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TABLE OF CONTENTS

	PAGE
1. Two New Species of Palms from Nicaragua. By S. F. Glassman	1
2. Tropical American Plants, VI. By Louis O. Williams	11
3. Agriculture, Tehuacan Valley. By C. Earle Smith, Jr.	49
4. Flora, Tehuacan Valley. By C. Earle Smith, Jr.	101
5. Preliminary Studies in the Palm Genus <i>Syagrus</i> Mart. and Its Allies. By S. F. Glassman	145
6. Tropical American Plants, VII. By Louis O. Williams	165
7. Supplement to Orchids of Guatemala. By Donovan S. Correll	175
8. Preliminary Notes on Scrophulariaceae of Peru. By Gabriel Edwin	223
9. New Species in the Palm Genus <i>Syagrus</i> Mart. By S. F. Glassman	233
10. Tropical American Plants, VIII. By Louis O. Williams	247
11. Notes on the Flora of Costa Rica, I. By William C. Burger	273
12. A New <i>Eurystyles</i> from Nicaragua. By Alfonso H. Heller	279
13. New Species in the Palm Genus <i>Syagrus</i> Mart. By S. F. Glassman	285
14. A Revision of the Family Geastraceae. By Patricio Ponce de Leon	303
15. Studies in American Plants. By Dorothy N. Gibson	353
16. Two New Nicaraguan Juglandaceae. By Antonio Molino R.	357
17. Studies in the Palm Genus <i>Syagrus</i> Mart. By S. F. Glassman	363
18. Tropical American Plants, IX. By Louis O. Williams	401

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Biology

PRELIMINARY NOTES ON THE
SCROPHULARIACEAE
OF PERU

GABRIEL EDWIN

NEW SPECIES IN THE PALM GENUS
SYAGRUS MART.

S. F. GLASSMAN

IR 22 1968

TROPICAL AMERICAN PLANTS, VIII

LOUIS O. WILLIAMS

University of Illinois

MAR 20 1968

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VOLUME 31, NUMBERS 8, 9, 10

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PRELIMINARY NOTES ON THE
SCROPHULARIACEAE
OF PERU

GABRIEL EDWIN

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Preliminary Notes on the *Scrophulariaceae* of Peru

During preparation of the *Scrophulariaceae* for the *Flora of Peru*, specimens were studied which necessitated reconsideration of the generic limits within the tribe, *Gratiolae*. A number of others were taxa not yet described. Finally, the establishment of a new tribe appeared necessary.

This paper will concern itself with the first and third groups noted above as well as novelties of the second, except those in the genera *Calceolaria* and *Bartsia*.

Familial and generic limits of the "figworts" have been discussed almost since the establishment of the family in 1789. Opinion about these limits is far from unanimous today.

The genera occurring in Peru with the notable exception of *Calceolaria* (and to a lesser degree *Alonsoa* and *Bartsia*) have been elaborated elsewhere. None of the genera is represented in Peru by more than six species, most having fewer than four. At least two genera, *Maurandya* and *Antirrhinum*, are known only from cultivation.

In the course of time, evolution, natural selection and other processes have led to variation. However, in my opinion, not enough change is apparent to warrant the current generic separation in the *Gratiolae*. First, it is necessary to divide the *Gratiolae* into two subtribes.

Gratiolinae, Subtribus novum.

Capsula plerumque septicidalis, aliquando secundarius loculicidalis, findens ad basim aut si loculicidalis nunc sepalum extimum latissimum. Placenta simplex. Sepala plerumque discreta aut subdiscreta (*Linaria* spp. excepto), interdum late valde inaequalis. Lamina et capsula plerumque glanduloso-punctatis. Inflorescentia plerumque racemus simplex aut racimo interdum ferens flores fasciculatum et pedicellatum. Lobi corollae anticae plerumque interium glabrum.

Capsule usually septicidal, occasionally secondarily loculicidal, splitting to the base, or if loculicidal the outermost sepal broader than the others; placenta simple; sepals usually distinct or almost so, sometimes very unequal in width (*Bacopa*);

leaf-blades and capsules usually glandular-punctate; inflorescence usually simply racemose or the raceme sometimes with fascicles of pedicellate flowers; anterior lobes of the corolla usually smooth and glabrous within.

Type species: *Scoparia dulcis* L.

Mimulinae, Subtribus novum.

Mimulae Benth.

Capsula loculicidalis et sepalum extimum aequans cetera in late, aut indehiscens, secundarius vix aut haud septicidalis. Placenta ramosa. Sepala connata plus quam media longitudo. Lamina et capsula glabra aut pubescentia, non glanduloso-punctatis. Inflorescentia racemosa aut cymis axillariis unique terminans pedunculam basalis. Lobi corollae anticae 2-porcata et interium pubescentium.

Capsule loculicidal and the outermost sepal about equal to the others in width, or indehiscent (secondarily barely if at all septicidal); placenta branched; sepals united over half their length; leaves and capsules glabrous or pubescent but not glandular-punctate; inflorescence racemose or of axillary cymes one of which is terminal to the basal peduncle; anterior corolla lobes 2-ridged and pubescent internally.

Type species: *Mimulus ringens* L., of North America.

As now defined the Mimulinae consists of the genera *Mimulus* and *Leucocarpus*. The remaining genera of the *Gratiolae* pertain to the *Gratiolinae*.

Stemodia L., Syst. Nat. ed. 10, 1118. 1759. *Lendernia* Minod, Bull. Soc. Genève **10**: 240. 1918. *Unanuea* R. & P. ex Pennell, Proc. Acad. Nat. Sci. Phila. **72**: 160. 1920.

Lendernia according to Minod differed from *Stemodia* in the dehiscence of the capsule, the splitting in *Lendernia* almost reaching the base of the capsule while in *Stemodia* the rupture is complete. This is hardly of generic significance.

Unanuea, based on *Stemodia suffruticosa* HBK., proposed by Pennell was said to differ from *Stemodia* L. in having widely spreading corolla lobes, internally glabrous corollas, ebracteolate pedicels and sessile or clasping leaves. Without comment on the value of such characters, it is necessary only to note that Pennell annotated all specimens as *Stemodia suffruticosa* HBK. for at least 25 years after publication of his new genus in 1920.

Bacopa Aubl., Hist. Pl. Guiane Fran. **128**, t. 49. 1775 (nom. cons.). *Moniera* P. Br., Hist. Jam. 269. 1756. *Bramia* Lam., Encyc. Meth., Bot. **1**: 459. 1785. *Mecardonina* R. & P., Fl. Peruv. et Chil. Prod. 95.

1794. *Herpestis* Gaertn. f., Fruct. et Sem. Plant. 3: 186. 1807.
Macuillamia Raf., Neogenyton 2, 1825.

In 1920 and in 1935 Pennell (1920, 1946) divided *Bacopa* into a number of genera including all the above synonyms as well as *Pagesia* Raf., *Hydrantheium* HBK., *Niadothrix* Pennell and a few others. By 1946, after studying more material, especially of eastern South America, he united most of these segregates but retained *Mecardonia*, on the basis of capsule dehiscence, corolla color and anther position on the filament. These characters vary throughout *Bacopa*.

Pennell's treatments of the *Bacopa*-*Herpestis* "complex" are inadequate. The taxa concerned vary randomly in calyx lobe shape, stamen and anther characteristics, style branching, corolla color and in other ways.

At present, there probably is no truly satisfactory way to arrange the species. However, when treated as one genus, they are quite readily separable from the remainder of the *Gratiolae* on the basis of the structure of the calyx lobes, the basis used by Wettstein in 1891. While one character is usually considered insufficient for generic distinction, it should be kept in mind that in this case it is the best of poor choices. Uniting the taxa in one genus allows for ready identification and naming of the taxa concerned¹ and for the combining of random and overlapping variations.

Ouriseae, Tribus novem.

Antice lobi corollarum extimae et superpostae alabastrae. Stigmatis lobi conata; antherae divaricatae.

Anterior lobes of the corolla external and overlapping in bud; stigma lobes united; anthers divaricate.

Type species: *Ourisia chamydrifolia* Benth.

A unigeneric tribe, as circumscribed, which lies between the *Digitaleae* and the *Veroniceae* in the *Rhinanthoideae*. The *Ouriseae* has the united stigma lobes of the *Digitaleae* and the divaricate anthers of the *Veroniceae*.

Species of *Ourisia* are almost always acaulescent herbs; the five calyx lobes are united at least part way; they have tubular corollas and didynamous and included stamens. Except for their habit, the *Ouriseae* resemble the *Digitaleae* more than the *Veroniceae*.

¹ It is useful to note that the species *Bacopa acuminata* (Walt.) Robinson has been interpreted by various workers to belong to five of the segregates of *Bacopa* discussed above as well as to five other genera, one in the other subfamily!

A great number of new species and novelties below the rank of species could be presented with some justification. However, those few appearing are proposed on a most conservative basis. A very broad view of the species is taken: it must be distinguished easily from its nearest (morphological) relatives. No other criteria have been employed, largely since so little of such data (pollen analysis, chromosome number, etc.) are available from Peru. The same criterion applies to subspecific entities.

Sibthorpia rotundifolia (R. & P.) Edwin, comb. nov. *Veronica rotundifolia* R. & P., Fl. Peruv. 1: 6. 1798. *Sibthorpia pichinchensis* HBK., Nova Gen. & Sp. Pl. 2: 390, t. 176. 1818.

The *Veronica* of R. & P. is unquestionably the *Sibthorpia* of HBK.

Sibthorpia rotundifolia (R. & P.) Edwin f. *alba* Edwin, f. nov.

Differt a typica corollis viridi-albus, capsulis pubescentiis et pilis rigidus.

Differing from the typical in having greenish-white (instead of rose-purple) corollas and bearing stiff hairs on the capsules.

CUSCO: Rio Yanamayo, below Pellahuata. Reperit herb. Wet mossy rocks by cascade at 2100–2300 m. alt., 4–5 May 1925, *F. W. Pennell* 13935 (F, Type; GH; NY; PH).

The several synonyms not pertaining to Peru, and therefore unlisted, only begin to indicate the taxonomic and nomenclatural problems remaining in *Sibthorpia*. Two Central American species and at least one species each in Africa, Europe and South America require further study.

It is unfortunate that Pennell's (1921) excellent paper concerning *Veronica* and its allies in North and South America did not treat *Sibthorpia*. The generic lines as drawn in this work appear to be as valid now as when published. The exclusion of *Hebe* (and *Veronicastrum*) from *Veronica* permits a treatment of the taxa occurring in Peru that is both natural and direct, in contradiction to the species limit problems of *Sibthorpia*.

Alonsoa integrifolia Edwin, sp. nov.

Frutex ramosus, caulis teres, longitudiner striatus, supra glanduloso-pubescentia. Folia lineare-lanceolata usque ad ellipticolanceolata interdum linearia, ad 2 cm. longa, sessilia, angusta ad bases et apices margines integri. Inflorescentiae racemi. Calycis lobi lanceolati, glandulosa, pubescentes, 7–8 mm. longa, plus quam quarta longi capsula maturata. Corollae rosae. Antherae longiores quam filamenta. Ovaria ovoidea, stigmatis-lobi connati, subpatelliformes.

Branched shrub drying dark brown to black, stems terete, longitudinally striate, new wood dark grey, glandular-pubescent at least on the upper part; leaf-blades sessile, linear-lanceolate to elliptic-lanceolate, 0.5–2.0 cm. long and 0.1–0.3 cm. wide, entire, narrowed at apex and somewhat to base, decreasing in size from base to apex of stems, punctate beneath, lower blades glabrous, upper sometimes puberulent or sparsely glandular-puberulent beneath, costa little impressed above, flattened and elevated beneath, lateral veins obsolete above and usually beneath, when present little elevated; inflorescences racemose, the internodes of the stem little if at all reduced in length, pedicels 10–12 mm. long, glandular-puberulent, usually 2 times longer than the subtending bractlike leaf; calyx tube very short, sparsely glandular-puberulent, calyx lobes lanceolate, 7–8 mm. long, more than one-fourth as long as the mature capsule; corolla red; stamens 4, the confluent anthers longer than the black, flattened filaments and dehiscing longitudinally across the septum; ovary ovoid or occasionally lance-ovoid; style little longer to little shorter than the ovary; stigma lobes united, subpatelliform; capsules lance-ovoid or ovoid, ca. 12 mm. long, about 6 mm. wide at the base, narrowing regularly to about 1–2 mm. wide at the apex; seeds numerous, black, longitudinally furrowed, usually blunt, occasionally acute, at one or both ends. Mature corollas few, poorly pressed, red or pale red.

CAJAMARCA: Michiquillo; shrub. On calcareous slope at 3000 m., 7 April 1948, *Pennell & Reichlin 15033* (BM, type; PH).

Alonsoa minor Edwin, sp. nov.

Frutex ramosus, in sicco brunneus vel atrobrunneus, apices ramorum et ramulorum glandulosa-pubescentia. Folia angustissime lanceolata, usque ad 1.9 cm. longa, 0.6 cm. lata, subsessilis, margines pauciserrata, dentibus angustissimis et durissimis, attenuata ad bases et apices, plerumque minore subta paucipunctata, puncti nigra. Inflorescentiae racemi. Pedunculi nulli, pedicelli glandulosa-pubescentia quam flores longiore. Calyces praefloratione hypocrateriforma, maturitati tubi brevissimi, usque ad 1.5 mm. longa. Corollae atrorubrae, lobi quam tubo breviores. Stamina ex tubum corollae exserta, antherae dolabriformi dense puberuli quam filaments breviores. Ovaria anguste ovoidea, quam stylos longiore vel breviora. Capsula ovoides, apices obtusi, colli incrassati. Semina juvenalia nigra.

Branched shrub drying brown or dark brown, apices of branchlets glandular-pubescent; leaf-blades very narrowly lanceolate, subsessile, up to 1.9 cm. long and 0.6 cm. wide, margins few-serrate, serrations very narrow and very hard, blades attenuate to bases and apices, sparsely black punctate beneath; inflorescences racemose; peduncles wanting; pedicels glandular-pubescent, up to 17 mm. long, longer than the flower, fruit and subtending bractolate leaf; calyces salverform in bud, when mature the tube very short, up to 1.5 mm. long, calyx lobe 2.5–3.5 mm. long, elliptical or narrowly elliptical, acuminate; corolla red to more often dark red, lobes shorter than the tube; stamens exceeding the tube, exerted beyond the mouth of the corolla, but shorter than the lobes, the axe-shaped, densely pubescent anthers shorter than the black filaments; ovary narrowly ovoid, little longer or shorter than the style; capsule (not fully mature) 9–10 mm. long and 4–5 mm. wide, ovoid or occasionally narrowly ovoid, widest about one-third the way from the base, the neck thickened and a little narrower than the obtuse to somewhat rounded apex; seed (immature) black.

Good corollas are lacking. Most closely related to *A. pallida* (see below) from which it differs in having smaller marginal teeth, blades narrower in relation to length, shorter styles in relation to the ovaries and shorter pedicels.

AMAZONAS: Above Colcamar. Shrub with red corolla, in thin soil over limestone rocks, alt. 2600–2900 m., 24–26 June 1948, *F. W. Pennell 15609* (F, type; PH).

Alonsoa pallida Edwin, sp. nov.

Glabra herba erecta, in sicco pallidibrunneus, ramosa, rami et ramuli oppositi, ramuli quadrati. Folia elliptica vel subovata elliptica, ca. 1 cm. longa \times ca. 0.6 cm. lata, brevipetiolata, margines paucidentati, serrati ad profundeserrati usque ad sublacinatos, interdum prope basim dimidiati, nervi subter elevatis, supra juvenalis puberulentis. Inflorescentiae racemi. Flores maturi ignoti, pedicelli glabri, usque ad 9 mm. longos, plerumque capsulae non aequans. Bractae minutae. lanceolatae vel anguste-elliptici, acuminati, 3-nervati, ca. 3 mm. longi, calyx tubi nulli. Corollae (fide Pennell) albae. Stamina in tubum corollae inclusa, antherae breviores quam filamenta, sagittatae. Capsulae 7–10 mm. longae \times 3–5 mm. latae, ovoideae. Semina anthracina.

Glabrous, erect, branched herb, branches and branchlets opposite, branchlets square, drying pale brown; leaf-blades elliptical or subovate-elliptical, up to 1 cm. long and 0.6 cm. wide, short petiolate, margins few-toothed, serrate to deeply serrate or lacinate blades sometimes dimidiate at base, young blades sometimes puberulent above, nerves elevated beneath; petioles up to 2 mm. long, flattened; inflorescences racemes; bracts minute, lanceolate or narrowly elliptic, margins entire, apices obtuse, bases obtuse to occasionally subacute; pedicels glabrous, up to 9 mm. long, shorter than the capsules; mature flowers lacking; calyx lobes about 3 mm. long, lanceolate or narrowly elliptic, acuminate, 3-nerved; calyx tube lacking; corolla white (fide Pennell); stamens included in the corolla tube, the sagittate anthers shorter than the filaments; capsule 7–10 mm. long and 3–5 mm. wide, ovoid; seeds shining black.

Mature flowers are lacking but this taxon is quite easily separated from *A. minor* (see above) and from *A. caulialata* R. & P. by its much smaller leaf-blades with fewer teeth, white corolla, and shorter petioles and pedicels. In addition, *A. caulialata* has pedicels most often longer than the capsules.

CAJAMARCA: Below Llama. Herb with whitish corolla. Banks, 1900–2100 m. alt., 17 July 1948, *F. W. Pennell 15918* (BM, type; PH).

Alonsoa linearis (Jacq.) R. & P. var. **glaberrima** Edwin, var. nov.

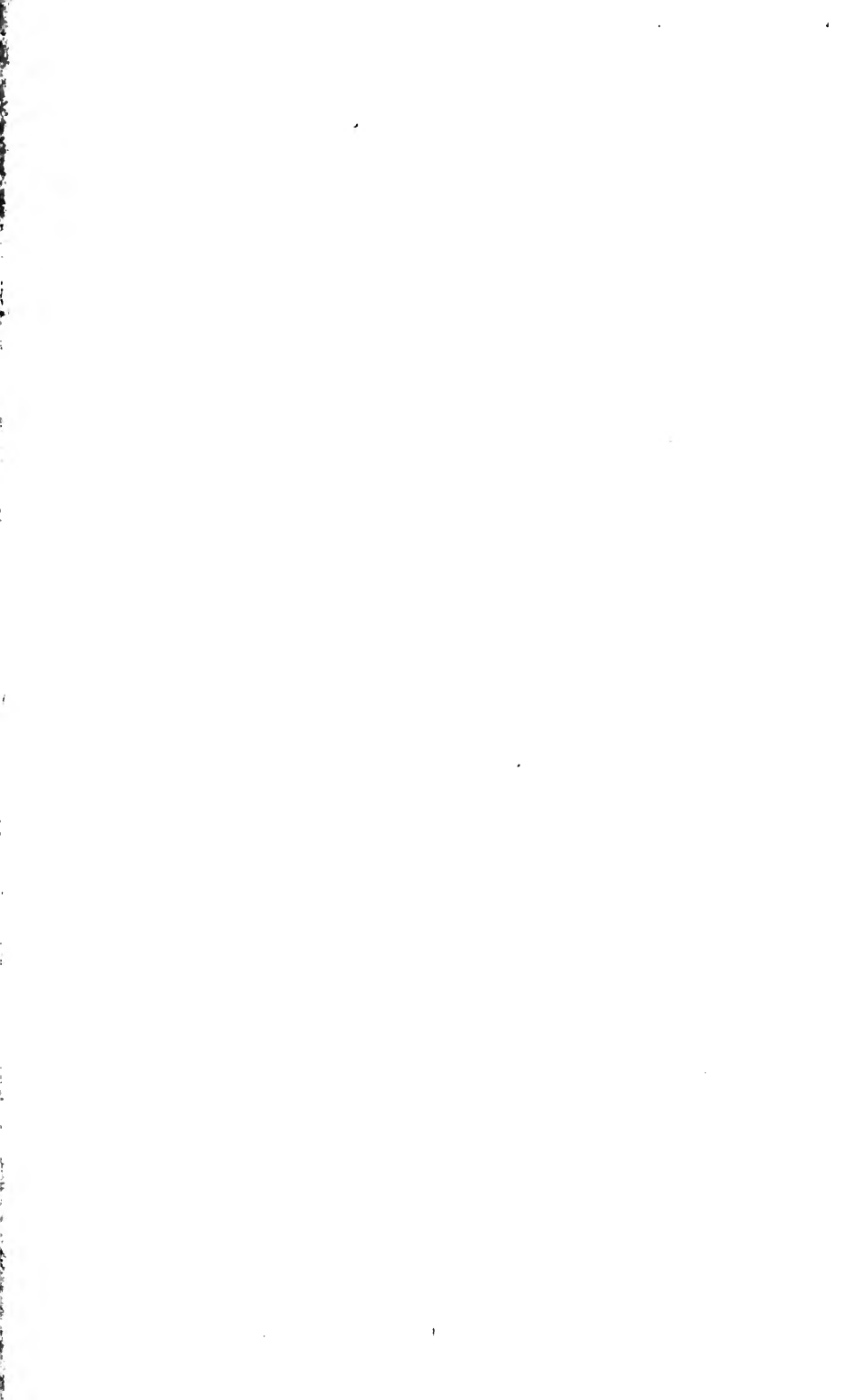
Differt a typica antheris brevioribus quam filamentis et laminis et pedicellis et calycibus glabrous.

Differs from the typical variety in having anthers shorter than the filaments and the herbage, pedicels and calyces glabrous.

LIMA: Canta; shrubby, corolla "scarlet red." On open rocky slopes, alt. 2700-2900 m., 11-19 June 1925. *F. W. Pennell 14330*, (F, type; GH; NY; PH). Lima: San Buenaventura; anthers yellow. On open rocky slopes, *F. W. Pennell 14556* (F).

REFERENCES

- BENTHAM, G.
1846. *In* A. de Candolle, *Prodromus* **10**: 186-586 (passim).
- PENNELL, F. W.
1920. Scrophulariaceae of Colombia. I, *Proc. Acad. Nat. Sci. Phila.* **72**: 136-188.
1920. *In* Britton, *Descriptions of Cuban Plants New to Science*, *Mem. Torr. Bot. Club* **16**: 103-106.
1921. "Veronica" in North and South America, *Rhodora* **23**: 1-41.
1935. *Monogr. Acad. Nat. Sci. Phila.* **1**: 49-69.
1946. Reconsideration of the Bacopa-Herpestis Problem of the Scrophulariaceae, *Proc. Acad. Nat. Sci. Phila.* **98**: 83-98.
- THIERET, J. W.
1954. The Tribes and Genera of Central American Scrophulariaceae. *Ceiba* **4**: 164-184.
- WETTSTEIN, R. v.
1891. *Die Natur. Pflanzenf.* **4**(3b): 76.



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