

BOTANY.—*New species of plants from Salvador. II.*<sup>1</sup> PAUL C. STANDLEY, U. S. National Museum.

In the present paper the notes upon two species of grasses have been furnished by Mrs. Agnes Chase, of the U. S. Department of Agriculture, and the description of a new species of *Piper* by Dr. William Trelease of the University of Illinois.

***Paspalum botteri* (Fourn.) Chase**

*Dimorphostachys botteri* Fourn. Mex. Pl. 2: 14. 1886. Based on *Botteri* 118, collected at Orizaba, Mexico. The specimen was examined in the Paris Herbarium. This is the species described as *Paspalum macrophyllum* H. B. K. by Nash.<sup>2</sup> The type of that species, also in the Paris Herbarium, was likewise examined, and is found to belong to a different group, not to that of *P. botteri* and its allies (the genus *Dimorphostachys* of Fournier) in which the first glume is developed in at least one of each pair of spikelets. Chase in Hitchcock's Mexican Grasses<sup>3</sup> misapplied the name *Paspalum planifolium* Fourn. to this species. That species is based on a Virlet specimen (without number) from San Luis Potosí, Mexico, and Müller 2062 "in herb. Petrop." The Virlet specimen was examined in the Paris Herbarium and is found to be the same as *P. publistorum* Rupr. Müller 2062 in St. Petersburg Herbarium has not been examined. This collection in the Kew Herbarium is *P. lividum* Trin.

SALVADOR: Volcano of San Salvador *Hitchcock* 8956. San Salvador *Calderón* 944.

***Syntherisma fiebrigii* (Hack.) Chase**

*Panicum fiebrigii* Hack. Rep. Sp. Nov. Fedde 8: 46. 1910. Based on *Fiebrig* 5371 and 5375 from northern Paraguay, "in herb. Hassler." These two specimens, named in Hackel's script, were examined in the Hassler collection in the herbarium of the Jardin de Botanique, Geneva.

SALVADOR: San Salvador, *Calderón* 1153.

***Piper incanum* Trelease, sp. nov.**

A shrub, 1.5 or in richer soil 3-5 m. high, nodose; flowering internodes moderately slender and short (4×40 mm.), gray-subtomentose; leaves elliptic or subobovate, acuminate, inequilaterally subcordulate, rather small (5-6×12-14 or as much as 8×16 cm.), pinnately nerved from below the middle, the nerves 5 or 6×2, gradually approximated downward, at length bullulate, somewhat thinly appressed-hispid on both faces and gray beneath; petiole rather short (8×2 mm.) and winged at base, or on the more equilaterally truncate-cordulate lower leaves twice as long and winged to or beyond the middle; spikes opposite the leaves, gray-mucronate, in fruit 3×80 mm.; bracts roundish-subpeltate, gray-ciliate; peduncle gray-hairy, 12 mm. long; berries obovate, glabrous; stigmas 3, sessile.

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution. The first paper of this series was published in the present volume of the Journal, pp. 363-369.

<sup>2</sup> N. Amer. Fl. 17: 179. 1909.

<sup>3</sup> Contr. U. S. Nat. Herb. 17: 234. 1913.

Type in the herbarium of the University of Illinois, collected at San Salvador, Salvador, by Paul C. Standley (no. 19129).

*Cuscatlania* Standl., gen. nov.

Slender perennial herbs with branched stems; leaves opposite, those of a pair very unequal, the blades entire; flowers in terminal few-flowered leafy-bracted inflorescences, cymose-paniculate, solitary or in pedunculate clusters of 2 or 3, surrounded by an involucre of 4-8 distinct foliaceous bracts; perianth funnellform, corolla-like, purple-red, the tube elongate, scarcely constricted above the ovary, the limb shallowly 5-lobate; stamens 3, the filaments filiform, slightly exserted, inserted upon the perianth tube at its middle, the anthers didymous; ovary oblong, the style filiform, exserted, the stigma capitate; anthocarp oblong-obovoid, constricted at base and apex, almost equally 10-costate.

Type species, *Cuscatlania vulcanicola* Standl.

In general appearance the present plant closely resembles some of the species of *Allionia* and *Mirabilis*, to which it is no doubt related. In those genera, however, the flowers are surrounded by a calyx-like involucre of united bracts. The insertion of the stamens upon the perianth tube is unique in the family Allioniaceae, so far as I am aware.

*Cuscatlania vulcanicola* Standl., sp. nov.

An ascending or decumbent herb, the slender branches glabrous below, puberulent or villosulous above; petioles slender, mostly 1-1.5 cm. long, glabrous or sparsely puberulent; leaves of a pair very unequal, the smaller less than half the size of the larger ones; larger leaf blades ovate to oblong-ovate or lance-oblong, 5-12 cm. long, 3-4.5 cm. wide, acuminate or long-acuminate, very unequal at base, on one side rounded, on the other acute or acuminate, slightly fleshy, glabrous or nearly so, with numerous and conspicuous raphids on both surfaces; cymes dense, the bracts numerous, leaf-like, 1-2 cm. long, densely viscid-villosulous, short-petiolate, the branches of the inflorescence also densely viscid-villous; flowers sometimes solitary and often in clusters of 2 or 3, the subtending bracts free to the base, 4 to 8, foliaceous, lanceolate or oblanceolate to oblong-elliptic, 10-15 mm. long, acute or acuminate, narrowed at base into a short petiolule, long-ciliate and viscid-villous; perianth about 3 mm. long, the tube very slender, densely viscid-villous with very short hairs, the throat 3-4 mm. in diameter; fruit about 8 mm. long and 3 mm. in diameter, very sparsely and minutely hirtellous.

Type in the U. S. National Herbarium, no. 1,137,438, collected in a quebrada near the base of the Volcán de San Vicente, Departamento de San Vicente, Salvador, altitude about 500 meters, March, 1922, by Paul C. Standley (no. 21678).

The generic name is derived from Cuscatlán, the ancient name of the region which now forms the Republic of El Salvador.

*Capparis stenophylla* Standl., sp. nov.

Shrub, 1-1.5 m. high, glabrous throughout; leaves mostly clustered near the ends of the branches; petioles very variable in length, often nearly ob-

solete and frequently as much as 7 cm. long, slender; leaf blades narrowly lanceolate to lance-linear, mostly 17–26 cm. long and 1.5–6 cm. wide, acute to long-attenuate at apex, rounded or subcordate at base, lustrous above and with prominulous venation, paler beneath, the venation very prominent, rather thin; flowers subumbellate, on peduncles 2.5–5 cm. long, the pedicels slender, 6–20 mm. long; sepals imbricate in bud, rounded-ovate, obtuse, 2–3 mm. long; petals white, 12 mm. long or more; immature fruit long-stipitate, cylindric, somewhat torulose.

Type in the U. S. National Herbarium, no. 1,137,442, collected in a quebrada near San Vicente, Salvador, altitude about 500 meters, March, 1922, by Paul C. Standley (no. 21681). The following additional specimens have been examined.

SALVADOR: Sonsonate, alt. 220 meters, *Standley* 22330. Sierra de Apaneca, near Finca Colima, Departamento de Ahuachapán, *Standley* 20121.

NICARAGUA: Without definite locality, *Wright*.

*Capparis stenophylla* may be no more than a narrow-leaved form of *C. baduoca* L., a common species of Central America, but the leaves are of so distinctive a form that it seems probable that the Salvadorean shrub merits specific rank.

#### ***Sedum salvadorensis* Standl., sp. nov.**

Plants perennial, the stems suffrutescent, about 14 cm. high and 6 mm. thick, granular-papillose above; leaves rather few, alternate, narrowly spatulate-oblongate, 2–9 cm. long, 0.5–2 cm. wide, obtuse or rounded at apex, narrowed below into a broad petiole, flat, thin and flaccid, green, the young ones granular-papillose; inflorescence a dense few-flowered cyme about 2 cm. broad, the bracts small, linear or oblanceolate, papillose, the pedicels slender, 2–3 mm. long; sepals linear-oblong, 4–4.5 mm. long, narrowed to a blunt apex; petals white, oblong-ovate, equaling the sepals, cuspidate-acute.

Type in the U. S. National Herbarium, no. 1,136,003, collected on a rock in forest, Finca Colima, Sierra de Apaneca, Departamento de Ahuachapán, Salvador, January, 1922, by Paul C. Standley (no. 20143).

Only a single colony of the plants was found, and the plants were somewhat withered as the result of the long dry season. In spite of their unsatisfactory condition, the specimens seem to represent a species clearly distinct from any heretofore reported from Central America or from Mexico.

#### ***Prunus axitliana* Standl., sp. nov.**

Shrub or tree, 3–7.5 m. high, glabrous throughout, the crown broad and rounded, the young branchlets bright red; petioles slender, 7–11 mm. long, bright red; leaf blades ovate or elliptic-ovate, 5.5–11 cm. long, 2.5–5 cm. wide, obtusely acute or acuminate, rounded to subacute at base, very lustrous on the upper surface, the costa depressed, paler and dull beneath, the slender costa salient, two small round glands present on the lower surface of the blade about 3 mm. above the base; fruiting racemes solitary on young branchlets of the year, stout, about 4 cm. long, few-fruited, the pedicels stout, 6 mm. long; calyx deciduous; fruit subglobose, 10–12 mm. in diameter.

Type in the U. S. National Herbarium, no. 1,152,610, collected on hills near Santa Tecla, Salvador, March, 1923, by Dr. Salvador Calderón (no. 1519). The following sterile specimens obtained by the writer in 1922 also belong here:

SALVADOR: Santa Tecla, alt. about 900 m., *Standley* 23011. Volcán de San Vicente, alt. 1500 m., *Standley* 21515.

*Prunus axilliana* is related to *P. samydoides* Schlecht., a Mexican species, but is distinguished by its solitary racemes and large leaves. Dr. Calderón reports the vernacular name as *cangrejillo*. The specific name commemorates the King or Topilzín Axtl, founder of the Province of Cuscatlán and of the kingdom Hueytlatō or Payaquí, now the Republic of El Salvador.

#### *Acacia calderoni* Standl., sp. nov.

A shrub, the branches brown, the young ones densely fulvous-pilose, unarmed; stipules linear-subulate, 5–7 mm. long; petioles 1.5–2 cm. long, without glands, the leaf rachis 5–7 cm. long, densely fulvous-pilose; pinnae 6–9 pairs, mostly 3.5–5.5 cm. long; leaflets about 23 pairs, oblong, 4–6 mm. long, 2 mm. wide, very obtuse, densely covered on both sides, especially beneath, with curved yellowish hairs, the venation obsolete on the upper surface, but both costa and lateral nerves prominent beneath; peduncles axillary or forming a terminal raceme, solitary or geminate, 1–1.5 cm. long, densely pilose; flowers racemose, the racemes very dense, 1.5–2 cm. long, about 1.5 cm. in diameter, the pedicels very short; calyx and corolla 2.5 mm. long, densely pilose with short yellowish hairs.

Type in the U. S. National Herbarium, no. 1,151,942, collected on the Cerro de la Olla, on the Guatemalan frontier near Chalchuapa, Salvador, in 1922 by Dr. Salvador Calderón (no. 977).

Closely related to *A. polypodioides* Standl., a species of southern Mexico and Nicaragua, but easily recognized by the elongate racemes, the flowers of *A. polypodioides* being capitate.

#### *Pithecollobium microstachyum* Standl., sp. nov.

Tree, 6–7.5 m. high, the young branchlets slender, puberulent or short-pilose; stipular spines stout, brownish, 1.5 cm. long or less; petioles sometimes 4 cm. long but often much shorter, glabrous, or puberulent, bearing at the apex a stout columnar sessile gland; pinnae one pair, the leaflets also one pair, nearly sessile, oblong to oblong-obovate, mostly 3.5–7 cm. long and 1.5–3 cm. wide, but on flowering branches often not over 1 cm. long, rounded or very obtuse at apex, oblique and obtuse or rounded at base, thick, slightly glabrous but ciliate when young, the venation prominently reticulate on both surfaces; flowers dirty white, in slender spikes 1–3 cm. long, these mostly in ample terminal panicles, the rachis pilosulous, the bracts lance-oblong, shorter than the calyx; calyx sessile, about 1 mm. long, acutely dentate, minutely appressed-pubescent; corolla 3 mm. long, minutely sericeous, the lobes oblong-lanceolate, acute; stamen tube not exerted; fruit several-seeded, short-stipitate, curved or coiled, minutely puberulent or glabrate, the valves thin, red or pink, constricted between the seeds; seeds black and shining, 7–8 mm. long and broad, compressed, surrounded at base by a fleshy white aril.

Type in the U. S. National Herbarium, no. 1,136,477, collected in dry

thicket near La Unión, Salvador, near sea level, February, 1922, by Paul C. Standley (no. 20646). The following additional specimens have been collected:

SALVADOR: Acajutla, *Calderón* 1663; *Standley* 21975.

HONDURAS: Amapala, *Standley* 20744.

It is probable that this is the tree reported from the Gulf of Fonseca by Hemsley as *P. oblongum* Benth. The Salvadorean plant is distinguished from that species by its elongate spikes and very small flowers. The vernacular name employed at La Unión is *mongollano*, a name applied also to *P. dulce* (Roxb.) Benth.

***Apalatoa choussyana* Standl., sp. nov.**

Tree, the branchlets and leaves glabrous; bud scales densely brownish-tomentulose; leaflets 6 or 8, oblong or lance-oblong, 3–6.6 cm. long, 1.5–2 cm. wide, acute or short-acuminate, with blunt tip, unequal at base, cuneate on one side, rounded on the other, thick and firm, lustrous above, paler beneath, the costa subimpressed above, prominent beneath, the lateral nerves not conspicuous; petiolules 2 mm. long, the leaf rachis and petioles together 5–8 cm. long; rachis of the inflorescence and peduncle in fruit 5–9 cm. long, glabrous; fruiting pedicels 4–5 mm. long, stout; legume orbicular or rounded-oval, 5–7 cm. long, 4–5.5 cm. wide, thin, with slightly thickened margin, densely and minutely fulvous-tomentulose, conspicuously rugose.

Type in the U. S. National Herbarium, no. 1,152,621, collected on the Finca San Nicolás, Salvador, May, 1923, by Dr. Salvador Calderón (no. 1573).

At the request of Dr. Calderón this species is named in honor of Mr. Felix Choussy, for many years a resident of Salvador and formerly director of the Escuela de Agronomía, of the Salvadorean government, which was located at Izalco. The vernacular name of the tree is said to be *chichipate*.

Only one species of *Apalatoa* has been reported previously from Central America, *A. acuminata* (Benth.) Standl.,<sup>4</sup> which was collected by one of the collectors who accompanied the British ship *Sulphur* in its voyage along the western coast of tropical America. The type of this species is said to have come from "Central America," and it is probable that it was collected either at Realejo, Nicaragua, or about the Gulf of Fonseca. The writer has seen no specimens of *A. acuminata*, but according to the description, it differs from *A. choussyana* in its large, abruptly acuminate leaflets, which are widest above the middle. *Apalatoa antillana* (Urban) Standl.<sup>5</sup> also is closely related to the Salvadorean tree, but differs in its larger, thinner, and comparatively narrow leaflets.

***Cashalia* Standl., gen. nov.**

Large unarmed trees; leaves odd-pinnate, the leaflets herbaceous; stipules minute, caducous; flowers racemose, the racemes elongate, many-flowered, simple, the bracts and bractlets caducous; calyx tube broadly campanulate,

<sup>4</sup> *Crudia acuminata* Benth. Bot. Voy. Sulph. 89. 1844.

<sup>5</sup> *Crudia antillana* Urban, Symb. Antill. 6: 10. 1909.

the limb 5-lobate, the 3 lower lobes triangular-ovate, subequal, the 2 upper ones similar, united for half their length; petal one, rounded-obovate, narrowed below into a broad claw; stamens 10, free, subhypogynous, the filaments slender but broadened below, glabrous, subequal, the anthers oval, uniform, attached near the base, dehiscent by longitudinal slits; ovary short-stipitate, 2-ovulate, attenuate to a slender curved style, the stigma terminal, minute; fruit ovoid or cylindrical, 1 or 2-seeded, turgid and subterete, coriaceous, bivalvate; seeds large, ovoid, exarillate, without endosperm, the cotyledons thick and fleshy, the radicle very short, inflexed.

Type species, *Cashalia cuscatlanica* Standl.,

*Cashalia cuscatlanica* Standl., sp. nov.

A very large deciduous tree, the young branchlets and petioles densely brown-pilose with stiff spreading hairs; leaves petiolate, the rachis 20-35 cm. long, subterete, brown-pilose; leaflets usually 11 or 13, alternate, the petiolules stout, 2.5-6 mm. long, densely pilose, the blades mostly oblong or lance-oblong, usually broadest below the middle but sometimes broadest toward the apex, acuminate or long-acuminate, broadly rounded or subcordate at base, mostly 9-23 cm. long and 2.5-9 cm. wide, the lower ones smaller, thin, bright green on the upper surface and glabrous, beneath paler, densely pilose with short spreading brownish hairs, the lateral nerves 13-19 pairs, nearly straight, extending quite to the margin, the secondary nerves in age prominent and closely reticulate; rachis of the racemes about 30 cm. long, stout, densely brown-tomentose, the pedicels stout, 2-3 mm. long; calyx about 8 mm. long, densely brown-tomentose, the lobes about equaling the tube, obtuse or subacute, tomentose within; standard about 18 mm. long, the blade 15 mm. broad, rounded at apex, tomentose on the outer surface, glabrous within; stamens about 15 mm. long, the anthers scarcely 1 mm. long; ovary densely brown-pilose, the style nearly glabrous; fruit 6-10 cm. long, subterete, acute at base and apex, covered with a very dense and fine, brown tomentum, the stipe very stout, about 6 mm. long; seeds terete-ovoid, 3-4 cm. long, 2 cm. in diameter, pointed at base, rounded at apex.

Type in the U. S. National Herbarium, no. 1,136,051, collected in mountain forest on the Finca Colima, Sierra de Apaneca, Departamento de Ahuachapán, Salvador, January, 1922, by Paul C. Standley (no. 20197). The following additional collections belong here:

SALVADOR: Comasagua, December, 1922, *Calderón* 1379. Hills near Santa Tecla, July, 1923, *Calderón* 1752.

The genus *Cashalia*, a member of the family Fabaceae, appears to be closely related to *Tounatea* (*Swartzia*), the specimens of the Salvadorean tree bearing some superficial resemblance to the curious Brazilian *Swartzia polycarpa* Ducke. In the genus *Tounatea*, so far as can be learned, the stamens are always numerous. Bentham and Hooker state that the ovules also are numerous, but this is improbable since the various species often have one-seeded fruits. The calyx of *Cashalia* is very different from that of *Tounatea*, and there is nothing to indicate that it is closed in anthesis, as it is in the latter genus.

*Cashalia cuscatlanica* is perhaps the most abundant and probably the largest tree in the primeval forest of the Finca Colima. At the time of the writer's visit to that region, the trees were in flower and nearly devoid of

leaves. The trees were so large that it was impossible to climb them in order to get specimens, but some of the racemes were found upon the ground and leaf specimens were secured from young plants. Dr. Calderón's specimens from Comasagua are sterile, but recently he was so fortunate as to find ample fruiting material on the hills near Santa Tecla, whose flora is similar to that of the Sierra de Apaneca. Dr. Calderón has forwarded a photograph of the tree from which the fruits came, evidently a gigantic one, which he states was larger than a ceiba, sufficient indication of its size to those who are acquainted with Central American trees. The seeds were found upon the ground, where they were beginning to germinate, their cotyledons at that time being of a deep but brilliant green.

This tree is well known in Salvador, under the vernacular name of *cashal*. It is said to be an important lumber tree.

**Amerimnon cuscatlanicum** Standl., sp. nov.

Tree, the branchlets and leaves glabrous; stipules oblong-ovate, 10–12 mm. long, obtuse, soon deciduous; leaves somewhat blackened in drying, the petioles and rachis slender, 20–25 cm. long, the petiolules slender, 2.5–4 mm. long; leaflets 13–17, lance-oblong or the lowest ovate, 6–10 cm. long and 2–2.5 cm. wide, the lower ones smaller, slightly narrowed to the obtuse apex, rounded to subacute at base, thin, bright green above, the venation prominently reticulate, much paler beneath, the venation prominent and finely reticulate; racemes numerous, forming a dense panicle about 8 cm. long on old wood, the bracts similar to the stipules, ciliate, the branches densely brown-pilosulous, the bractlets minute, oblong, densely pilosulous; flowers white, about 16 mm. long; calyx 4–5 mm. long, densely brown-pilosulous, the lobes about equaling the tube, oblong-ovate, obtuse, the carinal lobe much longer and narrower than the others; petals glabrous, the standard short-clawed, the blade suborbicular, 12 mm. long, rounded at base, obscurely retuse at apex, the wings obovate, oblique, rounded at apex, nearly 10 mm. long.

Type in the U. S. National Herbarium, no. 1,152,618, collected at San Salvador, Salvador, in 1923, by Dr. Salvador Calderón (no. 1557). Sterile specimens which probably represent the same species were collected at Comasagua in December, 1922, by Dr. Calderón (no. 1555).

The Salvadorean tree is related to **Amerimnon lineatum** (Pittier) Standl.<sup>6</sup> and **A. retusum** (Hemsl.) Standl.,<sup>7</sup> of Costa Rica and Panama, but differs from both in its perfectly glabrous leaflets, which are also more numerous and narrower. The vernacular name is *funera*. The wood is highly valued for cabinet work and for general construction purposes.

*Amerimnon lineatum*, described from the Nicoya Peninsula of Costa Rica, also has been collected at San Salvador, where it bears the name of *funera*. Dr. Calderón states that the trees of *A. cuscatlanicum* are leafless during the dry season, but that in the middle of March the young leaves and flowers are produced, the flowers, however, lasting only two or three days. The stipules are conspicuous upon the very young branches, but quickly fall.

<sup>6</sup> *Dalbergia lineata* Pittier, Journ. Washington Acad. Sci. 12: 63. 1922.

<sup>7</sup> *Dalbergia retusa* Hemsl. Diag. Pl. Mex. 8. 1878.

The specific name is derived from Cuscatlán, the aboriginal name of the Valley of San Salvador and of its principal city.

**Amerimnon melanocardium** (Pittier) Standl.

*Dalbergia melanocardium* Pittier, Journ. Washington Acad. Sci. **12**: 57. 1922.

The type of this species was collected in the Department of Santa Rosa, Guatemala. It has been recollected recently at Santa Tecla, Salvador, by Dr. Salvador Calderón (no. 1517), who reports the vernacular name as *chapulaltapa*, a name applied in Salvador to several leguminous trees of various genera.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

WASHINGTON ACADEMY OF SCIENCES

176TH MEETING

The 176th meeting of the ACADEMY was held jointly with the Geological Society of Washington, the Biological Society of Washington, and the Botanical Society of Washington in the Auditorium of the Interior Building, the evening of Wednesday, March 14, 1923. The evening was devoted to a symposium upon *The fossil swamp deposit at the Walker Hotel site*, Connecticut Avenue and De Sales Street, Washington, D. C. The program was as follows:

C. K. WENTWORTH. *The geologic relations.* (Read with supplemental remarks by L. W. STEPHENSON.)

E. BROWN, Department of Agriculture. *Seeds and other plant remains.* (Presented by FREDERICK V. COVILLE.)

E. W. BERRY, Johns Hopkins University. *The plant remains and their significance.*

ALBERT MANN, Carnegie Institution. *The remarkable fresh water diatom flora from the swamp deposit, and its significance.*

LAURENCE LA FORGE. *The physiographic relations of the swamp deposit.*

These addresses will be published in full in the JOURNAL of the Washington Academy of Sciences.

177TH MEETING

The 177th meeting of the ACADEMY was held jointly with the Philosophical Society of Washington, the Washington Society of Engineers, and the American Society for Steel Treating, in the Auditorium of the Interior Building, the evening of Saturday, March 31, 1923. Dr. WALTER ROSENHAIN, F. R. S., of the National Physical Laboratory, England, delivered an address entitled, *The structure and constitution of alloys.*

Dr. ROSENHAIN discussed the general theory of the constitution of ferrous and non-ferrous alloys, the construction of constitutional diagrams which represent graphically the transformations that occur in a metal or an alloy on cooling or heating, their interpretation and relation to the physical properties of alloys. Lantern slides of typical constitutional diagrams were shown and discussed. The question of laboratory equipment for the study of the structure and physical properties of alloys was next considered, and many interesting photographs and diagrams were shown of apparatus developed