

Like the preceding species, *M. apetala* L. Bol. was described as belonging to section *Helixyra*, so that it becomes

GYNANDRIRIS **apetala** (L. Bol.), comb. nov. *Moraea apetala* L. Bolus in S. Afr. Gard. xix. 385 (1929).

MORAEA TORTA L. Bol. was transferred to the genus *Helixyra* by Barnard in Iris Yrbk. (1932): 52 (Iris Soc. of England), and by me, in Contrib. Gray Herb. cxiv. 41 (1936), to *Gynandriris*. At that time, the original description, in S. Afr. Gard. xvii. 418 (1927), was not available to me. Since then, I have seen it and studied the figure which accompanies it, and I am convinced that it is a true *Moraea*, not a *Gynandriris*.

Through apparent inability to read my own handwriting, I typed *Acidanthera platysepala* Baker, in preparing the manuscript of page 42 in Contrib. Gray Herb. cxiv. (1936). The name intended was *Acidanthera platypetala* Baker in Journ. Bot. xiv. 339 (1876).

5. A MISCELLANY OF NEW WORLD EUPHORBIACEAE, — II.

BY LOUIS CUTTER WHEELER

IN THIS paper the status of several genera and species of the subfamily *Phyllanthoideae* is discussed. In the subfamily *Crotonoideae* the identity of several species of the tribe *Ditaxideae* (*Chrozophoreae*), one species of the tribe *Acalypheae*, and one species of the tribe *Cluytieae* is considered. In the tribe *Euphorbieae*, genus *Euphorbia*, the application of several names is explained, and several new entities are described from Mexico and South America. Probably of greatest importance, and of concern in the Old World as well as the New, is the discussion of the proper application of *Euphorbia hypericifolia* and the names of several of its widespread relatives. A matter of particular interest in the United States is the moot question of the name of the Leafy Spurge which is shown to be *Euphorbia Esula*. The arrangement of the genera is after Pax & K. Hoffmann in Engler & Prantl, Nat. Pflanzenfam. 2 Aufl. 19c: —. 1931.

MARGARITARIA L. f., Suppl. Pl., 66. 1781. In considering the type of this genus, Contr. Gray Herb. 124: 35. 1939, I neglected to point out that, since the type was based on incongruous elements the genus must also be rejected under Rules, Art. 64.

MASCHALANTHUS Nutt., Trans. Amer. Philos. Soc. n. s. **5**: 175. 1837, not Karl F. Schultz, Prod. Fl. Stargardiensis, 283. 1806. It has been apparently wholly overlooked that Nuttall renamed his preoccupied genus "*Chlorolepis*" in the errata appended to the reprint of his article "*Description of new Species and Genera of Plants in the natural Order of the COMPOSITAE, . . .*", first published in op. cit., **7**: 283-453. 1840?-1841.¹ These errata were not included in the regular issue of volume seven. In absence of proof to the contrary the date of publication will apparently have to be taken as that of the regular issue. Since *Chlorolepis* was substituted for *Maschalanthus*, the two binomials, *M. obovatus* and *M. polygonoides*, were automatically placed under *Chlorolepis*. *Maschalanthus obovatus* was a name substituted for *Phyllanthus carolinensis*. Although Nuttall credited this species to Michaux, Fl. Bor.-Amer. **2**: 209. 1803, there is no evidence to indicate that Nuttall intended to rename any supposedly misapplied sense of *P. carolinensis* Walter.

In the errata mentioned above, Nuttall renamed his *Lepidanthus* (Compositae) (Trans. Amer. Philos. Soc. n. s. **7**: 396. 1841) which has been used earlier by Nees, "*Lepidotheca*," but overlooked his use of *Lepidanthus* (Euphorbiaceae), op. cit. **5**: 175. 1837. The subgenus *Kymapleura* of the genus *Macrorhynchus* (Compositae) was raised to generic rank in these errata.

MASCHALANTHUS POLYGONOIDES Nutt., Trans. Amer. Philos. Soc. n. s. **5**: 175. 1837. This species was placed in synonymy under *Savia phyllanthoides* (Nutt.) Pax & K. Hoffmann var. *a Roemeriana* (Scheele) Pax & K. Hoffmann in Engler, Pflanzenreich IV. **147(15)**: 185. 1922. The parallel specific names of *Maschalanthus polygonoides* Nutt. and *Phyllanthus polygonoides* Nutt. ex Sprengel, Syst. Veg. **3**: 23. 1826, combined with the suggestion of the name and Nuttall's specific statement under the first that it resembled *Polygonum aviculare*, indicated that the two might be identical. Examination of authentic specimens at the Academy of Natural Sciences, Philadelphia proved this surmise to be correct. *Maschalanthus polygonoides* is identical with *Phyllanthus polygonoides* as commonly interpreted. Since both species assigned by Nuttall to his genus *Maschalanthus* are ordinary species of *Phyllanthus*, the following combinations are erroneous: *Andrachne* sect. *Maschalanthus* (Nutt.) Pax in Engler & Prantl, Nat. Pflanzenfam. **3(5)**: 15. 1890; *Savia* sect. *Maschalanthus* (Nutt.) Pax & K.

¹ See E. L. Greene, Dates of publication of Nuttall's Compositae, Erythea **3**: 177-178. 1895.

Hoffmann in Engler, Pflanzenreich IV. **147(15)**: 183. 1922. — A very generally overlooked combination is *Andrachne phyllanthoides* Coulter var. **Reverchonii** (Coulter) Blankinship, A. R. Mo. Bot. Gard. **18**: 189. 1907; based on *A. Reverchonii* Coulter, Contr. U. S. Nat. Herb. **2**: 396. 1894 (Man. West. Texas).

PHYLLANTHUS DRUMMONDII Small, Fl. SE U. S., 692, 1333. 1903. Type: Texas, *Drummond III 336* (New York Bot. Gard.!). This species is identical with *Phyllanthus abnormis* Baillon, Adansonia **1**: 42. 1860–1, which was based either on the same collection or on another given the same number. The description of the glands given by Baillon is unmistakable. The fragmentary condition of the type of *P. Drummondii* may account for the fact that Small did not recognize this as identical with his *P. Garberi*.

PHYLLANTHUS GARBERI Small, Fl. SE U. S., 692, 1333. 1903. Type: Cedar Keys, Florida, Apr., 1876, *Garber* (New York Bot. Gard.!). This is identical with *Phyllanthus abnormis* Baillon.

PHYLLANTHUS pudens nom. nov.; based on *P. Avicularia* Small, Bull. Torrey Bot. Club **27**: 278. 1900, not *P. avicularis* Muell. Arg., Linnaea **32**: 32. 1863. These two names are no more than orthographic variants of the same name under Rules, ed. 3, Art. 70, and hence the later must be renamed. I have examined the type at New York Bot. Gard. The species is quite distinct. In Muell. Arg., DC. Prod. **15(2)**: — 1866, *P. pudens* keys closest to *P. carolinensis* Walter.

REVERCHONIA ARENARIA A. Gray, Proc. Amer. Acad. Arts & Sci. **16**: 107. 1880 (Sept. 1, according to title page of separate). It has been generally overlooked that this was collected long ago in northern Arizona by Hough and reported by him in 1897 in a botanically obscure publication. See Yanovsky, U. S. Dept. Agr. Misc. Pub. **237**: 41. 1936. I have before me, from the U. S. Nat. Herb., the specimen which bears no data other than the following printed on the label heading: "Fewkes Exploring Expedition of 1896, sent out by the Smithsonian Institution. Plants collected by Walter Hough, Aug. 1 to Sept. 5, northeastern Arizona (Moki Reservation) and Little Colorado River." It is no. 39.

TETRACOCCLUS Engelm. and **HALLIOPHYTUM** I. M. Johnston. Among some of his 1938 collections of Mexican *Euphorbiaceae* which Dr. I. M. Johnston referred to me for identification were two collections of *Halliophytum*. They drew my attention to the question of whether *Halliophytum* I. M. Johnston, Contr. Gray Herb. **68**: 88. 1923, were distinct from *Tetracoccus* Engelm. ex Parry, West American Scientist **1(3)**: 13. 1885 (Feb. 5 fide Tre-

lease & Gray, Bot. Works Geo. Engelmann, 449. 1887). It was also necessary to consider the question in connection with the preparation of the Euphorbiaceae for Dr. T. H. Kearney's Flora of Arizona. The recent discovery of *Tetracoccus ilicifolius* Coville & Gilman, Proc. Wash. Acad. Sci., **26**: 531. 1936, made a reëxamination of these two genera imperative.

In publishing *Halliophytum*, Johnston related it to *Securinega*. The relationships are closer to *Tetracoccus*, as Johnston, Univ. Calif. Pub. Bot. **7**: 442. 1922, originally thought. The ecarunculate nearly centrally attached seeds of *Securinega* readily distinguish it from *Halliophytum* and *Tetracoccus* which agree in having carunculate, nearly apically attached seeds. The distinctions given by Johnston, l. c., between *Tetracoccus* and the species he later segregated as *Halliophytum* follow:

Ovary 4-celled; sepals on female flowers linear, becoming 3-5 mm. long; leaves linear, opposite; plants glabrous throughout.	<i>Tetracoccus</i>
Ovary 3-celled; sepals on female flowers triangular or ovate, becoming 2 mm. long; leaves spatulate or oblanceolate, alternate; young branches and fruit pubescent.	<i>Halliophytum</i>

The characters given in the above key will be considered *ad seriatim*: 1. The following specimen of *Halliophytum* has several 4-celled capsules: 26 miles west of Mapimi, Durango, I. M. Johnston 7783 (Gray Herb.). 2. *Tetracoccus ilicifolius* is described as having the outer sepals lanceolate or ovate, yet it has opposite leaves. 3. The leaves of *T. dioicus* may be alternate, subopposite, opposite, or even ternate on one short branch as shown by the type of the synonymous *T. Engelmannii* S. Watson, Proc. Amer. Acad. Arts & Sci. **20**: 372. 1885 (Feb. 21): Santo Thomas Hills, Baja California, Sept. 24, 1884, C. R. Orcutt 313 (Gray Herb.). *T. ilicifolius* is described as having leaves opposite yet ovate-lanceolate to ovate which completely destroys the distinction between the correlation of leaf shape and phyllotaxy. The leaves of *T. ilicifolius* are toothed. *T. dioicus* may on occasion have some of its leaves with inconspicuous and remote but nevertheless sharp and definite serrations as shown by: Red Hills near Fallbrook, San Diego County, California, Apr. 27, 1918, I. M. Johnston & S. B. Parish 1868 (Gray Herb.). This specimen also has both alternate and ternate leaves. 4. The ovaries of both *T. dioicus* and *ilicifolius* are tomentose and this vesture is more or less persistent on the capsules. The ovaries and capsules of *Halliophytum* are strigose. The leaves of *Tetracoccus ilicifolius* are described as sparingly villous on both sides when young.

Thus little is left of the original distinctions and the problem is resolved into a choice between erecting three genera on the flimsiest of habital and textural grounds, or the reduction of all to one sound and easily defined genus. The seeds, wherein lie so many stable characters in the *Euphorbiaceae*, show a marked uniformity in shape and developmental peculiarities. *T. dioicus*, according to Coville & Gilman, Proc. Wash. Acad. Sci. **26**: 531. 1936, usually matures but one seed in each cell. The one sheet which I have examined that had seeds, had developed 2 seeds per cell in the cells represented by the 4 seeds. The following specimen of *Hallio-phytum* developed 2 seeds in several cells and these bear a marked resemblance to the 4 seeds of *Tetracoccus dioicus* mentioned above: 16 miles east of Escalon, Chihuahua, Sept. 22, 1938, I. M. Johnston 7835 (Gray Herb.). The shape of the seeds, the number maturing per cell, and the presence of the caruncle all agree in uniting *T. dioicus*, *Hallii*, and *ilicifolius* into one genus.

TETRACOCCLUS HALLII T. S. Brandege, Zoe **5**: 229. 1906. — *Securinega Hallii* (T. S. Brand.) I. M. Johnston, Univ. Calif. Pub. Bot. **7**: 442. 1922. — *Halliophytum Hallii* (T. S. Brand.) I. M. Johnston, Contr. Gray Herb. **68**: 88. 1923. — *Securinega fasciculata* I. M. Johnston var. *Hallii* (T. S. Brand.) Jepson, Man. Fl. Pl. Calif., 595. 1925.¹ — I am accepting the first of the above typonymous names as taxonomically valid. The following discussion considers synonymous names: *Bernardia* (?) *fasciculata* S. Watson, Proc. Amer. Acad. Arts & Sci. **18**: 153. 1883,² *nomen provisorium*. Type: 24 miles northeast of Monclova, Coahuila, Mexico, Sept., 1880, Ed. Palmer 1233 (Gray Herb.). T. S. Brandege, Zoe **4**: 405. 1894, continued the provisional status. The earliest validation found is *Securinega fasciculata* I. M. Johnston, Univ. Calif. Pub. Bot. **7**: 442. 1922, where it is defined in a key. Johnston's attempted new combination, op. cit., 441, is not valid since a new combination cannot be based on a name not validly published. Some taxonomists may prefer to accept the reference to the place of publication of the provisional name as validating Johnston's new name (not new combination) on p. 441 by fulfilling the requirements for publication under Rules, ed. 3, Art. 44 "(2) by the citation of a previously and effectively published description of the group under another name;". Whether a description can be validly published

¹ Title page date doubtful and not accepted by Keck, Lloydia **1**: 88. 1938, under *Horkelia truncata*, but here provisionally accepted since no question of priority is involved.

² Issued Aug. 15, 1883 according to cover of separate.

when the name applied to it is provisional is dubious. Also the exact meaning of "another name" is obscure. Does it mean under another *specific* name, or either the same or different *specific* name under another genus? Whatever the interpretation of Art. 44 (2), the name *Bernardia* (?) *fasciculata* was provisional by Watson's own statement. There may be those who will claim that Watson meant something else when he stated that the species was "... only provisionally referred to *Bernardia*." However, it is difficult to see how the name *Bernardia* (?) *fasciculata* S. Watson can be saved from the provisions of the rule passed at the last International Botanical Congress: "A name of a taxonomic group is not validly published unless it is definitely accepted by the author who publishes it. A name proposed provisionally (*nomen provisorium*) in anticipation of the eventual acceptance of the group, or of a particular circumscription, position or rank of a given group, or merely mentioned incidentally is not validly published." (Proc. Zesde Internat. Bot. Congr. 1: 365. 1936.) — *Halliophytum fasciculatum* (I. M. Jtn.) I. M. Jtn., Contr. Gray Herb. 68: 88. 1923. — *Securinega capensis* I. M. Jtn., Univ. Calif. Pub. Bot. 7: 441. 1922, the basis of *Halliophytum capensis* (Jtn.) Jtn., Contr. Gray Herb. 68: 89. 1923, seems to differ little except in the longer and more slender staminate pedicels, and in the larger leaves which are matched by Arizonan specimens which in turn overlap those of the type of *H. fasciculatum*. Examination of ample material of *H. capensis* might show it to be distinct.

The following contemporary statement corroborating the above-mentioned statement of Trelease & Gray concerning the date of publication of *Tetracoccus* Engelm. ex Parry, West American Scientist 1(3): 13. 1885, is worth quoting: "*Tetracoccus disicus* [sic, error for *dioicus*] Parry, unfortunately secures the luxury of a synonym in Professor Watson's *T. Engelmanni*, published only a few days later in contributions to American botany, XII, Proc. Am. Acad., Vol. XX." (Orcutt, West. Amer. Scientist 1(4): 35. 1885, Mar.). Furthermore, l. c., 32, under "Editorial Notes" is inserted "The SCIENTIST is mailed between the fifteenth and twentieth of each month." Thus it is amply demonstrated that Parry published the genus before Watson did and *T. dioicus* Parry, West. Amer. Sci. 1(3): 13. 1885, was prior to the synonymous *T. Engelmanni* S. Watson, Proc. Amer. Acad. Arts & Sci. 20: 372. 1885.

CROTON COATEPENSIS T. S. Brandege, Zoe 5: 249. 1908.¹ This

¹ Date of issue given at bottom of p. 243.

was based on the following collection: Cerro de Coatepec, Puebla, México, Aug., 1907, *C. A. Purpus* 2827. The type is probably at University of California, Berkeley. An isotype at Gray Herbarium shows that this species is a member of the genus *Argythamnia*. Since this isotype is only in bud it is not in a state enabling more precise identification to be made.

DITAXIS DIVERSIFLORA Clokey, Bull. So. Calif. Acad. Sci. **37**: 6. 1938, is quite identical with *D. cyanophylla* Wooton & Standley, Bull. Torr. Bot. Club **36**: 106. 1909. I have seen neither type nor isotype of Wooton and Standley's species but I have seen two following collections cited in the original description. The first collection, of which I have seen 2 sheets, is labeled by Standley "*Ditaxis cyanophylla* W. & S.": south of Rito Quemado, Socorro County, New Mexico, July 24, 1904, *E. O. Wooton* 2890 (U. S. Nat. Herb.); near Coyote Spring southeast of Springerville, Apache County, Arizona, June 23, 1892, *E. O. Wooton* (U. S. Nat. Herb.). The distinctions claimed by Clokey to exist between the two species will be considered *ad seriatim*: (1) Geographical separation. This does not exist in the degree supposed. There are three collections from Coconino County, Arizona: pine forests, Slate Mountains, May-Oct., 1900, *C. A. Purpus* 7098 (U. S. Nat. Herb.); near Walnut Canyon, May 19, 1891, *D. T. MacDougal* 82 (U. S. Nat. Herb.); near Flagstaff in the yellow pine forest, alt. 1800 m., June 17, 1901, *J. B. Leiberger* 5528 (U. S. Nat. Herb.). (2) Height. The differences claimed were based on a comparison of Clokey's *specimens* with Wooton & Standley's *description*. The distinction does not exist when even the original specimens only are considered. Wooton & Standley gave an average of the variation rather than the extremes. (3) Leaves dull vs. shining. Wooton & Standley did not characterize the *leaves* as shining but rather the *stems*! (4) Absence vs. presence of water-soluble pigments. Fragments of Clokey's plants soaked for about an hour tinged the water a reddish purple. Perhaps the pH. and temperature of the water determine the solubility of the pigment. (5) Size and shape of sepals. The staminate sepals in an isotype of *D. diversiflora* (Gray Herb.) are 5-6 mm. long which is the same as those in the authentic specimens of *D. cyanophylla*. The pistillate sepals in *Ditaxis* are accrescent and in a topotype of *D. diversiflora*, *Clokey* 8010 (Gray Herb.) some of the fruiting sepals are over 7 mm. long. The distinction in shape does not exist. (6) Color of petals. Wooton & Standley described the staminate petals of their plant as "light yellow" rather than "yellow" as stated by Clokey. The difference be-

tween some "whites" and "light" or perhaps pale (?) yellow is trifling and perhaps more due to speed of drying than natural pigmentation. (7) Elliptic and rough vs. spheroidal and smooth seeds. Clokey's characterization of the seeds as "elliptic" is perhaps a trifle nearer the actual shape than "spheroidal" as stated by Wooton & Standley except that ellipsoidal is the correct term for a solid. The supposed difference between the "rough" seeds of Clokey and the "smooth" seeds of Wooton & Standley illustrates well the fact that different observers will describe the same thing in diametrically opposed terms. I should describe the seeds as macroscopically smooth but dull.

The following key will separate *Ditaxis cyanophylla* from its nearest relative *D. mercurialina* (Nutt.) Coulter:

Petals present in pistillate flowers; glands in both kinds of flowers
no longer than broad; sepals glabrous outside.....*D. cyanophylla*
Petals wanting in pistillate flowers; glands linear in both kinds of
flowers; sepals strigose outside.....*D. mercurialina*

ARGYTHAMNIA P. Browne, Hist. Jamaica, 338. 1756. There have been several variant spellings of this generic name. Sprague, Kew Bull. **1928**: 345. 1928, in discussing the "correct" spelling of the genus states: "There can be little doubt that Patrick Browne intended to give a name meaning "white shrub," and that the spelling *Argythamnia* was an unintentional orthographic error on his part for *Argithamnia*." In view of the fact that *Argythamnia* is derived from ἀργυρος, silver, and θάμνος, bush or shrub, there seems to be no good reason for changing to *Argithamnia* derived from ἄργυρ-, white, and θάμνος, bush or shrub. Both Britton & Wilson, Sci. Surv. Porto Rico and the Virgin Islands **5**(4): 487. 1924, and Jepson, Fl. Calif. **2**: 418. 1936, agree that the name is derived from the Greek meaning "silvery bush" or "silver bush." Aside from the fact that *Argythamnia* is perfectly correct and hence not to be altered, if Sprague had applied in this case the admirable principle propounded by him, op. cit., 364, in the case of *Wisteria* Nuttall, that "In such cases as *Wisteria*, where opinions differ as to whether a name contains an error or not, the original spelling should be retained" the original spelling of *Argythamnia* would perforce have been retained. In the case of *Wisteria*, Sprague lists only one variant spelling while the following variants of *Argythamnia* have been used: *Argitamnia*, Adanson, Fam. Pl. **2**: 520. 1763 (in index, original spelling of Browne retained in text p. 355); *Argithamnia*, Swartz, Fl. Ind. Occ. **1**: 335, t. 8. 1797 (Browne's original spelling was retained by Swartz, Nova Gen. & Sp. Pl.

Prodr., 39. 1788, contrary to statement of Pax in Engler, Pflanzenreich IV. **147(6)**: 78. 1912); *Argothenia*, Sprengel, Anleitung Kenntniss Gewächse ed. 2, **2**: 369. 1817, and Linn. Syst. Veg. ed. 16, **3**: 847. 1826; *Argyrothenia*, Muell. Arg., Linnaea **34**: 144. 1865 (basinym given on p. 148); *Argythamnia* Duchesne, Dict. Sci. Nat. **3**: 98. 1816. — See my defense, Contr. Gray Herb. **124**: 40. 1939, of the validity of the publication of *Argythamnia* by P. Browne. The type species of the genus is *A. candicans* Swartz, Nova Gen. & Sp. Pl. Prodr., 39. 1788. Britton & Wilson, Sci. Surv. Porto Rico & Virgin Islands **5(4)**: 487. 1924, designated this species as type probably for the excellent reasons that it was the first binomial assigned to the genus and that it was based on the single species assigned (as a polynomial) by P. Browne to his genus.

ARGYTHAMNIA CLARIANA Jepson, Fl. Calif. **2**: 419. 1936. Through the kindness of the collector of the type a topotype has been deposited in Gray Herbarium: sandy ground and gravelly benches, desert hills, elevation ca. 300 feet, foot of Santa Rosa Mountains about 10 miles west of Coachella, 3 miles due west of Coral Reef Ranch, Colorado Desert, Riverside County, California, Oct. 24, 1936, *Marjorie D. Clary 1707*. There is no distinction between Jepson's species and *Ditaxis adenophora* (A. Gray) Pax & Hoffmann in Engler, Pflanzenreich IV. **147(6)**: 65. 1912; based on *Argythamnia adenophora* A. Gray, Proc. Amer. Acad. Arts and Sci. **8**: 294. 1870, type: Sonora, Mexico, 1869, *Ed. Palmer 32* (Gray Herb.). The illustration of *Ditaxis adenophora* given by Pax in Engler, Pflanzenreich IV. **147(6)**: fig. 12 *B, C, & D*. 1912, is good though it is to be noted that the sex is reversed on *C & D*. Additional collections of this rare endemic of the Sonoran Desert are: **ARIZONA**: mouth of Williams Fork, Yuma or Mohave County, 1876, *Ed. Palmer 519* (Gray Herb. in part, U. S. Nat. Herb.); Agua Caliente, Maricopa County, Feb. 22, 1914, *John I. Carlson* (U. S. Nat. Herb.); without particular locality, *C. C. Parry 297* (U. S. Nat. Herb.). **SONORA**: limestone hills, Caborca, Aug. 25, 1884, *C. G. Pringle* (Gray Herb.).

BERNARDIA VIRIDIS Millsp., Proc. Calif. Acad. Sci. ser. 2, **2**: 223. 1889. Type: San Pablo, Baja California, April 22, 1889, *T. S. Brandegee* (Field Museum 280917!). Pax in Engler, Pflanzenreich IV. **147(7)**: 25. 1914, referred this provisionally to *B. myricifolia* (Scheele) S. Watson. Examination of the type reveals that it is identical with *B. mexicana* (H. & A.) Muell. Arg. A note on the type sheet reveals that I erred, Contr. Gray Herb. **124**: 36. 1939,

under *Croton crenulatus* M. E. Jones, in assuming that *B. Brandegei* Millsp., Proc. Calif. Acad. Sci. ser. 2, 3: 172. 1891 (nomen nudum), was based on a specimen from San Jose del Cabo. Millspaugh originally called the type of *B. viridis*, *B. Brandegei*, but according to Millspaugh's note on the sheet this "Sp. nomen unpublished as Brandegei, as Mr. B. desired the name to be other than his." Brandege's reason is plain since he considered the plant *B. mexicana* and reduced both *B. viridis* and its typonym *B. Brandegei* to synonymy, Zoe 4: 406. 1894. Millspaugh's use of *B. Brandegei* was "an inadvertence" according to Brandege, l. c.

JATROPHA ARIZONICA I. M. Johnston, Contr. Gray Herb. 68: 89. 1923. Type: foothills of the Santa Rita Mountains, Arizona, June 25, 1882, C. G. Pringle (Gray!; isotype U. S. Nat. Herb.). In nine collections, including the type, in which I have dissected the flowers, there were 8 stamens, 3 in the upper whorl and 5 in the lower, with the exception of one flower which had 7 stamens, 2 above and 5 below. *J. arizonica* was described as having 10 stamens. Yet the species of which I consider it but a variety, *J. macrorhiza* Benth., Pl. Hartw., 8. 1839, was described, correctly as confirmed by examination of an isotype at Gray Herbarium, as having 8 stamens. Also correctly described as having 8 stamens, as confirmed by examination of an isotype (Sulphur Springs, Cochise County, Arizona, 1874, J. T. Rothrock 546 (U. S. Nat. Herb.)) is *J. macrorhiza* var. *septemfida* Engelm. in Wheeler, Rep. U. S. Geogr. Surv. west of 100th Mer. 6: 243. 1878, which was not considered when *J. arizonica* was proposed, and to which I hereby reduce *J. arizonica*. *J. macrorhiza* var. *septemfida* differs from the species in having mostly 5-7 lobed leaves (as against 3-5), lobes narrower, sinuses deeper, margins more sharply and aristately toothed. — The following collection from Chihuahua, which confirms the report of Engelmann, op. cit., 244, of this variety from Chihuahua, has been examined: 25 miles southeast of Camargo, Sept. 24, 1938, I. M. Johnston 7884 (Gray Herb.).

EUPHORBIA subgenus **AGALOMA** (Raf.) House, N. Y. State Mus. Bull. 254: 471. 1924; based on genus *Agaloma* Raf., Fl. Tellur. 4: 116. 1838. Type: *Agaloma corollata* (L.) Raf., based on *Euphorbia corollata* L., designated as type by Rafinesque, Aut. Bot., 95. 1840. The following subgenera are synonyms of this one:

Euphorbia subgenus *Lepadena* (Raf.) House, N. Y. State Mus. Bull. 254. 471. 1924; based on genus *Lepadena* Raf., Fl. Tellur. 4: 113. 1838. Type: *L. leucoloma* (Raf.) Raf., op. cit., 114, and so designated, based on *Euphorbia leucoloma* Raf., based on *Euphorbia*

marginata Pursh, 1814, not HBK 1817; so stated by Raf., op. cit., 125.

Euphorbia subgenus *Adenopetalum*. Benth. ex Heinrich Ludwig Schmidt, Über Entwicklung Blüten & Blütenstände *Euphorbia*, 17, 1906, preprint from Beih. Bot. Centralbl. **22**: 33. 1907. I do not accept as a valid combination the casual misattribution of Schmidt's "Untergattung *Adenopetalum* Benth." Under the criteria which I have urged, Amer. Midl. Nat. **21**: 528, Art. 41. 1939, for the judgment of attempted new combinations, this attempt fails since the rank of the basynym is not given and no reference is given to its place of publication. Schmidt did not define his "subgenus." Of course, a special knowledge of *Euphorbia* enables me to trace the name to *Euphorbia* section *Adenopetalum* (Kl. & Gke.) Benth. & Hooker, Gen. Pl. **3**(1): 258. 1880; based on genus *Adenopetalum* Klotzsch & Garcke, Monatsb. Akad. Berlin **1859**: 250. 1859, not Turcz., Bull. Soc. Imp. Nat. Moscou **31**(1): 416. 1858. Type: *Euphorbia graminea* Jacq., chosen here since it is the best known of the species referred to the genus by its authors. *Euphorbia* section *Adenopetalum* was an avowedly and actually superfluous name since several of Boissier's sections were cited in synonymy.

Euphorbia subgenus *Trichosteryma* (Kl. & Gke.) Jepson, Fl. Calif. **2**: 424. 1936 (reference to basynym p. 430, under *Euphorbia misera*, defined in key in English); based on *Trichosteryma* Klotzsch & Garcke, Monatsb. Akad. Berlin **1859**: 248. 1859. Type: *Euphorbia fulgens* Karwinski; designated (satisfactorily) by Millspaugh, Addisonia **2**: 4. 1917.

Euphorbia subgenus *Aklema* (Raf.) Croizat, Rev. S. Am. Bot. Montevideo **6**: 13. 1939; based on genus *Aklema* Raf., Fl. Tellur. **4**: 114. 1838. Type: *A. nudiflora* (Jacq.) Raf., based on *Euphorbia nudiflora* Jacq.

EUPHORBIA subgenus *POINSETTIA* (Graham) House, N. Y. State Mus. Bull. **254**: 473. 1924; Jepson, Fl. Calif. **2**: 424. 1936, in key; based on genus *Poinsettia* Graham, New Philos. Journ. **20**: 412. 1836. Type: *Poinsettia pulcherrima* (Willd.) Graham, l. c.; based on *Euphorbia pulcherrima* Willd. ex Klotzsch in Otto & Dietr., Allg. Gartenz. **2**: 27. 1834. Croizat has made a combination for this subgenus which is superfluous under Rules, ed. 3, Art. 16: *Euphorbia* subgenus *Pleuradena* (Raf.) Croizat, Rev. S. Am. Bot. Montevideo **6**: 10. 1939; based on genus *Pleuradena* Raf., Atl. Journ. **1**(6): 182. 1833. Type: *Pleuradena coccinea* Raf., l. c., the only species assigned to the genus by its author, and specifically

stated by him, Fl. Tellur. 4: 113. 1838,¹ to be its type! The action of Croizat in designating "**Euphorbia pulcherrima** (Grah.) Rauch in [Loud.] Gard. Mag. 2, n. s., 390. 1836" as type of *Euphorbia* subgenus *Pleuradena*, and hence of the genus *Pleuradena*, is certainly out of order. No one has any right to challenge the action of an author of a monotypic genus to which he assigns a single new species when he designates that species as type. In fact, in such a case, the sole species must automatically be the type. The fact that *Euphorbia pulcherrima* Willd. is taxonomically identical with *Pleuradena coccinea* has no bearing on the question of nomenclatural typification. — The authors given by Croizat for *Euphorbia pulcherrima* are erroneous.

EUPHORBIA (subgenus CHAMAESYCE Raf.²) **peruviana** sp. nov. (TAB. IIIA). Annuua, glabra, sparse pilosa vel glabrata; caulibus erectis, gracilibus; foliis ovatis vel ovalibus vel oblongis, 4–8 mm. longis, subintegris vel irregulariter denticulatis, petiolis ca. 1 mm. longis; cyathiis solitariis; involucris cupuliformi-campanulatis, 1.7–2 mm. diametro, extus pilosis; glandulis transverse oblongis, 0.8–1 mm. longis; appendiculis glabris, albis, quam glandulis 1.5–2plo latioribus, irregulariter denticulatis; floribus masculis 31–41; stylis inferne 1/3–1/4 connatis, bifidis, stigmatibus ellipsoideis; capsulis sparse pilosis, acute 3-lobatis, ca. 2.3 mm. longis; seminibus (immaturis) quadrangularibus, ca. 1.7 mm. longis, laevibus.

Annual; stems 1–4, erect 4–8 cm. tall, ca. 0.5 mm. thick, pilose with partially deciduous, white, microrugulose hairs, internodes from 2.5 cm. below to a few mm. above; leaves opposite, sparsely pilose to glabrate, blades ovate, oval, to oblong, 4–8 mm. long, subentire to irregularly denticulate (at the apex), petioles ca. 1 mm. long; stipules of 1 or 2 linear segments 0.6–1 mm. long, or often obsolete; peduncles pilose, 1–4 mm. long; cyathia solitary in the bifurcations; involucres cupuliform-campanulate, 1.7–2 mm. in diam., pilose outside, hairy above inside; lobes entire, subulate, pilose, exceeding the glands; glands transversely oblong, often folded, 0.8–1 mm. long; appendages glabrous, white, a little longer than and 1 1/2–2 times as wide as the glands, margin irregularly toothed; fifth gland absent; sinus U-shaped, scarcely depressed; bracteoles several opposite each gland, free, filiform, with sparse hairs on the upper end; staminate flowers 31–41; androphores

¹ See Barnhart, Torreyia 7: 177–182. 1907, as to date.

² Amer. Mo. Mag. 2: 119. 1817. Type: *Euphorbia supina* Raf., l. c., designated here.

glabrous, 1.9–2 mm. long; gynophore exerted and reflexed, pilose above; ovary 3-lobed, densely pilose; styles glabrous, 1.1–1.3 mm. long, united for $1/3$ – $1/4$ their length, bifid from only the length of the ellipsoidal stigmas to halfway; capsule sparsely pilose, sharply 3-lobed, wider below the middle, ca. 2.3 mm. long; seeds (immature), sordid white, quadrangular, ca. 1.7 mm. long, ca. 0.9 mm. tangentially, ca. 1 mm. radially, radially narrowly ovate, base obtuse, apex acute, facets macroscopically smooth but the gelatinous coat microscopically verruculose.

Type: Mount Estuquiña, northwest of Moquegua, Prov. Moquegua, Peru, alt. 1600–1900 m., Mar. 22, 1925, A. Weberbauer 7441 (Gray Herb.).

This new species is readily distinguished from all other species of subgenus *Chamaesyce* known to me by the extremely long styles with their thickened tips.

EUPHORBIA (subgenus *CHAMAESYCE* Raf.) **crepitata** sp. nov. (TAB. IIIB). Perennis, glabra; caulibus numerosis, adscendentibus vel erectis, gracilibus, ramosis; laminis foliorum ellipticis, ovatis, vel suborbicularibus, integris; petiolis 0.7–1 mm. longis; stipulis distinctis, linearibus, glabris, 0.3–0.5 mm. longis; cyathiis solitariis, terminalibus; involucri anguste campanulatis, 1.1–1.3 mm. diametro; glandulis transverse ovalibus vel ellipticis, 0.5–0.7 mm. longis; appendiculis angustis; floribus masculis 22–33; stylis bifidis, ca. 0.8 mm. longis; capsulis glabris, 3-lobatis; seminibus quadrangularibus, 1.4–1.5 mm. longis, in quoque latere 4–5, canalibus subregularibus.

Perennial, glabrous; stems numerous, ascending to erect, freely branching, slender (mostly 0.2–0.5 mm. thick), internodes mostly 1–3 cm. long; leaf-blades suborbicular, elliptical, to ovate, 2–5 mm. long, base inequilateral, margin entire; petioles 0.7–1 mm. long; stipules distinct, linear, glabrous, 0.3–0.5 mm. long; cyathia solitary at the tips of the branches, the peduncles disarticulating if the stem axis elongates; peduncles 0.6–2 mm. long; involucre narrowly campanulate, 1.1–1.3 mm. in diam., glabrous outside, pubescent inside at the summit; lobes pubescent inside, triangular, about equaling the glands; glands transversely oval to elliptical, 0.5–0.7 mm. long, slightly depressed in the middle, pink to reddish; appendages margining the glands evenly on the outside, entire, about half as wide as the gland and essentially the same color; fifth gland linear, $1/2$ – $2/3$ as long as the lobes; sinus very small, U-shaped, not depressed; bracteoles mostly united below into a radial row adnate to the involucre, free ends pubescent, ca. $3/4$

as long as the androphores; staminate flowers 22–33; androphores glabrous, 1.3–1.4 mm. long; gynophore glabrous, soon exerted, reflexed to erect; ovary glabrous, 3-lobed; styles ca. 1/2 bifid, ca. 0.8 mm. long, the divided portion expanded in the vertical plane; capsule 3-lobed, glabrous, ca. 2 mm. long; seeds quadrangular, 1.4–1.5 mm. long, 0.75–0.9 mm. tangentially and radially, radially ovate to narrowly ovate, facets traversed by 4–5 subregular sharp transverse grooves which do not pass through the angles, coat white to sordid.

Type: dry rocky canyon floor 4 miles west of Cuatro Cienegas, Coahuila, Mexico, Aug. 24–26, 1938, *I. M. Johnston 7160* (Gray Herb.). Known only from the solitary plant in the collection cited. The following key will readily separate *E. crepitata* from its nearest relative *E. polycarpa* Benth.:

Seeds smooth or faintly wrinkled; styles not thickened at the tip. . . . *E. polycarpa*.
Seeds with sharp deep transverse grooves on the facets; styles
markedly broadened in a vertical plane on the upper half *E. crepitata*.

EUPHORBIA VILLIFERA Scheele var. **crepuscula** var. nov. (TAB. IIIC). A specie: cutis glabra, non papillata; foliis nonnullis angustis; seminibus 3–4 canalibus humilibus transversalibus differt.

Annual; glabrous except for crisped hairs on some young internodes; epidermis not papillate; stems prostrate to ascending; leaf-blades 3–12 mm. long. linear to oblong or elliptic-obovate (all extremes on any one plant, the longer are the narrower except on the ultimate branchlets), base inequilateral, margin subentire to serrulate; seeds brown to whitish, quadrangular, 1.1–1.2 mm. long, 0.7–0.8 mm. tangentially and radially, ovate-oblong radially, base truncate, facets with 3–4 rounded, slightly irregular transverse ridges.

Type: palm-oak habitat, Guirocoba, District of Alamos, Sonora, Mexico, Nov. 13, 1933, *H. S. Gentry 789M* (Gray Herb.). The only other collection examined which is referable to this variety is: Cofradia, Sinaloa, Mexico, Oct. 22, 1904, *T. S. Brandege* (Gray Herb.); distributed as *E. villifera* Scheele and referred, at least in part, to *E. villifera* var. *nuda* Engelm. by T. S. Brandege, *Zoe* 5: 209. 1905. The following key will separate the varieties of *E. villifera*:

Some of the leaves of the main stem linear or oblong-linear; seeds
plainly but shallowly transversely grooved; epidermis not
papillate. var. *crepuscula*
Leaves (except those of the ultimate branchlets) ovate to triangu-
lar-ovate-acute; seeds smooth or faintly wrinkled; epidermis
papillate.
Herbage, especially the stems, more or less pilose. *E. villifera*
Herbage glabrous. var. *nuda*

EUPHORBIA (subgenus AGALOMA (Raf.) House) **innocua** sp. nov. (TAB. IIID) Perennis; caulibus prostratis, ramosis, 8–45 cm. longis, pilosis; foliis 4–15 mm. longis, latissime ovatis vel ovatis vel oblongo-ovatis, basi cordatis, inferne alternis et petiolatis, superne oppositis et sessilibus; cyathiis solitariis in axillis, et terminalibus; involucris late obconicis vel obconico-campanulatis, extus pilosis, 1.3–1.6 mm. diametro; glandulis 4, transverse ovalibus vel oblongis, 0.6–1 mm. longis; appendiculis pallide viridibus, quam glandulis 1–2plo latoribus, subintegris, subtus pilosis; floribus masculis 7–9; stylis bifidis, 0.6–0.7 mm. longis; capsulis profunde 3-lobatis, 2.4–2.8 mm. longis; seminibus (immaturis) ca. 1.7 mm. longis, ovoideis, leviter lacunosis.

Herbaceous perennial; stems branching 8–45 cm. long, longitudinally ribbed at maturity, pilose, median internodes up to 9 cm. long, subterminal internodes but a few mm. long; leaves 4–15 mm. long, pilose, orbicular-ovate to ovate and oblong-ovate, base cordate, lower alternate, borne on petioles up to 2 mm. long, grading into the upper opposite sessile leaves; stipules minute, glanduliform; cyathia solitary, in the upper axils and terminal; peduncles from almost wanting to 4 mm. long; involucre broadly obconical to obconical-campanulate, pilose outside, glabrous inside except for appressed hairs just beneath the glands, 1.3–1.6 mm. in diam.; lobes about equaling the glands, obtuse or triangular and acute; glands 4, transversely oval to oblong, 0.6–1 mm. long; appendages pale green, 1–2 times as wide as the gland, margining the gland in a half-moon to suborbicular shape, entire to minutely crenulate, pilose beneath; fifth gland reduced to two linear segments ca. $\frac{1}{2}$ as long as the lobes; sinus U-shaped, depressed ca. $\frac{1}{3}$ to base of involucre; bracteoles mostly represented by two, sometimes by only one, linear segments between each fascicle, shorter than the androphores, glabrous or nearly so; staminate flowers 7–9 per cyathium; androphores glabrous, 1.4–1.6 mm. long; gynophore pilose above, soon exerted and reflexed; ovary pilose-tomentose, roundly 3-lobed; styles ca. 0.6–0.7 mm. long, glabrous, bifid $\frac{1}{3}$ – $\frac{1}{2}$ to base, subclavate; capsule depressed-globose, strongly and roundly 3-lobed, 2.4–2.8 mm. long, pilose; seeds (immature and misshapen) ca. 1.7 mm. long, ovoid, testa with shallow smooth pits (“dimples”).

Type: in sand in open fields 2 miles north of Yturria on Highway 96, Willacy County near Kenedy County line, Texas, Apr. 10, 1937, Robert Runyon 1627 (US 1735250). The following is the only other collection seen: deep sands Refugio, Refugio County, Texas,

Mar. 9, 1916, *E. J. Palmer 9115* (Acad. Nat. Sci. Philadelphia 694167).

Although roots are lacking on both collections, the appearance of Palmer's specimen and the statement of Runyon that the root is perennial have convinced me that the plant is perennial from a probably thickened farinaceous root.

The relationships of this species were very puzzling. At first glance the plant appears to be a member of subgenus *Chamaesyce* Raf. (sect. *Anisophyllum* Roeper). The alternate lower leaves exclude it from that group. After considerable study it gradually became evident that it was closely related to *Euphorbia macropus* (Klotzsch & Garcke) Boiss. which was assigned to *E.* sect. *Anisophyllum* §*Pleiadeniae* Boissier by Boissier DC. Prod. **15**(2): 52. 1862, with the comment that it was intermediate between sections *Anisophyllum* and *Zygophyllidium*. The true relationships of this new species, and the geminate species *E. macropus* and *E. macropodoides* Robinson & Greenman are with *E. sphaerorrhiza* Benth through *E. biformis* S. Watson as a connecting link. The pilose capsule and pilose leaves with cordate base readily distinguish *E. innocua* from the close relatives named above which have the capsules glabrous (or if strigose, leaves linear) and glabrous to strigose leaves.

There is some confusion as to the spelling of Robinson & Greenman's epithet. It was published as "*macropodoides*," yet on the printed label of the type specimen it appears as "*macropoides*." The former spelling is to be preferred. The authors were directly responsible for the publication, but not for Pringle's labels; and according to Mr. Weatherby *macropodoides* is etymologically correct.

EUPHORBIA (subgenus AGALOMA (Raf.) House) **succedanea** sp. nov. (TAB. IVA). Annua; caulibus erectis, 35-72 cm. altis, longitudinaliter sulcatis, glabris; foliis inferne alternis, superne oppositis, petiolis 0.5-3.5 cm. longis, laminis ellipticis vel oblongo-linearibus et linearibus, 1-4 cm. longis, integris, plerumque supra glabris, subtus sparse strigosis; cyathiis in furcis superioribus solitariis, et terminalibus; involucris latissime obconicis, 1.4-1.7 mm. diametro; glandulis 5, appendiculis albis, glabris, 1.3-1.4 mm. longis; floribus masculis 19-35; stylis bifidis, 0.7-0.9 mm. longis, clavatis; capsulis glabris, profunde 3-lobatis, ca. 3 mm. longis; seminibus 2.3-2.4 mm. longis, nigro-brunneis vel albidis, irregulariter et leviter tuberculatis, subsexangulo-pyramidalibus, basi obtusis.

Erect annual herb 35–72 cm. tall; stems longitudinally ribbed, glabrous, with alternate branches below, branched above with 3–5 subequal to unequal branches arising from nearly the same point, branches forking at the tips; leaves alternate below, opposite toward the branch tips, petioles of the main stem leaves about equaling the blades, 0.5–3.5 cm. long, mostly glabrous, blades elliptic to oblong-linear and linear, 1–4 cm. long, entire, mostly glabrous above, sparsely strigose beneath; stipules minute, distinct or united; cyathia solitary in the upper bifurcations and solitary or in threes at the branch tips; peduncles glabrous, 1–6 mm. long; involucre very broadly obconical, about as broad as long, 1.4–1.7 mm. in diam., glabrous outside except for a ring of scattered appressed hairs just below the glands, glabrous inside save for a similar ring in a corresponding position; lobes about equaling the glands, ca. as long as wide, apex obtuse or truncate, erose; glands 5, elevated, horseshoe-shaped; appendages white, glabrous, ovate, 1.3–1.4 mm. long, seeming to arise directly from the involucre with the glands arising from them, ascending, margin irregular; bracteoles essentially free, ca. $\frac{2}{3}$ as long as the androphores, often with a few short hairs above; staminate flowers 19–35; androphores glabrous, 1.1–1.6 mm. long; gynophore glabrous, long-exserted and mostly erect at maturity; ovary glabrous, strongly and roundly 3-lobed; styles 0.7–0.9 mm. long, ca. $\frac{2}{3}$ bifid, clavate; capsule glabrous, strongly 3-lobed, ca. 3 mm. long; seeds sub-hexagonal-pyramidal, apex capped by a triangular pyramid, base obtuse, color very dark brown, or irregularly overcast with a translucent sordid white gelatinous coat, surface with low irregular tubercles, 2.3–2.4 mm. long, 1.6–1.9 mm. tangentially, 1.7–2 mm. radially, elliptic-ovate radially.

Type: Telpintla, Temascaltepec, state of Mexico, Mexico, Sept. 25, 1934, *Geo. B. Hinton et al.* 6580 (Gray Herb.). Other collections seen: MEXICO, Michoacán: près la Huerta, vicinity of Morelia, 1900 m., Oct. 15, 1909, *G. Arsène* 3107 (Gray Herb.); la Huerta, vicinity of Morelia, 1950 m., Sept. 1, 1910, *G. Arsène* 5134 (Gray Herb.). Mexico: Rancho-Posadas, près Puebla, May 15, 1910, *Nicolas* (Gray Herb.).

The relationships of this species are puzzling. It seems best referred to the group called by Boissier, DC. Prod. **15**(2): 52. 1862, sect. *Zygophyllidium* §*Ecarunculatae*. It is easily distinguished from the other members of this group, *E. hexagona* Nutt., *E. bilobata* Engelm. and particularly *E. hexagonoides* S. Watson, by

having the leaves alternate below rather than essentially opposite throughout.

EUPHORBIA (subgenus *AGALOMA* (Raf.) House) **Hintonii** sp. nov. (TAB. IVB). Perennis; radice tuberosa, globosa vel ovoidea; caulis annuis, erectis, 10–30 cm. longis, longitudinaliter sulcatis, glabris vel sparse strigillosis, prope basim umbelliformi-ramosis, superne dichotomis; inferne foliis alternis, superne oppositis, ovato-cordatis et acutis vel ovato-acutis, vel lanceolatis, integris, glabris supra, glabris vel sparse vestitis subtus, 5–18 mm. longis, petiolis 1–1.5 mm. longis; cyathiis in cymosis foliosis; involucris late obconico-campanulatis, 2.4–2.8 mm. diametro; glandulis 5, cuneato-reniformibus, ca. 1 mm. latis; appendiculis ellipticis vel ovatis, 3–4 mm. longis; floribus masculis 16–25; stylis bifidis, 1.2–1.6 mm. longis; capsulis profunde 3-lobatis; seminibus ovoideis, laevibus, brunneis, ca. 2.7 mm. longis.

Perennial from a globose to ovoid root up to 3 cm. in diam.; stems annual, erect, 10–30 cm. tall, longitudinally sulcate, glabrous to sparsely appressed-vestite, umbellately branched near the base, stems forking symmetrically above; leaves alternate below the umbellate branching, opposite above, ovate-cordate-acute, ovate-acute to lanceolate, entire, glabrous above, glabrous to very sparsely crisped-hairy beneath, 5–18 mm. long, petioles 1–1.5 mm. long; stipules minute, glanduliform; cyathia borne in loose leafy cymes of mostly 3 cyathia; peduncles 3–28 mm. long, glabrous to very sparsely crisply vestite; involucre broadly obconical-campanulate, 2.4–2.8 mm. in diam., sparsely crisply vestite outside, glabrous inside except just beneath the glands; lobes glabrous, ca. 1 mm. wide and long, slightly broader upward, exceeding the glands, summit obtuse, shallowly parted into numerous linear segments; glands broadly cuneate-reniform, ca. 1 mm. wide, surface irregularly sub-alveolate-convolute especially at the much-thickened summit; appendages elliptical to ovate and obcuneate-oblong, 3–4 mm. long, glabrous or with a few scattered hairs beneath, white to pink, margin mostly entire except the apex often sub-truncate and irregular to bluntly 2–3 toothed; bracteoles partly united, forming a radial partition adnate on its outer edge to the involucre, ca. $\frac{3}{4}$ as long as the androphores, densely white-hairy; staminate flowers 16–25; androphores glabrous, 2.1–3 mm. long; gynophore glabrous, long-exserted and mostly at length reflexed; ovary glabrous, roundly 3-lobed; styles erect, slightly united below, 1.2–1.6 mm. long, $\frac{1}{4}$ – $\frac{1}{3}$ bifid, the tips flattened; capsules

deeply and roundly 3-lobed, 3.4–3.9 mm. long; seeds ecarunculate, ovoid, sub-acute, very slightly laterally compressed, ca. 2.7 mm. long, ca. 2 mm. tangentially, ca. 2.1 mm. radially, testa smooth, brown.

Type: Berros, Dist. Temascaltepec, state of Mexico, Mexico, July 29, 1934, *Geo. B. Hinton et al. 6257* (Gray Herb.). Additional collections: MEXICO: Dist. Temascaltepec, Mexico: oak woods, Nanchititla, Aug. 16, 1933, *Hinton 4534* (Gray Herb.); cliffs by the river, Carboneras, June 24, 1934, *Hinton et al. 6092* (Gray Herb.); oak woods, Nanchititla, July 24, 1934, *Hinton et al. 6351* (Gray Herb.).

The following key will distinguish this new species from its two closest relatives:

- Stems erect; lower alternate leaves few or wanting, often narrow, entire, petioles not over $1/5$ as long as the blades.
 - Leaves ovate-cordate-acute to lanceolate, ovary and capsule glabrous.....*E. Hintonii*
 - Leaves all narrowly linear; ovary and capsule strigose...*E. sphaerorrhiza* Benth.
- Stems weak, apparently too weak to be erect; lower alternate leaves numerous, broad (ovate to orbicular-ovate), often serrulate, petioles about half as long as blade.....*E. muscicola* Fern.

EUPHORBIA ESULA L., Sp. Pl. 1: 461. 1753. Of late years there has been some discussion as to whether this plant occurred in North America and, if it did, whether it were the only species known as "Leafy Spurge." C. V. Morton, "The correct name of the leafy spurge" *Rhodora* 39: 49–50. 1937, stated that he had "seen no specimens of undoubted *E. Esula* from the United States" and concluded that our plants were *E. virgata* W. & K. A. L. Bakke, in an admirable study of the problem from an agricultural viewpoint, concluded that *E. virgata* W. & K. was indistinguishable from *E. Esula* L. At first I was inclined to agree with Morton. Assuming that *E. Esula* does not occur in the U. S. it is easy to identify our plants as *E. virgata* W. & K. But I have been unable to distinguish our plants from European material of *E. Esula*. As a consequence I have been forced to conclude that the Leafy Spurge of the United States is *E. Esula*.

Another aspect of the matter which has been generally overlooked is that *Euphorbia virgata* Waldstein and Kitaibel, Descr. & Icones Pl. Rar. Hungariae 1: 176, t. 162. 1805, is preoccupied by the same name published by Desfontaine, Tableau, 204. 1804 (based on *E. mauritanica* L. *sensu* Lamarck, Encyc. Meth. Bot. 2: 418. 1786). Typonyms of *E. virgata* W. & K. are: *Esula virgata* (W. & K.) Haw., Syn. Pl. Succ., 155. 1812, and *Tithymalus virga-*

tus (W. & K.) Klotzsch & Garcke ex Garcke, Fl. Deutschl., ed. 4, 292. 1858, not Haw., Syn. Pl. Succ., 139. 1812.

Typonyms of *Euphorbia Esula* L. are: *Tithymalus Esula* (L.) Scop., Fl. Carn. ed. 2, 1: 338. 1772.¹ — *Esula Dalechampii* Haw., Syn. Pl. Succ., 155, 1812. — *Keraselma Esula* Raf., Fl. Tellur. 4: 116. 1838² (with the vague basonym (or alternative name?) given as "E. esula" without author). — *Esula vulgaris* Fourreau, Ann. Soc. Linn. Lyon, n. s., 17: 150. 1869. — *Galarhoeus Esula* (L.) Rydberg, Brittonia 1: 92. 1931.

EUPHORBIA HIRTA L., Sp. Pl. 1: 454. 1753. This polymorphic species was said by Linnaeus, l. c., to be an inhabitant of India. It is evident from Burmann, Thesaurus Zeylanicus, 223, t. 104, & 224, t. 105 fig. 1. 1737, cited respectively as *E. hirta* and *E. pilulifera* by Linnaeus, l. c., that prior to 1753 *E. hirta* was growing in the East Indies. (The two figures cited represent merely different phases of the same species.) However, biological evidence indicates that *E. hirta* is native in the New World and introduced in the Old World. A plant with a wide natural range is likely to exhibit well-marked variations in some regions. An introduced plant is unlikely to exhibit the total range of variation of the indigene. In this case only the typical species occurs in the many collections which I have examined from the Old World. Yet in the New World there are very definite variations two of which show geographical localization. The third, var. *procumbens*, may have a zonal localization in spite of its rather wide range. The following key will serve to separate the varieties of *Euphorbia hirta*:

Capsules small, 1–1.5 mm. long; seeds 0.7–0.9 mm. long.

Clusters of cyathia (cymules) both terminal and lateral (except in depauperate plants), on leafless peduncles; stems sparingly branched above the base, unbranched at the tip . . . var. *typica*.

Cymules terminal, or, if lateral, on leafy branches; stems branching freely, often forking symmetrically (or nearly so) at the tip.

Leaves rhombic-ovate to rhombic-oblong, acute; stems prostrate to ascending, mostly with conspicuous spreading hairs . . . var. *procumbens*.

Leaves linear to broadly lanceolate, the apex tapering; stems erect, with few or no spreading hairs; Peruvian . . . var. *destituta*.

Capsules large, 1.6–1.7 mm. long; seeds 1.15–1.2 mm. long; Mexican . . . var. *nocens*.

¹ I do not accept as valid combinations the names placed under *Tithymalus* by Hill, Hort. Kew., 172/3–4. 1768. (ed. 2. 1769 examined; "minime differt!" fide Pritzel, Thes. Lit. Bot., ed. 2, 144. 1872.) For the criteria I propose to use in judging the validity of attempted new combinations see Amer. Midl. Nat. 21: 528. 1939.

² See Barnhart, Torreya 7: 177–182. 1907 as to date.

EUPHORBIA HIRTA L., Sp. Pl. 1: 454. 1753, var. **typica**. Type: source unknown (Linnaean Herb., not seen; photograph Gray Herbarium!). Quite typical of this widespread entity. — *E. capitata* Lam., Encyc. Meth. Bot. 2: 422. 1786, substituted for *E. hirta* on the ground that the name was bad. — *Chamaesyce hirta* (L.) Millsp., Field Mus. Pub. Bot. 2: 303. 1909. — *Euphorbia pilulifera* L. I *hirta* (L.) Thellung in Ascherson & Graebner, Syn. Mitteleur. Fl. 7: 425. 1917.

Euphorbia globulifera HBK, Nov. Gen. et Sp. 2: 56 (quarto), 45 (folio). 1817. Type: Cumana, Venezuela, *Bonpland* 403 (Herb. Mus. Paris, not seen; fragment Field Mus.!). The fragment is too small to show beyond doubt whether this species belongs here or under var. *procumbens*.

Euphorbia verticillata Velloso, Fl. Flum., 202. 1825, & vol. 5: t. 16. 1827, not Poiret, in Lam., Encyc. Meth. Bot. Suppl. 2: 611. 1811. Type: ?. The interpretation given here is based on the plate cited. — *E. nodiflora* Steudel, Nom. Bot. ed. 2, 1: 613. 1840.

Euphorbia pilulifera L. β *discolor* Engelm. in Emory, U. S. & Mex. Bound. Surv. 2(1): 188. 1859. Type: "On the Sonoita [creek] near Deserted Rancho," Santa Cruz County, Arizona, Sept. 16, 1851, *C. Wright* 1842 (Missouri Bot. Gard. 144667!; isotypes Gray Herb.!, U. S. Nat. Herb.!, p. p.). Merely plants with red-spotted leaves. — *E. pilulifera* L. l. ["spielart"] *discolor* (Engelm.) Thellung in Ascherson & Graebner, Syn. Mitteleur. Fl. 7: 426. 1917.

Chamaesyce Rosei Millsp., Field Mus. Pub. Bot. 2: 402. 1916. Type: along an arroyo in the vicinity of Alamos, Sonora, Mexico, Mar. 13, 1910, *Rose, Standley, & Russell* 12728 (New York Bot. Gard.!). A rather stunted and perhaps overwintering plant.

Euphorbia pilulifera L. var. *guaranitica* Chodat & Hassler, Bull. Herb. Boiss. ser. 2, 5: 679. 1905. Type: in regione cursus superioris fluminis Apa, Paraguay, Nov. 1901/2, *E. Hassler* 7735 (Geneva?, not seen; isotype Gray Herb.!). A low plant with smaller leaves than usual for var. *typica*.

Euphorbia pilulifera L. *sensu* Jacquin, Icones Pl. Rar. 3: t. 478. 1786-93; Boissier, DC. Prod. 15(2): 21. 1862; J. D. Hooker, Fl. Brit. India 5: 251. 1887; Thellung in Ascherson & Graebner, Syn. Mitteleur. Fl. 7: 423. 1917; Farwell, Rhodora 38: 331-2. 1936; and many other authors under *Euphorbia*, *Anisophyllum*, *Chamaesyce*, and *Tithymalus*.

The following Australian forms probably belong here: *E. pilulifera* L. forma *rubromaculata*, f. *humifusa*, & f. *viridis* K. Domin, Bibliotheca Bot., Band 22, Heft 89(4): 866. 1927.

Range: southern United States, West Indies and Mexico south to Argentina, widely introduced in the Old World. This plant is so common and well understood that it seems unnecessary to cite specimens. In herbaria it is often found under the name of *Euphorbia pilulifera* L.

EUPHORBIA HIRTA L. var. *PROCUMBENS* (DC.) N. E. Brown in Thiselton-Dyer, Fl. Trop. Afr. **6**(1): 497. 1911; based on *E. procumbens* DC., Cat. Pl. Hort. Monsp., 111. 1813, not Miller, Gard. Dict. ed. 8, *Euphorbia* 12. 1768. Type: probably a plant from the garden at Montpellier, France (Geneva?, not seen.) — *E. pilulifera* L. var. *procumbens* (DC.) Boiss., DC. Prod. **15**(2): 21. 1862. — *Chamaesyce pilulifera* (L.) Small var. *procumbens* (DC.) Small, Fl. SE U. S., 714, 1334. 1903. — Since no authentic material has been available it has been necessary to accept without confirmation the interpretation of Boiss., DC. Prod. **15**(2): 21. 1862. — Plate IVC, fig. 2.

Euphorbia obliterata Jacquin, Enum. Syst. Pl. Carib., 22. 1762, and Select. Stirp. Amer. Hist., 151. 1763, at least in the sense in which it was used: *E. pilulifera* L. var. *obliterata* (Jacq.) A. S. Hitchcock, A. R. Mo. Bot. Gard. **4**: 127. 1893. No authentic material has been available.

Euphorbia ophthalmica Persoon, Syn. Pl. **2**: 13. 1807. Type: Rio de Janeiro, Brazil, July, 1767, *Commerson* 238 (Herb. Mus. Paris, not seen; fragment Field Mus.!). A small-leaved plant.

Euphorbia gemella Lag., Gen. et Sp. Nov., 17. 1816. Type: "Habit.[at] in N.[ova] H.[ispania]" (Perhaps at Madrid judging by Alph. DC., Phytographie, 426. 1880). Supposed by Boissier, DC. Prod. **15**(2): 21. 1862, *et alior* to be the same as *E. procumbens* DC. — *Chamaesyce gemella* (Lag.) Small, Fl. Miami, 110, 200. 1913.

Range: Florida, Mexico, West Indies, and South America. Judging by an ample suite of Old World specimens of *Euphorbia hirta*, var. *procumbens* does not occur outside the New World, and reports of it from the Old World must be based on depauperate plants of var. *typica*. While there is a size difference between the means of var. *procumbens* and *typica* there is an overlapping of the extremes. The distinction between the two is not primarily one of size but rather the type of branching and position of the cymes.

Representative specimens of *Euphorbia hirta* var. *procumbens* in Gray Herbarium are cited below: FLORIDA: Dade County: without additional locality, *Fredholm* 5645; Miami, May, 1877, *Garber*. MEXICO: Mexico: Salto de Agua, *Purpus* 1810. Morelos: Yantepec, *Pringle* 8539, *Pringle* 8730. Durango: Durango, July, 1896, *Ed.*,

Palmer 360. Yucatan: without particular locality, *Valdez 2*, *Gaumer 315*; San Anselmo, *Gaumer 2128*; Izamal, *Gaumer 1003*. GUATEMALA: Coban, Dept. Alta Verapaz, *Tuerckheim 457*. SALVADOR: Ateos, Dept. La Libertad, *Standley 23336*; San Martín to Laguna de Ilopango, Dept. San Salvador, *Standley 22474*; Volcán de San Salvador, *Standley 22830*. BERMUDA ISLANDS: Harrington Sound, *Collins 337*. CUBA: Havana, *Curtiss*, West Indian Plants, 712; Santiago de las Vegas, *Baker & Wilson 514*. BRAZIL: without particular loc., *Riedel*, ECUADOR: Ambato, Province Tungurahua, alt. 2,600 m., *A. S. Hitchcock 21732*; vicinity of Huigra, mostly on the Hacienda de Licay, *J. N. & Geo. Rose 22543*; "in andibus Ecuadorensibus," *Spruce 5776*. Galapagos Islands, Charles Island: *Stewart 1883, 1884, 1885, 1886*, *Snodgrass & E. Heller 439*, *Svenson 171*. Galapagos Islands, Chatham Island: *Snodgrass & E. Heller 519*, *Stewart 1887*. PERU: Lima, Apr., 1882, *J. Ball*. CHILE: Tacna-Arica region, *Shepard 285*. ARGENTINA: Provincia de Salta, Dept. Candelaria: Agua Caliente, *Venturi 3695*; Aguaraz, *Parodi 9131*; Campo Durán, *Parodi 9165*. Provincia de Tucuman, Dept. Capital: Villa Lujan, *Venturi 167*. Gobernacion del Chaco: Fontana, *T. Meyer 2446*.

Many of the Galapagian plants are marked by their thin subentire and dark green leaves.

EUPHORBIA HIRTA L. var. **destituta** var. nov. (TAB. IVC, FIG. 1) Caulibus erectis, tenuibus, 14–22 cm. altis, multo ramosis et saepe bifurcatis, strigiosis vel inferne glabratis, internodiis plerumque foliis longioribus; foliis linearibus vel late lanceolatis, integris vel leviter serrulatis, 1–3.3 cm. longis, apice attenuata; cymulis in caulibus praecipuis et ramorum lateralium foliosorum apicibus terminalibus.

Type: between Piura and Ñomala, Dept. Piura, Peru, alt. 100–250 m., March, 1912, *A. Weberbauer 5953* (Gray Herb.). Additional collections: PERU, Dept. Piura: Cabo Blanco, Apr. 15, 1927, *O. Haught 150* (Gray Herb.); Tablazo, Mar. 24, 1929, *O. Haught 150* (Gray Herb.).

EUPHORBIA HIRTA L. var. **nocens** var. nov. Caulibus procumbentibus vel erectis, 7–20 cm. longis, crassis, inferne ramulosis, superne plerumque simplicibus, plerumque hirsuto-pilosis supra; foliis serrulatis; capsulis 1.6–1.7 mm. longis; seminibus 1.15–1.2 mm. longis.

Type: Loma del Zapote, vecindad de Morelia, Michoacan, Mexico, alt. 1,850 m., July 11, 1909, *G. Arsène 3038* (U. S. Nat. Herb. 1002124, probable isotype Gray Herb.). Additional collec-

tions seen: MEXICO: north of Loma del Zapote, alt. 1,900 m., vecindad de Morelia, Michoacan, Aug. 4, 1910, *G. Arsène* 5732 (U. S. Nat. Herb., N. Y. Bot. Gard. p.p.); "central Mexican flora chiefly in the region of San Luis Potosi, 22° N. Lat. altitude 6,000–8,000 ft.," 1878, *C. C. Parry & Ed. Palmer* 809 (U. S. Nat. Herb., Gray Herb.).

The "probable isotype" at Gray Herbarium mentioned above appears to be one of the specimens with fake data similar to those discussed by Standley, *Science*, n. s., **65**: 130–133. 1927, and Wheeler, *Contr. Gray Herb.* **124**: 36. 1939. It purports to have been collected in Rio Grande do Sul, Brazil, by *Reineck* in 1899 but it is such a perfect counterpart of the sheet at the U. S. Nat. Herb. collected by *Arsène* in Mexico, that, in view of the fact that this variety is otherwise a local Mexican endemic, it seems reasonable to suspect the data on the label.

Judging by the original description, and the statement of Boissier, *DC. Prod.* **15**(2): 21. 1862, that it was distinguished from *Euphorbia hirta* by having its "capsula tertia parte majori," *E. Karwinskyi* Boiss., *Cent. Euph.*, 6. 1860 (*Chamaesyce Karwinskyi* (Boiss.) Millsp., *Field Mus. Pub. Bot.* **2**: 407. 1916) may possibly be identical with *Euphorbia hirta* var. *nocens*. I have before me, from Field Museum, what is supposed to be a fragment of the Karwinsky collection for which Boissier named the species and upon which at least part of the original diagnosis was based. The capsules of this are not larger than the average in var. *typica* to which the plant may belong but the fragment is too small to ascertain certainly. A fragment of *Gregg* 1092 (Field Mus.), cited by Boissier, *DC. Prod.* **15**(2): 21. 1862, as belonging to *E. Karwinskyi* is also before me and it, too, is neither distinguished by large capsules nor adequate for varietal determination.

There has been much disagreement in literature as to whether *Euphorbia pilulifera* or *E. hirta* should be the name for the common tropical weed here called *E. hirta*. This debate is based on the assumption that both are the same, but more of this presently. Linnaeus, *Sp. Pl.* **1**: 454. 1753, published both of the above species. There are two lines of reasoning: (1) The synonyms and figures cited by Linnaeus should be taken as the types of both species rather than the specimens in his herbarium. With this assumption it is generally agreed that *E. hirta* and *pilulifera* are identical. The only question then, under the present (ed. 3, 1935) Rules is to discover which name was first reduced to synonymy. Thellung in Ascherson & Graebner, *Syn. Mitteleur. Fl.* **7**: 425. 1917, states that

Grisebach in 1859 made the reduction first. Neither he nor Farwell, *Rhodora* **38**: 332. 1936, gives the reference, but elimination of Grisebach's publications in the period near 1860 reveals that the reduction was made in *Fl. Brit. W. Ind. Islands*, 54. 1859. (Title page date of whole work is 1864 but the work was evidently issued in fascicles, with only the last two fascicles issued as late as 1864.) Since *E. hirta* was reduced to synonymy under *E. pilulifera*, according to the assumption that the specimens in Linnaeus' herbarium should *not* be considered as the types of these species, *E. pilulifera* is the valid name until someone finds an earlier reduction in the other direction. (2) The specimens in Linnaeus' herbarium should be taken as the types of the two species. As shown by B. D. Jackson, *Index to the Linnean Herbarium*, 74-75. 1912, each of these species was represented by a specimen in Linnaeus' herbarium at the time the first edition of *Species Plantarum* was published. Thellung in Ascherson & Graebner, *Syn. Mitteleur. Fl.* **7**: 424-5. 1917, maintains that Linnaeus' diagnosis of at least *E. pilulifera* was not original. It may not be, but in absence of reasonable proof such an assumption cannot be accepted. The characterization of "pedunculis bicapitatis" might have been drawn from the Burmann plate cited, but it is also *possible* that it could have been drawn from the Linnaean specimen of *E. pilulifera*. Furthermore, according to N. E. Brown in Thiselton-Dyer, *Fl. Trop. Afr.* **6**(1): 497. 1911, and corroborated by photographs at Gray Herbarium, there is a specimen of both species in Linnaeus' herbarium labeled respectively in Linnaeus' hand "18 *hirta*" and "19 *pilulifera*." These numbers are those of the "Diss. Euph." reprinted in Amoen. *Acad.* **3**: 100-131. 1756. Therefore it seems quite evident that while Linnaeus took his diagnosis of *E. pilulifera* from the thesis of his student, Johanne Wiman, there is not only no proof that Wiman did *not* have the specimen from Linnaeus' herbarium available to him but it is *known* that Linnaeus did have the specimen in his herbarium in 1753. (Wiman took his diagnosis of *E. hirta* from Linnaeus, *Fl. Zeyl.*, 88. 1747.) Consequently it seems reasonable to take the specimens in Linnaeus' herbarium as the types. These two names have been used interchangeably and the use will fluctuate according to the earliest reduction of one to a synonym of the other which can be found. Taking the Linnaean specimens as the types, *E. hirta* is the proper name for the entity of which varieties are described above and *E. pilulifera* is a quite distinct species. For the identity of *E. pilulifera* see beyond under that name.

EUPHORBIA HYPERICIFOLIA L., Sp. Pl. 1: 454. 1753. Type: probably from Jamaica, *Patrick Browne* (Linnaean Herb., not seen; photograph Gray Herb.). — *Anisophyllum hypericifolium* (L.) Haw., Syn. Pl. Succ., 161. 1812. — *Euphorbia mucronata* Willd. ex Steudel, Nom. ed. 2, 1: 612. 1840 as synonym of *E. hypericifolia*. — *Xamesike hypericifolia* Raf., Aut. Bot., 98. 1840, identity inferred from basonym of "Euph. O. [mnes]" — *Chamaesyce hypericifolia* (L.) Millsp., Field Mus. Pub. Bot. 2: 302. 1909.

The above typonymous names have been applied to a New World plant which is glabrous except for occasional cilia on the stipules, and to probably more than one closely related Old World species with larger capsules and often vestite herbage. Examination of a photograph of the type shows that there has been a misinterpretation. The type bears cymes of only a few cyathia, which, while neither a constant character of *E. lasiocarpa* Klotzsch, nor wholly unknown in what has been called *E. hypericifolia*, is nevertheless a hint. The size of the cyathia in the type of *E. hypericifolia* is too large to admit of the customary interpretation. The heavy vesture of the type, particularly on the young stems, confirmed by the statement of N. E. Brown in Thiselton-Dyer, Fl. Trop. Afr. 6(1): 498. 1911: "The type specimen in the Linnean Herbarium is more tomentose on the young parts of the stem, involucre, and capsule than in any other that I have seen" is another point of discrepancy. It is evident that *E. hypericifolia* has been misapplied. One of the first points to consider in identifying *E. hypericifolia* with the proper plant is to determine the source of the type. According to Mr. S. Savage, Assistant Secretary of the Linnean Society of London, in a letter of Jan. 13, 1939, filed at Gray Herbarium, the type of *E. hypericifolia* bears "Br[owne]" in Linnaeus' hand. According to Jackson, Index Linn. Herb., 10. 1912, this means that the specimen was collected by *Patrick Browne*, who collected in the West Indies, principally Jamaica. With this hint as to the source of the type the problem is easily clarified. There is an entirely common plant of the West Indies and Mexico to South America which matches the photograph of the type of *E. hypericifolia* and agrees with N. E. Brown's comments. It is the plant commonly known as *E. lasiocarpa* Klotzsch, Nov. Act. Nat. Cur. vol. 19 Suppl. 1: 414. 1843. The New World plant to which *E. hypericifolia* has been customarily applied must be called *E. pilulifera* L. at least for the present.

Unfortunately I named specimens at the U. S. National Herbarium and New York Botanical Garden as *Euphorbia hyperici-*

folia L. early in January, 1939, just before I received the photographs of the types in the Linnaean Herbarium. The proper name for these specimens seems to be *E. pilulifera* L. Examination of the type will be necessary before a certain decision can be reached. See discussion below.

The following collections in Gray Herbarium are illustrative of *Euphorbia hypericifolia*: MEXICO: Tancanhuitz, San Luis Potosi, *E. W. Nelson* 4397; San Geronimo, Oaxaca, *E. W. Nelson* 2764; Temisco, Sierra Madre del Sur, north of Rio Balsas, Distrito Adama, Guerrero, *Mexia* 8811; Yucatan, *Gaumer* 882. GUATEMALA: Lake Petén, District of Petén, *Lundell* 4124. NICARAGUA: Granada, Dept. of Granada, *C. F. Baker* 179. COSTA RICA: Rio Virilla, Prov. San José, *J. D. Smith* 4942. SALVADOR: San Salvador, *Salvador Calderón* 804. JAMAICA: Constant Spring to Bardowie, *Wm. Harris* 12173; Pedro Plains, Cornwall County, St. Elizabeth Parish, *Hunnewell & Griscom* 14333. HAITI: Ennery, Dept. Artibonite, *Leonard* 8983; Pétionville, *Leonard* 4967; Jean Rabel, *E. & G. Leonard* 12789. TOBAGO: Scarborough, *Broadway* 4415. VENEZUELA: Hacienda de Cura, near San Joaquín, state of Carabobo, *Pittier* 8225; Valencia, state of Carabobo, *Pittier* 8894; Petare and vicinity, near Caracas, state of Miranda, *Pittier* 9704; Caracas, Federal District, *Pittier* 9725. COLOMBIA: Guanabanal, Cauca Valley, Dept. El Valle, *Killip* 6226; Cúcuta, Dept. Norte de Santander, *Killip & Smith* 20966; Vuelta de Acuña, Rio Magdalena, Dept. Antioquia, *Pennell* 3792; Natagaima, Dept. Huila, *Rusby & Pennell* 1187. ECUADOR: Huigra, Prov. Chimborazo, *A. S. Hitchcock* 20623, *J. N. & Geo. Rose* 22541. PERU: Rio Chillón near Viscas, Dept. Lima, *Pennell* 14490; Huanuco, *Macbride* 3235; Piedra Grande Estacion near Rio Santa Domingo, *Macbride* 3679; Rio Huallaga Cañon below Rio Santo Domingo, *Macbride* 4232; Huanuco, *Macbride* 3218.

EUPHORBIA MACULATA L., Sp. Pl. 1: 455. 1753. Examination of a photograph of the type shows that this name applies not to the small-leaved prostrate plant to which it has been generally applied but to the large-leaved erect plant variously known as *E. nutans* Lag., Gen. et Sp. Pl., 17. 1816, *Chamaesyce nutans* (Lag.) Small, Fl. SE U. S., 712, 1333. 1903; *Euphorbia Preslii* Guss., Fl. Sic. Prod. 1: 539. 1837, *Chamaesyce Preslii* (Guss.) Arthur, Torreya 11: 260. 1912; and *Euphorbia hypericifolia* L. *sensu* American authors for plants of the United States exclusive of southern Florida and Cameron County, Texas.

The misapplication of *Euphorbia maculata* by modern authors is

of sufficient importance and interest to warrant a detailed explanation of the proper application. That Linnaeus' diagnosis does not refer to the small-leaved prostrate plant to which it has been applied is obvious. His original diagnosis was as follows:

Caules dichotomi: Ramis alternis, patentibus, supra-purpurascens. Folia ovali-oblonga, trinervia, subpilosa, serrata, altero latere maxima parte integerrima, tenera adhuc planta notata macula fusca. Flores axillares, solitarii, parvi, calyce rufo.

Certainly "*folia trinervia*" does not apply to the small-leaved plant to which it has been applied, but it does apply admirably to the plant of the Linnaean Herbarium. Jacquin, Hort. Bot. Vindob. 2: 87, t. 186. 1772, published a colored illustration of what he called "*Euphorbia maculata*" but which was really *E. supina* Raf. or some closely related species. This misapplication by Jacquin perhaps started the series of uses of *E. maculata* in an erroneous sense. The problem of how the misapplication became established in American literature was solved by the remarks of Torrey, Fl. State N. Y. 2: 176. 1843:

"Many years ago, I sent specimens of this and the preceding species to Sir J. E. Smith, who assured me that the former agrees precisely with the original *E. hypericifolia* of Herb. Linn., and that the latter is as certainly *E. maculata*. He also stated, that 'Linnaeus seems subsequently to have confounded his original smooth specimen of *E. hypericifolia* (numbered 17, as in *sp. pl. ed.* 1) with *E. maculata*: not that they are at all alike, nor is there any foundation for his remark in the 2nd mantissa, p. 392. The 1st edition of the *Sp. pl.* is here decisive authority. The original specimen of *E. maculata* is smooth, but there is a downy variety from Jamaica, from Browne's herbarium.'"

The quoted statement of Smith seems contradictory. He identified the large erect plant, common in the United States, with *E. hypericifolia*. Then, after applying *E. maculata* to the small prostrate weed, he proceeded to say that "the original specimen of *E. maculata* is smooth". According to Mr. S. Savage, Assistant Secretary of the Linnean Society, in a letter of Jan. 13, 1939, filed at Gray Herbarium, Smith even went so far as to change the name on the type of *E. maculata* to *hypericifolia*. In addition he questioned Linnaeus' own statement, Mantissa Altera, 392. 1771, that *Euphorbia maculata* resembled *E. hypericifolia*. The reason for Smith's idea is not evident. The only other basis for the Linnaean species is a Plukenet plate which at first glance might be taken for the small-leaved prostrate plant, but no scale is given

and it is easy to find specimens of the large-leaved erect plant which match Plukenet's plate. But the identity of the plate is of secondary importance since the specimen in Linnaeus' herbarium takes precedence over cited figures.

The photograph of the type shows unmistakably a large-leaved plant. It is conceivable that this plant could be the same as the later and scarcely distinct *E. hyssopifolia*, but since it probably came from Virginia where *E. hyssopifolia* does not occur, it is not likely to be that. Careful examination of the vesture of the type might enable a certain decision to be made. However, the only absolute distinction is in the seeds and they are probably lacking.

According to his notes on the Linnaean Herbarium, Asa Gray saw the type of *Euphorbia maculata* and recognized that it was not the plant known to him by that name. Nevertheless he chose to continue the misapplication.

The statement of Boissier, DC. Prod. **15**(2): 46. 1862, where he applied *E. maculata* to the small-leaved prostrate plant, that he had seen the Linnaean specimen, is difficult to understand.

The voluminous bibliographies given by Thellung, Bull. Herb. Boiss. ser. 2, **7**: 762-765. 1907, and Thellung in Ascherson & Graebner, Syn. Mitteleur. Fl. **7**: 465-473. 1917, for *Euphorbia maculata* L. in a misapplied sense, tempt one to smug and futile moralizations on the general uselessness of blindly assembled bibliographies for taxonomic units.

The name to be used for the small-leaved, usually prostrate plant which has been incorrectly called *E. maculata* L. is *E. supina* Raf., Amer. Mo. Mag. **2**: 119. 1817 (Dec.).

EUPHORBIA PILULIFERA L., Sp. Pl. **1**: 454. 1753.¹ Type: source unknown (Linnaean Herb., not seen; photograph Gray Herb.). — *Tithymalus piluliferus* (L.) Moench, Meth. Pl. Suppl., 283. 1802. — *Anisophyllum piluliferum* (L.) Haw., Syn. Pl. Succ., 162. 1812. — *Euphorbia hypericifolia* L. var. *micrantha* Engelm. ex Boiss., DC. Prod. **15**(2): 23. 1862, as synonym of *E. hypericifolia* L. *sensu* Boiss., l. c. — *Chamaesyce pilulifera* (L.) Small, Fl. SE U. S., 714, 1334. 1903. — Boissier, DC. Prod. **15**(2): 20. 1862, assigns the type of this species to synonymy under *Euphorbia parviflora* L., Syst. ed. 10, **2**: 1047. 1759. N. E. Brown in Thiselton-Dyer, Fl. Trop. Afr. **6**(1): 498. 1911, assigns it to synonymy under *E. hypericifolia* in the broad and misapplied sense in which he was using it. Fawcett & Rendle, Fl. Jamaica **4**(2): 341. 1920, assign it to synonymy under *E. hypericifolia* L. *sensu* recent au-

¹ See later conclusion on page 78.

thors as to the plant of the American tropics. It is not possible to be sure from the photograph of the type whether *E. pilulifera* is applicable to the plant of the southern United States (Florida and Texas), Bermuda, West Indies, Mexico, Central America, South America (British Guiana, Venezuela, and Colombia) and Hawaii characterized by being generally, perhaps always, glabrous except for cilia on the margins of the brown membranous united stipules, and the small capsules (1.3–1.4 mm. long). There are very closely related but probably distinct plants in the Old World to which the name may belong. Linnaeus' statement "*Hatitat in India*" is not to be taken unquestioned since, as shown above, the same statement was made concerning *E. hypericifolia* yet its type came from the West Indies. For the present, until I can examine the type, I shall apply *E. pilulifera* to the New World plant mentioned above for it seems better to do that than to describe it as a new species which seems to be the only alternative if *E. pilulifera* is not applicable to the concept.

EUPHORBIA TUBEROSA J. N. Rose, Contr. U. S. Nat. Herb. 1: 111. 1891; not L., Sp. Pl. 1: 456. 1753, or Haw., Misc. Nat., 185. 1803. An examination of the type at U. S. National Herbarium revealed that this name is based on a juvenile specimen of *Euphorbia colorata* Engelm.

EUPHORBIA UMBELLULATA Engelm. var. MAJOR Millsp., Bull. Torrey Bot. Club 16: 65. 1889. Type: dry slopes of barranca, near Guadalajara, Jalisco, Mexico, Dec. 11, 1888, *Pringle 2065* (Field Mus., not seen; isotype Gray Herb.). This is nothing but a robust growth phase of the species and is not worthy of nomenclatorial recognition.

ACKNOWLEDGMENTS

This study was conducted at the Gray Herbarium and is based mainly on the material there. Additional material has been either studied at or borrowed from the following: Academy of Natural Sciences, Philadelphia; Field Museum, Chicago; Missouri Botanical Garden, St. Louis; New York Botanical Garden; and United States National Herbarium. The author hereby expresses his gratitude to the curators of the above herbaria for their kindness in placing their collections at his disposal. The writer is indebted to Mr. Charles Schweinfurth for help with the Latin diagnoses, but the writer assumes responsibility for whatever errors may remain due to faulty transcription or other causes. Mr. G. W. Dillon has ably executed the drawings under the author's direction.

EXPLANATION OF PLATES

PLATE III. A, *EUPHORBIA PERUVIANA*, n. sp.: 1, branchlet; 2, cyathium with mature capsule; 3, capsule, end view; 4, glands and appendages from above; 5, seed, basal view; 6, seed, lateral view, raphe on left; 7, seed, ventral view. All drawn from the type; the capsule reconstructed from the single nearly mature carpel found on the type sheet.

B, *EUPHORBIA CREPITATA*, n. sp.

C, *EUPHORBIA VILLIFERA* var. *CREPUSCULA*, n. var.

D, *EUPHORBIA INNOCUA*, n. sp.

B, C, & D: 1, branchlet; 2, cyathium with mature capsule; 3, capsule, end view; 4, glands and appendages from above; 5, styles; 6, seed, basal view; 7, seed, lateral view, raphe on left; 8, seed, ventral view; 9, leaf. All drawn from the respective types.

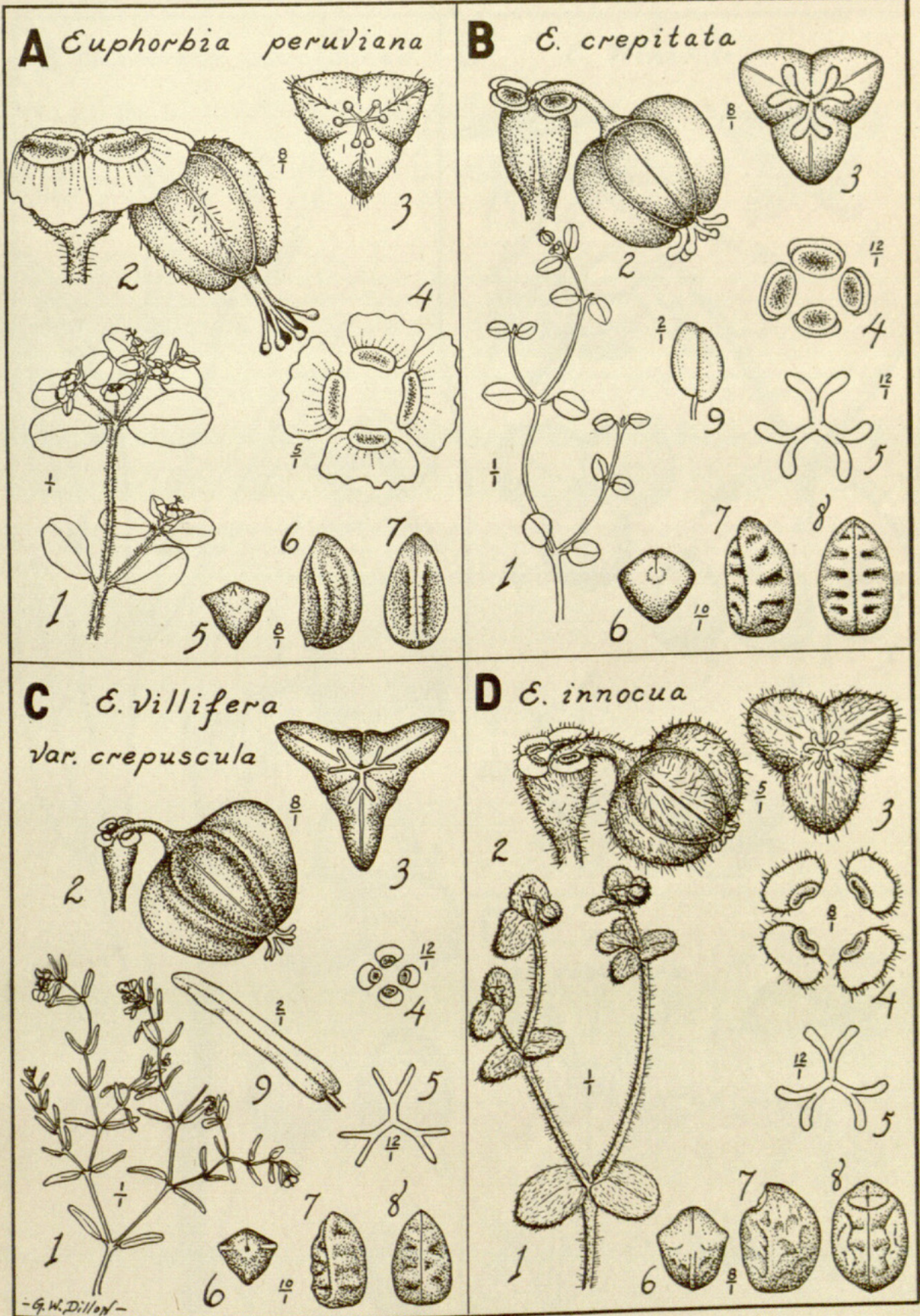
PLATE IV. A, *EUPHORBIA SUCCEDANEA*, n. sp.: Drawn from the type except the capsule of fig. 3, and 4, drawn from *Arsène 5134*.

B, *EUPHORBIA HINTONII*, n. sp.: Drawn from the type except the capsule of fig. 3, and 4, drawn from *Hinton 6351*.

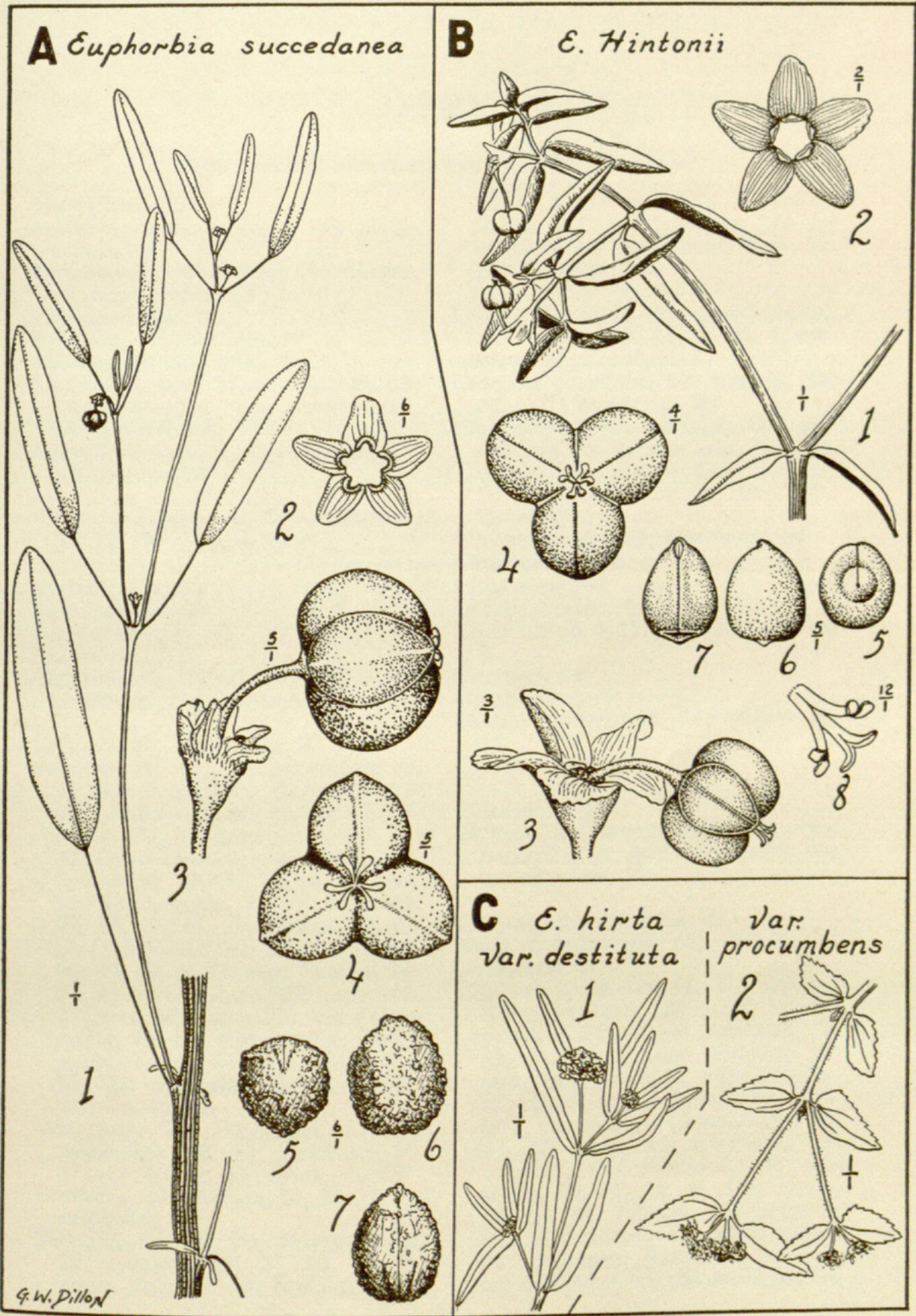
A & B: 1, segment of main stem with branch; 2, glands and appendages from above; 3, cyathium with mature capsule; 4, capsule, end view; 5, seed, basal view; 6, seed, lateral view, raphe on left; 7, seed, ventral view; 8, styles.

C, *EUPHORBIA HIRTA*: 1, var. *DESTITUTA*, var. nov; tip of stem, drawn from the type; 2, var. *PROCUMBENS*; tip of stem, drawn from *Curtiss 5849* (Gray Herb.).

NOTE: *EUPHORBIA PILULIFERA* L. Since the above comments on the application of this name were set in type and paged, wholly unexpected evidence has been discovered. At Field Museum there is a fragment of the type of *E. pilulifera*. Careful examination of this shows that it is closely related to, but not conspecific with, the New World plant to which I had decided above to apply the name provisionally. In fact it is different from any New World species known to me. Happily there is already a name for the New World plant: ***Euphorbia glomerifera*** (Millspaugh) comb. nov.; based on *Chamaesyce glomerifera* Millspaugh Field Mus. Pub. Bot. 2: 377. 1913.



A, EUPHORBIA PERUVIANA; B, EUPHORBIA CREPITATA; C, EUPHORBIA VILLIFERA var. CREPUSCULA; D, EUPHORBIA INNOCUA; all drawn from their respective types.



A, EUPHORBIA SUCCEDANEA; B, EUPHORBIA HINTONII; C, EUPHORBIA HIRTA: 1, var. DESTITUTA, 2, var. PROCUMBENS.



Wheeler, Louis C. 1939. "A miscellany of New World Euphorbiaceae,--II." *Contributions from the Gray Herbarium of Harvard University* (127), 48-78.
<https://doi.org/10.5962/p.336232>.

View This Item Online: <https://www.biodiversitylibrary.org/item/123814>

DOI: <https://doi.org/10.5962/p.336232>

Permalink: <https://www.biodiversitylibrary.org/partpdf/336232>

Holding Institution

Missouri Botanical Garden, Peter H. Raven Library

Sponsored by

Missouri Botanical Garden

Copyright & Reuse

Copyright Status: Permission to digitize granted by rights holder

Rights Holder: Harvard University Herbaria

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.