

valley which is the outlet of Lake Toyah—*Peganum Harmala* does not grow in highly alkaline soils); (c) No. 52116, $14\frac{2}{3}$ miles northwest of Pecos (on the shoulder of U.S. Highway 285, near a culvert, where the largest of several plants had a spread of four feet or more). On this same highway southeast of Pecos the plant was seen the preceding day as far away as eight or ten miles; No. 52121 was collected along U.S. Highway 80 at a point 2 miles west of Barstow, the first record of its occurrence in Ward County. On the following day (May 7) I collected No. 52149 in Reeves County, 2.4 miles east of Balmorhea. This point is about twenty-seven miles southwest of where *Peganum* grows at the western edge of Pecos, and apparently represents the greatest extension of range of this species since its original infestation. Obviously the species is spreading in every direction from its starting point in Texas. While as yet there is no report of its poisoning livestock in Texas, nevertheless its continued growth and spread should be discouraged.

Notes on Texas Compositae — I

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In the introduction to the unabridged edition of his *Study of History* (1933), Toynbee comments on the invasion of the field of scientific investigation by the Industrial System: the working up of raw materials ("data") by many individual workers ("scientists") into finished products ("papers," or as so commonly designated, "the literature"), according to more or less standardized methods of mass production ("Research"). Toynbee leaves it an open question whether this is not after all the best manner in which scientific investigation should be conducted in the present stage of development of western science. Certainly the magnitude of the task makes a division of labor inescapable.

Yet the extent to which fragmentation is carried over into the printed output in systematic biology makes for considerable inefficiency, at least as viewed from the standpoint of ready and effective utilization. It is difficult to approve

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methods which make it necessary to consult twelve different references in order to discover the currently correct names of half a dozen species of *Eupatorium* in a limited area of north central Texas, or to consult well in excess of two score references to find the currently correct names of ten species of *Aster* in the same area. It is more than difficult when the outcome is only to learn that zealous publication of nomenclatorial notes or partial synopses has not always been accompanied *pari passu* by sufficiently diligent taxonomic investigation, and that despite a plethora of publications, one is still very far indeed from having the answers sought. Present-day taxonomic publications too often give the impression of an army of taxonomists attempting to lay low hordes of information with barrages of bird-shot, only to find that the recalcitrant data, lightly wounded, rise up to be confronted all over again. The publication of a small number of complete and, as nearly as possible, definitive revisions is surely more meritorious than the publication of many pages of miscellaneous notes, comments, corrections, arguments, new names, fragmentary synopses, and the like.

But it is not always practicable to let small items accumulate unpublished for an indefinitely long time. Specimens to be identified for correspondents may include material of undescribed species, belonging to genera which cannot be hastily revised. The early publication of small nuisance notes may be better than allowing old errors to persist and spread. With reluctance and apology, I commence the publication of such tid-bits as it seems highly desirable to put into print far in advance of the completion of a treatment of all the *Compositae* of Texas.

When not otherwise stated, cited collections are in the herbarium of Southern Methodist University.

PALAFOXIA tripteris (DC.) Shinnery, comb. nov. *Florestina tripteris* DC., Prodrômus 5: 655. 1836. — I agree with Mr. Cory (1946) in rejecting the generic segregations in the recent treatment (1944) of *Palafoxia* and its allies by Elizabeth Ammerman (Mrs. Baltzer), and go further. *Florestina tripteris* in general appearance and in details of involucre, florets, and achenes is closely similar to several species of *Palafoxia* of the *Othake* group. Hoffmann (in Engler & Prantl, 1894) states that *Florestina* "differs little from *Schkuhria*, chiefly in the subulate appendage of the style

branches and scarcely leafy panicle." Actually *Florestina* is not very closely allied to *Schkuhria*, despite superficial resemblance of the involucre. In the latter genus, the style branches are compressed and have a quite asteroid triangular appendage (as is true of its allied genus *Bahia*), and the disk corollas are columnar, scarcely differentiated into tube and limb, with short lobes. In *Florestina* the style branches are terete, plumose in the terminal third or half, and the corollas are well differentiated into short cylindrical tube, shallow funnel-form limb, and long ascending or spreading lobes. In these features it closely resembles species of *Palafoxia*, which differ only in having the style branches pubescent throughout. All the species assigned to *Florestina*, *Palafoxia*, *Polypteris*, and *Othake* are obviously closely allied, and might be grouped in series or sections, but hardly in separate genera. The genus *Florestina* Cassini was not validly published until 1820 (Dictionnaire des Sciences Naturelles 17: 155-156), though it appeared in print in 1815 (Bulletin de la Société Philomathique (Paris) 1815: 175, *nomen nudum*) and 1816 (Journal de Physique 82: 145, *nomen subnudum*). *Palafoxia*, twice published by Lagasca in 1816 (Elenchus Plantarum, p. 26, and Genera et Species Plantarum, p. 26), therefore remains the name of the enlarged genus. The reduction of *Florestina* to *Palafoxia* necessitates the transfer of two Mexican species:

PALAFOXIA pedata (Cav.) Shinnery, comb. nov. *Stevia pedata* Cav., Icones 4: 33, tab. 356. 1797. *Florestina pedata* (Cav.) Cassini, Dict. Sci. Nat. 17: 155-156. 1820.—Although the plant depicted in Cavanilles' plate seems to be the plant generally known as *Florestina pedata*, the detailed sketch of the corolla shows a longer, stouter tube and more abruptly and widely spreading (almost recurved) lobes than appears in herbarium specimens. The figure given by Cassini (Dict. Sci. Nat., Planches, 2me. partie: règne organisé, Botanique, Végétaux Dicotylédones, 86th plate (not numbered) shows similar florets, but may have been copied from Cavanilles.

PALAFOXIA Liebmannii (Schultz-Bip.) Shinnery, comb. nov. *Florestina Liebmannii* Schultz-Bip. ex Greenman, Field Museum Publ. Bot. Ser. 2: 272-273. 1907.

PALAFOXIA cyanophylla Shinnery, sp. nov. Annuua erecta 40-70 cm. alta divaricate ramosa hispida pilis subappressis, in inflorescentia quoque pilis glanduloso-capitatis. Folia lan-

ceolata basin versus elata petiolata integra ramorum 2.5-3.2 cm. longa, 4-7 mm. lata, petiolis 8-12 mm. longis; juniora supra cinereo-cyanea. Pedunculi nudi 1.5-4.0 cm. longi hispidi viscosi. Involucra cylindraco-conica 10-13 mm. alta decemflora. Phyllaria anguste lanceo-oblonga 1.3-1.7 mm. lata acuta vel obtusa hispida, interiora anguste hyalino-marginata. Corollae dilute violaceae (antheris atrovioleaceis) quinquefidae 6-7 mm. longae (lobae 1.8-2.5 mm., fauces 1.8-2.7 mm., tubae 2.3-2.5 mm.). Achaenia 7-9 mm. longa hispida, interiora longipapposa, exteriora simul longi- et brevipapposa, sive brevipapposa solum. Pappi squamae diversae: nunc anguste triangulari-acuminatae 5-7 mm. longae media incrassatae margine hyalinae, nunc oblongae sive lanceolato-oblongae seu ovato-oblongae obtusae 1-3 mm. longae crassae anguste marginatae sive sine margine, nunc intermediae.

PALAFOXIA cyanophylla Shinnars, n. sp. Erect annual 40-70 mm. high, with divaricate branches nearly from the base. Stem, branches, and leaves hispid with subappressed, translucent, white trichomes from swollen bases (only the bases remaining on older parts); inflorescence hispid with spreading trichomes and viscid with short glandular-capitate hairs. Lower leaves falling early; the others lanceolate, widest just above the base, entire, gradually acute, with petioles about $\frac{1}{5}$ as long as the blades; leaves of main branches near the middle of the plant with blades 2.5-3.2 cm. long, 4-7 mm. wide, on petioles 8-12 mm. long. Upper surface of younger leaves more densely hispid, appearing gray-blue. Inflorescence with few much-reduced leaves or small bracts. Peduncles naked, 1.5-4.0 cm. long, hispid and viscous. Involucres cylindrical-conic, 10-13 mm. high, 10-flowered. Phyllaries narrowly lance-oblong, 1.3-1.7 mm. wide, acute to obtuse, hispid-pubescent, the inner narrowly hyaline-margined. Corollas light violet (contrasting with the deep violet anthers), 6-7 mm. long, unevenly 5-parted, the lobes lanceolate-oblong, glabrous, 1.8-2.5 mm. long, throat narrowly funnel-form, glabrous, 1.8-2.7 mm. long, tube cylindrical, pubescent externally, 2.3-2.5 mm. long. Achenes 7-9 mm. long, hispid-pubescent, the central with long pappus, the outer with short to long or short pappus only. Pappus scales white or yellowish, of two types, with intermediates: narrowly triangular, acuminate, 5-7 mm. long, with thickened opaque central portion and hyaline margins, and oblong to lanceolate-oblong or

ovate-oblong, truncate or obtuse, 1-3 mm. long, thick and opaque with narrow hyaline margins or marginless; hyaline margins where present more or less erose or lacerate, at least toward apex. TYPE: in bare sand, mouth of Santa Elena Canyon (south of Terlingua), Big Bend National Park, Brewster Co., *Lloyd H. Shinnners 8792*, Aug. 6, 1946. Additional specimen seen: same locality (as "St. Helena Canyon,"), *H. J. Cottle*, Nov. 5, 1928 (in herb. Sul Ross State College, Alpine).

Palafoxia cyanophylla is closely related to *P. linearis* (Cav.) Lag., of southern Nevada, southeastern California, and Arizona (with a variety in Baja California and Coahuila), but differs from it in having leaf blades widest near the base, tapering to the tip, shorter corollas with lobes nearly equalling the throat, shorter achenes, and shorter pappus scales. As described by Mrs. Baltzer (1944, p. 265), and as shown by the few specimens examined, *P. linearis* has linear or lance-linear leaves, corollas about 9-10 mm. long, its lobes much shorter than the throat, achenes 10-15 mm. long, and the longer pappus scales 7-10 mm. long.

CIRSIUM terrae-nigrae Shinnners, sp. nov. Biennis radibus crasso-fibrosis saepe tuberoso-incrassatis fusiformibus. Planta 50-95 cm. alta erecta, caule striato primum floccoso demum plerumque glabrato simplice seu ramoso ramis longis adscendentibus. Folia caulina lanceolata 10-21 cm. longa 4-7 cm. lata profunde pinnatifida inferne dense albolanulosa superne viridia scaberula. Folia inferiora quasipetiolata superiora gradatim multo minora integriora remotiora minus petiolata, sub involucreo nulla vel unum. Capitula solitaria terminalia. Involucrea primum urceolata demum campanulata 2.5-3.6 cm. alta viscida primum parce floccosa. Phyllaria appressa inbricata coriacea straminea glutinososignata, exteriora triangulari-lanceolata 3-5 mm. longa vel magis 1.5-2.0 mm. lata apice spina divaricata 1.5-2.5 mm. longa ornata, interiora lineari-lanceolata apice triangulari scariosa torta vel patenti 1-3 mm. longa terminata. Corollae dilute vel intense lavadulaceae (siccis rosaceo-lavandulaceae) 3.4-4.0 cm. longae (tuba 11-20 mm., faux 5-8 mm., lobae 8-12 mm.). Achaenia plus minusve compressa vel asymmetrica circa 6 mm. longa nitida glabra brunnea. Pappi setae 40-55 subaequales 2.3-3.3 cm. longae parte quarta terminali scabrae reliqua valde plumosae.

CIRSIIUM terrae-nigrae Shinnars, n. sp. Biennial. Root system coarsely fibrous (sometimes one root larger and appearing like a taproot), some of the main roots often distally fusiform-enlarged and tuberous. Plant erect, 50-95 cm. high; stem striate, at first floccose, later glabrate or quite glabrous (occasionally persistently hirsutulous below the inflorescence), simple or forking above the middle into few, long, ascending branches, with 14-24 leaves below the lowest main branch. Stem leaves lanceolate, 10-21 cm. long, 4-7 cm. wide, deeply pinnatifid; the divisions either nearly straight and directed slightly forward, or somewhat retrorsely falcate, lanceolate to oblong-rhombic, entire to coarsely and irregularly toothed, acute; lower surface densely, closely, and permanently white-woolly except for the principal veins, upper surface green and slightly scabrous. Lower leaves with petiolar base, upper leaves progressively much reduced, less divided, more remote, and less petiolate, those of the peduncles narrowly lanceolate or lance-linear, spiny-toothed, none or one closely subtending the involucre, the uppermost three or four 1-3 cm. long, their undivided middle part 1-4 mm. wide. Heads solitary and terminal on the stem or branches. Involucre first urceolate, later campanulate, 2.5-3.6 cm. high, very viscous, sparsely and temporarily floccose, especially near the base. Phyllaries appressed, imbricated, coriaceous, straw-colored, with heavy, lanceolate, black-brown glutinous area on the back at or just below the tip (area smaller on inner phyllaries). Outer phyllaries triangular-lanceolate, 3-5 mm. long or more, 1.5-2.0 mm. wide, with widely spreading spine tips 1.5-2.5 mm. long; grading through oblong-lanceolate, acuminate, spine-tipped middle phyllaries about 2.5 mm. wide, to linear-lanceolate inner phyllaries with narrowly triangular, scarious, twisted or spreading tips 1-3 mm. long. Corollas light to dark lavender (rosy lavender in dried specimens), 3.4-4.0 cm. long, the tube 11-20 mm. long, limb 5-8 mm. long, lobes narrowly linear, 8-12 mm. long; anther tube about 12 mm. long, appendages about 0.85 mm. long, tails about 0.6 mm. long. Achenes more or less compressed or bent (according to pressure in growth), about 6 mm. long, bluntly pointed at base, slightly narrowed at the truncate summit, tipped by the persistent swollen style base, glabrous and rather glossy, light reddish brown with dark streaks, the summit with a broad yellowish

band. Pappus of 40-55 white, slightly unequal bristles 2.3-3.3 cm. long, scabrous in the terminal fourth, very plumose in the lower three-fourths, the branch hairs ascending, 1.5-2.3 mm. long. TYPE: in black clay, common, railroad right-of-way, 5½ miles east of Bonham, Fannin Co., *Lloyd H. Shinnners* 7486, June 10, 1945. Additional specimens seen: COOKE Co.: near Tyler bluff, western edge of county, *D. S. Correll & H. B. Correll* 12956, July 2, 1946. ELLIS Co.: Bear Creek, 2 miles south of Ferris, *V. L. Cory* 53369, July 10, 1946. KAUFMAN Co.: east side of Terrell Lake, 2¼ miles east of Terrell, *Cory* 53283, June 14, 1946. LAMAR Co.: 9½ miles west and 1½ miles south of Paris, *Shinnners* 7856, June 10, 1945. MCLENNAN Co.: 6 miles south of McGregor, *C. L. York* 46086, May 25, 1946. ROCKWALL Co.: 1 mile northeast of Rockwall, *Cory* 53313, June 26, 1946. TARRANT Co.: 1 mile east of Everman, *Eula Whitehouse* 16042, June 15, 1946.

This species is frequent in the Blackland Prairie belt of central Texas, and occurs rarely in adjacent areas. It has generally been identified as *Cirsium discolor* (Muhl.) Spreng., a much more robust, later-flowering species of the midwestern and central eastern states, not developing tuberous roots, and with heads closely subtended by several leafy bracts. It was given the name *Cirsium filipendulum* by Engelmann, in manuscript, but this was published merely as a synonym by Gray in the fifth edition of his Manual (p. 273, 1867). Later (Proc. Amer. Acad. 19: 57, 1883) Gray published the combination *Cnicus altissimus* var. *filipendulus*, but without description, so that a valid name was not published until the appearance of the Synoptical Flora (vol. 1, part 2, p. 404, 1884). Here the plant is described as being smaller than *Cnicus altissimus*, with tuberiferous roots, but was said to grow in Colorado and Mexico as well as Texas. According to Index Kewensis, there is a *Cirsium filipendulum* Lange of Spain, described in 1861, preventing the adoption of Engelmann's homonymous *Cirsium filipendulum* as the name of the Blackland Prairie relative of *C. discolor*.

CIRSIIUM TEXANUM Buckley, Proc. Acad. Nat. Sci. Phila. 13 (1861): 460. 1862. TYPE: "near Brady's Creek, north of Fort Mason [evidently near Brady in present McCulloch Co.], June," (in herb. Philadelphia Academy). Additional specimen seen: KIMBLE Co.: field, along south Llano River,

10 miles south of Junction, *Correll 12839*, June 22, 1946.— This species is not listed by Small (1903) nor by Cory and Parks (1937). Small described two new species of thistle from Texas. His *Carduus austrinus* (*Cirsium austrinum* [Small] E. D. Schulz), based on Charles Wright's no. 1291, collected "between the Pecos and the Limpio," probably in Pecos Co., Texas, is one of the common and widespread native thistles of south and west Texas. His *Carduus Helli* (*Cirsium Helli* [Small] Cory) is evidently, like *C. texanum*, a highly restricted endemic of the Edwards Plateau; the only specimen I have seen is the type, collected by A. A. Heller at Kerrville (in herb. New York Botanical Garden).

CREPIS CAPILLARIS (L.) Wallr. BREWSTER Co.: lawn, Alpine, *H. J. Cottle*, May 5, 1928 (in herb. Sul Ross State College). Both species and genus are recorded from Texas for the first time.

REFERENCES

- BALTZER, ELIZABETH AMMERMAN. A monographic study of the genus *Palafoxia* and its immediate allies. *Ann. Mo. Bot. Gard.* 31: 249-278. 1944.
- CORY, V. L. The genus *Palafoxia* in Texas. *Rhodora* 48: 84-86. 1946.
- , and H. B. PARKS. Catalogue of the flora of Texas. *Texas Agric. Exper. Sta. Bull.* 550. 1937. (Actually published Jan. 18, 1938.)
- HOFFMANN, O. *Compositae*. In ENGLER & PRANTL, *Die natürlichen Pflanzenfamilien*, Teil IV, Abt. 5. 1894. (*Florestina* and *Palafoxia* in key, p. 255; text, p. 261.)
- SMALL, JOHN KUNKEL. Flora of the southeastern United States. New York. 1903. (*Carduus*, pp. 1305-1308 and 1341.)

Rapid Methods for Killing Planaria and Lumbricus in an Extended Condition

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PLANARIA

Most methods in vogue for killing planarians in an extended condition are time-consuming, and frequently do not give fully expanded specimens. Their successful expansion (when killed with hot Bouin's fluid, Gilson's, or hot corrosive sublimate) depends: (a) on whether the animal is fully or only partially expanded at the time when it is flooded with the killing solution. This calls for coördination of one's

¹South-Western Biological Supply Company, P. O. Box 4084, Dallas, Texas.