler beneath, glabrous or more or less pilose; panicles small or rather large, many-flowered; berries blue, about 6 mm. in diameter, containing 2-3 seeds; pedicels and branches of the panicle usually bright red in fruit.

Usually called "Virginia creeper" in the United States, where the vine is much planted to cover the sides of buildings. It is probably the most common ornamental vine of the United States, although much inferior to the true or English ivy (*Hedera*), which is not hardy in the colder parts of North America. The plant was found to be common along the Rio Azul in the Cuchumatanes, but it was noted in only one locality between San Andre's and San Marcos. It has not been reported previously from Central America and its occurrence in Guatemala is quite unexpected, since the nearest Mexican locality at which it has been collected is about 600 miles distant (in the State of Mexico). In the Guatemalan

specimens the leaflets are very sparsely pilose beneath on the nerves and veins.

VITISL. Grape

Woody vines, often very large, scandent by tendrils borne opposite the leaves, or the tendrils sometimes arising from the peduncles; flowers small, polygamodioecious, the staminate flowers similar to the perfect ones but with longer stamens and an abortive ovary; calyx cupular, repand-dentate; petals 5, valvate, coherent by their tips to form a deciduous cap; stamens 5; hypogynous glands 5, adnate to the base of the ovary, more or less united; ovary 2-celled, the cells 2-ovulate; ovules erect from the base of the cell, anatropous; fruit baccate, usually edible, 2-celled, pulpy; seeds more or less pyriform, usually narrowed at the base into a beak, the face 2-foveolate.

About 60 species, chiefly in temperate regions of the Northern Hemisphere. Only two species are native in Central America.

Branches of the panicles floccose-tomentose, sparsely or usually not at all hispidulous; leaves, at least when young, pale beneath, densely floccose-tomentose, the tomentum usually persistent and often very dense in age . . . *V. tiliifolia*.

Branches of the inflorescence without floccose tomentum, viscid-hispidulous; leaves green beneath, the tomentum very sparse, consisting of only a few, long, slender, scarcely matted hairs *V. Bourgaeana*.

Vitis Bourgaeana Planch, in DC. Monogr. Phan. 5: 368. 1887.

?*V. vulpina* L. var. *yzabalana* Wats. Proc. Amer. Acad. Sci. 21:

463. 1886 (type from lake shore near Izabal, Watson 48; not seen

but the description seems to suggest this, rather than *V. tiliifolia*).

Tusuj (Quecchi); Tusub cam (Quecchi, fide Dieseldorff).

[Begin Page: Page 301]

STANDLEY AND STEYERMARK: FLORA OF GUATEMALA 301

Moist or wet thickets, sometimes in pine forest, 1,450 meters or less; Peten(?); Alta Verapaz; Izabal(?); Huehuetenango. British Honduras; southern Mexico.

A small or large vine, the stems terete, somewhat floccose-tomentose when young but soon glabrate, often short-pilose or hispidulous; tendrils intermittent, at each second node, furcate; leaves on long, slender, often hispidulous petioles, the blades thin, rounded-ovate, mostly 5-10 cm. long, cuspidate-acuminate, sometimes shallowly 3-lobate, rarely deeply 3-5-lobate, repand-denticulate or serrulate, truncate or shallowly cordate at the base, green above and more or less puberulent or minutely hispidulous, beneath green and scarcely paler, bearing sparse, long, scarcely matted hairs or almost glabrous, often hispidulous on the nerves; flowers yellowish green, very fragrant, paniculate, the panicles rather lax, long and narrow, often exceeding the leaves, the branches not at all floccose-tomentose but hispidulous or villosulous and sometimes more or less viscid, the flowers slender-pedicellate; berries small, 4 mm. long when dry, very acid, purple-black at maturity.

In Central America this species seems to be quite limited in distribution. When growing it is easily differentiated from *V. tiliifolia* by its much smaller leaves, which lack the abundant tomentum of the lower leaf surface that usually is so conspicuous in *V. tiliifolia*.

It was believed at first that the Guatemala plant represented an undescribed species, but it seems to agree well with forms of the Mexican *V. Bourgaeana*, described from the region of Orizaba, Veracruz, and the range is a natural one. The vine is common in the pine forests surrounding Coban.

Vitis tiliifolia Humb. & Bonpl. ex Roem. & Schult. Syst. Veg.

5: 320. 1819. *V. caribaea* DC. Prodr. 1: 634. 1824. Uva; Paac (Cacchiquel) ; Bejuco de agua; Uva de pdjaro.

Common in wet to dry forest or thickets, 1,700 meters or lower, often in pine-oak forest, most plentiful at lower elevations; Baja Verapaz; El Progreso; Zacapa; Chiquimula; Jalapa; Jutiapa; Santa Rosa; Escuintla; Guatemala; Sacatepequez; Chimaltenango; Huehuetenango; Suchitepquez; Retalhuleu; Quezaltenango; San Marcos. Mexico; British Honduras to Salvador and Panama; West Indies; Colombia.

A small or often a very large vine with thick stems, the young branches densely floccose-tomentose, becoming glabrate, subterete; leaves thin, rounded-ovate, mostly 8-18 cm. long, abruptly acuminate, often shallowly or deeply 3-5-lobate, finely or coarsely dentate, when young floccose-tomentose above but in age glabrate, beneath usually covered with a dense, close or very lax, grayish or brownish tomentum, this generally persistent in age; flowers greenish yellow, fragrant, the panicles pedunculate, narrow, lax or dense, the branches abundantly floccose-tomentose or in age glabrate, the flowers slender-pedicellate; fruit purple-black, 6-8 mm. in diameter, usually very sour.

[Begin Page: Page 302]

302 FIELDIANA: BOTANY, VOLUME 24

Called "bejuco de agua" and "water-wise" (withe?) in British Honduras. Known in Salvador as "uva montes" and "uvilla."

This has been reported from Guatemala as *V. aestivalis* Michx., a species of the United States. *Vitis tiliifolia* is a well-known water vine of Central America, that is, from sections of the stem there may be obtained considerable quantities of watery sap that may be drunk in place of water, a fact of which advantage often is taken in regions where surface water is lacking. The tough stems are used for temporary cordage in gathering firewood and for other purposes. The fruit, even when fully ripe, is too acid to be palatable, but it is utilized sometimes for making vinegar.

Vitis vinifera L. Sp. Pl. 202. 1753. Uva; Parra; Vid; European grape.

Probably native in the region of the Caucasus and the Caspian Sea, and in western India; now grown in many parts of the earth for its delicious fruit, from which many kinds of wine are prepared; planted extensively in western North America, especially in California; also in Mexico. In Guatemala at the present time, as in other parts of Central America, the grape is little grown, but scattered vines may be found in fincas of the mountains and foothills. In order to produce well, apparently they must be carefully tended. The climate of most regions seems unsuited for them, and they have

many insect and other enemies, especially leaf-cutting ants. Good Malaga grapes are produced in very small quantities in the central region, and are seen sometimes in the markets. Substantial quantities of grapes are imported from California. Soon after the conquest the European grape was introduced into Spanish America and flourished in many regions, particularly Mexico, Chile, and Argentina. Important wine industries were developed, but these were discouraged or suppressed by the Spanish government, to protect the wines produced in Spain. One region of Guatemala was formerly famous for its grapes and wine, not only in Guatemala but far outside its boundaries. At San Geronimo, Baja Verapaz, the Dominican friars planted many hundreds of acres of vines, which thrived under irrigation, and supplied grapes for great quantities of wine, but the industry vanished for political and religious reasons, and the lands are now occupied by sugar cane, from which rum is produced.

TILIACEAE. Linden Family

Trees or shrubs, rarely herbs, the pubescence often of branched hairs; leaves alternate, rarely opposite, simple; stipules geminate or none; flowers small or