REVISION OF THE GENUS ACANTHOSPERMUM.

By S. F. Blake.

INTRODUCTION.

The genus *Acanthospermum*, a member of the Melampodioid *Heliantheae*, was established by Schrank in 1819 on the single species *A. brasilum*. In the following year the same species, which had been originally published by Loefling in 1758 as *Melampodium australe*, was again described and figured as the type of a new genus, *Centrospermum*, in the Nova Genera et Species of Humboldt, Bonpland, and Kunth, and in 1825 it became the type of the genus *Orcya* of Velloso; while the genus *Echinodium* of Poiteau, published as a synonym by Cassini in 1829, was likewise based on this species. In De Candolle's Prodromus, in 1836, four species of *Acanthospermum* were recognized, divided between two sections based on the shape of the fruits. With the exception of two new species described from the Galapagos Islands by Robinson and Greenman, no other species of the genus have been published. In the present revision three new species from South America are described, bringing the total number of valid species in the genus to eight.

All the species of *Acanthospermum* are natives of America, but with their spiny *Xanthium*-like fruits they are easily transported, and two have reached the Old World as widespread if scattered introductions. *A. hispidum*, found in South America from Colombia and Venezuela to Argentina, and native over at least a part of this region, occurs as a weed in the southern United States as far north as New Jersey, in Honduras, Nicaragua, and the Lesser Antilles, and in Sénégal, Angola, Natal, and Hawaii. Gossweiler describes it in Angola as "a peculiar colonial weed appearing on waste places frequented by native carriers." *A. australe*, likewise occurring over essentially all of South America, and certainly a native of that continent, has been collected in the Lesser Antilles, the Hawaiian Islands, and India, and is becoming frequent along railroads in the southern United States occurring sporadically as far north as Massachusetts and Oregon The fruits of this species, thickly covered with hooked prickles,

easily become entangled in the wool of sheep and are said to cause financial loss in the Southern States in this way, by lowering the quality of the wool. A third species, *A. humile*, originally described from Santo Domingo, is known as a presumptive native from the islands of the Greater Antilles, with the exception of Porto Rico, and occurs also in Panama and in Florida. In Florida it is of recent collection, and is certainly a weed of comparatively recent introduction. The first record for the species in Panama [1] was from waste places, and subsequent collections are from similar situations, so that there can be little doubt that the plant is an introduction in that region also.

The five other species of the genus are each known from only one or at most two collections of specimens, all of which were with little doubt indigenous where found. The two most distinct of these come from Paraguay and the Galápagos Islands, respectively. Of the three other species, forming a very closely interrelated group, two are from Ecuador and one is from the Galápagos Islands, the latter not at all closely allied to the single other species of the islands.

SYSTEMATIC TREATMENT.

ACANTHOSPERMUM Schrank.

Acanthospermum Schrank, Pl. Rar. Hort. Monac. *pl. 53*. 1819.
Centrospermum H. B. K. Nov. Gen. & Sp. **4**: 270. *pl. 397*. 1820.
Orcya Vell. Fl. Flum. 344. 1825; Fl. Flum. Icon. **8**: *pl. 83*. 1827.
Echinodium Poit.; Cass. Dict. Sci. Nat. **59**: 235. 1829, as synonym.

Pubescent dichotomous annuals, with opposite, subentire to pinnatifid leaves and small, sessile or short-peduncled heads solitary in the axils and forks of the stem; heads heterogamous, radiate, the ray flowers 5 to 8, 1-seriate, fertile, those of the disk 5 to 30, sterile; proper involucre of 4 to 6 elliptic to ovate, herbaceous, 1-seriate phyllaries; inner phyllaries of the same number as the ray achenes and closely enveloping them, enlarged in fruit; receptacle small, convex, the pales membranous, concave, subtending the disk flowers, more or less persistent; ray corollas ligulate, small or medium, elliptic to ovate, emarginate or tridenticulate, the tube as long as or much shorter than the limb, pale yellow; disk corollas yellowish, with short cylindric tube, cylindric-funnelform or campanulate throat, and 5-lobed limb; anthers barely cordate to cordate-sagittate at base, the appendage ovate, obtuse, somewhat inflexed; style of ☿ flowers clavate, obtuse, undivided, hispidulous; fruit (achenes of the ray with their closely enveloping indurate phyllaries) cuneate or oblong-fusiform, rarely trigonous-turbinate, weakly or strongly laterally compressed, more or less densely echinate on the whole surface, the angles, or rarely only at apex, with straightish or usually uncinate prickles, those at the apex of fruit usually elongate; pappus none.

Type species, *A. brasilum* Schrank, which is *A. australe* (Loefl.) Kuntze.

[1] Steetz; Seem. Bot. Voy. Herald 155. 1854.

KEY TO SPECIES.

Leaves pinnatifid; fruit trigonous-turbinate, with 4 or 5 spines at summit, smooth on sides; ligules 7.5 mm. long. Section LECOCARPOPSIS Blake.
1. A. lecocarpoides.

Leaves lyrately repand-dentate to subentire; fruit spiny at least on the angles, as well as at apex; ligules 1 to 1.5 mm. long.

Fruit strongly compressed, cuneate in outline, obscurely ribbed, the two terminal prickles largest; heads usually sessile. Section CERATOCHLAENA DC.

Terminal prickles slender-subulate, terete or very slightly flattened, about as long as the body of the fruit.

Leaves with ovate or oval blade, abruptly contracted into a distinctly petiolar winged base..... **2. A. humile.**

Leaves oval or obovate, gradually narrowed to the base.... **3. A. hispidum.**

Terminal prickles lanceolate or lanceolate-subulate, more or less flattened, much shorter than the body of the fruit.

Body of fruit (excluding the terminal prickles) 3.5 to 3.8 mm. long. **4. A. donii.**

Body of fruit 4 to 5 mm. long.

Body of fruit 5 mm. long..... **5. A. simile.**

Body of fruit 4 to 4.5 mm. long..... **6. A. microcarpum.**

Fruit oblong-fusiform or oblong-obovate in outline, slightly compressed, strongly ribbed; heads (at least those in the forks) peduncled. Section XANTHIOIDES DC.

Fruit sharply 2-beaked..... **7. A. consobrinum.**

Fruit obtuse, with open orifice at apex..... **8. A. australe.**

1. Acanthospermum lecocarpoides Robins. & Greenm. Amer. Journ. Sci. III. **50**: 141. 1895. PLATE 23, a.

Erect, sparsely branched, 28 cm. high; stem fuscous, densely stipitate-glandular and hispid with short several-celled spreading hairs, subglabrate below; leaf blades 4.5 to 9 cm. long, 2.2 to 4.5 cm. wide, ovate in outline, divided to middle or deeper into 6 to 8 pairs of ovate to obovate lobes, these laciniate above the middle or pinnatifid nearly to base with somewhat revolute divisions, densely hispidulous-glandular above, beneath equally green, hispidulous along the nerves and glandular elsewhere, pinnate-veined, narrowed at base into the petiole; petioles margined above, glandular-hispidulous, 1.5 to 2.5 cm. long; heads solitary in the forks of the stem, 1.8 to 2.5 cm. wide; peduncles densely glandular-hispidulous, 2.3 to 4.5 cm. long; phyllaries 4, ovate, acute, hispidulous on both sides with glandular-tuberculate hairs and glandular, crenate-serrate, united at base, 9 to 10 mm. long; ray flowers about 6; rays ligulate, yellowish, oblong-elliptic, tridenticulate, about 9-nerved, stipitate-glandular dorsally, merely closed in a ring at base without proper tube, 7.5 mm. long, 2.2 mm. wide; disk corollas about 30, glandular, the tube cylindric, 1.5 mm. long, the throat campanulate, scarcely broader, 0.7 mm. long, the 5 teeth erect, lanceolate, subacuminate, 1 mm. long; stamens strongly sagittate at base; pales slender, acuminate, densely stipitate-glandular, 4 mm. long; fruit trigonous-turbinate, somewhat gibbous above the middle, densely stipitate-glandular and hispidulous with several-celled glandular-based hairs, the body 5 to 5.5 mm. high, 4.5 to 5 mm. wide, bearing around the rounded apex 4 or 5 slender-subulate, wide-spreading, straight or somewhat curved horns 3 to 7 mm. long, the two on the inner angles always present, that on the outer angle sometimes obsolete.

TYPE LOCALITY: Hood Island, Galápagos Islands.

SPECIMENS EXAMINED:

GALÁPAGOS ISLANDS: Hood Island, July, 1891, *Baur* 128 (type, G[2]); May, 1899, *Snodgrass & Heller* 744 (G).

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[2] The following abbreviations are used to indicate the herbaria in which specimens are deposited: B, British Museum; Ber., Royal Herbarium, Berlin; G, Gray Herbarium; K, Kew Herbarium; N, U. S. National Herbarium; Prod., Prodromus Herbarium.

This very distinct species closely simulates the monotypic genus *Lecocarpus*, also endemic in the Galápagos Islands (on Chatham and Charles islands), but is at once distinguishable by the lack of the broad spreading circular border which terminates the fruiting phyllaries in that genus. *A. lecocarpoides* has been recorded by Stewart [3] from Sappho Cove on Chatham Island.

2. Acanthospermum humile (Swartz) DC. Prodr. **5**: 522. 1836. PLATE 23, b.

Melampodium humile Swartz, Prodr. Veg. Ind. Occ. 114. 1788.

Centrospermum humile Less. Syn. Gen. Compos. 217. 1832.

Acanthospermum humile α normale Kuntze, Rev. Gen. Pl. **1**: 303. 1891.

Much branched, erect or decumbent, 30 cm. long or more; stem fuscous, densely puberulous and hispid-pilose with many-celled spreading hairs; leaf blades 1 to 2.8 cm. long, 1 to 3.3 cm. wide, ovate or deltoid-ovate, obtuse or acutish, abruptly narrowed into a margined petioliform base, irregularly crenate-dentate or repand-serrate, gland-dotted and hispid-pilose particularly along the veins on both sides, slightly paler beneath, the irregularly serrulate, lobulate, or entire, petioliform, margined base 4 to 18 mm. long; heads solitary in the axils and forks of the stem, sessile or on peduncles 3 mm. long or less, 3.5 to 4 mm. wide in anthesis, 12 to 15 mm. in fruit; outer phyllaries 5, oval, acutish, 3-nerved, hispid-pilose chiefly on margin, 2.5 mm. long, 1 mm. wide; ray flowers 5 to 7, their corollas erect, pale yellowish, oval, emarginate, hispid-pilose, 1.3 mm. long, about equaled by the style, with very short tube; disk corollas 5, stipitate-glandular and sparsely hispid-pilose, 1.4 mm. long; pales emarginate, lacerate at apex, 1.3 mm. long; fruit cuneate, compressed-trigonous, gland-dotted and more or less pilosulous, uncinate-prickly on the angles and the apical margin, the sides unarmed or with a few sparse prickles, the body 3 mm. long, the two large terminal prickles (one usually straight, one uncinate) 2 to 3 mm. long.

TYPE LOCALITY: "Jamaica, Domingo."

SPECIMENS EXAMINED:

FLORIDA: Ballast wharf, Pensacola, August, *Curtiss* 1491* (N).

CUBA: Weed, Laguna Jovero and vicinity, 1911, *Shafer* 10968 (N), 10985 (N). Open places in thicket, valley of Río Bacuranao, Havana, 1912, *Wilson & León* 11605 (N). Vicinity of Vento, Havana, 1904, *Wilson* 1328 (N). Roadside near La Gloria, Camaguey, 1909, *Shafer* 321 (N). Maisi to Sabana, Oriente, 1910, *Shafer* 7936 (N). Without definite locality, *Wright* 311 (N). Nueva Gerona, Isle of Pines, 1904, *Curtiss* 361 (N).

JAMAICA: Green Valley, altitude 610 meters, 1895, *Harris* 5733 (B). Sand near beach, Long Acre Point, west of Black River, 1907, *Harris* 9964 (B, N). Without definite locality, *Dr. Wm. Wright* (B).

SANTO DOMINGO: Paradis, Province of Barahona, 1909, *Türckheim* 2709 (N); in 1911, *Fuertes* 1100 (N). Without definite locality, *Swartz* (B).

PANAMA: Boca Chica de Horconcitos, Chiriquí, 1911, *Pittier* 5123 (N). Chagres, 1850, *Fendler* 171 (N). Along beach between Fató and Playa de Damas, Province of Colón, 1911, *Pittier* 3833 (N). Waste places about Panama, July, 1862, *Hayes* (B). Without definite locality, *Hayes* 198 (B); *Seemann* 296 (B).

CULTIVATED: Kew Gardens, 1784 (B).

Swartz,[4] in his amplified description of this species, remarks: "Planta agricolis odiosa; et semina pullis Gallinarum et Meleagridum obnoxia."

3. Acanthospermum hispidum DC. Prodr. **5**: 522. 1836. PLATE 23, c.

Acanthospermum humile β hispidum Kuntze, Rev. Gen. Pl. **1**: 303. 1891.

Erect, 20 to 55 cm. high, dichotomous; stem stout, striatulate, hispid-pilose with spreading many-celled hairs, sordid-puberulous between them; leaf blades 2 to 12.5 cm. long, 0.8 to 8 cm. wide (including the cuneate base), elliptic to ovate or

[3] Proc. Calif. Acad. IV. **1**: 148. 1911.

[4] Fl. Ind. Occ. **3**: 1371. 1806.

deltoid-ovate, acute to obtuse, mucronulate, gradually cuneate below the middle into a sessile base (those of the pairs united), serrulate or doubly repand-serrate to subentire, rather sparsely hispid-pilose on both sides, gland-dotted and slightly paler green beneath; heads solitary in the axils and forks of the stem, in anthesis 4 to 5 mm. wide, in fruit 13 to 18 mm.; peduncles 3 to 15 mm. long; outer phyllaries 5, ovate or narrowly elliptic-ovate, acutish, hispid-pilose mainly on the margin, 3.5 to 4 mm. long; ray flowers 5 to 8, their corollas pale yellow, elliptic, tridenticulate at the slightly spreading apex, sparsely hispid-pilose, half longer than the style, 1.5 mm. long; disk corollas about 7, shortly hispid-pilose, 1.7 mm. long; pales stipitate-glandular on back, lacerate-ciliate at the subtruncate apex, 2 mm. long; fruit cuneate, strongly compressed, gland-dotted, rather densely uncinate-hispid all over the body, 4 to 5 mm. long, the two terminal straightish or curved, strongly divergent prickles 3 to 4 mm. long; sterile ovaries stipitate-glandular.

TYPE LOCALITY: "In Brasiliae sabulosis maritimis circa Bahiam." Type collected by Salzmann.

ILLUSTRATIONS: Engl. & Prantl, Pflanzenfam. 4^5: *f. 108, M;* Proc. Amer. Acad. 38: *pl. 1, f. 4.*

SPECIMENS EXAMINED:

NEW JERSEY: Ballast grounds, Camden, 1879, *Martindale* (N).

GEORGIA: Waste places and roadsides, Darien, 1903, *Harper* 1999 (N).

FLORIDA: Ballast ground, Pensacola, 1880, *Mohr* (N); in 1899, *Curtiss* 6501 (N).

ALABAMA: Ballast ground, Mobile, 1893, *Mohr* (N).

SALVADOR: Without definite locality, *Velasco* (J. D. Smith, no. 8884; N); *Renson* 183 (N).

HONDURAS: San Pedro Sula, Santa Bárbara, altitude 200 meters, 1889, *Thieme* (J. D. Smith, no. 5296; N).

NICARAGUA: Roadsides, Grenada, 1869, *Lévy* 228 (K).

CULEBRITA: Waste places, Culebrita, 1906, *Britton & Wheeler* 280 (N).

ST. THOMAS: In 1880, *Eggers* 3 (K).

ST. JOHN: Roadside, Bethania to Rosenberg, 1913, *Britton & Shafer* 252 (N).

TORTOLA: Rocky hill, Road Town to Sea Cow Bay, 1913, *Britton & Shafer* 672 (N).

VIRGIN GORDA: Roadside near Valley, 1913, *Britton & Fishlock* 1099 (N).

ST. CROIX: Bassin pasture, 1895, *Ricksecker* 20 (N).

MONTSERRAT: Richmond, 1907, *Shafer* 127 (N).

GUADELOUPE: Lowlands, Galisbi, 1904, *Duss* 4203 (N).

TOBAGO: Roadside, Bethesda, 1909, *Broadway* 3141 (B).

COLOMBIA: Anapoima, Magdalena, altitude 500 meters, *Triana* 1332 (B, K). El Overo, Cauca, 1853, *Holton* 358 (K). Without definite locality, *Linden* 1378 (B, K).

VENEZUELA: Weed, near Caracas, *Ernst* (Moritz, no. 1500; B). Tovar, 1856–57, *Fendler* 1969 (K).

PERU: Lima, *Cuming* 987 (K). Callao, *Wilkes Expedition* (G, N).

BOLIVIA: Bolivian Plateau, 1891, *Bang* 1137 (N). Guanai to Tipuani, 1892, *Bang* 1445 (N). Province of Larecaja, *Mandon* 31 (B, K, G). Dry sunny field, Tarija, 1902, *R. E. Fries* 1056 (N). Corral, Velasco, altitude 200 meters, 1892, *Kuntze* (N). Open grassy pampas, Carrapari, May, 1864, *Pearce* (B).

BRAZIL: Waste ground in village, Fernando do Noronha, 1887, *Ridley, Lea & Ramage* 105 (B, K). Pernambuco, 1887, *Ridley, Lea & Ramage* (B). Maçino, Province of Alagoas, 1838, *Gardner* 1345 (B, K). Oeiras, Province of Piauhy, 1839, *Gardner* (B). Province of Bahia, *Salzmann* 21 (K); *Gardner* 869 (B); *Glocker* (B, K). Arrayas, Province of Goyaz, 1840, *Gardner* 3842 (B, K.), Cuyacá, Province of Matto Grosso, 1893, *Malme* 1266 (B). Province of

Minas Geraes, *Claussen* (B). Piracicaba, Province of Sao Paulo, 1894, *Campos Novaes* (N). Without definite locality, *Sello* (K); *Martius* 645 (K); *Gardner* 22.1 (B).

PARAGUAY: L'Assomption, 1874, *Balansa* 874 (K). Central Paraguay, 1888–90, *Morong* 162 (N). Cordillera de Altos, 1903, *Fiebrig* 1000 (G, K). San Bernardino, *Hassler* 3895 (G).

ARGENTINA: Tucumán, *Lorentz & Hieronymus* 90 (K). Córdoba, 1878, *Hieronymus* (B, K). Estancia Germania near Córdoba, 1874, *Lorentz* 37 (B). Buenos Aires, *Tweedie* 739 (K). Province of Catamarca, 1915, *Jörgensen* 1093 (G).

SÉNÉGAL: In 1906, *Farmar* 16 (K).

ANGOLA: "A peculiar colonial weed, appearing on waste places frequented by native carriers," N'Dalatando Cazengo, 1912, *Gossweiler* 5541 (B).

NATAL: Durban, 1910, *Franks* (Wood, no. 11676) (K).

HAWAIIAN ISLANDS: Hawaii, 1851–55, *Rémy* 256 (G).

From its only near relative, *A. humile*, this much more widely distributed species is easily distinguished by its cuneate-based, not distinctly petioled leaves, and by its fruits, which are rather densely uncinate on the sides as well as on the angles. Its local name in Matto Grosso is given by Malme as "carapicho." In Ceará it is known as "retirante," and an infusion of the root is used as a remedy for coughs and bronchitis.[5]

4. Acanthospermum donii Blake, sp. nov. PLATE 23, d.

Herbaceous, branching, 30 cm. high and more, the base not seen; stem compressed, striatulate, whitish, pilose with spreading whitish hairs and puberulous between them with closely appressed hairs, glabrate below; leaf blades 3.5 to 8 cm. long, 1.5 to 4 cm. wide, rhombic-oval or broadly obovate, obtuse, gradually narrowed into a cuneate base, subsessile, repand-dentate (the teeth about 9 to 15 pairs, depressed, scarcely mucronulate), triplinerved above the base, green on both sides and rather sparsely pilose, the hairs longer along the veins; heads solitary in the axils and the forks of the stem, subsessile or on very short (1.5 mm. long) peduncles, in anthesis 6 to 8 mm., in fruit 9 to 11 mm. thick; outer phyllaries 4 or 5, oblong or obovate, obtuse, herbaceous, pilose-ciliate, united at extreme base, 3-nerved, 3 5 to 4.5 mm. long, 1 to 2.3 mm. wide; ray corollas about 8, yellow, oval, emarginate, 1 mm. long; disk corollas about 14, pale yellow, sparsely pilose and glandular, 1.8 mm. long (tube 0.6 mm.), the throat obscure, the teeth ovate; fruit cuneate, strongly compressed, 4 mm. high, 1 mm. wide at base, 3.5 to 4 mm. wide across the spines at apex, the body (exclusive of the terminal spines) 3.5 to 3.8 mm. long, whitish, with a short conic-subulate compressed spine on the inner angle and a longer one on the outer, 1-ridged on inner face, with sparse subulate uncinate-tipped aculei on the sides and back.

Type in the British Museum, from the herbarium of Ruiz and Pavón, collected in Ecuador (?). Fragments of type in Gray Herbarium.

The type specimens in the British Museum, labeled as of Mexico but certainly from South America and probably from Ecuador, were marked by David Don many years ago as a new species of *Melampodium*, under a name which would be in no way distinctive in *Acanthospermum*.

5. Acanthospermum simile Blake, sp. nov. PLATE 23, e.

Subsimple or dichotomous annual, at length 1 meter long; stem subcompressed, striate, whitish, rather densely pilose with loosely spreading, many-celled hairs, and between them closely appressed-pilosulous; leaf blades 3.5 to 7.7 cm. long, 3 to 3.8 cm. wide, rhombic-ovate or rhombic-oval, obtuse, gradually narrowed below the

[5] Dias da Rocha, Bot. Med. Cear. 98. 1919.

middle into a margined petioliform base, sessile, obscurely repand, triplinerved above the base, green on both sides and rather sparsely pilose, the hairs longer and spreading along the veins, elsewhere more or less appressed; heads solitary in the axils and forks of the stem, sessile, 10 to 11 mm. thick in fruit; outer phyllaries 5, oblong or oblong-oval, rounded at apex, herbaceous, pilose-ciliate and on back sparsely pilose, 4.5 to 5 mm. long, 1.5 to 2 mm. wide; ray corollas about 10, yellow, oval, emarginate, 1 mm. long; disk corollas about 13, yellowish, sparsely pilose and glandular; fruit cuneate, compressed, flattened and 1-ridged on inner angle, 5.5 mm. long, 1 mm. wide at base, 4.8 mm. wide across the tips of the spines, the body (exclusive of the terminal spines) 5 mm. long, dull or greenish white, gland-dotted, with a short lanceolate compressed spine on the inner angle at apex and a longer lanceolate-subulate one on the outer, bearing about 2 stout aculei on the dorsal angle, on margin of inner angle, and at apex, the sides bearing 2 to 4 weak prickles.

Type in the British Museum, collected on savannas near the River Daule, near Guayaquil, Ecuador, by R. Spruce (no. 6307). Fragments of type in the Gray Herbarium.

Closely related to the last preceding species, which probably comes from essentially the same region, but distinguished by its larger fruit. The type collection was distributed as *Acanthospermum xanthioides* DC. (*A. australe*), an unrelated species. Two of the fruits are sometimes connate into one.

6. Acanthospermum microcarpum Robinson, Proc. Amer. Acad. **38**: 208. *pl. 1, f. 3*. 1902. PLATE 23, *f*.

Erect, branching, 30 cm. high; stem stoutish, rather densely hirsute-pilose with several-celled wide-spreading hairs, in age glabrate; leaf blades 2.6 to 4.3 cm. long, 1 to 1.8 cm. wide, rhombic or rhombic-ovate, obtuse, abruptly or gradually contracted below the middle into a cuneate sessile base, crenate-serrate above the base, 3-nerved, rather sparsely hirsute-pilose on both sides with several-celled ascending hairs, gland-dotted beneath; heads sessile or subsessile in the forks of the stem and in the axils, 9 mm. wide in fruit; phyllaries 4 to 6, elliptic or oblong-elliptic, obtuse or acutish, hispid-pilose-ciliate and sparsely hispid-pilose on back, 3.5 to 4.5 mm. long; ray corollas 8, yellowish white, quadrate-oval, tridentate, glandular on back, 1 mm. long; disk corollas 8, 1.2 to 1.5 mm. long, the slender tube and short-campanulate throat 0.5 to 0.7 mm. long, sparsely hispid-pilose with several-celled hairs and gland-dotted, the 5 teeth ovate, acutish, spreading, sparsely hispid and gland-dotted; anthers cordate-sagittate at base; united style branches of ♀ flowers clavate, obtuse, hispidulous above; pales obovate, concave, lacerate at the obtuse apex; fruit trigonous-cuneate, compressed, 4.8 to 5.5 mm. high, 4 to 4.3 mm. wide across the tips of the spines, the body (exclusive of the terminal spines) 4 to 4.5 mm. long, with 2 lance-subulate, slightly compressed, straight or slightly curved spines at apex, gland-dotted, about 3-nerved on the sides, bearing mostly above middle on back and on sides toward apex a few subulate, straightish or slightly uncinate aculei.

TYPE LOCALITY: Charles Island, Galápagos Islands.

SPECIMEN EXAMINED:

GALÁPAGOS ISLANDS: Charles Island, May, 1899, *Snodgrass & Heller* 446 (type; G).

Acanthospermum microcarpum is intermediate between *A. donii* and *A. simile*, both of Ecuador, but is distinguished by the size of its fruit.

7. Acanthospermum consobrinum Blake, sp. nov. PLATE 23, *g*.

Branched procumbent "annual," 30 cm. long and more, the base not seen; stem subterete, striate, whitish, glandular-puberulous and pilose with loosely spreading shining many-celled hairs; leaf blades 1.7 to 2.5 cm. long, 6 to 12 mm. wide, obovate or rhombic-obovate, obtuse, cuneate into a sessile base, dentate above the middle (teeth 2 to 4 pairs, triangular, more or less depressed), triplinerved above the base, green on both sides and sparsely pilose with more or less appressed hairs, those along

the midrib longer and spreading; heads solitary in the axils and the forks of the stem, in anthesis 7 mm., in fruit about 1.8 cm. thick; peduncles curved, 3 to 4 mm. long; phyllaries 4 or 5, ovate to oblong-ovate, obtusish, herbaceous, 3-nerved, pilose-ciliate, 4 to 5 mm. long, 1.8 to 2.5 mm. wide; ray corollas about 7, yellowish, oblong-oval, tridenticulate, sparsely glandular, 1 mm. long; disk corollas about 7, yellowish, glandular and pilose on the tube (1 mm. long), sparsely glandular on the teeth, 2.5 mm. long; fruit obovoid-fusiform, distinctly compressed, 9.5 to 10 mm. long, whitish, gland-dotted, 2-beaked at apex, the outer beak curved, slender-subulate, the inner longer and straight, grooved on its inner face, the body acute at base, 3 to 3.3 mm. wide above the middle, about 8-ridged, the ridges bearing firm glochidiate-tipped aculei, those on the margins of the outer angle the longest (3 to 3.5 mm. long).

Type in the British Museum, collected in waste lands, L'Assomption, Paraguay, April 6, 1874, by Balansa (no. 874a). Fragments of type in the Gray Herbarium.

This species is at once recognizable by its fruit, which is to a slight degree intermediate between that of *A. australe* and that of the section *Ceratochlaena*.

8. Acanthospermum australe (Loefl.) Kuntze, Rev. Gen. Pl. **1**: 303. 1891.

PLATE 23, h–m.

Melampodium australe Loefl. Iter Hisp. 268. 1758.
Acanthospermum brasilum Schrank, Pl. Rar. Hort. Monac. *pl. 53*. 1819.
Centrospermum xanthioides H. B. K. Nov. Gen. & Sp. **4**: 271. *pl. 397*. 1820.
Orcya adhaerescens Vell. Fl. Flum. 345. 1825; Fl. Flum. Icon. **8**: *pl. 83*. 1827.
Echinodium prostratum Poit.; Cass. Dict. Sci. Nat. **59**: 245. 1829, as synonym.
Acanthospermum xanthioides DC. Prodr. **5**: 521. 1836.
Acanthospermum xanthioides α obtusifolium DC. Prodr. **5**: 522. 1836.
Acanthospermum xanthioides β acutifolium DC. Prodr. **5**: 522. 1836.
Acanthospermum xanthioides γ glabratum DC. Prodr. **5**: 522. 1836.
Acanthospermum hirsutum DC. Prodr. **5**: 522. 1836.

Procumbent or creeping, 60 cm. long or more; stem compressed, whitish, short-pilose with oblique many-celled hairs; leaf blades 1.3 to 3.7 cm. long, 0.7 to 3.2 cm. wide, rhombic-ovate or triangular, acute to obtuse, cuneate into the narrowly margined petiole, triplinerved, irregularly dentate-serrate above the cuneate entire base with callous-tipped teeth, sparsely appressed-pilosulous, dotted with impressed glands, particularly beneath; petioles 3 to 15 mm. long; heads solitary in the axils and at apices of stem and branches, in anthesis 6 to 7 mm., in fruit 1.5 to 2 cm. wide; peduncles sordidly hispid-pilose, 1.5 cm. long or less; outer phyllaries 5, oval or elliptic, obtusish, herbaceous, 3-nerved, ciliate and on back sparsely pilose, 3 to 4 mm. long; ray corollas 5 to 8, yellowish, densely stipitate-glandular, 1 mm. long, the erect limb 3-toothed; disk corollas about 12, yellowish, pilose below, glandular above, 2.5 mm. long (tube 1 mm., teeth 0.8 mm. long); pales scarious, glandular and ciliate, fimbriate-ciliate at the deeply emarginate apex, 2.5 mm. long; fruit obliquely ellipsoid-fusiform, slightly compressed, 5 to 7-ribbed, with open orifice at the obtuse apex, 7 to 8.5 mm. long, densely glandular, the ribs bearing 1 or 2 rows of ascending uncinate prickes 1 to 2 mm. long.

TYPE LOCALITY: Vicinity of Barcelona, Venezuela. Type collected by Loefling, February 15, 1755.

ILLUSTRATIONS: Schrank, Pl. Rar. Hort. Monac. *pl. 53:* H. B. K. Nov. Gen. & Sp. 4: *pl. 397;* Lam. Tabl. Encycl. *pl. 988;* Vell. Fl. Flum. Icon. 8: *pl. 83;* Britt. & Brown, Illustr. Fl. ed. 2. 3: *f. 4420.*

SPECIMENS EXAMINED:

MASSACHUSETTS: Lawrence, 1906, *Mrs. E. Schneider* (G).
VIRGINIA: Well established near Alexandria, 1912, *Summers* (N).
NORTH CAROLINA: Raleigh, 1880, *Hyams* (N). W. & W. Railroad near Goldsboro, 1890, *Coville* 48 (N). Streets of Wilmington, 1879, *Hyams* (N).
SOUTH CAROLINA: Streets, Blufftown, *Mellichamp* (B).

GEORGIA: Along railroad near Rocky Face, Whitfield County, 1900, *Harper* 290 (N). Stone Mountain, 1893, *Small* (N); in 1897, *Eggert* (N); in 1900, *Pollard & Maxon* 471 (N). Abundant in sandy soil along railway, Godwinsville, 1901, *Dewey* 545 (N).

FLORIDA: Jacksonville, *Curtiss* 1491, 4476, 5515 (N); in 1899, *Pieters* 22 (N). Gainesville, 1876, *Garber* (N). Along railroad, Eustis, 1894, *Nash* 724 (N). Clarcona, Orange County, 1899, *Meislahn* 128 (N). Dunedin, 1900, *Tracy* 6918 (N). Cedar Keys, 1874, *Palmer* 273 (N). Common along Chattahoochee River, 1897, *Bush* 18 (N). Apalachicola, 1890, *Biltmore Herbarium* 107a (N).

ALABAMA: Tuscaloosa, *Mohr* (N). Waste places in sandy soil, Ozark, 1880, *Mohr* (N). Grandbay, Mobile County, 1879, *Mohr* (N).

TENNESSEE: Along railroad, Tellico Junction, 1894, *Bain* (N).

MISSISSIPPI: Scranton, 1898, *Tracy* 4837 (N).

LOUISIANA: Port Eads, 1900, *Tracy & Lloyd* 517 (N).

OREGON: Ballast, Linton, 1916, *J. C. Nelson* 975 (G).

MARTINIQUE: *Sieber* 204 (G; distributed as *Siegesbeckia flosculosa*); in 1868, *Hahn* 409 (B; distributed as *Siegesbeckia flosculosa*).

ST. VINCENT: *Alex. Anderson* (B).

GRENADA: *Thomson* (B).

COLOMBIA: Villarica, altitude 450 meters, *Triana* 1333 (B). Upata, *Otto* 1018 (G).

VENEZUELA: Caracas, *Moritz* 206, 691 (B). Road from Caracas to La Guayra, altitude 1,100 to 1,700 meters, 1913, *Pittier* 5874 (N). Cerro del Gelipán, altitude 1,370 meters, 1891, *Eggers* 13233 (N).

BRITISH GUIANA: 1838–39, *Schomburgk* 663 (B, N); in 1841, *Schomburgk* "195 (144)" (B, N).

FRENCH GUIANA: Karouany, 1857, *Sagot* 349 (B). Without definite locality, *Poiteau* (B).

BOLIVIA: Yungas, 1890, *Bang* 324 (N). Cochabamba, 1891, *Bang* 884 (N). Maipiri, altitude 1,525 meters, 1886, *Rusby* 1348 (N). Coroico, 1866, *Pearce* (B).

BRAZIL: Near Para, 1850–51, *Spruce* (B). District of the Rio Plata, Province of Pernambuco, 1839, *Gardner* 2902 (B), 2903 (K). Province of Bahia, *Salzmann* 38 (K); *Sello* 583 (K); in 1817, *Lockhart* (B); in 1842, *Glocker* 33 bis (B). Chapada, Province of Goyaz, 1840, *Gardner* 3297 (B). Santa Cruz, Province of Matto Grosso, 1891–92, *S. L. Moore* 761 (B). Province of Rio de Janeiro, *Gaudichaud* (K); *MacGillivray* 317 (K); *Glaziou* 13999 (K); *Miers* 3019 (K); *Gardner* 57 (K); *Wilkes Expedition* (N). Porto Alegre, Province of Rio Grande do Sul, 1892, *Malme* 276 (B).

PARAGUAY: On termite hills of yellow loam, between Río Apa and Río Aquidaban, Villa Sana, 1908–09, *Fiebrig* 5204 (B). Cerro de Tobati, *Fiebrig* 744 (K). Cordillera Central, 1897, *Hassler* 3882 (B); in 1900, *Hassler* 7045 (B). South Paraguay, 1892, *Kuntze* (N).

URUGUAY: Concepciõn, 1877, *Lorentz* 951 (B).

HAWAIIAN ISLANDS: Diamond Head, Oahu, 1895, *Heller* 2030 (B, N).

INDIA: Singapore, 1861, *T. Anderson* 52 (B). Ang Mo Ko, Singapore, 1891, *Ridley* 2740 (B).

This species, which is commonly known as "Paraguay bur" or "sheep bur," has spread throughout most of the Southern States, especially along railroads, and occurs sporadically on waste heaps and ballast as far north as Massachusetts and Oregon. An account of the plant by J. P. Berckmans, which appeared in the Bulletin of the

Torrey Botanical Club many years ago,[6] contains the earliest record available of the presence of the Paraguay bur in the United States and is of sufficient interest to be reproduced here.

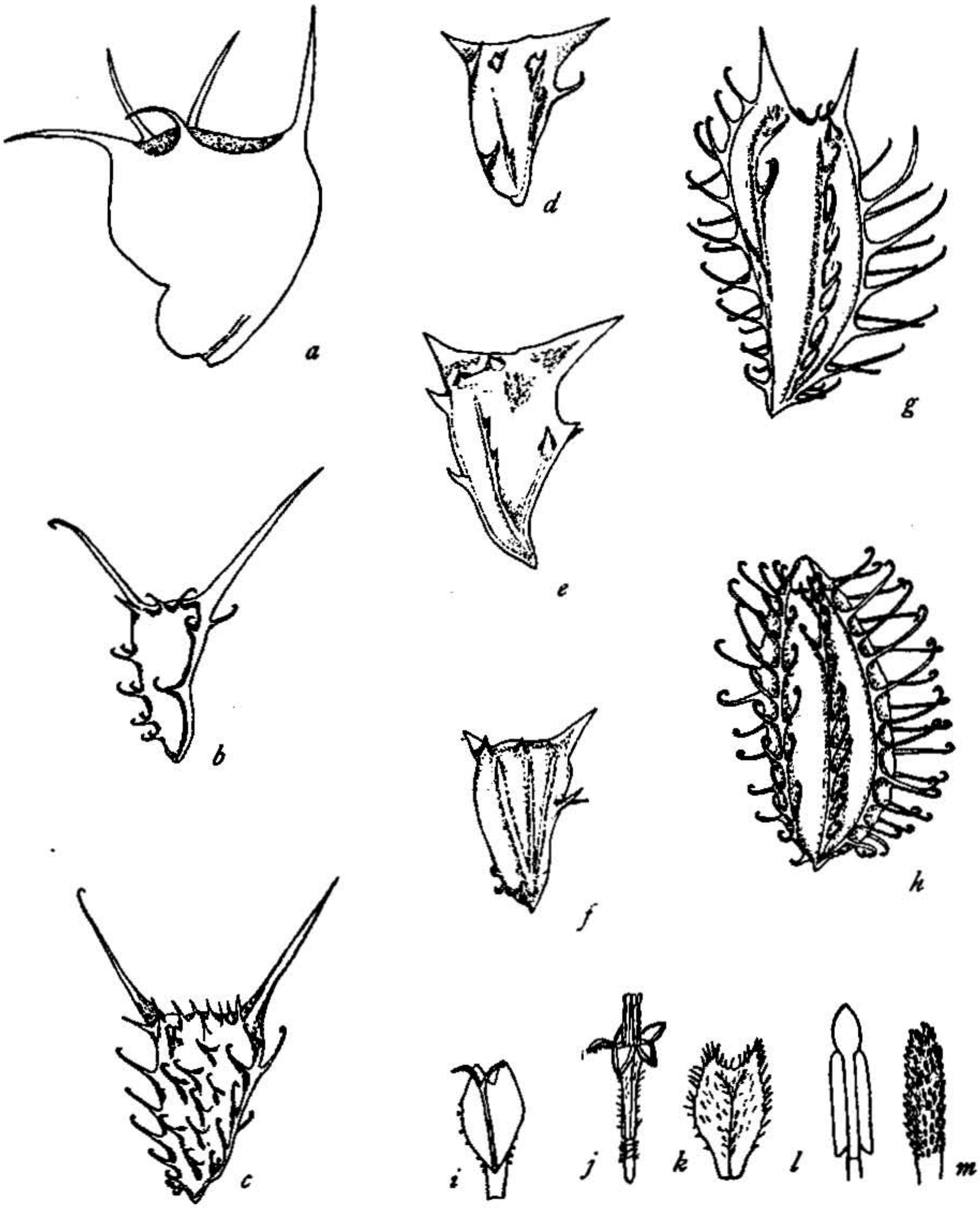
"ACANTHOSPERMUM XANTHOIDES.—About the year 1851 the then existing factory of Belleville, a few miles from Augusta [Georgia], received a quantity of wool imported from Buenos Aires. This wool was found to contain great numbers of small burs, which were separated by the picking machine, and the 'trash' was thrown outside of the picker room. The following year there sprang up innumerable plants of a spreading habit, which covered the ground all around the factory, and in a very few years the surrounding country was filled with the plant. The hooks upon the involucre allow the heads, or burs, to attach themselves to the legs of cattle, and in this way the seeds are carried about and widely scattered.

"I first saw the plant in 1857, when it made its appearance on my place simultaneously with *Lespedeza striata*, and I attribute its introduction here to the servants, who formerly had frequent intercourse with those at the Belleville factory. I have seen the plant in numerous places along the South Carolina Railroad, and there is scarcely a roadside within many miles of Augusta, if the soil is sandy, that is free from this plant. While it seems to prefer sandy localities, it will grow quite as luxuriantly on clay soils. Mr. Ravenel gave me its name many years ago."

The vernacular name of this species in Brazil is given by Baker as "carrapicho" or "carapixo."

EXPLANATION OF PLATE 23.—*a*, fruit of *Acanthospermum lecocarpoides, Baur* 128, scale 4.5; *b*, fruit of *A. humile, Pittier* 5123, scale 4.5; *c*, fruit of *A. hispidum, Britton & Fishlock* 1099, scale 4.5; *d*, fruit of *A. donii, Ruiz & Pavón*, scale 4.5; *e*, fruit of *A. simile, Spruce* 6307, scale 4.5; *f*, fruit of *A. microcarpum, Snodgrass & Heller* 446, scale 4.5; *g*, fruit of *A. consobrinum, Balansa* 874a, scale 4.5; *h*, fruit of *A. australe, Bang* 884, scale 4.5; *i*, ray corolla of *A. australe, Curtiss* 1491, scale 10; *j*, disk flower of *A. australe*, scale 5; *k*, pale of *A. australe*, flattened and viewed from back, scale 5; *l*, anther of *A. australe*, scale 10; *m*, apex of style of hemaphrodite flower of *A. australe*, scale 10.

[6] Bull. Torrey Club 6: 90. 1876.



FRUITS AND FLORAL DETAILS OF ACANTHOSPERMUM.

10322—20——2