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BOTANY.—*The genus Sanchezia in Peru.*¹ E. C. LEONARD, U. S. National Museum. (Communicated by E. P. KILLIP).

The genus *Sanchezia*, belonging to the family Acanthaceae, consists mainly of shrubs having large, firm, subentire leaves, which are either bright green or, in a few species, conspicuously variegated along the main veins. The flowers, arranged in spikes or panicles, have tubular, small-lobed, red, yellow, or purple corollas. Inserted at the base of the corollas are two pairs of stamens, one pair long and usually exerted, the other shorter and sterile (staminodes). Floral bracts are present in all the species. In some they are small and inconspicuous, but in others they are large and bright red or yellow. The brilliant color of the inflorescence as a whole, in contrast to the bright green of the leaves, adds greatly to the attractiveness and beauty of these plants. They grow wild in the wet forest regions of the northern Andes, but being easily adaptable to cultivation they have been carried to widely separated countries, where, either as greenhouse plants or escapes, they readily flourish. I have examined such collections from Costa Rica, Cuba, Java, and Amboina.

Since the publication of an earlier paper² on *Sanchezia*, a large number of Peruvian specimens have been submitted to me for identification, among these nine undescribed species. It seems well worth while, therefore, to bring together in a single paper descriptions of all the Peruvian species (21) now known. The recent material has been obtained largely through the collecting of E. P. Killip and A. C. Smith, Llewelyn Williams, and Guillermo Klug. Further exploration will doubtless bring to light many additional species in this interesting and complex group.

¹ Published by permission of the Secretary of the Smithsonian Institution. Received January 22, 1932.

² E. C. Leonard, *Notes on the genus Sanchezia*. This Journal, 16: 484-492. 1926.

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KEY TO THE PERUVIAN SPECIES

Calyx lobes lanceolate, slender-acuminate.

Bracts 6.5 to 7 cm. long..... 1. *S. filamentosa*.

Bracts 2 cm. long or less.

Sterile bracts 1 to 1.5 cm. long, 4 to 5 mm. wide; corolla puberulent.

2. *S. williamsii*.

Sterile bracts 4 to 5 mm. long, 1 to 2 mm. wide; corolla glabrous.

Leaf blades large, up to 25 cm. long and 12 cm. wide, glabrous; stamin-

odes 2.5 cm. long, pilose..... 3. *S. oxysepala*.

Leaf blades smaller, up to 11 cm. long and 3.5 cm. wide; staminodes

1.8 cm. long or less, glabrous..... 4. *S. sprucei*.

Calyx lobes oblong, acute to rounded.

Bracts small, shorter than the calyx (sometimes exceeding the calyx in no. 5).

Inflorescence of 1 or more slender unilateral spikes (imperfectly unilateral in no. 5).

Leaves elliptic, abruptly narrowed at base, less than twice as long as broad; bracts 3 to 6 mm. long..... 5. *S. sylvestris*.

Leaves oblong-elliptic, gradually narrowed to base, more than twice as long as broad; bracts 8 to 25 mm. long.

Bracts acuminate, 1.6 to 2.5 cm. long, often equaling or exceeding the calyx..... 6. *S. rosea*.

Bracts obtuse or acute, 1.5 cm. long or less, much shorter than the calyx.

Corolla pubescent; calyx segments 1.7 to 2 cm. long; bracts glabrous..... 7. *S. loranthifolia*.

Corolla glabrous; calyx segments 1.4 to 1.6 cm. long; bracts puberulent..... 8. *S. tigrina*.

Inflorescence compact, not unilateral.

Leaves rounded or obtuse at base; flowers sessile in the axils of the bracts..... 9. *S. conferta*.

Leaves acute at base; flowers crowded at the ends of the peduncles.

10. *S. capitata*.

Bracts large, longer than the calyx and concealing it.

Leaves pubescent..... 11. *S. ovata*.

Leaves glabrous.

Bracts connate at least to middle.

Lateral nerves 15 to 17 to a side; corolla lobes 5 mm. long.

12. *S. cyathibracteata*.

Lateral nerves 9 to 12 to a side; corolla lobes 3 mm. long.

13. *S. pennellii*.

Bracts not connate.

Corolla manifestly pubescent.

Bracts and bractlets pubescent; corolla 4 cm. long or less.

14. *S. oblonga*.

Bracts and leaflets glabrous; corolla 5 to 6 cm. long.

15. *S. macbridei*.

Corolla glabrous, or with a few hairs near the tip of the lobes.

Leaves gradually narrowed into winged petioles.

Corolla red; staminodes about 3 mm. long, glabrous above.

16. *S. peruviana*.

Corolla yellow; staminodes about 2 cm. long, pilose above.

17. *S. flava*.

Leaves plainly differentiated into leaf blade and petiole.

Corolla red.

Leaf blades entire or undulate; staminodes averaging 10 mm. long..... 18. *S. rubriflora*.

Leaf blades coarsely crenate-dentate; staminodes averaging 4 mm. long..... 19. *S. pulchra*.

Corolla yellow.

Leaf blades ovate, obtuse or rounded at base; inflorescence capitate or a short congested spike; staminodes glabrous or sparingly pubescent above..... 20. *S. stenantha*.

Leaf blades oblong, elliptic, or oblong-obovate, narrowed at base; inflorescence spicate; staminodes pilose above.

21. *S. killipii*.

1. *Sanchezia filamentosa* Lindau, Bull. Herb. Bois. II. 4: 314. 1904.

Stem subquadrangular, pubescent; petioles 3 to 7 cm. long, pubescent; leaf blades ovate, up to 30 cm. long, 12 cm. wide, obliquely acuminate at apex, slightly narrowed at base, the nerves and midrib pubescent, the cystoliths 0.5 mm. long; inflorescence a terminal panicle, the branches unilateral, the bracts opposite, one sterile the other subtending 2 to 4 flowers; bracts and bractlets up to 7 cm. long, 3 to 5 mm. wide at base, produced into a long slender tip; calyx segments linear-lanceolate, 3.5 to 6 cm. long, 3 to 4 mm. wide at base, pubescent; corolla purple, 4.5 cm. long, pubescent toward tip, the lobes 3.5 mm. in diameter; stamens and staminodes pubescent at base, pilose above, the staminodes about 2 cm. long, slender and narrowly capitate.

Type collected near Pongo de Cainarachi, Department of Loreto, Peru, by E. Ule (no. 6401).

No material is available for my examination and the above description has been compiled from the original. This species should be easily recognized by its extremely long slender bracts and calyx segments.

2. *Sanchezia williamsii* Leonard, sp. nov.

Frutex, ramis gracilibus subtetragonis glabris vel pubescentibus; foliis ellipticis vel leviter obovatis basi acutis vel breviter in petiolum decurrentibus, apice acuminatis, margine integerrimis vel undulatis, glabris, nervis fulvopilosis exceptis, cystolithis conspicuis; spica interrupta; bracteis lanceolatis pubescentibus dense ciliatis; bracteolis anguste lanceolatis; calycis laciniis anguste lanceolatis; corolla rubra puberula.

Shrub; stem slender, quadrangular with rounded angles, glabrous or slightly pubescent at the nodes; petioles 2 to 4 cm. long, channeled, glabrous, or pubescent above; leaf blades elliptic or slightly obovate, up to 16 cm. long, 6.5 cm. wide, acuminate at apex, acute at base and subdecurent on the petioles, entire or undulate, glabrous except the nerves and midrib, these prominent and pilose with yellowish-brown ascending or spreading hairs 0.5 mm. long, the cystoliths 0.25 to 0.5 mm. long, prominent and numerous on upper surface, less so on lower, crowded and parallel on nerves and midrib; inflorescence an interrupted spike 10 to 22 cm. long, the lowermost internode about 5 cm. long, the others successively shorter toward the summit, all pubescent with ascending hairs up to 1 mm. long; bracts lanceolate, 10

to 15 (occasionally 20) mm. long, 3 to 5 mm. wide (bract subtending the flowers slightly larger than the opposite sterile one), acute or acuminate at apex, pubescent with ascending hairs, densely ciliate, the cystoliths prominent and crowded; flowers one to several, crowded on a short peduncle 1 to 5 mm. long; bractlets linear-lanceolate, otherwise similar to the bracts; calyx 2 to 2.8 cm. long, the segments linear-lanceolate, 2 to 3 mm. wide, sparingly pubescent without, densely so within, the hairs ascending; corolla (immature) red (?), puberulent, the lobes 2 mm. long, 1.5 mm. wide, shallowly emarginate; filaments glabrous; staminodes 3 mm. long (?); style 4 cm. long, glabrous.

Type in the U. S. National Herbarium, no. 1,444,810, collected at San Roque, Department of San Martín, Peru, altitude 1,350 to 1,500 meters, January or February, 1930, by Llewelyn Williams (no. 7701). Williams' no. 7215 from the same locality also belongs to this species.

This is closely related to *S. oxysepala*, but can be distinguished readily by its simple spike, its denser pubescence, and its larger bracts (10 to 15 mm. long). In *S. oxysepala* the spikes are sparingly branched at the base and the bracts are 8 mm. long or less.

3. *Sanchezia oxysepala* Mildbr. Notizbl. Bot. Gart. Berlin 9: 983. 1926.

Stem quadrangular, glabrous; petioles 2 to 5 cm. long; leaf blades elliptic-ovate, up to 25 cm. long, 12 cm. wide, acuminate, repand-dentate, glabrous; inflorescence terminal, of one to several unilateral spikes; bracts opposite, those subtending the flowers 6 to 7 mm. long, the sterile one much smaller; bractlets 8 mm. long, 2 mm. wide; sepals linear-subulate, 2.5 to 3 cm. long, 2.5 mm. wide; corolla 5 cm. long, the lobes 5 to 6 mm. long, 4 mm. wide; stamens exserted, pilose; staminodes 2.5 cm. long, capitate, pilose.

Type collected at mouth of Río Santiago, Department of Loreto, Peru, by G. Tessmann (no. 3874a). Photograph in the U. S. National Herbarium and in the herbarium of the New York Botanical Garden.

No actual specimens have been seen by the writer.

4. *Sanchezia sprucei* Lindau, Bull. Herb. Boiss. 5: 648. 1897.

Stem terete, pubescent; petioles 6 to 12 mm. long, pubescent; leaf blades elliptic, up to 11 cm. long, 4.5 cm. wide, acute at apex and base, sparingly pilose, the cystoliths prominent; inflorescence terminal, of one or more interrupted spikes; bracts (one subtending the flower, the opposite one sterile) ovate, 7 to 13 mm. long, 2 to 5 mm. wide, acuminate, pilose; bractlets lanceolate, 1.3 cm. long, 4 mm. wide; calyx segments 2 to 2.2 cm. long, 3.5 to 4.5 mm. wide, the margin pilose and subhyaline; corolla 3.8 cm. long, 9 mm. wide at middle, the lobes 3 mm. in diameter; stamens exserted, the filaments sparingly pilose; anthers 4 mm. long; staminodes 1.5 to 1.8 cm. long, glabrous; style 4.5 cm. long; stigma 4 mm. long; capsule 1.6 cm. long, 8-seeded.

Type collected near Tarapoto, Peru, by R. Spruce (no. 4325). Type collection in the Gray Herbarium; photograph in the U. S. National Herbarium.

Near *S. oxysepala*, but distinguished from that species by the smaller leaves, pubescent stems, and the shorter glabrous staminodes.

5. *Sanchezia sylvestris* Leonard, sp. nov.

Frutex, ramis subtetragonis glabris; foliis ellipticis vel oblongo-ellipticis basi obtusis apice abrupte breviterque acuminatis glabris, margine sinuato-

dentato; inflorescentia terminali paniculata; bracteis oppositis ovatis acutis subtiliter ciliatis; bracteolis ovatis obtusis parce puberulis ciliatis; calycis laciniis oblongis paullum inaequalibus; corolla punicea glabra, lobis ciliatis exceptis; filamentis parce pilosis; staminodiis basi tomentosis apice glabris.

Shrub 1 meter high; stem quadrangular with rounded angles, glabrous; petioles 2 to 3 cm. long, glabrous; leaf blades elliptic to oblong-elliptic, up to 17 cm. long, 10 cm. wide, abruptly narrowed to a slender tip, obtuse at base, shallowly sinuate-dentate, glabrous, the upper surface marked with numerous, very minute, papillate projections, the cystoliths rather numerous and prominent, closely parallel on the nerves and midrib; inflorescence a terminal panicle about 20 cm. long, composed of slender unilateral spikes; bracts opposite (one subtending a flower, the other sterile), ovate, 3 to 6 mm. long, 1 to 2 mm. wide, acute, minutely ciliate; bractlets ovate, 4 to 5 mm. long, 3 mm. wide, obtuse, sparingly puberulent and ciliolate; calyx segments oblong, slightly unequal, 9 to 10 mm. long, 2 to 3 mm. wide, obtuse and apiculate at apex, glabrous or inconspicuously and sparingly puberulent, furfuraceous toward tip, ciliolate; corolla 4 cm. long, pink, glabrous (except the finely ciliate lobes), 3 mm. broad at base, 7 to 8 mm. broad at throat, the lobes 3 mm. long, 2.5 mm. wide, emarginate; stamens 3.5 to 4 cm. long, the filaments flat and sparingly pilose, the anthers 5 mm. long; staminodes 1.5 cm. long, 0.5 mm. broad at base, flat and tomentose toward base, the upper portion glabrous, very slender and narrowly spatulate at tip; style 4 to 5 cm. long, glabrous; capsule 1.2 cm. long, 3 mm. broad, glabrous, or with a few appressed hairs near the tip.

Type in the U. S. National Herbarium, no. 1,461,741, collected in dense forest between Yurimaguas and Balsapuerto, Department of Loreto, Peru, altitude 135 to 150 meters, August 26, 1929, by E. P. Killip and A. C. Smith (no. 28093). Klug's 1653, collected in the Río Putumayo forest, is also of this species.

Sanchezia sylvestris is readily distinguished by its minute bracts, which are seldom more than 5 mm. long. In all other Peruvian species the bracts are 10 mm. long or more.

6. *Sanchezia rosea* Leonard, sp. nov.

Frutex, ramis subtetragonis glabris; foliis oblongo-ellipticis glabris, apice acuminatis basi acutis, margine leviter crenato-dentato; spica subunilateralis; bracteis ovato-lanceolatis glabris vel subtiliter ciliatis; bracteolis oblongo-ovatis glabris; calycis laciniis oblongis apice rotundatis et mucronulatis; corolla lutea glabra, lobis parce ciliatis exceptis; staminodiis basi tomentosis apice pilosis.

Low shrub; stem quadrangular with rounded angles, glabrous; petioles 2 to 4 cm. long, glabrous; leaf blades oblong-elliptic, up to 24 cm. long, 9 cm. wide, acuminate at apex, acute at base, shallowly crenate-dentate except the basal third (here entire), glabrous, the upper surface bearing minute papillate projections but these less numerous and conspicuous than in *S. sylvestris*, the cystoliths 0.5 mm. long; inflorescence spicate, imperfectly unilateral; bracts opposite (one subtending a sessile cluster of several flowers, the other slightly smaller, sterile, or subtending a single flower), ovate-lanceolate, 1.6 to 2.5 cm. long, 6 to 11 mm. wide near base, gradually narrowed to a slender tip, glabrous or minutely ciliate, the cystoliths parallel and rather prominent; bractlets oblong-ovate to oblong, 6 to 16 mm. long, 2 to 5 mm.

wide, glabrous; calyx segments oblong, equal or nearly so, 1.5 to 1.8 cm. long, 2 to 4 mm. wide, rounded and mucronulate at apex, conspicuously puberulent and ciliate at tip, otherwise glabrous, the cystoliths minute and parallel; corolla light red, glabrous without except for a few scattered hairs on the margin of the lobes, glabrous within except for a white tomentum about the insertion of the stamens, 4 to 5 cm. long, 3 mm. broad at base, 1 cm. broad at throat, slightly constricted at mouth, the lobes 3 mm. long, 2 mm. wide, rounded and emarginate at apex; stamens exerted about 5 mm., the filaments sparingly pilose, the anthers 5 mm. long; staminodes 1.8 cm. long, ending in a flat spatulate tip 0.75 mm. wide, white-tomentose at base, otherwise pilose with spreading hairs 1 to 2.5 mm. long; style slightly exceeding the stamens.

Type in the U. S. National Herbarium, no. 1,461,695, collected in woods along the lower Río Huallaga, Yurimaguas, Department of Loreto, Peru, altitude about 135 meters, August 25, 1929, by E. P. Killip and A. C. Smith (no. 28040).

Sanchezia rosea is related to *S. tigrina*, from which it differs mainly in its thinner leaf blades, longer bracts, and pilose staminodes. Although it agrees with *S. loranthifolia* in having pilose staminodes, it does not possess the puberulent corolla and firm dark leaf blades of that species.

7. *Sanchezia loranthifolia* Lindau, Bull. Herb. Boiss. II. 4: 314. 1904.

Stem quadrangular, glabrous; leaf blades oblong, up to 18 cm. long and 5 cm. wide, acuminate at apex, narrowed at base to a short petiole, glabrous, firm and dark colored, the cystoliths conspicuous; inflorescence a terminal panicle, the flowers in clusters of 4 to 6 crowded in the axil of one of each pair of bracts; bracts ovate, obtuse, up to 1.6 cm. long, 6 mm. wide; bractlets up to 1.4 cm. long, 3.5 mm. wide; calyx segments unequal, 1.7 to 2 cm. long, 3 to 4 mm. wide; corolla red, 4 mm. wide at base, 9 mm. wide at throat, puberulent toward tip, the lobes 5 mm. long, 3 mm. wide; stamens 4.2 cm. long, pilose; staminodes 1.4 to 1.7 cm. long, pilose, spatulate at tip; style 5 cm. long, glabrous; capsule 1.7 cm. long, 2.5 mm. in diameter, glabrous.

Type collected along the Cumbaso River, near San Pedro, Department of Loreto, Peru, by E. Ule (no. 6820).

I have seen no material of this species, and the above description is compiled from the original.

8. *Sanchezia tigrina* Leonard, sp. nov.

Frutex, ramis tetragonis glabris, nodis parce pubescentibus exceptis; foliis oblongo-ellipticis basi acutis, apice acuminatis glabris, marginibus integerrimis vel undulatis; inflorescentia terminali paniculata, spicis pluribus unilateralibus; bracteis oblongis vel oblongo-ovatis puberulis, margine subscarioso; bracteolis oblongis; corolla glabra, lobis parce ciliatis exceptis; staminodiis basi tomentosis apice glabris.

Shrub; stem quadrangular, glabrous or sparingly pubescent at nodes; petioles up to 2.5 cm. long, channeled, sparingly puberulent above, glabrous beneath; leaf blades oblong-elliptic, up to 25 cm. long, 8 cm. wide, narrowed and acuminate at apex, narrowed at base, firm, drying olive-brown, entire and undulate, both surfaces glabrous, the upper marked by numerous minute papillae, the cystoliths 0.5 to 0.75 mm. long; inflorescence a terminal panicle

consisting of several unilateral spikes, the lowermost node 1 to 3 cm. long, the others successively shorter, pubescent, the flowers in clusters of 3 or 4, or solitary, sessile in the axil of one of each pair of bracts, the opposite bract sterile; bracts oblong to oblong-ovate, up to 1.7 cm. long, 7 mm. wide, acute at apex, puberulent, the margin subscarious, ciliolate; bractlets oblong, up to 15 mm. long, 5 mm. wide, obtuse; calyx segments oblong, 1.5 to 1.7 cm. long, 3 to 5 mm. broad, obtuse and sparingly pubescent at apex, the margin scarious; corolla glabrous except for a few scattered hairs at the margin of the lobes, 4.5 cm. long, 3 mm. broad at base, slightly contracted, 1.2 cm. broad at mouth, the lower portion of the throat streaked with brown (dry flower), the lobes 5 mm. long, 4 mm. wide, shallowly emarginate, conspicuously reticulate; filaments white-tomentose at base, sparingly pilose above; anthers 4 mm. long; staminodes 1.5 to 1.8 cm. long, white-tomentose below, glabrous above, narrowly capitate; style 5 to 6 cm. long, glabrous; stigma linear, one lobe 2 mm. long, the other vestigial.

Type in the U. S. National Herbarium, no. 1,444,803, collected at Iquitos, Department of Loreto, Peru, altitude 120 meters, October, 1929, by Llewelyn Williams (no. 3622).

This species is closely related to *S. loranthifolia*, but is distinct in its glabrous corolla, puberulent bracts, and smaller calyx. The specific name was chosen because of the peculiar markings on the lower part of the corolla throat, a character found in only a few species of *Sanchezia*.

The color of the flowers can not be determined with any degree of certainty from the type. Judging from the closely related species *S. sylvestris*, *S. rosea*, and *S. loranthifolia*, it may be inferred that they are either red or pink.

9. *Sanchezia conferta* Leonard, sp. nov.

Frutex, ramis tetragonis glabris, nodis pubescentibus exceptis; foliis ovatis glabris, basi rotundatis vel obtusis, apice acuminatis, margine sinuato-dentato; spica densa, floribus confertis; bracteis ovatis acutis vel obtusis; bracteolis oblongis obtusis pubescentibus; calycis laciniis oblongo-lanceolatis paullum inaequalibus; corolla glabra, lobis pilosis exceptis; staminodiis angustis glabris vel parce pubescentibus.

Stem quadrangular, glabrous or pubescent at the nodes; petioles up to 2 cm. long, channeled, glabrous; leaf blades ovate, up to 14 cm. long and 6 cm. wide, acuminate at apex, rounded or obtuse at base, shallowly sinuate-dentate, glabrous, the cystoliths about 0.5 mm. long, inconspicuous, surrounded by minute papillate projections; inflorescence terminal, the flowers numerous and crowded in the axils of the bracts, the internodes short and concealed by the flowers, pubescent; bracts ovate, up to 1.5 cm. long, acute or subobtuse at apex; bractlets oblong, subobtuse, pubescent, much smaller than the bracts; calyx segments subequal, oblanceolate, 2 to 2.3 cm. long, 2 to 2.5 mm. wide at base, 2.5 to 4 mm. wide above middle, acute at apex, thin, pubescent without with ascending hairs up to 0.75 mm. long, glabrous within; corolla 4.5 cm. long, 2.5 mm. broad at base, 8 mm. broad at throat, glabrous except for the lobes, these 4 mm. long, 3.5 mm. wide, emarginate, rather conspicuously pilose with hairs up to 0.5 mm. long; filaments white-tomentose at base, sparingly pilose above; staminodes 10 mm. long, linear, glabrous, or bearing a few minute hairs at the margin; style glabrous.

Type in the U. S. National Herbarium, no. 1,359,680, collected in dense

forest on Pichis trail to Yapas, Department of Junín, Peru, altitude 1,350 to 1,600 meters, June 29, 1929, by E. P. Killip and A. C. Smith (no. 25479).

Although evidently related to the small-bracted group of *Sanchezia* (*S. sylvestris*, *S. rosea*, *S. loranthifolia*, and *S. tigrina*), this species is strongly differentiated by its compact inflorescence, larger calyx, and shorter staminodes.

10. *Sanchezia capitata* (Nees) Lindau, Bull. Herb. Boiss. II. 4: 315. 1904.

Ancylogyne capitata Nees in DC. Prodr. 11: 222. 1847.

Shrub up to 2 meters high; stem subquadrangular, glabrous; petioles 3 to 4 cm. long, glabrous; leaf blades ovate to obovate, up to 28 cm. long, 9 cm. wide, acuminate, gradually narrowed from about the middle to base, undulate-crenate, entire at base, glabrous; inflorescence terminal, the flowers crowded in several compact heads up to 4 cm. broad on stout peduncles about 3 cm. long; bracts red, oblong, up to 5 mm. long, acute; calyx segments (mature) linear-oblong, 3.3 to 3.5 cm. long, 4 to 5 mm. wide, obtuse or rounded at apex, glabrous; corolla 2.5 cm. long, red; capsule 1 to 1.2 cm. long, 3 to 4 mm. broad; seeds lenticular, 4.5 mm. broad, about 1 mm. thick, brown.

Type collected at Pangoa, Peru, by A. Mathews (no. 1230).

Peruvian specimen examined.—

JUNÍN: Pichis Trail, between San Nicolas and Azupizú, 650 to 900 meters, Killip & Smith 26092.

This specimen agrees very well with Nees' brief description of *Ancylogyne capitata*, at least in respect to the leaves and inflorescence. The Killip and Smith plant is well beyond the flowering stage, and no corollas are present.

11. *Sanchezia ovata* R. & P. Fl. Peruv. Chil. 1: 7. pl. 8, fig. c. 1798.

Sanchezia glabra Pers. Syn. Pl. 1: 24. 1805.

Stem quadrangular, glabrous; leaf blades ovate, acuminate, entire, pubescent; inflorescence a terminal spike, the flowers sessile and crowded in the axils of the purple, ovate, acute, concave bracts; bractlets oblong, emarginate, purplish; calyx segments oblong, rounded; corolla yellow, glabrous; filaments hirsute except at base; staminodes about 4 mm. long.

Reported from Cuchero, Pozuzo, and Pillao, Peru, by Ruiz and Pavon.

As no material is available for my examination, the description is compiled from the original.

12. *Sanchezia cyathibracteata* Mildbr. Notizbl. Bot. Gart. Berlin 9: 267. 1925.

Stem stout, glabrous; petioles 4 to 6 cm. long; leaf blades oval, up to 30 cm. long, 16 cm. wide, obtuse at apex, subcuneate at base, coarsely crenate-undulate, the nerves 15 to 17 on each side of midrib; inflorescence a spike up to 20 cm. long, the internodes 3 to 4 cm. long; bracts ovate, 4 to 5 cm. long, connate to middle or beyond; flowers numerous, sessile; calyx segments unequal, 1.3 to 1.6 cm. long, 3 to 4 mm. wide, rounded at apex; corolla glabrous, yellow, 5 cm. long, the throat 8 mm. broad, the lobes 5 mm. long, 3 mm. broad; filaments 4 cm. long; anthers 6 mm. long; staminodes 5 mm. long.

Type collected at the mouth of the Capanahua River, eastern Peru, by G. Tessmann (no. 3134).

The relationship between this species, the type of which I have not seen, and *S. pennellii* is extremely close, the main differences lying in the number of lateral nerves of the leaves and in the size of the corolla lobes. Further material may show that the two are conspecific.

13. *Sanchezia pennellii* Leonard, Journ. Washington Acad. Sci. 16: 488. 1926.

Stem obscurely quadrangular, glabrous; petioles up to 4 cm. long; leaf blades elliptic to elliptic-obovate, up to 30 cm. long, 13 cm. wide, abruptly narrowed to a blunt tip, narrowed at base, shallowly crenate, glabrous, the lateral nerves 9 to 12 to a side; inflorescence a terminal spike; bracts ovate, up to 5 cm. long and 3.5 cm. wide, connate at base, acute to obtuse at apex, red; sepals ligulate-obovate, 1 to 1.5 cm. long, 2 to 5 mm. broad; corolla yellow, 4 to 5 cm. long, 6 to 7 mm. broad at throat, the lobes 3 mm. long, rounded and emarginate at apex; filaments pilose; staminodes 4 to 5 mm. long; style glabrous.

Type collected at Vuelta de Acuña, Magdalena River, Department of Antioquia, Colombia, by F. W. Pennell (no. 3798).

RANGE: Panama; Colombia; Peru.

Peruvian specimens examined.—

LORETO: Dense forests at Yurimaguas, Lower Río Huallaga, about 135 meters, *Killip & Smith* 27993. Dense forests, Santa Rosa, lower Río Huallaga below Yurimaguas, 135 meters, *Killip & Smith* 28829.

The inflorescence of both Peruvian specimens is immature and the corollas are not fully developed; the leaves and bracts, however, agree well with those of specimens from Panama and Colombia.

14. *Sanchezia oblonga* R. & P. Fl. Peruv. Chil. 1: 7. *pl. 8, fig. b.* 1798.

Sanchezia hirsuta Pers. Syn. Pl. 1: 24. 1805.

Stem glabrous; petioles winged, connate; leaf blades oblong-lanceolate, acuminate, glabrous; inflorescence a terminal spike with a few short lateral branches; bracts ovate, red, pubescent; bractlets linear, hirsute, red; calyx segments rounded at apex, yellow; corolla yellow; filaments hirsute; staminodes 4 to 5 mm. long.

Reported from Cuchera, Pozuzo, and Pillao, Peru, by Ruiz and Pavon.

15. *Sanchezia macbridei* Leonard, Journ. Washington Acad. Sci. 16: 487. 1926.

Stem glabrous; petioles winged; leaf blades up to 30 cm. long, 12 cm. wide, acuminate at tip, narrowed to a somewhat clasping base, undulate-dentate, glabrous; inflorescence spicate, or occasionally with a few lateral branches; bracts ovate, up to 5 cm. long, 3 cm. wide, red, glabrous, the lower long-acuminate, the upper obtuse at apex; bractlets oblong, up to 2.5 cm. long, 1 cm. wide, obtuse at tip; sepals 1.5 to 1.8 cm. long, 2 to 4 mm. wide, rounded at apex; corolla yellow, the tube up to 5 cm. long, finely appressed-pubescent, the lobes 4 to 5 mm. long, 2.5 mm. wide; filaments 4.5 cm. long, pubescent below with white hairs 0.5 mm. long, sparingly pilose above with hairs up to 1.5 mm. long; staminodes 1.5 to 1.8 cm. long, white-pubescent at base, glabrous at tip; style 6 cm. long, pubescent toward base.

Type collected at the mouth of the Chinchao River, Pampayacu, Peru by J. F. Macbride (no. 5056).

Peruvian specimens examined.—

LORETO: Soledad, Río Itaya, 110 meters, in dense forests, *Killip & Smith* 29549.

HUÁNUCO: Pampayacu, *Macbride* 5056 (type).

JUNÍN: La Merced, 700 meters, thickets, *Killip & Smith* 23411.

AYACUCHO: Río Apurímac Valley, near Kimpitiriki, 400 meters, edge of forest along beach, *Killip & Smith* 22954. Densely forested valley at Ccarrapa, between Huanta and Río Apurímac, 1,500 meters, *Killip & Smith* 23205.

This species is readily recognized by its large bracts and its conspicuous, bright yellow, pubescent flowers.

16. *Sanchezia peruviana* (Nees) Rusby, Mem. Torrey Club 6: 103. 1896.

Ancylogyne peruviana Nees in DC. Prodr. 11: 222. 1847.

Stem quadrangular, glabrous; leaf blades oblong-elliptic or obovate, up to 35 cm. long, 15 cm. wide, acuminate at apex, narrowed from below middle to a winged petiole, sinuate-dentate, glabrous; inflorescence a terminal spike up to 20 cm. long, the lowermost internode up to 8 cm. long, the others successively shorter, the upper ones hidden by the flower clusters; bracts opposite, ovate, up to 3.5 cm. long, 4 cm. wide, obtuse, bright red, glabrous; bractlets oblong; calyx segments unequal, 2.2, 2.5, and 3 cm. long, 2 to 7 mm. wide, rounded at apex; corolla 4 cm. long, red, glabrous, or the lobes sparingly ciliate; filaments tomentose at base, pilose above, the hairs spreading, up to 2 mm. long; staminodes 2 to 3 mm. long, tomentose at base, glabrous above.

Type collected at Sesuija, Peru, by Mathews (no. 1221).

RANGE: Peru and Bolivia.

Peruvian specimens examined.—

SAN MARTÍN: San Roque, 1,350 to 1,500 meters, *Williams* 6933.

JUNÍN: Wooded valley, La Merced, 1,200 meters, *Schunke* 292; *Killip & Smith* 24080.

Sanchezia peruviana has inflorescence and flower parts similar to those of *S. munita* (Nees) Planch., a native of Brazil, but is distinguished by the character of the leaves. In *S. munita* the petioles are wingless, and the leaf blades, usually under 20 cm. in length, are entire. On the other hand, the petioles of *S. peruviana* are broadly winged and the blades are sinuate-dentate.

17. *Sanchezia flava* Leonard, sp. nov.

Frutex, ramis tetragonis glabris; foliis oblongo-ellipticis vel oblongo-obovatis glabris, apice acuminatis, basi acutis, margine sinuato-dentato; petiolis alatis; spica simplici vel parce divisa; bracteis ovatis, infimis acutis rubris, summis obtusis flavis; bracteolis oblongis; calycis laciniis oblongo-ovatis rotundatis inaequalibus; corolla lutea glabra, lobis parce ciliatis exceptis; staminodiis gracilibus pilosis.

Shrub 1 to 2 meters high; stem quadrangular, glabrous; leaves narrowed into short, winged petioles; leaf blades oblong-elliptic to oblong-obovate, up to 30 cm. long, 13 cm. wide, acuminate at apex, acute at base, rather shallowly sinuate-dentate, glabrous; inflorescence spicate, simple or bearing one or more branches at the basal node, the upper nodes hidden by the bracts; bracts ovate, up to 4 cm. long, 3 cm. wide, the lower acute and bright red, the upper obtuse and yellow; bractlets oblong; calyx segments unequal, oblong-ovate, 2 to 2.5 cm. long, 2 to 7 mm. wide, rounded at apex; corolla bright yellow, glabrous, or with a few minute hairs near the tip of the lobes,

about 5 cm. long, 7 mm. broad, the lobes suborbicular, about 3.5 mm. in diameter; filaments finely pubescent below, pilose above with hairs 2 mm. long; staminodes 2 cm. long, slender and pilose above; ovary glabrous; style 5 cm. long, rather densely pilose below with hairs 0.5 mm. long, glabrous above.

Type in the U. S. National Herbarium, no. 1,358,997, collected in dense forest of the Schunke Hacienda, above San Ramón, Department of Junín, Peru, altitude 1,400 to 1,700 meters, June 8, 1929 by E. P. Killip and A. C. Smith (no. 24640).

This differs from *S. peruviana* in its yellow flowers and long slender pilose staminodes.

18. *Sanchezia rubriflora* Leonard, sp. nov.

Frutex, ramis tetragonis glabris; foliis oblongo-ellipticis vel leviter obovatis glabris, apice acuminatis, basi acutis, margine integerrimo vel leviter crenato; spica terminali; bracteis infimis lanceolatis acuminatis, summis ovatis obtusis rubris; bracteolis oblongis obtusis; calycis laciniis paullum inaequalibus angustis oblongo-ovatis apice rotundatis glabris; corolla rubra glabra vel lobis apice parce pilosis; staminodiis angustis, basi tomentosis apice glabris.

Shrub 2 or 3 meters high; stem quadrangular, glabrous; petioles up to 4 cm. long, glabrous; leaf blades oblong-elliptic or slightly obovate, up to 25 cm. long, 12 cm. wide, acuminate at apex, acute or acutish at base, entire or shallowly crenate, glabrous (nerves and midrib bright yellow in *Macbride* 4665); inflorescence a terminal spike, the lowermost internode up to 9 cm. long, the others successively shorter, those near the tip hidden by the bracts; lowest pair of bracts lanceolate, 2 cm. long, 2 cm. wide near the base, gradually narrowed to a slender tip, the upper bracts ovate, smaller, obtuse, all red and glabrous; bractlets oblong, obtuse; flowers several in each axil; calyx segments subequal, narrowly oblong-ovate, 1.8 to 2 cm. long, 3 to 5 mm. wide, rounded at tip, glabrous; corolla red, glabrous or with a few hairs near tip of lobes, 4 to 5 cm. long, 2 mm. in diameter at base, 7 mm. wide above base, the lobes 3 mm. long, 2.5 mm. wide, emarginate; stamens 4 to 5 cm. long, the filaments white-tomentose below, sparingly pilose above with hairs 1 mm. long; staminodes linear, about 10 mm. long, white-tomentose below, glabrous above; ovary and style glabrous, or the style bearing a few long hairs near base.

Type in the U. S. National Herbarium, no. 1,460,617, collected in dense forest at Cahuapanas, Río Pichis, Department of Junín, Peru, altitude about 340 meters, July 20, 1929, by E. P. Killip and A. C. Smith (no. 26768).

Additional Peruvian specimens examined.—

LORETO: La Victoria, Amazon River, *Williams* 2880.

HUÁNUCO: Pozuzo, *Macbride* 4665.

This closely resembles *S. munita*, of western Brazil, but that species has staminodes about 2 mm. long (not 10 mm. long or more, as in *S. rubriflora*). *Macbride's* no. 4665 was erroneously cited in my previous paper as *S. peruviana*.

19. *Sanchezia pulchra* Leonard, sp. nov.

Frutex, ramis tetragonis glabris; foliis obovatis glabris, basi cuneatis, apice breviter acuminatis, margine crasse crenato-dentato; spica terminali; bracteis infimis lanceolatis glabris, reliquiis ovatis glabris rubris; bracteolis oblongis obtusis; calycis laciniis inaequalibus spathulatis; corolla luteo-

rubra glabra, lobis apice pilosis exceptis; staminodiis basi tomentosis, apice glabris.

Suffrutescent, 1 meter high; stem quadrangular, glabrous; petioles up to 6 cm. long, glabrous; leaf blades obovate, up to 30 cm. long, 16 cm. wide, rounded or abruptly narrowed to a short acumen, cuneate at base, coarsely crenate-dentate, glabrous; inflorescence a terminal spike, the flowers clustered in the axil of the bracts, the lowermost internode up to 5 cm. long, the others partially hidden by bracts and flowers; lowermost bracts lanceolate, up to 7 cm. long, 2.5 cm. wide near base and gradually narrowed to tip, the others ovate, acute, all dark red and glabrous; bractlets oblong, obtuse at apex; calyx segments unequal, spatulate, 1.4 cm. long, 3 to 4 mm. wide toward the rounded tip, gradually narrowed to 2 mm. at base, glabrous, the margin subscarios; corolla orange-red, glabrous except for a tuft of hairs at tip of lobes and a white tomentum at insertion of stamens, 4 to 4.5 cm. long, the tube 2 mm. broad, the throat 6 to 8 mm. broad, the lobes about 3 mm. long and broad, emarginate, reticulate-veined; filaments white-tomentose at base, pilose above with hairs up to 1 mm. long; staminodes 3 to 4 mm. long, white-tomentose except for the glabrous tip; ovary and style glabrous.

Type in the U. S. National Herbarium, no. 1,461,526, collected in dense forest at Puerto Arturo, lower Río Huallaga below Yurimaguas, Peru, August 24, 1929, by E. P. Killip and A. C. Smith (no. 27842).

Additional Peruvian specimens examined.—

LORETO: Forest, Mishuayacu, near Iquitos, 100 meters, *Klug* 667. Lower Río Huallaga, 155 to 210 meters, *Williams* 5143.

JUNÍN: Dense forest, Puerto Bermudez, 375 meters, *Killip & Smith* 26447.

This is distinguished from *S. rubriflora* and *S. pulchra* by its large, obovate, coarsely crenate-dentate leaves. It is further differentiated from *S. rubriflora* by its short staminodes.

Killip & Smith's 26447, from Puerto Bermudez, is doubtfully referred to *S. pulchra*. In this specimen the inflorescence is very immature, and the upper pair of leaves have broadly winged, clasping petioles, although the second pair are typically slender-petioled.

20. *Sanchezia stenantha* Leonard, Journ. Washington Acad. Sci. 16: 489. 1926.

Stem quadrangular; petioles slender, 4 to 6 cm. long; leaf blades ovate to oblong-ovate, up to 25 cm. long, 12 cm. wide, acuminate at apex, rounded or obtuse at base, entire or undulate, glabrous; inflorescence a terminal spike (occasionally capitate), the lowermost internode up to 7 cm. long, the others much shorter and hidden by the bracts; bracts ovate, concave, up to 4 cm. long, 2.5 cm. wide, obtuse or acutish at apex, bright red; bractlets oblong-obovate; sepals equal, obovate, narrowed to a slender base, rounded at apex, about 1.5 cm. long, 4 to 8 mm. wide; corolla bright yellow, glabrous (lobes sparingly ciliate), 4 to 5 cm. long, 6 to 7 mm. broad; filaments white-pubescent at base, sparingly pilose above with hairs about 1 mm. long; staminodes 1.3 to 1.4 cm. long, white-pubescent below, glabrous above; style glabrous.

Type collected at Pozuzo, by J. F. Macbride (no. 4634).

Peruvian specimens examined.—

HUÁNUCO: Pozuzo, 650 meters, *Macbride* 4634 (type).

JUNÍN: Dense forests, Yapas, Pichis Trail, 1,350 to 1,600 meters, *Killip & Smith* 25472. Thickets, Meriatiriani, Pichis Trail, 500 meters, *Killip & Smith* 26207. Dense forest, Río Paucartambo Valley, near Perene Bridge, 700 meters, *Killip & Smith* 25287.

A well-marked species, easily recognized by the ovate, nearly entire leaf blades with rounded bases, and by the large compact spike of bright yellow flowers.

21. *Sanchezia killipii* Leonard, sp. nov.

Frutex, ramis tetragonis glabris; foliis oblongo-ellipticis glabris utrinque acutis, margine undulato; spica terminali; bracteis acutis glabris; bracteolis oblongis obtusis; calycis laciniis oblongis inaequalibus obtusis glabris; corolla lutea glabra; staminodiis basi tomentosis, apice pilosis.

Shrub about 1 meter high; stem quadrangular, glabrous; petioles up to 1.5 cm. long, glabrous; leaf blades oblong-elliptic, up to 18 cm. long, 7 cm. wide, narrowed at both ends, glabrous, entire or shallowly undulate; inflorescence a terminal spike, the flowers clustered in the axils of the bracts (sometimes short secondary spikes present in the axils of the lower bracts), the lowermost internode 3.5 cm. long, the others successively shorter, about equaling the flower clusters; bracts (lowermost pair not seen) ovate, up to 2.2 cm. long, 1.8 cm. wide, acute, glabrous; bractlets oblong, obtuse; calyx segments oblong, subequal, 1.8 to 2 cm. long, 4 to 6 mm. wide, obtuse at apex, narrowed at base, glabrous; corolla yellow, glabrous except for a white tomentum at insertion of stamens, 4 cm. long, 3 mm. wide at base, 9 mm. wide at middle, 6 mm. wide at mouth, the lobes 3 mm. long, 3.5 mm. wide, emarginate; filaments white-tomentose at base, pilose above with hairs up to 2 mm. long; staminodes about 15 mm. long, white-tomentose below, pilose above, the hairs most numerous and longest just below the slightly enlarged curved tip; ovary and style glabrous.

Type in the U. S. National Herbarium, no. 1,462,404, collected in dense forests of Santa Rosa, lower Río Huallaga below Yurimaguas, Peru, altitude about 135 meters, Sept. 4, 1929, by E. P. Killip and A. C. Smith (no. 28967).

In the character of the staminodes this species agrees with *S. flava*, but can be distinguished by its well-defined, wingless petioles.

ENTOMOLOGY.—*New species of Sphingidae and Saturniidae in the U. S. National Museum.*¹ W. SCHAUS, Bureau of Entomology.
(Communicated by HAROLD MORRISON.)

The new species described herein have been received within recent times and are a valuable addition to the national collections. They include 15 new species, one subspecies, two races, and one aberration.

SPHINGIDAE

***Protoparce camposi*, new species**

Male.—Palpi iron gray above, white underneath. Head, collar, and tegulae iron gray; a white spot at base of antenna and at side of neck. Thorax dark olive gray. Abdomen above black, thickly mottled with white and

¹ Received January 13, 1932.



Leonard, E C. 1932. "The genus *Sanchezia* in Peru." *Journal of the Washington Academy of Sciences* 22, 125–137.

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