



## A Synopsis of Poinsettia (Euphorbiaceae)

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## A SYNOPSIS OF POINSETTIA (EUPHORBIACEAE)

ROBERT L. DRESSLER

### ABSTRACT

The position of *Poinsettia* in the tribe Euphorbieae is discussed, and a key is given for the American genera. The name *P. heterophylla* is found to be applicable to a weedy tropical plant, and the distinctions between this and the North American *P. cyathophora* are tabulated. Gametic chromosome numbers of 14 and 28 are reported for both *P. cyathophora* and *P. dentata*, while *P. heterophylla* shows only  $n = 14$ . The geographic variation of the North American annual species is briefly discussed. A key is given for the 11 species recognized, of which two are described as new: *P. coccinea* and *P. inornata*, while new combinations are published in *Poinsettia* for *P. colorata*, *P. pentadactyla* and *P. restiacea*. ROBERT L. DRESSLER, Missouri Botanical Garden, 2315 Tower Grove Ave., St. Louis 10, Missouri.

There are not many species in the genus *Poinsettia*, but their bewildering foliar polymorphism has caused a great deal of confusion. While studying the genus *Pedilanthus* (Dressler 1957), some observations were made on other genera of the tribe Euphorbieae. In the summer of 1957 I was able to observe most of the North American species of *Poinsettia* in Mexico and the southwestern United States.\* Many collections made at that time have been grown and studied at the Missouri Botanical Garden. These observations have permitted considerable clarification of the annual species, especially. While I am no longer actively studying the Euphorbieae, it is felt that these notes on *Poinsettia* may be of some value.

### GENERIC CONCEPT

The Linnaean genus *Euphorbia*, as it is frequently used, includes most of the tribe Euphorbieae, and is surely the most broadly inclusive generic concept in modern usage (among flowering plants). I much prefer to recognize about fourteen genera in the tribe Euphorbieae, six of these being included in the genus *Euphorbia* by many authors. I have no quarrel with those who prefer the inclusive concept of *Euphorbia*, but feel that the same arguments could be used to reduce most Compositae to *Aster*, with about equal profit. In the narrower sense, *Euphorbia* is a distinctive group of about 80 Old World species which are woody or succulent, and usually have two spines (rarely 1) near each leaf base. These spines are frequently considered to be stipular, but true stipules appear to be present in addition to the spines. The large group of south African succulents which are spineless or have spines formed from axillary branches are not directly related to the above group. The earliest generic name for the south African group is *Medusea* Haw. Neither of these groups is represented in the New World, the American succulents being members of *Agaloma* or *Tithymalus*. The largest and most difficult of the segregate genera is *Tithymalus*, which is largely an Old World group, but includes three major American groups: (1) Primitive woody species, such as *Euphorbia* (*Tithymalus*) *fulva* Stapf and *Tithymalus calyculatus* (HBK.) Kl. & Gke., of the West Indies, Central America and the Andes. (2) Herbaceous

\* I am especially grateful to the Gray Herbarium and the National Science Foundation for their support of the field work in northeastern Mexico. Special thanks are also due Dr. Rogers McVaugh, who kindly lent material of *P. restiacea* which he collected, and Dr. John D. Dwyer, for aid with the Latin diagnoses.

perennials related to *Tithymalus cbrysophyllus* Kl. & Gke. and *Euphorbia* (*Tithymalus*) *floridana* Chapm. This group includes two or three species of the south-eastern United States and a number of southern South America, all of them with a conspicuous pistillate calyx. (3) Herbaceous species which are closely related to Old World sorts and are surely geologically late invaders of the New World. These include *Tithymalus commutatus* (Engelm.) Kl. & Gke. and *T. campester* (Cham. & Schlecht.) Kl. & Gke., and are largely montane forms. There are also a few anomolous species which do not fall into these groups, such as *Tithymalus trichotomus* (HBK.) Kl. & Gke. and *Euphorbia* (*Tithymalus*) *pteroneura* Berger.

Most New World Euphorbieae belong to the distinctive group made up of *Agaloma*, *Poinsettia* and *Chamaesyce*. Of the three, *Chamaesyce* is most frequently treated as a distinct genus, while *Agaloma* generally has been kept in *Euphorbia*. These two groups are closely related, but can be distinguished by habit and by the distinctive leaf structure of *Chamaesyce*. While *Agaloma* can almost always be distinguished from *Tithymalus* by the appendaged glands, this feature is not infallible. The diminutive *Euphorbia misella* Watson, of alpine meadows in central and southern Mexico appears to lack gland appendages, but close scrutiny shows rudimentary appendages beneath the glands, indicating that it is a reduced member of *Agaloma*. Similarly, *Euphorbia heterophylla* var. *ericarpa* Millsp. may belong in *Agaloma*, but lacks the gland appendages characteristic of that group (see excluded species, p. 340). *Agaloma* is greatly in need of monographic study, and there would be very little profit in wholesale new combinations made without such study. For this reason, I propose to cite the species of *Agaloma* as, for example, "*Euphorbia* (*Agaloma*) *corollata* L.," with the understanding that this group is quite distinct from true *Euphorbia*. The same system, of course, may be used for *Medusea*, or even *Tithymalus*. A tentative key to the New World genera of Euphorbieae is given below.

1. Leaves opposite or (rarely) ternate; the branching dichasial throughout; the veins of the leaves sheathed with chlorenchyma (usually visible by transmitted light)...CHAMAESYCE S. F. Gray
1. Leaves various; at least the base of the plant monopodial; leaf veins without distinct chlorenchyma sheaths. .... 2
2. Glands of the involucre crenate or entire, often with two lateral horns, but without distinct petaloid appendages..... 3
3. Glands of the involucre 4 or 5, not cup-like or bilabiate..... TITHYMALUS Trew 4
3. Glands usually 1 or 2, cup-like, bilabiate, or shield-like..... 4
4. The involucre lobes connate to their apices; two glands united into a lateral shield-like structure; the cymes pseudo-umbellate; the pistillate flowers calyculate..... CUBANTHUS Millsp.
4. The involucre lobes apically distinct; the gland cup-like or bilabiate; inflorescence a condensed pleiochasium or dichasium, the branches becoming monochasial; the pistillate flower naked..... POINSETTIA Grah.
2. Glands of the involucre with distinct petaloid appendages, these often lacinate..... 5
5. The involucre lobes equal; the gland appendages not forming a single hood-like spur. .... AGALOMA Raf.
5. The involucre highly zygomorphic, with 2 large lobes and 3 very small ones; the gland appendages forming a spur on one side of the involucre..... PEDILANTHUS Neck.

#### GENERIC RELATIONSHIPS

As noted above, *Poinsettia* is closely allied to *Agaloma*, though readily distinguished by the lack of petaloid appendages on the glands. *Euphorbia* (*Agaloma*) *lancifolia* Schlecht. is especially similar to *Poinsettia*, and resembles that genus in

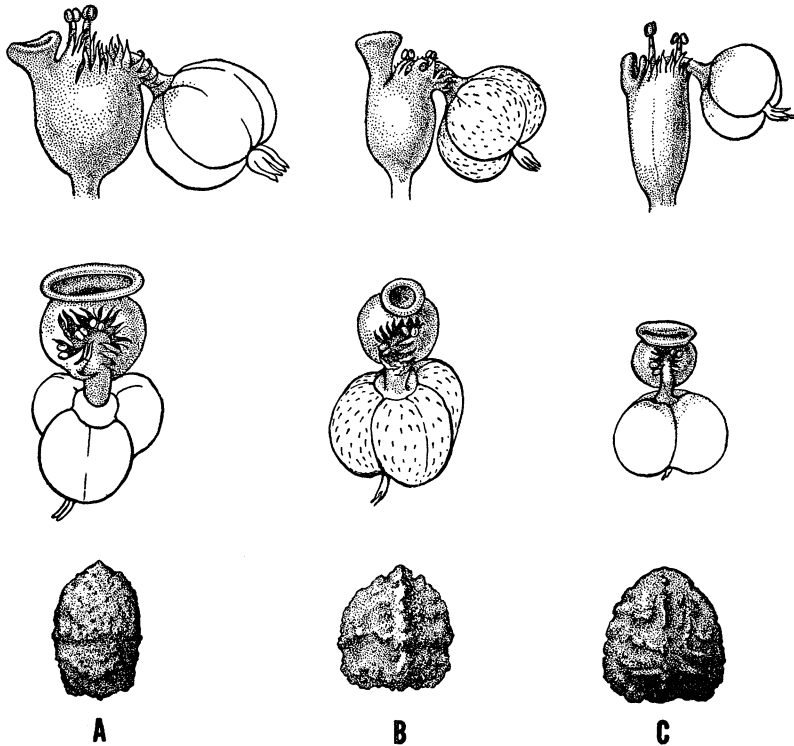


Figure 1. Cyathia and seed of the North American annual poinsettias. A. *P. cyathophora* (Dressler 2430), B. *P. heterophylla* (Dressler 2254), C. *P. dentata* (Dressler 2198). Above: side view of cyathium,  $\times 5$ ; middle: top view of cyathium,  $\times 5$ ; below: dorsal view of seed,  $\times 7.5$ . All drawn from fresh, living specimens.

habit, in the tendency toward reduced gland number, in the form of the glands, in the reduced petaloid appendages and in the thick-walled, coarsely reticulate pollen grains. The seed of *E. (A.) lancifolia* is very different from that of *Poinsettia*, which serves to reinforce the generic distinction. Several other species of *Agaloma* have been confused with *Poinsettia*, though they are less closely related (see excluded species, p. 340). *Poinsettia* is evidently derived from *Agaloma* by the loss of petaloid appendages and reduction in number of glands. While the involucre of *Poinsettia* generally has only a single gland, the central involucre of a pleiochasium, especially, is likely to have a full complement of five glands.

#### THE IDENTITY OF EUPHORBIA HETEROPHYLLA L.

Much of the confusion concerning the annual poinsettias has centered about the identity of Linnaeus' *Euphorbia heterophylla*. The epithet seems very descriptive of the familiar North American plant with red and green floral bracts, and most botanists seem to have assumed that it applied to this plant. One finds, though, that Linnaeus' epithet refers to the *shape* of the leaves, rather than to their color.

There is no specimen of *E. heterophylla* in the Linnaean herbarium, so one must turn to *Tithymalus curassavicus*, *salicis* & *atriplicis foliis varius*, *caulibus viridantibus* of Plukenet's *Almagestum Botanicum* (1696). Plukenet's figure shows a plant with both lanceolate and pandurate leaves, quite characteristic of the weedy tropical species with green floral bracts. Leaf shape is none too dependable in this group, but the entire lanceolate form shown is rarely encountered in the North American *P. cyathophora*. It is conceivable, of course, that the North American ornamental had been introduced into Curaçao by that date, but it is hardly likely that Plukenet would have failed to mention the red floral bracts of that species.

It should not be concluded that Linnaeus' epithet has been consistently and discerningly misapplied to the North American species. Rather, most specimens of either species from North and Central America have been determined as *E. heterophylla*, while South American specimens of true *E. heterophylla* have more often been labeled as *E. geniculata* or *E. elliptica*. The consistent confusion of these two species is based on very superficial observation, for the two differ from each other much more than either differs from *P. dentata*, which is generally recognized as distinct. A tabular comparison of the two species is given herewith.

<i>Poinsettia cyathophora</i>	<i>Poinsettia heterophylla</i>
Stems and petioles glabrous or sparsely pilose.	Stems and petioles often markedly pilose.
Leaves glossy green.	Leaves dull green.
Floral bracts usually basally red.	Floral bracts green or basally pale, never basally red (often purple spotted).
Gland broad, more or less bilabiate, the opening narrowly oblong.	Gland narrow, substipitate, the opening circular.
Seed finely and sharply tuberculate, not angular.	Seed coarsely and bluntly tuberculate, angular.

#### CHROMOSOME NUMBER

A number of chromosome counts have been made from material cultivated at Missouri Botanical Garden. These are given below, with the counts previously published by Perry (1943). Voucher specimens are available for all those which have collection numbers.

<i>Poinsettia cyathophora</i>	Gametic No.	Somatic No.
Dressler 1821 (Tamaulipas)	14	
Dressler 2271 (Tamaulipas)	14	
Dressler 2430 (Nuevo León)	14	
s. n. Washington, Missouri	14	
s. n. Grey Summit, Missouri	14	
Dressler 2373 (Tamaulipas)	28	
Cultivated (Rex Pearce)	28	
Cultivated (Parke)	28	
Perry (cult. as <i>Euphorbia heterophylla</i> )		56

	Gametic No.	Somatic No.
<i>Poinsettia dentata</i>		
Dressler 2268 (Oaxaca)	14	
s. n. Grey Summit, Missouri	14	
Dressler 2198 (Texas)	28	
s. n. Empalme Escobedo, Guanajuato	28	
Perry, Clarke Co., Virginia		14, 28
Davis, Oklahoma		28
Pleasant Hill, Missouri		56
<i>Poinsettia heterophylla</i>	Gametic No.	Somatic No.
Dressler 2136 (Tamaulipas)	14	
Dressler 2194 (Arizona)	14	
Dressler 2243 (Vera Cruz)	14	
Howard & Proctor 13883 (Jamaica)	14	
Manning & Manning 531217 (Jalisco)	14	
s. n. Soledad, Cuba	14	
Moyer (cited by Perry) as <i>E. geniculata</i>		28
<i>Poinsettia pulcherrima</i>		Somatic No.
Perry		28

From the above counts, one could consider 14 to be the base number for the genus, if it were not for Perry's record of a somatic number of 14 for one plant of *P. dentata*. It is at least conceivable that the plant studied by Perry was a chance haploid, but more counts are needed from the eastern United States, before this can be evaluated properly. There is no indication of polyploidy in *P. heterophylla*, but *P. cyathophora* and *P. dentata* both contain polyploids. These are discussed further in the next section.

#### PATTERNS OF VARIATION

The most outstanding feature of the annual species of *Poinsettia* is their extreme polymorphism. Linear-lanceolate, ovate and deeply pandurate leaves may be found not only in the same population, but on the same individual. More frequently, however, extremely different leaf types are found on different individuals or on different stages of one individual. It would appear that there is an interaction of genetic and environmental control in such cases. The perennial species are less markedly polymorphic, but all of the adequately sampled species show some degree of foliar polymorphism. Even seed structure shows a good deal of variation in *Poinsettia*, though this feature is usually dependably stable in the Euphorbieae.

In spite of the extreme polymorphism, some patterns of geographic or genetic variation are evident, and merit more detailed study.

1. *Poinsettia cyathophora*. This species is perhaps the most highly variable of the genus. The cultivated polyploids ( $n = 28$ ) are coarse, somewhat weedy plants that show little polymorphism, and have somewhat coriaceous leaves. When collected in a dry, rocky arroyo, the plants of Dressler 2373 were relatively small, but when cultivated in St. Louis, they became large and coarse, very closely resembling the cultivated plants of the same chromosome number. Many of the more delicate

plants of lower chromosome number would seem to have greater ornamental potential than the polyploids now available.

Collections from Oaxaca and Nuevo León have behaved as distinctly short-day plants, while one collection from Tamaulipas (Rancho del Cielo) has proven to be relatively day-neutral. The characteristic red bracts of this species are a surprisingly dependable key feature, but some plants of the Missouri Ozarks lack the red coloring.

2. *Poinsettia dentata*. This species shows a good deal of geographic variation, which is complicated by polyploidy. The plants with  $n = 14$  of southern Mexico are much branched and often decumbent, strongly pilose plants with very condensed, nearly capitate inflorescence and cream or yellowish floral bracts. This is apparently the form described as *Poinsettia schiedeana*. These features become less marked to the north, suggesting a clinal pattern. One also finds erect, rather weedy plants with little or no bract coloration in Mexico. These are frequent in disturbed areas of central Mexico, and closely resemble the forms of this species which grow in Arizona and western Texas. It is probable that these weedy forms have entered Mexico from the north and are genetically isolated from the native form by their higher chromosome number.

Some of the semi-desert forms from northern Mexico are striking because of their small, coriaceous leaves. The type of Engelmann's var. *rigidia* is not the extreme in this feature.

3. *Poinsettia heterophylla*. This tropical species shows less variation than its temperate counterparts. Occasional populations with whitish floral bracts, strongly dentate leaves or very pilose stems suggest introgression from *P. dentata*, and I suspect that these two do hybridize to a certain degree where *P. heterophylla* grows with a population of *P. dentata* having the same chromosome number.

#### TAXONOMY

POINSETTIA Graham, Edinb. New Philos. Jour. 20:412. 1836. Type: *Euphorbia pulcherrima* Willd.

*Pleuradena* Raf., Atl. Jour. 1(6):182. 1833, not *Pleuradenia* Raf., 1825. Type: *Pleuradena coccinea* Raf.

*Cyathophora* Raf., Fl. Tell. 4:117. 1838, not *Cyathophora* S. F. Gray, 1821. Type: *Euphorbia heterophylla* L.

Woody or herbaceous, often perennial from a fleshy storage root; leaves alternate or opposite, stipules inconspicuous or absent, appearing glandular; inflorescence a condensed pleiochasium or dichasium, the branches becoming monochasial; involucre glands more or less cup-like, usually reduced in number (commonly 1); pollen grains thick-walled and coarsely reticulate; pistillate flower naked.

#### KEY TO SPECIES

1. Plants woody, or perennial from thickened storage roots.....2
2. Woody plants, generally exceeding 2 meters in height; involucre usually more than 5 mm. in diameter; seeds ca. 10 mm. long.....1. *P. PULCHERRIMA*
2. Herbaceous plants, less than 1 meter tall; involucre usually less than 5 mm. in diameter; seeds 2-5 mm. long.....3

3. Plant ca. 1 dm. tall, flowering on short leafless stems, the vegetative stems developing later, usually more or less decumbent.....2. *P. RADIANS*
3. Plants 2-5 dm. tall; foliage and flowers borne on same stem, stems erect.....4
4. Floral bracts white; glands white, with the outer rim flaring and somewhat petaloid (western Mexico).....3. *P. RESTIACEA*
4. Floral bracts red or red and green; glands red, yellow or green, the outer rim not flaring and petaloid.....5
5. Leaves entire, markedly paler beneath (northwestern Mexico).....5. *P. COLORATA*
5. Leaves more or less serrate, not markedly paler beneath.....6
6. Foliage markedly scabrous-strigose; gland broadly campanulate, the inner and outer rims similar; seed 3-4 mm. long (western Mexico).....4. *P. STRIGOSA*
6. Foliage subglabrous; gland narrow, the outer rim much thicker than the inner; seed 2-2.5 mm. long (northeastern Mexico).....6. *P. COCCINEA*
1. Plants annual, without thickened storage roots.....7
7. Style branches (3) entire, about one half connate, much longer than the ovary (Paraguay and Argentina).....9. *P. PENTADACTYLA*
7. Style branches divided, not longer than the ovary.....8
8. Seeds smooth, with an equatorial row of blunt tubercles and one or two fainter rows; low spreading, delicate plant (Peru).....10. *P. INORNATA*
8. Seeds strongly tuberculate; generally coarser, erect plants.....9
9. Glands more or less funnel-like, the opening circular; coarse tropical weed.....11. *P. HETEROPHYLLA*
9. Glands more or less bilabiate, the opening narrowly oblong.....10
10. Lower leaves usually alternate; floral bracts usually basally red; seeds without caruncle (North America).....7. *P. CYATHOPHORA*
10. All leaves usually opposite; floral bracts green or cream at base, sometimes with purple spots, but never basally red; seeds often carunculate.....11
11. Seeds finely and sharply tuberculate (North America).....8. *P. DENTATA*
11. Seeds coarsely and bluntly tuberculate (Argentina).....*P. species\**

1. *POINSETTIA PULCHERRIMA* (Willd.) Grah., Edinb. New Philos. Jour. 20:412. 1836.

*Euphorbia pulcherrima* Willd. ex Klotzsch, Allg. Gartenz. 2:27. 1834.

*Pleuradena coccinea* Raf., Atl. Jour. 1(6):182. 1833, not *Poinsettia coccinea* Dressler

*Euphorbia erythrophylla* Bertol., Nov. Comment. Acad. Scient. Inst. Bonon. 4:419, t. 41. 1840.

*Euphorbia fastuosa* Sessé & Mociño, Pl. Nov. Hisp. 81. 1888.

Distribution. The familiar cultivated poinsettia occurs as a wild plant in the rocky canyons of western Mexico, in Nayarit, Jalisco and Colima. Dr. Rzedowski suggests (personal communication) that it may also occur further south, in Michoacan and Guerrero. The habit of the plant, with a fleshy storage root especially well developed in the seedling stage, is characteristic of the tropical deciduous forest of this area.

2. *POINSETTIA RADIANS* (Benth.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859.

*Euphorbia radians* Benth., Pl. Hartw. 8. 1839.

*Euphorbia stormiae* Croiz., Rev. Sudam. Bot. 6:13. 1939 [Type: *Storm s. n.* AH!].

Distribution. Arizona through central Mexico to Oaxaca.

\* Several Argentine specimens may represent an undescribed species. Some of these were determined by Croizat as *Euphorbia aureocincta* Croiz., but that epithet is irrevocably typified by a specimen of *P. heterophylla*. The plants in question are very similar to *P. dentata*, but differ somewhat in seed structure, and possibly in the proportions of the involucre. More material and study are needed to fix the status of these plants, so they shall remain nameless for the present. They are *Castellano s. n.* Dec. 5, 1927 (GH), *Castillón 1851* (GH), *Meyer 3647* (GH) and *Schreiter 10990* (AAH).



3. *POINSETTIA restiacea* (Benth.) comb. nov.

*Euphorbia restiacea* Benth., Bot. Voy. Sulph. 162. 1844.

Distribution. Western Mexico (Nayarit and Durango).

Superficially the plants of *P. restiacea* resemble some species of *Agaloma*, such as *Euphorbia sphaerorbiza* Benth., because of the slender stems, narrow white bracts and conspicuous white glands. Though the outer rim of the gland is flattened and somewhat petaloid, there is no sharp distinction between gland and appendage, such as characterizes the members of *Agaloma*. The type specimen (K) is very scrappy, but a photograph (MICH) indicates that it is probably the same species as the excellent material which Dr. McVaugh has collected in Nayarit.

4. *POINSETTIA STRIGOSA* (Hook. & Arn.) Arthur, Torrey 11:260. 1912.

*Euphorbia strigosa* Hook. & Arn., Bot. Voy. Beech. 310. 1840.

*Poinsettia pedunculata* Klotzsch, Seem. Bot. Voy. Herald 277. 1856.

Distribution. Western Mexico (Nayarit and Jalisco).

5. *POINSETTIA colorata* (Engelm.) comb. nov.

*Euphorbia colorata* Engelm., Rep. U. S. & Mex. Bound. Surv. 2:190. 1859 [Type: *Thurber 265*, GH!].

*Euphorbia tuberosa* Rose, Contr. U. S. Nat. Herb. 1:111. 1891, not *E. tuberosa* L., 1753.

Distribution. Northwestern Mexico (Sinaloa, Sonora and Zacatecas).

6. *POINSETTIA coccinea* sp. nov. Figure 2

Perennis, erecta, 40–70 cm. alta, radice tuberosa oriens, caulibus basi lignescens, glabris; folia alterna, linearia vel anguste lanceolata, 1.5–6 mm. lata, 40–120 mm. longa, subtus hispida, ad basin barbellata, apice attenuata, basi attenuata vel breviter petiolata, marginibus serratis vel subintegris; cymarum bractee coloratae, lineari-lanceolatae vel elliptico-lanceolatae, 3.5–7 mm. latae, 30–80 mm. longae; inflorescentiae compactae; involucri anguste campanulata, 3–3.5 mm. lata, 3.5–4 mm. longa, glandulis involucri excedentibus, 1.5–2 mm. latis, marginibus externis crassioribus altioribusque; ovarium glabrum; styli ca. 1 mm. longi, basi breviter connati, fere ad medium bipartiti; semina oblongo-ovoida, ecarunculata, tuberculata, ca. 2.5 mm. longa.

MEXICO. TAMAULIPAS, Municipio de Aldama, Sierra de Tamaulipas, above Juan Tomás, east of Rancho Las Yucas (ca. 40 km. nnw. of Aldama). Oak scrub and rocky arroyo, October 13, 1957, bracts basally red, roots with series of thickened "tubers," R. L. Dressler 2395 (Type: MO, isotypes to be distributed). Other collections from the same region are: Las Yucas, Oak scrub (chaparral), peak of Cerro de Las Yucas, July 20, 1957, rocky soil, R. L. Dressler 1930 (MO); near Paso Lajas (Ejido Las Yucas), Oak scrub, October 10, 1957, R. L. Dressler 2343 (GH). NUEVO LEÓN, Rancho Resendez, Lampazos, June 22, 1937, "Pico de perico," M. T. Edwards 313 (MO, incomplete, but apparently this species).

This species is related to *P. colorata*, but may be distinguished by the usually serrate leaves which are not markedly paler beneath and by the smaller green (rather than red) cyathia; the gland also is smaller and differently shaped. *Poinsettia coccinea* will more often be confused with the annual *P. cyathophora*. Under favorable conditions *P. cyathophora* may survive for two or more seasons, but it is

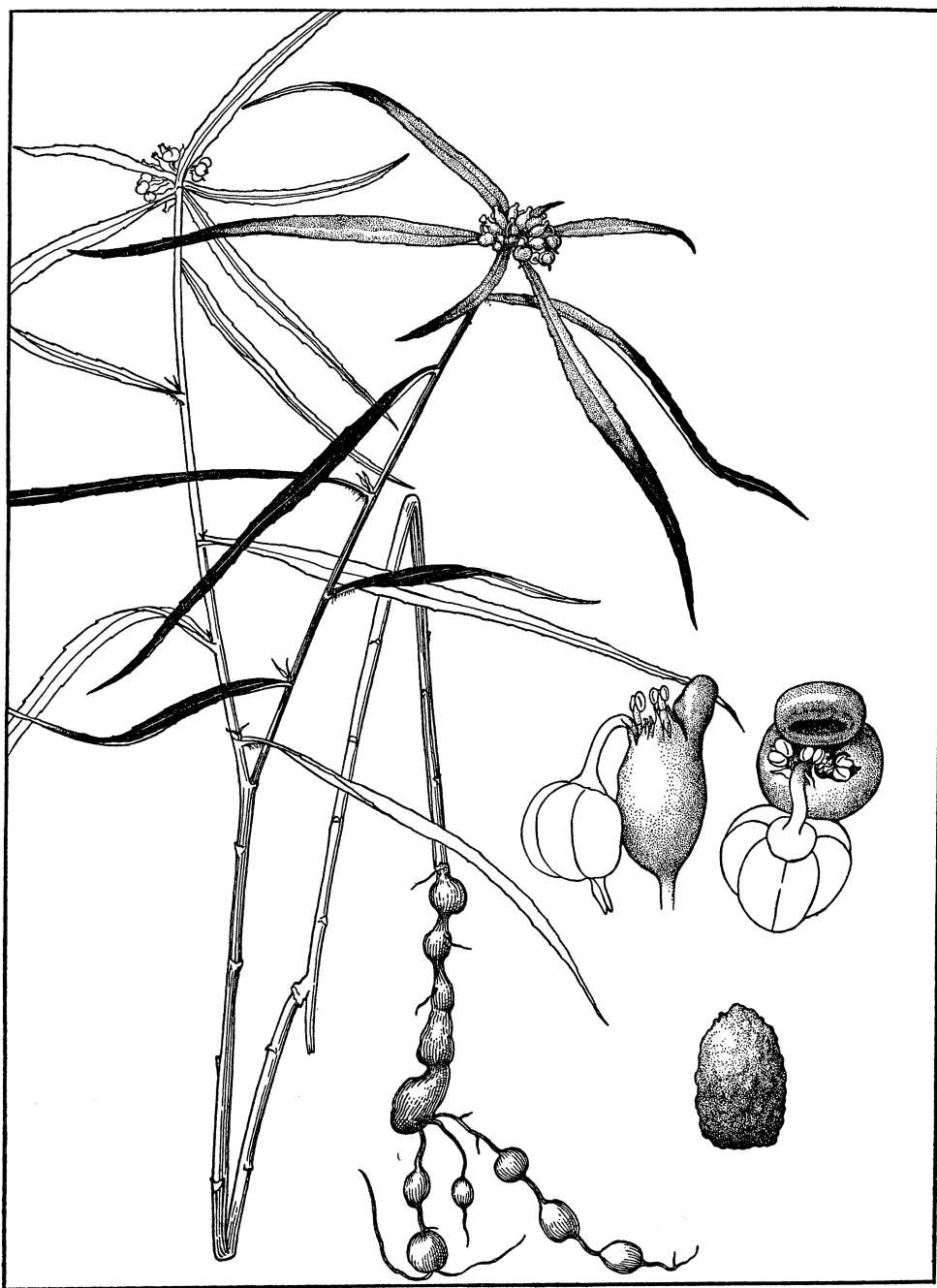


Figure 2. *Poinsettia coccinea*, drawn from living material of the type collection. Habit  $\times \frac{1}{2}$ , side view of cyathium  $\times 5$ , top view  $\times 6$ , dorsal view of seed  $\times 7.5$ .

not known to form the fleshy "sausage-string" roots of *P. coccinea*. *Crutchfield & Johnston 5611A*, from near Jaumave, Tamaulipas, is definitely a perennial, but appears to be *P. cyathophora* (no roots were present on the specimen seen).

*Poinsettia coccinea* is frequent in rocky oak scrub and open oak forest in the region of the type locality. In this area it is quite distinct from *P. cyathophora*, which was found only in the polyploid form ( $n = 28$ ). To the north of the Sierra de Tamaulipas other forms of *P. cyathophora* occur (*Crutchfield, Johnston & McMillan 6082, Graham & Johnston 4695*, both near Padilla, Tamaulipas), and it is quite possible that introgression may occur between the annual and perennial species in this region. No satisfactory chromosome counts have been obtained for this species, but the slides which were made indicated approximately 12 to 15 chromosomes, so this probably has  $n = 14$ .

7. *POINSETTIA CYATHOPHORA* (Murr.) Kl. & Gke., Monatsb. Akad. Berlin 1859: 253. 1859.

*Euphorbia cyathophora* Murr., Comm. Götting. 7:81. 1786. *Tithymalus cyathophorus* (Murr.) Moench, Meth. 667. 1794. *Euphorbia heterophylla*  $\beta$  *cyathophora* (Murr.) Boiss., DC. Prod. 15(2):72. 1862. *Euphorbia heterophylla* forma *cyathophora* (Murr.) Voss, Vilmorin, Blumengärtn. (ed. 3) 1:898. 1895.

*Euphorbia graminifolia* Michx., Fl. Bor.-Am. 2:210. 1803. *Poinsettia graminifolia* (Michx.) Millsp., Field Mus. Pub. Bot. 2:304. 1909.

*Cyathophora picta* Raf., Fl. Tell. 4:117. 1838.

*Cyathophora ciliata* Raf., Fl. Tell. 4:117. 1838.

*Euphorbia barbellata* Engelm., Rep. U. S. & Mex. Bound. Surv. 2:190. 1859 [Type: *Wright s. n.*, GH!]. *Euphorbia heterophylla* var. *barbellata* (Engelm.) Holzinger, Contrib. U. S. Nat. Herb. 1:216. 1892. *Poinsettia barbellata* (Engelm.) Small, Fl. Southeastern U. S. 722, 1334. 1903.

*Euphorbia heterophylla* var. *graminifolia* Engelm., Rep. U. S. & Mex. Bound. Surv. 2:190. 1859.

*Poinsettia edwardsii* Kl. & Gke., Abh. Akad. Berlin Phys. 1859:104. 1860.

*Poinsettia pinetorum* Small, Fl. Miami 111, 200. 1913.

Distribution. The eastern United States south through eastern Mexico to the Isthmus of Tehuantepec; west to Colima in Mexico. Possibly native in the Greater Antilles. Widely cultivated and often naturalized.

There is a specimen from the Göttingen Botanical Garden (1794) in the Missouri Botanical Garden herbarium. While this was prepared after the description of *Euphorbia cyathophora*, it probably represents the population described by Murray.

Though this species is usually an annual, clonal material is easy to maintain by cuttings, which should facilitate the experimental study of its polymorphism. Under favorable conditions it may be a facultative perennial. I have seen specimens from northeastern Mexico and southern Florida which had over-wintered at least one season before collection.

8. *POINSETTIA DENTATA* (Michx.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859.

*Euphorbia dentata* Michx., Fl. Bor.-Am. 2:211. 1803. *Anisophyllum dentatum* (Michx.) Haw., Syn. Pl. Succ. 162. 1812.

*Euphorbia herronii* Riddell, Syn. Fl. W. States 32. 1835.

- Euphorbia dentata*  $\beta$  *rigidia* Engelm., Rep. U. S. & Mex. Bound. Surv. 2:190. 1859 [Type: Wright 1837, MO!].
- Euphorbia dentata*  $\gamma$  *cubbosperma* Engelm., Rep. U. S. & Mex. Bound. Surv. 2:190. 1859 [Type: Wright 1834, MO!]. *Euphorbia cubbosperma* (Engelm.) Boiss., DC. Prod. 15(2):73. 1862. *Poinsettia cubbosperma* (Engelm.) Small, Fl. Southeastern U. S. 721, 1334. 1903. *Euphorbia dentata* forma *cubbosperma* (Engelm.) Fern., Rhodora 50:148. 1948.
- Poinsettia schiedeana* Kl. & Gke., Abh. Akad. Berlin Phys. 1859:102. 1860.
- Euphorbia dentata*  $\beta$  *lasiocarpa* Boiss., DC. Prod. 15(2):72. 1862.
- Euphorbia dentata*  $\gamma$  *linearis* Engelm. ex. Boiss., DC. Prod. 15(2):72. 1862.
- Euphorbia dentata* var. *gracillima* Millsp., Pittonia 2:90. 1890.
- Euphorbia dentata* var. *lancifolia* Farwell, Am. Midl. Nat. 8:273. 1923.

Distribution. The eastern United States west to Arizona and south through Mexico possibly to Guatemala. To be expected as a weed elsewhere.

9. **POINSETTIA pentadactyla** (Griseb.) comb. nov.

*Euphorbia pentadactyla* Griseb., Gött. Abh. 24:63. 1879.

Distribution. Paraguay and northern Argentina.

10. **POINSETTIA inornata** sp. nov. Figure 3

Annual, ramosa, 8–14 cm. alta, ramisque procumbens ad 12 cm. longa, caulibus sparse pilosis; folia alterna vel ea basalia opposita, ovata vel elliptica, 8–16 mm. lata, 12–32 mm. longa, subtus sparse hispidula, apice acuta, basi cuneata, marginibus leviter serratis et hispidulis, petiolis 2–6 mm. longis; cymae dichotomae, involucris late campanulatis, ca. 2 mm. longis, 1.2–2 mm. latis, glandulis 0.6–0.8 mm. latis, ostio oblongo; ovarium glabrum styli ca. 1 mm. longi, basi breve connati, fere ad basin bipartiti; semina quadrato-ovoidea, minute carunculata, sub-laevia, paucituberculata, 2.5 mm. longa.

PERU. Dept. & Prov. Lima, Dist. Pachacamac; Atacongo; among rocks in arid valley, alt. 195 m., common, scattered, October 14, 1935, *Ynes Mexia 04044* (Type: MO, isotype GH, presumably also at UC).

This is apparently a deep-rooted, spreading annual. The plant would pass superficially for a small delicate *P. heterophylla*, but the gland is quite different in shape, and the nearly smooth seed with an equatorial row of small, blunt tubercles, and fainter basal and distal rows, is unlike that of any other species of *Poinsettia*.

11. **POINSETTIA HETEROPHYLLA** (L.) Kl. & Gke., Monatsb. Akad. Berlin 1859: 253. 1859.

- Euphorbia heterophylla* L., Sp. Pl. 453. 1753. *Tithymalus heterophyllus* (L.) Haw., Syn. Pl. Succ. 141. 1812. *Cyathophora heterophylla* (L.) Raf., Fl. Tell. 4:117. 1838.
- ?*Euphorbia elliptica* Lam., Encyc. Meth. Bot. 2:425. 1788. *Euphorbia heterophylla* var. *elliptica* (Lam.) O. Ktze., Rev. Gen. 2:605. 1891.
- ?*Euphorbia linifolia* Vahl, Symb. Bot. 2:53. 1791. *Euphorbia heterophylla* var. *linifolia* (Vahl) O. Ktze., Rev. Gen. 2:605. 1891.
- Euphorbia geniculata* Ortega, Hort. Mat. Dec. 18. 1797. *Poinsettia geniculata* (Ort.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859. *Euphorbia heterophylla*  $\epsilon$  *geniculata* (Ort.) Gómez, Anal. Hist. Nat. Madrid 23:46. 1894.
- Euphorbia prunifolia* Jacq., Hort. Schoenb. 3:15, t. 277. 1798. *Tithymalus prunifolius* (Jacq.) Haw., Syn. Pl. Succ. 143. 1812. *Poinsettia prunifolia* (Jacq.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859.

- Euphorbia frangulaefolia* HBK., Nov. Gen. et Sp. 2:62. 1817. *Poinsettia frangulaefolia* (HBK.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859.  
*Euphorbia trachyphylla* A. Rich., La Sagra, Hist. Cuba 9:198. 1850.  
*Euphorbia morisoniana* Kl., Seem. Bot. Voy. Herald 100. 1853. *Poinsettia morisoniana* (Kl.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859.  
*Poinsettia ruiziana* Kl. & Gke., Abh. Akad. Berlin Phys. 1859:102. 1860.  
 ?*Euphorbia heterophylla*  $\delta$  *minor* Boiss., DC. Prod. 15(2):73. 1862.  
*Euphorbia heterophylla* var. *brasiliensis* Müll. Arg., Mart. Fl. Bras. 11(2):695. 1874.  
*Euphorbia prunifolia* var.  $\alpha$  *repanda* Müll. Arg., Mart. Fl. Bras. 11(2):694. 1874.  
*Euphorbia prunifolia* var.  $\gamma$  *angustifolia* Müll. Arg., Mart. Fl. Bras. 11(2):695. 1874.  
*Euphorbia zonosperma* Müll. Arg., Mart. Fl. Bras. 11(2):696. 1874.  
*Euphorbia heterophylla*  $\beta$  *elliptica* forma *hirticaulis* O. Ktze., Rev. Gen. 3(2):286. 1898.  
*Poinsettia havanensis* Small, Fl. Southeastern U. S. 722, 1334. 1903.  
*Euphorbia aureocincta* Croiz., Jour. Arnold Arb. 24:181. 1943 [Type: Rojas 3379, AH!].

Distribution. From Arizona and Tamaulipas southward throughout the American tropics. As a weed throughout the tropics. Naturalized in Louisiana and Texas and to be expected elsewhere.

#### EXCLUDED SPECIES

- Poinsettia eriantha* (Benth.) Rose & Standley, Contrib. U. S. Nat. Herb. 16:13. 1912. = *Euphorbia (Agaloma) eriantha* Benth. This species, *E. (A.) exstipulata* Engelm., *E. (A.) jaliscensis* Rob. & Greenm., and *E. (A.) lacera* Boiss. are all closely related. All of these species have small but distinct petaloid appendages on the glands and have seeds which are unlike those of *Poinsettia*. In *E. (A.) eriantha*, at least, the pollen grains are very unlike those of *Poinsettia*.  
*Euphorbia heterophylla* var. *eriocarpa* Millsp., Proc. Cal. Acad. II 2:230. 1889. The type (F!) is not a *Poinsettia*, but appears to be an *Agaloma* with reduced gland appendages, or possibly a *Tithymalus*. It is probably unnamed as a species.  
*Poinsettia insulana* (Vell.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859. = *Euphorbia (Agaloma) insulana* Vell. This and the following two species are closely related, if not conspecific.  
*Poinsettia lancifolia* (Schlecht.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859. = *Euphorbia (Agaloma) lancifolia* (Schlecht.)  
*Poinsettia oerstediana* Kl. & Gke., Abh. Akad. Berlin Phys. 1859:103. 1860. = *Euphorbia (Agaloma) oerstediana* (Kl. & Gke.) Boiss.  
*Poinsettia punicea* (Sw.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859. = *Tithymalus puniceus* (Sw.) Haw.  
*Poinsettia xalapensis* (HBK.) Kl. & Gke., Monatsb. Akad. Berlin 1859:253. 1859. = *Euphorbia (Agaloma) xalapensis* HBK.

#### REFERENCES

- Dressler, R. L. 1957. The Genus *Pedilanthus* (Euphorbiaceae). Contrib. Gray Herb. 182:1-188.  
 Perry, B. A. 1943. Chromosome Number and Phylogenetic Relationships in the Euphorbiaceae. Amer. Jour. Bot. 30:527-543.  
 Plukenet, L. 1696. *Almagestum Botanicum*. London, 402 pp.  
 Wheeler, L. C. 1943. The Genera of the Living Euphorbiaceae. Amer. Midl. Nat. 30:456-503.

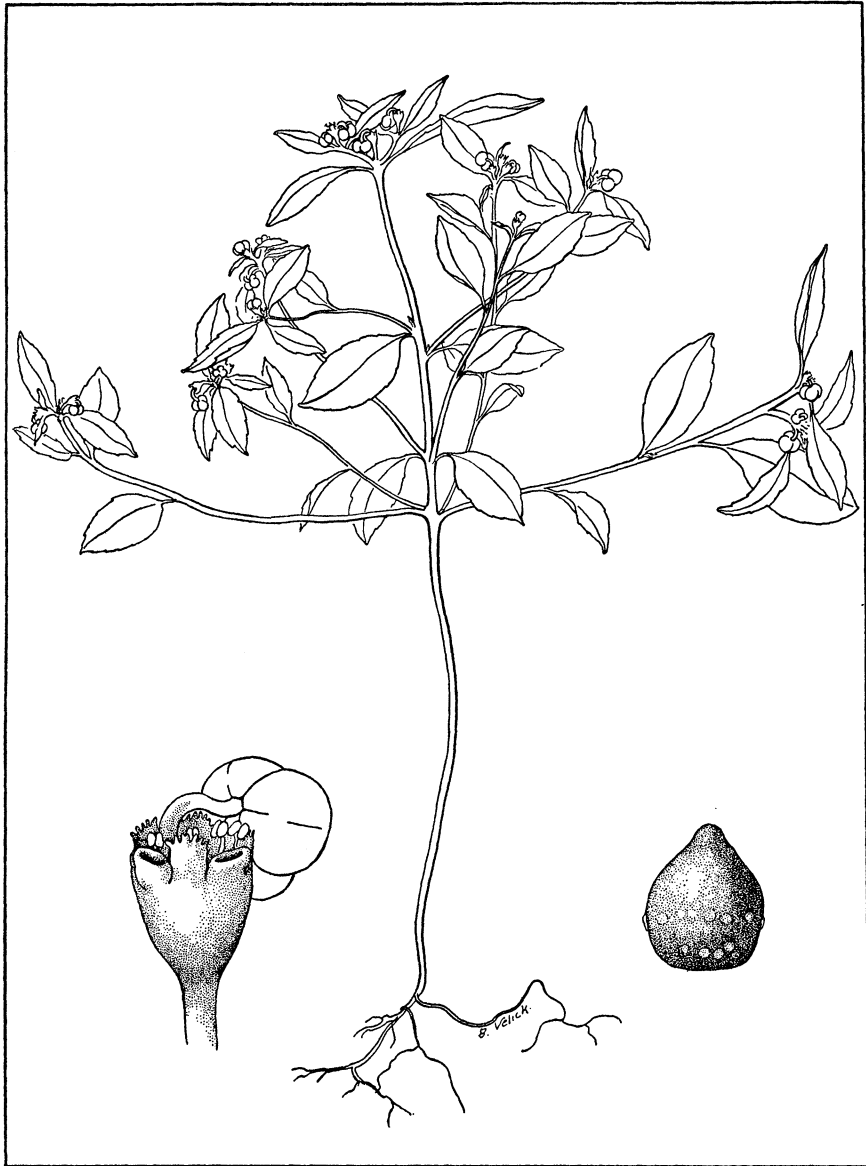


Figure 3. *Poinsettia inornata*, drawn from the type specimen. Habit  $\times \frac{3}{8}$ , cyathium  $\times 10$ , dorsal view of seed  $\times 8$ .