

RHYNCHOSPORA, SECTION EURHYNCHOSPORA, IN
CANADA, THE UNITED STATES AND THE
WEST INDIES

SHIRLEY GALE

(Continued from page 197)

Series 6. **Rariflorae**, ser. nov. Foliis culmisque filiformibus erectis vel debilibus: cymis pluribus parvis patentibus: spiculis paucis remotis saepissime longe pedicellatis: setis antrorse serrulatis: achaenio ovoideo valde biconvexo castaneo vel pallido cancellato vel striato rugoso; rugis acutis.

Growing in bogs and on pond-margins of the Coastal Plain—*R. rariflora* infrequent inland and also occurring in the West Indies and Central America. Habit caespitose: leaves and culms filiform, erect to reclining: inflorescence of several small, open cymes: spikelets few, remote, mostly long-pedicellate: bristles upwardly serrulate, fragile: achenes ovoid, strongly biconvex, abruptly ridged, cancellate to striate, castaneous or pale, with 2 small whitish tongues of spongy tissue pushed out on either side at the base: tubercle deltoid, compressed.—*Rhynchospora* V. *Glomeratae* Small, Man. 175 (1933), in part. *Rhynchospora*, Series B. *Diplostyleae*, Sect. 4. *Fuscae* Clarke in Urban, Symb. Ant. ii. 105 (1900), in part.

KEY TO SPECIES OF SERIES RARIFLORAE

- Spikelet 2-4-flowered, the achene when solitary accompanied by a sterile floret; bristles shorter than the achene; tubercle deltoid, 0.3-0.6 mm. high. 36. *R. rariflora*.
Spikelet usually 1-flowered, with the axis then terminated by the solitary achene; bristles nearly equal to or exceeding the deltoid-acuminate tubercle which is 0.8-1.4 mm. long. . 37. *R. stenophylla*.

36. *R. RARIFLORA* (Michx.) Ell. Densely tufted: leaves filiform to 1 mm. wide, involute at least on drying, loosely erect; upper margins finely serrulate: culms filiform to very slender, wiry, flexuous to reclining, 2.4-5.6 dm. high: cymes 1-3, small, lax, open, with few spikelets, corymbiform, the capillary branchlets ascending to spreading; spikelets broadly ovoid, rarely sterile, remote, long-pedicelled, 2-4-flowered, 1-3-fruited, 3-4 mm. long: scales round-ovate, obtuse, castaneous, often pushed apart at maturity: bristles 6, upwardly serrulate, unequal in length, the longest shorter than the achene: achene obovoid to rotund, strongly biconvex, 1.1-1.4 mm. wide, 1.3-1.4 mm. long, castaneous, traversed by abrupt ridges, striate to oblong-cancellate between the ridges; two small whitish ascending tongues of spongy tissue pushed out on either side at the base: tubercle compressed, deltoid, 0.3-0.6 mm. high. PLATE 828,

FIGS. 4A and 4B; MAP 49.—Sk. Bot. S. Car. and Ga. i. 58 (1816); Gray, Ann. Lyc. N. Y. iii. 197, pl. 6, fig. 3 (1835); Chapman, Fl. So. U. S. 524 (1860); Britton, Trans. N. Y. Acad. Sci. xi. 92 (1892); Clarke in Urban, Symb. Ant. ii. 130 (1900); Small, Fl. 196 (1903) and Man. 183 (1933); Britton, Mem. Soc. Cubana Hist. Nat. ii. 197 (1916); Kükenthal, Fedde Rep. Spec. Nov. xxxii. 78 (1933). *Schoenus rariflorus* Michaux, Fl. Bor.-Am. i. 35 (1803); Muhlenberg, Descript. Gram. 10 (1817). *R. setacea* sensu Grisebach, Cat. Pl. Cub. 243 (1866); C. Wright in Sauvalle, Anal. Acad. Ci. Habana, viii. 84 (1871) and Fl. Cub. 180 (1873); non Vahl. *Phaeocephalum rariflorum* House, Am. Midland Nat. vi. 202 (1920).—Open peaty depressions, bogs, or pond-margins of the Coastal Plain from New Jersey and southeastern Virginia south to the Florida Peninsula and west to Texas, with isolated inland stations in the mountains of Georgia, in central Tennessee and northern Texas; also in western Cuba, the Isle of Pines, Jamaica, the Dominican Republic, and Central America. NEW JERSEY: clay-bottomed bog, Cold Spring, Cape May Co., *Gershoy*, no. 168 (G). VIRGINIA: boggy swale, Otterburn, about 1 mile west of Amelia Court House, Amelia Co., *Fernald & Long*, no. 8986 (G, P); sphagnous bog about 1 mile northeast of Burgess, Dinwiddie Co., *Fernald & Long*, no. 7354 (G, P); argillaceous and siliceous boggy depressions about 3 miles southeast of Petersburg, at head of Poo Run, Prince George Co., *Fernald, Long & Smart*, no. 5656 (G); wet peaty margin of pine woods about 3 miles southeast of Zuni, Isle of Wight Co., *Fernald & Long*, no. 6083 (G, P); damp peaty meadows behind dunes, Rifle Range, south of Rudy Inlet, Princess Anne Co., *Smith & Hodgdon* in Pl. Exsic. Gray. no. 624 (CU, G, NY, P, US); peaty openings bordering wooded swamp along Mill Creek, about 1 mile north of Skippers, Greensville Co., *Fernald & Long*, no. 8601 (G, P). NORTH CAROLINA: open pine forest, used soil south of Bennett Memorial, west of Durham, Durham Co., *Blomquist*, no. 9803 (D); edge of swamp, $\frac{1}{2}$ mile within west boundary of county, highway 264, Nash Co., *Blomquist*, no. 7686 (D); rich moist low soil near Chocowinity, Beaufort Co., *Correll*, no. 1589 (D); moist rich soil, waste ground, Bettie, Carteret Co., *Randolph & Randolph*, no. 796 (G); damp soil, Fayetteville, Cumberland Co., *Biltmore Herb.*, no. 259b (US); dried-out road-making sand pit, 4 miles east of Bolton, Columbus Co., *Wiegand & Manning*, no. 622 (G); in roadside-ditch near Bolivia, Brunswick Co., *Blake*, no. 11893 (CU). SOUTH CAROLINA: Aiken, Aiken Co., July, *Ravenel* (G); sunny banks near pond, Lotus Pond, Savannah River Refuge, Jasper Co., *Eyles*, no. 6085 (CU). GEORGIA: Little Stone Mt., DeKalb Co., July 25, 1893, *Small* (NY); wet woods about 2 miles west of Wrightsville, Johnson Co., *Harper*, no. 1345 (NY, US); low grounds near depot, Millen, Jenkins Co.,

Harper, no. 781 (G, NY, US); moist sandy roadside, Bullock Co., *Harper*, no. 879 (G, NY, US); pine barren, 13 miles north of Waycross, Ware Co., *Eyles*, no. 7027 (G); low wet edge of woods between Folkston and Mattox, Charlton Co., *Correll*, no. 5520a (D); moist pine barrens, near Huntington, Sumter Co., *Harper*, no. 1396 (G, NY, US); damp margin of cypress-pond about a mile north of Jakin, Early Co., *Harper*, no. 3629 (P, US); *Michaux Herb.* (G, TYPE-PHOTO; NY, TYPE-FRAGMENT from *Michaux Herb.*). FLORIDA: moist pine barrens near Jacksonville; Duval Co., *Curtiss*, no. 4870 (G, NY, US); Eustis, Lake Co., *Nash*, no. 438 (CU, G, NY, US); in a wet ditch in low pineland at the crossroads east of Fivay, Pasco Co., *O'Neill*, no. 2613 (CA, CU, US); Tampa, Hillsborough Co., Oct., 1877, *Garber* (G, P, US); in moist ditch along roadside, about 5 miles north of Parish, Manatee Co., *Moldenke*, no. 1053 (D, NY); cut-over flatwoods 5 miles east of Lake Rudy, vicinity of Polk Co., *McFarlin*, no. 5145 (CU); Istokpoga Prairie, between Lake Istokpoga and Kissimmee River, Okeechobee Co., *Small & DeWinkler*, no. 9058 (NY); Alapittah Flats, St. Lucie Slough to Lake Okeechobee, St. Lucie Co., *Small & DeWinkler*, no. 9513 (NY); low grassy pine barrens, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 259a (NY, US). ALABAMA: Auburn, Lee Co., July 3, 1897, *Earle & Baker* (NY); boggy sunny slope near Jasmine (on M. and O. R. R.), Chilton Co., Apr. 28, 1921, *Harper* (NY; US with collector's no. 171); Mobile, Mobile Co., May, 1845, *Sullivant* (G). TENNESSEE: swamps between Spencer and Cagle, Van Buren Co., *Svenson*, no. 9644 (G). MISSISSIPPI: Ocean Springs, Jackson Co., *Tracy*, no. 4863 (NY, US); Biloxi, Harrison Co., *Tracy*, no. 4890 (G, NC, NY, US). LOUISIANA: in low pine barrens near Mandeville, St. Tammany Parish, May 1, 1893, *Langlois* (G, Mo, US); in cut-over pines four miles west of Hammond, Tangipahoa Parish, *Trotter & Chilton*, no. 141 (La); New Orleans, *Drummond*, no. 414 (G); in low prairies, Pointe aux Loups, Acadia Parish, Sept. 17, 1894, *Langlois* (CU, US); wet prairies, Sulphur, Calcasieu Parish, *Palmer*, no. 7712 (CA, P, US). TEXAS: along road on dry sandy soil, West Orlando, Orange Co., Apr., 1936, *Uphof* (CU); bogs, Hempstead, Waller Co., *Hall*, no. 716 (G, Mo, NY, US); San Antonio, Bexar Co., Sept. 20, 1891, *Plank* (NY); e. Texas, *Wright* (G); Hookley Co., *Thurrow* (US). CUBA: white sand, vicinity of Los Indios, Isle of Pines, *Britton*, *Britton & Wilson*, no. 14175 (NY); Isle of Pines, *Taylor*, no. 59 (G, NY, US); Colpothrinx savanna, between Pinar del Rio and Coloma, Pinar del Rio, *Britton*, *Britton & Cowell*, no. 10083 (NY); low pinales, San Juan-Guanes, Pinar del Rio, *Wright*, no. 3400 (G); Hacienda San Julian, south of Guane, Pinar del Rio, *León & Roca*, no. 6937 (NY); moist places, Mateo

Sanchez, Pinar del Rio City, Pinar del Rio, *Ekman*, no. 17935 (NY); common, moist places near rivulets in pinelands, Herradura, Pinar del Rio, *Ekman*, no. 17719 (US). JAMAICA: in the morass, Pedro Morass, Upper Clarendon, alt. 3000 ft., *Harris*, no. 11223 (NY, US). HISPANIOLA: slightly moist places, Pimental, prov. Duarte, Valle del Cibao, Santo Domingo, *Ekman*, no. 13252 (G, US); in savanna, El Valle, Sabana de la Mar, prov. de Samana, Cordillera Central, Santo Domingo, *Ekman*, no. 15700 (NY, US).

37. *R. STENOPHYLLA* Chapm. Tufted: leaves filiform, strongly involute, flexuous, ascending, upper margins minutely serrulate: culms filiform, wiry, flexuous, 3.1–9 dm. tall: cymes 1–2, small, weak, lax, corymbiform, bearing only 1–5 fertile spikelets on capillary ascending to divaricate branchlets: fertile spikelets ovate to lanceolate in outline, usually 1-flowered, 1-fruited, 3–5 mm. long, remote; sterile spikelets frequent, smaller, fusiform: scales lanceolate, pale, tightly imbricate: bristles 6, delicate, darker than the achene, with few antrorse serrulations, unequal in height, shorter than or exceeding the tubercle: achene obovoid, strongly biconvex, with surface transversely ridged, cancellate, pale, 1–1.3 mm. wide, 1.3–1.5 mm. long, with two small whitish ascending tongues of spongy tissue 0.4 mm. in height, pushed out on either side at the base: tubercle compressed, deltoid-acuminate, 0.8–1.4 mm. long. PLATE 828, FIGS. 5A and 5B; MAP 41.—Fl. So. U. S. 525 (1860); Small, Fl. 198 (1903) and Man. 186 (1933); Britton, Trans. N. Y. Acad. Sci. xi. 92 (1892), excl. syn. *R. tenuifolia* Griseb.—Infrequent in swamps or boggy ground, often in pine woods, Coastal Plain of the Carolinas, northwest Florida and Alabama. NORTH CAROLINA: boggy ground ca. 3 miles north of Hampstead, Pender Co., *Blake*, no. 11906 (G, US). SOUTH CAROLINA: Aiken, Aiken Co., July, 1866, *Ravenel* (G, NY). FLORIDA: Apalachicola, Franklin Co., *Chapman* (NY); low grassy pine barrens, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 4479 (US); swamp near Argyle, Walton Co., *Curtiss*, no. 5945 (G, NC, NY, US); fertile pine woods, Walton Co., *Curtiss*, no. 3174 (CU, P, US); Warrington, Escambia Co., *Tracy*, no. 8613 (G, NY, US). ALABAMA: Great Bog, Mobile Co., July, 1889, *Mohr* (US); *Bigelow* (G).

In contrast to *R. rariflora* (Michx.) Vahl, which it closely resembles, *R. stenophylla* has pale lanceolate scales with acute tips which, in the fertile spikelets, are closely imbricated about the solitary achene. A number of spikelets are characteristically erect, sterile, and fusiform. The scales of *R. rariflora*, on the other hand, are castaneous, broadly ovate, rounded or obtuse at the tip. Frequently the 2–several-flowered spikelet of the

latter matures 2–3 achenes which, during growth, cause the scales to separate. Unlike the condition in *R. stenophylla*, the spikelets of *R. rariflora* are usually fertile and distant on wiry capillary pedicels.

Two sheets of *R. stenophylla* from Chapman's Herbarium (both of which are now at the National Herbarium, no. 968501 and Biltmore Herbarium, no. 4479) have specimens the spikelets of which are comparatively numerous and more than 1-flowered. However, none of these spikelets have mature achenes, and, although they may have been merely immature when collected, there is also the possibility that they are pathological.

Series 7. **Cernuae**, ser. nov. Plantae valde caespitosae saepe depressae: basibus saepe densis fibrillosisque: foliis setaceis saepe crispis vel latis planis subcoriaceis: cymis parvis ovoideis capitatis vel spiciformibus vel leviter patentibus corymbiformibus: spiculis monocarpis: squamis saepe pallidis; apicibus saepe obtusis: setis antrorse serrulatis vel laevibus: achaenio parvo subtiliter ruguloso vel rugoso nitido et fusco vel castaneo vel valde corrugato et pallido.

Small plants (with exception of *R. nipensis*) growing in exsiccated locations, such as rocky crevices of stream-beds and dry pine barrens, mostly restricted to the mountains of eastern Cuba. Strongly caespitose, often depressed: bases often dense, occasionally fibrillose, due to the fraying out and the persistence of the fibro-vascular strands of the old cauline leaves: leaves filiform, setaceous, often curling, or broad, flat and subcoriaceous with the upper surfaces exasperate or pruinose: cymes small, ovoid-capitate, spiciform or weakly corymbiform: spikelets 1-fruited: scales often pale, with obtuse apices, frequently short, leaving the upper portion of the achene and tubercle exposed: bristles 6, extremely fine, weakly ascending; antrorse serrulations sometimes imperceptible: achenes small, their surfaces finely rugulose, glossy dark brown to castaneous and rugose, or pale and heavily corrugate: tubercle compressed, deltoid.—*Rhynchospora*, Series B. *Diplostyleae*, Sect. 5. *Glaucæ* Clarke in Urban, Symb. Ant. ii. 106 (1900), in part.

KEY TO SPECIES IN SERIES CERNUAE

- a. Inflorescence of 1–3 loosely spiciform cymes or a solitary (rarely 2) ovoid capitulum; spikelets sessile; bases of the caespitose tufts often densely fibrous. . . . b.
- b. Radical leaves 1.5 (rarely)–3 mm. broad, revolute, short, spreading; upper surfaces pruinose. . . . 38. *R. pruinosa*.
- b. Radical leaves capillary or if 1 mm. wide flat, attenuate, approximating the culm in length, ascending; upper surfaces smooth. . . . c.

- c. Inflorescence loosely spiciform; spikelets erect to ascending; leaves capillary....d.
- d. Plants forming depressed tufts; bases hard, fibrous; leaves short, 0.6 dm. in height or less, circinate-coiled; culms 0.2–0.9 dm. tall; achene obovate, 1 mm. long.....39. *R. crispa.*
- d. Plants forming erect tufts; bases not fibrous; leaves 2 or more dm. in height, sinuously ascending to erect; culms 2–3.3 dm. high; achene slenderly obovate, 1.3–1.4 mm. long.....40. *R. Shaferi.*
- c. Inflorescence of 1–2 dense, ovoid capituli; spikelets erect, divergent and reflexed, the lowermost nodding in *R. cernua*; leaves filiform to 1 mm. wide....e.
- e. Leaves 1 mm. wide, ascending, attenuate, approximately 3.5 dm. in length, nearly equalling to exceeding the culm; capitulum solitary; spikelets ascending to divaricate, occasionally reflexed; achene elliptic-ovoid, 0.8–0.9 mm. wide, 1.3–1.4 mm. long.....41. *R. nipensis.*
- e. Leaves filiform, curling, short, 0.15–0.8 dm. in length, less than $\frac{1}{2}$ the height of the culm; capituli 1–(rarely)2; spikelets erect to nodding on short curved pedicels; achene obovoid, 0.8 mm. wide, 1 mm. long.....42. *R. cernua.*
- a. Inflorescence consisting of a terminal, small, spreading cyme and 1–4 lateral cymes; or, if cymes are poorly developed, some of the spikelets pedicellate; bases of the caespitose tufts not fibrous....f.
- f. Mature achenes and bristles pale, the former flattened, corrugate and stipitate....g.
- g. Plants forming depressed tufts; culms 1–1.5 dm. tall, weak; scales whitish; achene 0.7 mm. wide, 1.2 mm. long; bristles shorter than the achene.....43. *R. depressa*
- g. Plants forming erect tufts, not depressed; culms 2.4–4.4 dm. tall, slenderly erect; scales light brown; achenes 0.7–0.9 mm. wide, 1.3–1.4 mm. long; bristles exceeding the tubercle.....44. *R. tenuifolia.*
- f. Mature achenes and bristles castaneous to dark brown, the former strongly biconvex to plano-convex, finely to obscurely rugulose, not conspicuously stipitate....h.
- h. Radical leaves usually exasperate on the upper surface, 1.5–2 mm. wide; the short cauline leaves as broad, often divaricate; culms with rarely more than 2 nodes; achene dark brown, plumply biconvex, with the bristles equally distributed on both sides.....45. *R. scabrata.*
- h. Radical leaves smooth-surfaced, 1 mm. wide, usually less; cauline leaves filiform, attenuate, ascending; culms 2 (rarely)–5-noded; achene castaneous, plano-convex, with the bristles assembled on the flat side.....46. *R. Lindeniana.*

38. *R. PRUINOSA* Griseb. Caespitose, often depressed: basal leaves commonly short, 1.5 (rarely)–3 mm. wide, canaliculate, marginally revolute, with the roughened upper surface and the small white inclusions in many of the epidermal cells producing a silvery to rimy effect; culms triquetrous, slender, erect, 0.6–5.3 dm. high, seldom bearing more than two short divaricate leaves: inflorescence of 1–2 (rarely 3) small glomerules which are oblong-

ovate in outline, 3–6 mm. broad; the smaller axillary glomerule subexserted to exserted on a slender erect peduncle: the bract subtending the terminal glomerule occasionally setaceous and inconspicuous, but more often short and leafy: spikelets ovoid, 2–2.5 mm. long, compact, turgid, 1-fruited with the tubercle of the achene protuberant: scales suborbicular, tightly imbricate, pale: bristles 6, delicate and weakly ascending, upwardly serrulate: achene broadly obovoid, biconvex, 0.7–0.9 mm. wide, 1–1.4 mm. long, gleaming dark brown, with barely discernible rugulosity: tubercle subulate-triangular, 0.4–0.6 mm. long. PLATE 826, FIGS. 3A and 3B; MAP 42.—Pl. Wright. pars 2: 535 (1862), preprint of Mem. Am. Acad. Sci. new ser. viii. 535 (1863); Grisebach, Cat. Pl. Cub. 243 (1866); C. Wright in Sauvalle, Anal. Acad. Ci. Habana, viii. 84 (1871) and Fl. Cub. 179 (1873), excl. syn. *R. scabrata* Griseb.; Clarke in Urban, Symb. Ant. ii. 132 (1900), excl. syn. *R. scabrata* Griseb.; Britton, Mem. Soc. Cubana Hist. Nat. ii. 198 (1916), excl. syn. *R. scabrata* Griseb.—Damp woods or thickets often bordering brooks, mountains of eastern Cuba and northern Dominican Republic. CUBA: in woods, Gato Mts., Cobre Range of Sierra Maestra, alt. 1000 m., *León, Clement & Roca*, no. 10424 (NY); in umbrosis, Loma Mensura, in cacumine montis, Sierra de Nipe, Oriente, alt. 1000 m., *Ekman*, no. 9936 (NY); road to pinal, Mayari Abajo, Aug. 6, 1860,¹ *Wright*, no. 1532 (G, type-number cited without locality by Grisebach); damp banks of stream in thickets, Sierra Nipe near Woodfred, Oriente, alt. 450–550 m., *Shafer*, no. 3438 (NY, US); Camp La Gloria south of Sierra Moa, Oriente, *Shafer*, no. 8084 and no. 8085 (NY); banks of rivulets, prope villam Monte Verde dictam, Jan.–Jul., 1859, *Wright*, no. 1532 (G, NY; type-number cited without locality by Grisebach) and no. 729 (G); *Wright*, no. 3391 (NY, US; also the number of the type-collection of *R. scabrata*). HISPANIOLA: rare, in forest, Loma Quita Espuela, prov. Duarte (formerly Pacificador), Cordillera Septentrional, Santo Domingo, alt. 800 m. *Ekman*, no. 12269 (NY).

39. *R. crispa*, sp. nov. Caespites parvos valde depressos formans; basibus saepe fibrillosis: foliis basilaribus brevibus circinnatis: culmis filiformibus flexilibus ascendentibus 0.2–0.9 dm. altis, fasciculis 1–2 rare 3 parvis laxe spiciformibus; spiculis paucis; fasciculis axillaribus minoribus gracillime pedunculatis: bracteis et squamis imis setose prolongatis: setis 6, subtilissimis inaequalibus quam achaenio saepe longioribus fere laevibus: achaenio obovoideo biconvexo transverse ruguloso pallide castaneo 0.8 mm. lato, 1 mm. longo: tuberculo anguste conico 0.6 mm. longo. PLATE 827, FIGS. 4A and 4B; MAP 43.—Wet rocks of the mountain streams, Sierra Nipe, eastern Cuba. CUBA: in wet crevices of rock subject to overflow, Arroyo del Medio above

¹ See Underwood, Bull. Torr. Bot. Cl. xxxii. 295 (1905).

the falls, Oriente, Dec. 22, 1909, *Shafer*, no. 3266 (NY, TYPE); in pinetis (et carrascales) Sierra de Nipe, Oriente, July 24, 1914, *Ekman*, no. 2171 (NY); banks of upper Sojo River at 600 m. alt. Sierra de Nipe, Oriente, May, 1940, *Carabia*, no. 3731 (G); Pinal Mayari, 700 m. alt. Sierra de Nipe, Oriente, April 7, 1941, *León & Victorin*, no. 19906 (G, in part).

The Ekman sheet, no. 2171, in the Herbarium of the New York Botanical Garden bears the copied annotation "*R. cernua* Gris. det. Kükenthal, 1926." Considering the evident similarity of *R. crispa* and *R. cernua*, it is not strange that Kükenthal failed to distinguish the one from the other. Both form small depressed tufts of curling leaves (although the leaves of *R. crispa* are apparently more tightly and usually inwardly rolled), from which short, capillary, wiry culms arise. Both have characteristically pale spikelets and the stubby ovate achenes with an identical pattern of surface-elaboration. The cymes of *R. crispa*, however, are strictly elongate, and are composed of more or less distant and erect—never crowded and pendulous—spikelets. The long setose subtending bracts pass by gradations into the shorter, less strongly setose, basal scales of the spikelets proper. The upper scales of *R. crispa* appear to be acute with aristulate tips, although from the over-ripe condition of the only available specimens neither this fact, nor the degree of protuberance of the achene from the spikelet can be satisfactorily determined.

The small ovoid congested capituli of *R. cernua*, on the other hand, bear erect to pendulous spikelets, and are exceeded by only 1–2 setaceous bracts at the most, which are sharply differentiated from the poorly developed lower scales. The uppermost scales, beyond which the tubercle and the upper end of the achene protrude, are characteristically emarginate with a short central mucro.

Although the achene of *R. crispa* is of the same shape and size as that of *R. cernua*, it is exceeded by several of the slender bristles and surmounted by an elongate flattened tubercle; whereas the achene of *R. cernua* is short-bristled, with a low conic tubercle.

Shafer's sheet, no. 3266, which I am designating as the TYPE of *R. crispa*, was identified by Britton as *R. Berterii* Clarke (*R. pusilla* Griseb.); but the two species are so utterly different in all but their general size and the bleached appearance of their

spikelets that it is improbable that such a misidentification should reoccur. *R. pusilla* is a lax little plant with flat, soft-textured, spreading leaves which are rarely filiform to 2 mm. wide—very different in appearance from the thick hard-based tufts of *R. crispa* with their strictly filiform subcoriaceous and inwardly coiling leaves.

40. *R. SHAFERI* Britt. Forming dense, upright tufts: basal leaves capillary, wiry, attenuate, flexuous, ascending; cauline leaves few, attenuate, approximating the height of the culms: culms many, capillary, wiry, flexuous-ascending, 2–3.3 dm. high: cymes solitary, small, loosely spiciform, 3–4 mm. wide, each exceeded by an upright, setaceous bract: spikelets ovoid, sessile, erect or ascending, 1–2-fruited, 2.4–2.6 mm. long; the tubercle and $\frac{1}{3}$ – $\frac{1}{2}$ the achene exposed: scales broadly ovate, pale; the apex rounded, with the midrib slightly, or not at all projecting: bristles 6, not equalling the achene in height, upwardly serrulate: achene slenderly ovoid, lenticular, compressed, transversely rugulose, castaneous, 0.8 mm. wide, 1.3–1.4 mm. long: tubercle conic-subulate, compressed, 0.5 mm. high. PLATE 827, FIGS. 2A and 2B; MAP 44.—Mem. Soc. Cubana Hist. Nat. ii. 197 (1916). *R. lingulata* Kükenthal, Fedde Rep. Spec. Nov. xxiii. 211 (1926).—Thin soil, rocks on banks of mountain streams, Sierra Nipe, eastern Cuba. CUBA: thin soil near base of mountain, Loma Mensura, Oriente, alt. 680 m., *Shafer*, no. 3797 (NY, TYPE; US, ISOTYPE); on the edge of Arroyo Machete, Sierra de Nipe, Oriente, *Ekman*, no. 15121 (NY, this number cited by Kükenthal in type-description of *R. lingulata*); in carrascales-pinets, Sierra de Nipe, Oriente, *Ekman*, no. 2172 (NY, US; this number cited by Kükenthal in type-description of *R. lingulata*); rocks, bank of stream, Arroyo del Medio above the falls, Sierra Nipe, Oriente, alt. 250–500 m., *Shafer*, no. 4477 (NY); carrascales at Rio Pedra, Sierra, Sierra de Nipe, Oriente, alt. 200–300 m., *Ekman*, no. 19107 (G, US), and same locality, *Ekman*, no. 10010 (G, this number cited by Kükenthal in type-description of *R. lingulata*).

41. *R. NIPENSIS* Britt. Densely caespitose with thick often heavily fibrous bases: roots coarse, sparingly branched, spongy: radical leaves 1 mm. wide or less, subcoriaceous, flexuous, ascending, approximating the culms in height; the tips flat and blunt, the margins finely serrulate: culms few, slender, erect, 3–3.5 dm. high, bearing 1–2 short, blunt-tipped leaves and terminated by a small ovoid dense capitulum of spikelets: bracts few, short, filiform, divergent: fertile spikelets ovoid, 1-fruited, sessile, ascending to divergent, 2.5 mm. long; the tubercle and upper portion of the achene protruding; sterile spikelets numerous, small, fusiform: fertile scales ovate, short, with rounded

apices: bristles 6, extremely tenuous, loosely ascending, antrorsely serrulate: achene elliptic-ovoid, compressed, often slightly asymmetric, 0.8–0.9 mm. wide, 1.3–1.4 mm. long; surface dull pale brown, transversely rugulose, the rugulosities conspicuously striolate: tubercle seemingly confluent with the apex of the achene, conical-acuminate, 0.6 mm. long. PLATE 826, FIGS. 4A and 4B; MAP 45.—Mem. Soc. Cubana Hist. Nat. ii. 197 (1916), non Kükenthal. *R. fibrillosa* Kükenthal, Fedde Rep. Spec. Nov. xxiii. 212 (1926).—Rocks bordering mountain streams of the Sierra Nipe, eastern Cuba. CUBA: rock ravine, dry but subject to overflow after heavy rain, Sierra Nipe, along trail from Piedra Gorda to Woodfred, Oriente, alt. 400–500 m., *Shafer*, no. 3103 (NY, TYPE); ad marginem fluvii Rio Piloto, Sierra de Nipe, Oriente, *Ekman*, no. 3244 (NY, cited by Kükenthal in type-description of *R. fibrillosa*); on rocks of the high cascades of Rio Piloto, Sierra Nipe, Oriente, ca. alt. 700 m., *Ekman*, no. 15173 (NY, cited by Kükenthal in type-description of *R. fibrillosa*); in rock fissures, carrascales at Rio Piloto, Sierra de Nipe, ca. alt. 375 m., *Ekman*, no. 19147 (G, US; cited by Kükenthal in type-description of *R. fibrillosa*).

42. *R. CERNUA* Griseb. Depressed, the basal leaves forming dense curly tufts with more or less fibrous bases: leaves filiform, setaceous, wiry, sparingly serrulate, much shorter than the culms: culms filiform, erect, 1–2-leaved, 0.4–2.5 dm. high: inflorescence 1 (rarely 2) small, ovoid capituli 3–4 mm. wide; lateral capituli exserted on long filiform ascending peduncles: spikelets ovate, 1.5–2 mm. long, subsessile, erect to pendant, 1-fruited; the achene and tubercle protruding: scales obovate, notched at the apex, with the midrib slightly prolonged, stramineous to whitish: bristles 6, upwardly serrulate, height variable but falling short of the achene: achene obovoid, biconvex, transversely rugulose, castaneous, 0.8 mm. wide, 1 mm. long: tubercle a stubby cone 0.3–0.4 mm. high. PLATE 826, FIGS. 2A and 2B; MAP 46.—Cat. Pl. Cub. 248 (1866); C. Wright in Sauvalle, Anal. Acad. Ci. Habana, viii. 87 (1871) and Fl. Cub. 182 (1873); Clarke in Urban, Symb. Ant. ii. 133 (1900), excl. syn. *R. brevirostris* Griseb.¹; Britton, Mem. Soc. Cubana Hist. Nat. ii. 197 (1916).—Open places in pineland, mountains of eastern Cuba. CUBA: pinal near Baracoa, Oriente, June 15, 1861?,² *Wright*, no. 3413 (G; NY, fragment from Gray Herb. This number cited by Grisebach in type-description); 1860–64, *Wright*, no. 3365 (G. This number cited by Grisebach in type-description); forming small clumps in open places, Sierra Nipe near Woodfred, Oriente,

¹ C. B. Clarke lists *R. brevirostris* in the synonymy of *R. cernua*, due to a misprint in Griseb. which gives the Wright coll. no. of *R. brevirostris* as 3414 (instead of 3410), making it the same as coll. no. of *R. cernua*.

² See Underwood, Bull. Torr. Bot. Cl. xxxii. 295 (1905).

alt. 500–650 m., *Shafer*, no. 2995 (NY, in part); same locality, *Shafer*, no. 3048 (NY, US); on bank of stream, Camp La Gloria, south of Sierra Moa, Oriente, *Shafer*, no. 8218 (NY); banks of small stream, Aserrio de Moa, Oriente, *León*, no. 20254 (G).

On a basis of his new species, *R. cernua*, Grisebach¹ drew up the section *Microchaeta* to contain those species which possessed tripartite styles. However, the specimens of *R. cernua* which I have examined have the typically bifid styles. Grisebach's description was probably based upon an anomalous specimen with a tricarpellary gynoeceium, a condition which occurs sporadically throughout the Section *Eurhynchospora*.

43. *R. depressa* (Kük.), stat. nov. Growing in depressed tufts: leaves filiform, canaliculate and wiry, erect or somewhat arching with the apices rounded and sparingly serrulate: culms wiry-filiform, subterete or flattened, 1–1.5 dm. high, with 1–2 nodes towards their apices; cymes 1–2, strictly ascending; the terminal cyme limited to 1–2 branchlets each of which bears either a pair of spikelets, the one subsessile, the other slenderly pedicellate, or a central sessile and two lateral pedicellate spikelets; lateral cymes smaller, exsertly pedunculate, erect: bracts attenuate, setaceous, paralleling the culm, serrulate: spikelets 2.2 mm. long, erect, approximate, sessile or slenderly pedicellate, 1-fruited, with the tubercle of the achene slightly protuberant: scales ovate, with the midrib extended slightly from a rounded, emarginate apex, papery, whitish, flecked with cinnamon toward the apex: bristles 6, shorter than the achene, with the fine upward serrulations somewhat prolonged and silvery toward the bases: achene slenderly obovoid, lenticular, biconvex, 0.7 mm. wide, 1.2 mm. long, corrugate with fine longitudinal striae, yellowish-brown: tubercle narrow-based, pike-like, 0.4 mm. long, pale, scurfy. PLATE 826, FIGS. 1A and 1B; MAP 48.—*R. Lindeniana* Griseb. ? var. *depressa* Kükenthal, Fedde Rep. Spec. Nov. xxiii. 211 (1926).—Along mountain brooks, eastern Cuba. CUBA: ad marginem rivuli, Minas de Iberia (a Taco Bay), Oriente, *Ekman*, no. 3808 (NY, US. This number cited by Kükenthal in type-description of *R. Lindeniana* var. *depressa*).

R. depressa was described by Kükenthal in 1926 as a provisional variety of *R. Lindeniana* Griseb. Following the brief description the author stated that the specimens at hand were over-ripe and did not permit of a more reliable diagnosis. I have examined two sheets of the original collection, and, after careful comparison of these with specimens of *R. Lindeniana*,

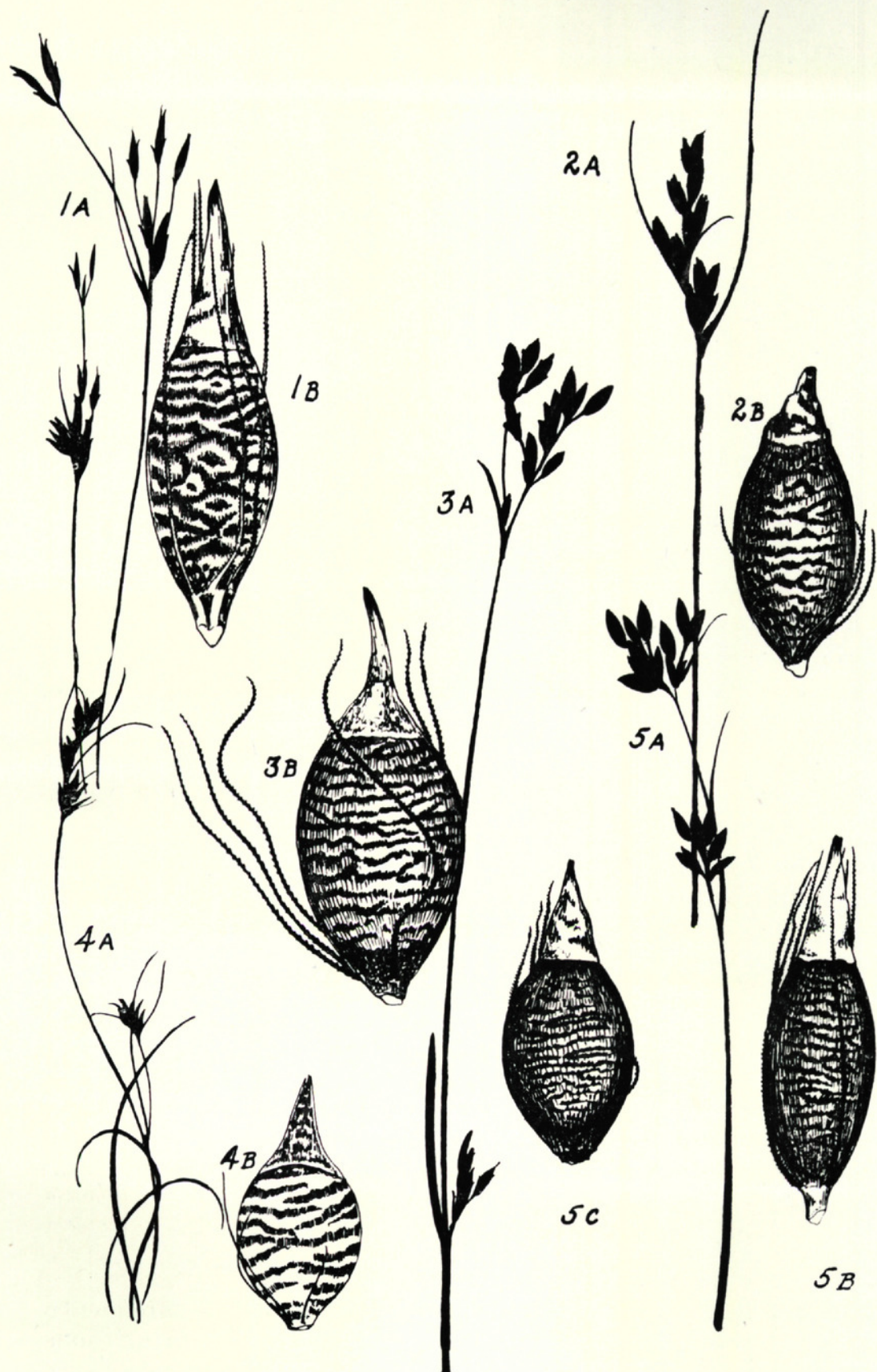
¹ Cat. Pl. Cub. 248 (1866).

believe that Kükenthal's variety is not conspecific with Grisebach's plant. The matted, depressed habit, emphasized by the name, and the dense wiry filiform leaves distinguish the former from both *R. Lindeniana* var. *typica* and var. *bahamensis* (Britt.) Gale.

Most fundamental, however, are the differences of inflorescences and achenes. In *R. depressa* the cymes are of few spikelets, delicate, strictly ascending, and the scales are silvery white, flecked with cinnamon, emarginate, with short mucronulate tips. The cymes of *R. Lindeniana*, however, are congested, often irregularly corymbiform, and the scales, although often marginally bleached, are definitely castaneous to dark brown, with rounded or acute apices. The achene of *R. Lindeniana* is ovate to oblong-ovate in outline, plano-convex, indistinctly to finely rugulose, and a glossy dark brown at maturity. The base of the tubercle includes the summit of the achene. The achene of *R. depressa*, however, is obovate and so flattened as to be only slightly biconvex; its surface is banded by a few pale yellowish-brown corrugations. The narrow base of the tubercle of *R. depressa* does not include the summit of the achene, and extends to form a small pike-like projection.

The type-locality, Taco Bay, Oriente, tends to strengthen the argument for the specificity of *R. depressa*, for the high rate of endemism in this province is well-known.

44. *R. TENUIFOLIA* Griseb. Tufted: basal leaves filiform to 1 mm. wide, short, often curling, triquetrous and sparingly serrulate at the tips: culms filiform, loosely ascending, leafy, 2.4–4.4 dm. high: cymes 2–3, 6 mm. wide or less; the filiform branches erect, approximate, with few spikelets; lateral cymes distant on subexserted peduncles, the lowermost not far from the base of the culm: spikelets lanceolate-acuminate in outline, 3.5–4.5 mm. long, 3-flowered, 1-fruited, erect on slender pedicels: scales slenderly ovate, acute, light brown, papery, loosely imbricate, promptly caducous: bristles 6, pale, extremely delicate, ascending, heavily and upwardly serrulate, exceeding the tubercle: achene slenderly oblong-ovate, strongly flattened, broadly and heavily corrugate with fine longitudinal striae, pale, frequently dark brown in the narrow interstices between the corrugations, conspicuously stipitate, 0.7–0.9 mm. wide, 1.3–1.4 mm. long: tubercle attenuate-subulate, pale, 0.7–0.9 mm. high. PLATE 827, FIGS. 1A and 1B; MAP 47.—Cat. Pl. Cub. 244 (1866); non *R. tenuifolia* Benth. (1878); C. Wright in Sauvalle, Anal. Acad. Ci.



S. G. del.

RHYNCHOSPORA TENUIFOLIA: FIG. 1A, portion of inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.

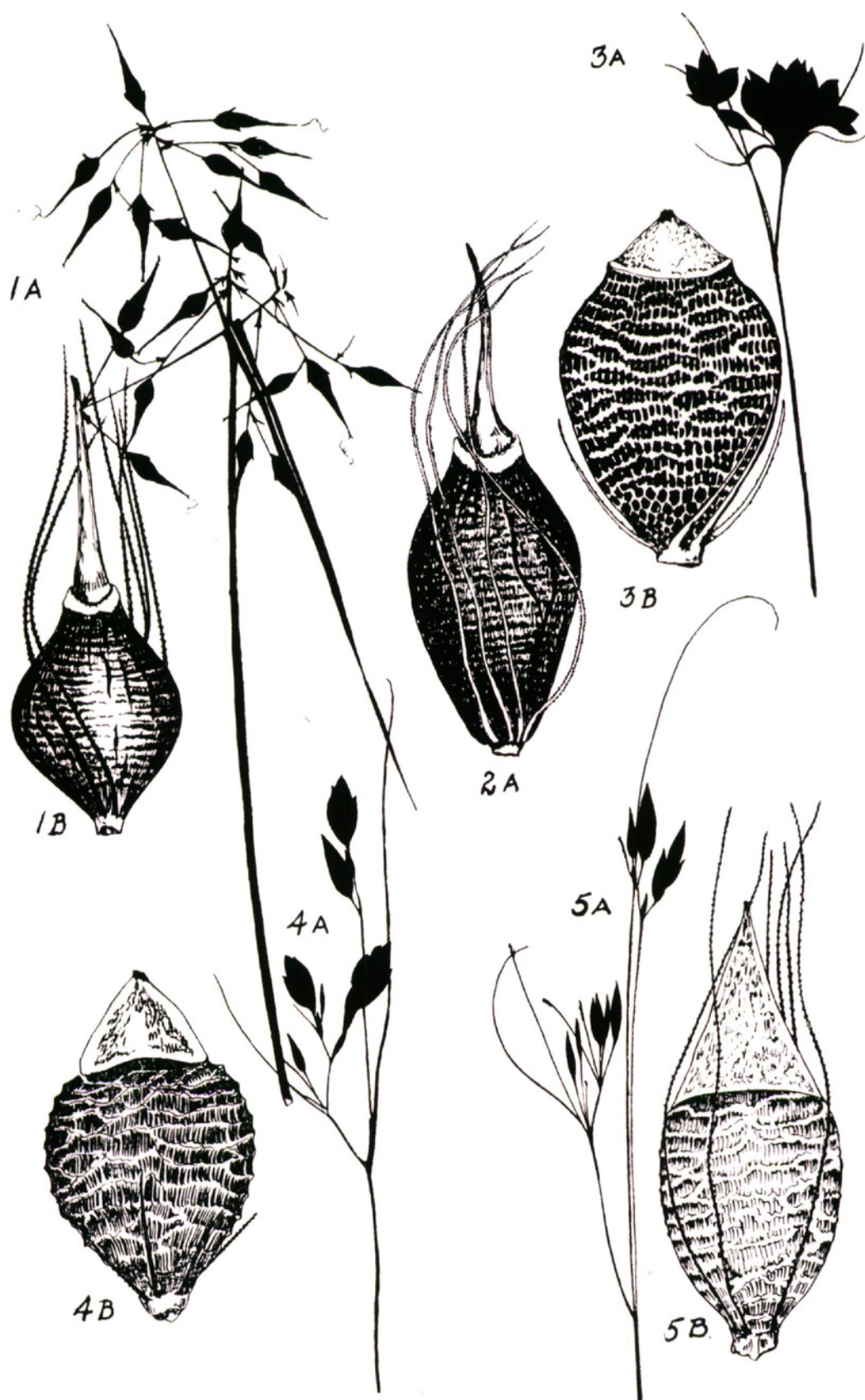
R. SHAFERI: FIG. 2A, inflorescence, $\times 2$; FIG. 2B, achene, $\times 20$.

R. SCABRATA: FIG. 3A, inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.

R. CRISPA: FIG. 4A, inflorescence, $\times 2$; FIG. 4B, achene, $\times 20$.

R. LINDENIANA, var. TYPICA: FIG. 5A, portion of inflorescence, $\times 2$; FIG. 5B, achene, $\times 20$.

R. LINDENIANA, var. BAHAMENSIS: FIG. 5C, achene, $\times 20$.



S. G. del.

RHYNCHOSPORA CUBENSIS: FIG. 1A, portion of inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.

R. STENOPHYLLOIDEA: FIG. 2A, achene, $\times 20$.

R. CULIXA: FIG. 3A, portion of inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.

R. RARIFLORA: FIG. 4A, portion of inflorescence, $\times 2$; FIG. 4B, achene, $\times 20$.

R. STENOPHYLLA: FIG. 5A, inflorescence, $\times 2$; FIG. 5B, achene, $\times 20$.

Habana, viii. 86 (1871) and Fl. Cub. 181 (1873). *R. capillacea* sensu Boeckeler, Flora, lxiv. 78 (1881), non Torrey. *R. stenophylla* sensu Britton, Trans. N. Y. Acad. Sci. xi. 92 (1892), in part, non Chapman; Britton, Mem. Soc. Cubana Hist. Nat. ii. 200 (1916), non Chapman. *R. stenophylla* sensu Clarke in Urban, Symb. Ant. ii. 130 (1900), excl. syn., non Chapman. *R. stenophylla* Chapm. var. *albescens* Kükenthal, Fedde Rep. Spec. Nov. xxiii. 211 (1926).—River-banks and moist open woodlands of northwestern Cuba. CUBA: in dense tufts, banks of rivulets San Marcos, jurisdicción Bahía Honda, Pinar del Río, Apr. 17, 1863?¹ Wright, no. 3393 (NY: US, without locality. This number cited by Grisebach in type-description.)²; 1865, Wright, no. 313 and no. 315 (NY); in cuabales, Minas, Habana, Ekman, no. 13138 (NY); Coca Hill, Campo Florido, Havana, León, no. 4733 (NY); in a clearing of a wood, Loma de la Pita, San Miguel de Casanova, Havana, León, no. 11547 (NY); very sterile locality, in cuabales towards Canasi, Ceiba Mocha, Matanzas, Ekman, no. 18597 (US); Guabal del Espinal south of San Jose station, Matanzas, León & Roig, no. 4142 (NY).

Grisebach followed the original description of *R. tenuifolia* with the citation of the Wright numbers 3392 and 3393. The only sheet of number 3392 which I have seen is at the Gray Herbarium. On it are mounted three specimens; the central and largest one is *R. setacea* which Grisebach mentions as growing with *R. tenuifolia*. The other two specimens, which have filiform leaves and culms, are *R. Lindeniana*, easily distinguished from *R. tenuifolia* by the finely rugulose rather than deeply rugose achene.

According to Grisebach, *R. tenuifolia* occurs in both eastern and western Cuba. However, the specimens which I have seen come exclusively from the western half of the island, that is, if the memorandum on Wright's no. 3393 in the Herbarium of the New York Botanical Garden can be taken to apply also to no. 3392 in the National Herbarium. However, the misidentified no. 3392 at the Gray Herbarium is from the vicinity of Baracoa, Oriente, suggesting the possibility that, if the sheet of no. 3392 which Grisebach saw was similarly mixed, the inclusion of eastern Cuba in the range of *R. tenuifolia* is erroneous.

R. tenuifolia Griseb. is the basis of the reports of *R. stenophylla* Chapm. from the West Indies. Although *R. tenuifolia* is very

¹ See Underwood, Bull. Torr. Bot. Cl. xxxii. 297 (1905).

² The sheet bearing numbers 3393 and 3392 at the Gray Herbarium consists of two specimens of *R. Lindeniana* Griseb. and one of *R. setacea* Vahl.

like Chapman's species in appearance, both having the caespitose habit, filiform leaves and culms, and small, weakly corymbose cymes of pale pedicellate spikelets, the organization of the spikelets and the appearance of the achenes are strikingly dissimilar. The spikelet of *R. tenuifolia* is 3-flowered, the lowest floret not maturing and the upper remaining rudimentary. The solitary achene, during its growth, forces apart the rather loosely imbricated, promptly caducous scales. The achene itself is slenderly oblong-ovate in outline, strongly flattened, pale, and broadly and heavily corrugate with the cancelli reduced to very fine longitudinal striae. Frequently the narrow interstices between the corrugations are dark brown, the tubercle narrowly attenuate-subulate, and the bristles extremely delicate (as is true in general of the Series *Cernuae*) pale and heavily serrulate.

The spikelet of *R. stenophylla*, however, is usually 1-flowered (rarely 2-3). The solitary achene is tightly enclosed by the persistent scales. The achene, unlike that of *R. tenuifolia*, is ovoid, prominently biconvex, and traversed by abrupt ridges between which occur the oblong cancelli. The surface is uniformly pale, except for two small tongues of whitish spongy tissue which occur, one on either side, at the base. The tubercle is triangular, and the bristles, which are heavier than those of *R. tenuifolia*, are only sparsely serrulate.

45. *R. SCABRATA* Griseb. Caespitose: basal leaves tufted, 1.5-2 mm. wide, short, with obtuse to acute tips; margins serrulate; upper surfaces smooth to exasperate; cauline leaves few, short-bladed, ascending to divaricate: culms obscurely triquetrous, slender, flexuous, erect, 2.3-3.8 cm. high: cymes 2-4, corymbiform, small (0.8-1 cm. wide), congested; more loosely organized cymes occurring on later-formed shorter culms; lateral cymes on included peduncles: spikelets ovoid, 3-3.5 mm. long: scales ovate to lanceolate, tightly imbricate, pale to castaneous, papery: bristles 6, extremely delicate, weakly ascending, upwardly serrulate, falling short of the tubercle: achene ovoid-ellipsoid, biconvex, gleaming dark brown, transversely rugulose, 0.9-1 mm. wide, 1.4 mm. long: tubercle attenuate-subulate, whitish, 0.9-1 mm. long.

45a. Var. **typica**. Basal leaves obtusely tipped, 1.5-2 mm. wide; upper surfaces exasperate: scales pale, concealing the tubercle. PLATE 827, FIGS. 3A and 3B; MAP 50.—*R. scabrata* Griseb. Cat. Pl. Cub. 243 (1866). *R. Randii* Britt. Mem. Soc. Cubana Hist. Nat. ii. 198 (1916).—Moist, shaded spots, moun-

tains of eastern Cuba. CUBA: pinal of Monte Libano, Oriente, Oct. 7, 1861,¹ and pinal of Mayari, July 24, 1860,² *Wright*, no. 3391 (G; NY, US, without locality, this TYPE-NUMBER cited without locality by Griseb.); shaded bank of small stream, Sierra Nipe near Woodfred, Oriente, *Schafer*, no. 3077 (NY, type of *R. Randii* Britt.); Sierra de Nipe, Oriente, *Carabia*, no. 3608 (G); Pinal Mayari, East of Loma Mensura, Sierra de Nipe, Oriente, *León & Victorin*, no. 19934 (G); open pineland, La Casimba, Sierra de Nipe, Oriente, 700 m. alt. *León & Alain*, no. 19241 (G).

Since the publication of Sauvalle's *Flora Cubana* in 1871, *R. scabrata* has been considered synonymous with the earlier *R. pruinosa* Griseb. This confusion may have had its origin in an unfortunate mixture of both species within the type-material (*Wright*, no. 3391) of *R. scabrata*; for one of *Wright*'s specimens of this number, at the National Herbarium, is undoubtedly *R. pruinosa*, label and citations to the contrary notwithstanding. And possibly the perpetuation of the confusion may have been due to the superficial similarity existing between the two species. Both are caespitose, often depressed, with a tuft of coarse, flat, basal leaves which are subject to degrees of the same peculiar roughness, and from which arise the slender, triquetrous culms.

The similarity ends, however, with the inflorescence. The cyme of *R. scabrata*, although small, is spreading and corymbiform, and the scales cover the tubercle or, in the case of var. *laevifolia*, the tubercle protrudes but does not extend beyond the lanceolate scales. The cyme of *R. pruinosa*, on the other hand, is glomerulate, ovoid-oblong in shape, and so congested as to simulate a small spike; while the characteristic suborbicular scales of the spikelet are exceeded by the wholly exposed tubercle. Then, too, the pronounced transverse rugulosities on the achene of *R. scabrata* are not at all like the fine almost indistinct sculpturing on the achene of *R. pruinosa*.

Britton apparently followed previous opinion in reducing *R. scabrata* to the synonymy of *R. pruinosa* and, accordingly, the *Wright* sheet, no. 3391, at New York bears his annotation "*R. pruinosa*." However, for identical material, also collected in Oriente, Britton published the name *R. Randii* which, now that *R. scabrata* is given rightful recognition, becomes a synonym of that species.

¹ See Underwood, Bull. Torr. Bot. Cl. xxxii. 296 (1905).

² See Underwood, loc. cit. 295.

45b. Var. **laevifolia**, var. nov. Foliis basilaribus acuminatis, 1.5 mm. latis, supra laevibus vel minute granularibus; squamis castaneis; tuberculis squamas superantibus. MAP 51.—Mountains of eastern Cuba. CUBA: moist places, side of trail, Sierra Nipe, along trail Piedra Gorda to Woodfred, Oriente, Dec. 8, 1909, *Shafer*, no. 3098 (NY, TYPE).

The leaves of var. *laevifolia* and var. *typica* are short, approximately 1.5 mm. wide, and basally tufted—identical except in one detail: whereas those of the latter have the peculiar exasperate upper surface, from which the specific name *scabrata* derives, those of the former are smooth or only minutely granular.

It is notable that the achenes of both var. *laevifolia* and var. *typica*, although inseparable, are, at best, very similar to those of *R. Lindeniana*. Possibly the one specimen by which var. *laevifolia* is typified is the result of hybridization between the two very closely related species.

46. *R. LINDENIANA* Griseb. Densely caespitose: leaves lax, setaceous, 1 mm. wide or less, flat, marginally scabrous toward the often rounded apices; cauline leaves long-attenuate, erect: culms obtusely trigonous to subterete, slender to filiform, flexuously ascending, sometimes weak, 1.5 (depressed)—7 dm. tall: cymes 2–5, remote, with few spikelets; uppermost cyme small, congested, corymbiform, with many of the spikelets undeveloped and sterile; lowermost cyme not far from the base of the culm, loosely ascending; axillary bracts slender, equalling or exceeding the height of the cymes: spikelets ovoid to rotund, 2–3.2 mm. long, 1–3-flowered, 1-fruited; the tubercle protruding: lower scales mucronate; upper scales acute to obtuse, papery, castaneous to ferruginous: bristles 6, extremely fragile, weakly ascending, upwardly serrulate, assembled on the flat side of the achene: achene ovate to oblong-ovate in outline, plano-convex, 0.7–0.9 mm. wide, 1.1–1.4 mm. long; surface indistinctly rugulose, glossy, castaneous: tubercle triangular-acuminate or sometimes prolonged and subulate, compressed, whitish, 0.8–1 mm. high.

46a. Var. **typica**. Spikelets ovoid, 3–3.2 mm. long, with the tubercle protruding: scales castaneous, acute: achene ovate in outline, 0.7–0.9 mm. wide, 1.2 (rarely)—1.4 mm. long; tubercle prolonged, subulate, 0.8–1 mm. high. PLATE 827, FIGS. 5A and 5B; MAP 52.—*R. Lindeniana* Griseb. Cat. Pl. Cub. 244 (1866); Clarke in Urban, Symb. Ant. ii. 126 (1900), in part var. *bahamensis*; Britton, Mem. Soc. Cubaña Hist. Nat. ii. 196 (1916); Küenthall, Fedde Rep. Spec. Nov. xxiii. 211 (1926).—Moist woodland in western and eastern Cuba. CUBA: low woods bordering manglares, Toscano, Pinar del Rio, July 29, 1863?¹,

¹ See Underwood, Bull. Torr. Bot. Cl. xxxii. 297 (1905).

Wright, no. 3393¹ (G, in part); 1843–44, *Linden*, no. 1945 (G, ISOTYPE; NY, drawing of no. 1945 from Mus. Bot. Berol. with data "Mt. Lebanon sur les roches endroits couverts alt. 600 f. v. 1844 leg. Linden")²; moist bank of trail, Sabanilla to Yamuri Arriba, Oriente, *Shafer*, no. 8428 (NY); Yamuri Arriba to Bermejál, Oriente, *Shafer*, no. 8455 (NY, US); Camp la Gloria, south of Sierra Moa, Oriente, *Shafer*, no. 8086 (NY); Baracoa to Florida, Oriente, *Shafer*, no. 4328 (G, NY, US).

46b. Var. **bahamensis** (Britt.), stat. nov. Similar to var. *typica* in habit, but the spikelets more nearly rotund, 2–2.4 mm. long, with tubercle and achene protruding: scales often ferruginous, usually white-margined; the uppermost blunt: achene oblong-ovate in outline, 0.8 mm. wide, 1.1–1.2 mm. long: tubercle triangular-acuminate, 0.5–0.7 mm. long. PLATE 827, FIG. 5C; MAP 53.—*R. bahamensis* Britton, *Torrey*, xiii. 217 (1913); Britton, *Mem. Soc. Cubana Hist. Nat.* ii. 198 (1916); Britton & Millspaugh, *Bahama Fl.* 55 (1920); Britton & Wilson, *Sci. Surv. Porto Rico and Virgin Isl.* v. 105 (1923).—Open to shady brook-margins and damp slopes of the Bahamas, eastern and western Cuba, eastern Hispaniola and Puerto Rico. BAHAMAS: along path in coppice, Soldiers Road, New Providence, *Britton & Brace*, no. 588 (NY, TYPE of *R. bahamensis*); vicinity of Blue Hills, New Providence, *Wilson*, no. 8241 (NY, US); mudholes of mangrove swamp, Deep Creek, Andros, *Brace*, no. 5195 (NY). CUBA: in cuabales, Loma de Cajalbana, Pinar del Rio, *Ekman*, no. 12710 (G); dry open place, Loma Pelada de Buena Vista, Cayajabos, Pinar del Rio, alt. 400 m., *León*, no. 13797 (NY); bushy savanna near Loma de la Pita, San Miguel de Casanora, Havana, Dec. 6, 1923, *León* (NY); in humidis, secus Rio Piedra, Sierra de Nipe, Oriente, *Ekman*, no. 1796 (G, NY). HISPANIOLA: very steep open mountainside, M. Bonpere, Gros-Marne, Massif du Nord, Haiti, *Ekman*, no. 4959 (G, NY, US). PUERTO RICO: rocky slopes, Maricao to Monte Alegriño, alt. 650–750 m., *Britton*, *Stevens & Hess*, no. 2552 (NY); Rio de Maricao, *Hess*, no. 559 (NY).

The specimens of *R. Lindeniana* which I have studied fall into two groups. That to which the Gray Herbarium isotype, *Linden*, no. 1945, belongs, I am designating as var. *typica*. The other group, var. *bahamensis* (Britt.), includes Britton's species *R. bahamensis*.

Extremely diverse in habit, both varieties range from subdepressed, filiform tufts to robust caespitose clumps. The spikelets

¹ This is the type-number of *R. tenuifolia* C. Wright and as such was obviously misapplied to the specimens on this sheet.

² "in scopulosis montis Liban." as cited by Clarke in *Urban*, *Symb. Ant.* ii. 126 (1900).

of var. *typica*, however, are ovoid, acute, 3–3.2 mm. long, and 1-fruited. The solitary achene is oblong-ovoid and slender, 1.2 (rarely)–1.4 mm. long, completely enclosed by the castaneous scales, although the tubercle may protrude.

The spikelets of var. *bahamensis*, by contrast, are nearly rotund, 2–2.4 mm. long, and often 2-fruited. Their scales are characteristically stubby and usually white-margined. Beyond them protrudes the upper portion of the ovoid achene which is 1.1–1.2 mm. long.

Series 8. **Cubenses**, ser. nov. Spiculis ovoideis apicem versus tenuiter prolongatis pedicellatis; pedicellis longis, tenuibus, divaricatis vel reflexis: squamis dense imbricatis: achaenio fusco longitudinaliter irregulariter rugoso sive contracto et transverse laevissime ruguloso: tuberculo prolongato.

Growing on damp, usually shaded hillsides, endemic in the West Indies. Coarsely caespitose: bases hard: leaves 2–4 mm. wide: culms slender, flexuous, few: cymes 2–4, compound or decomposed; branchlets wiry, filiform, caducous, stiffly divaricate to reflexed, forming a globose network 2.5 cm. wide; lateral cymes on included peduncles: spikelets basally ovoid with a prolonged, acute tip, borne on long, slender, divaricate to reflexed peduncles: scales tightly imbricate: achenes dark brown to black, longitudinally wrinkled as if shrunken, transversely but slightly rugulose: tubercle prolonged.—*Rhynchospora*, Series B. *Diplostyleae*, Sect. 5. *Glaucæ* Clarke in Urban, Symb. Ant. ii. 106 (1900), in small part.

KEY TO SPECIES IN SERIES CUBENSES

- Achene ovoid, swollen, 1.2–1.4 mm. wide, 1.4–1.6 mm. long; bristles equalling to exceeding the tubercle; species limited to Cuba.....47. *R. cubensis*.
 Achene rhombic-elliptic in outline, conspicuously flattened, 1–1.2 mm. wide, 1.6–1.8 mm. long; bristles usually shorter than the tubercle; species limited to Hispaniola....48. *R. stenophylloidea*.

47. *R. CUBENSIS* A. Rich. Coarsely caespitose with hard bases: leaves 2–3 mm. wide, flat, attenuate, loosely ascending, with acutely triquetrous scabrous tips: culms 3-angled, slender, leafy, loosely ascending: cymes 2–4, compound or decomposed, the wiry filiform, stiffly divaricate to mainly reflexed branchlets forming a globose network, 2–5 cm. wide; lateral panicles on included peduncles: bracts foliaceous: spikelets basally ovoid with a prolonged acute apex, often split open by the maturing achene, 1-fruited, 5–6 mm. long, solitary on slender divaricate to reflexed pedicels: lower fertile scale ovate-aristate, upper scale lanceolate-acuminate and tightly convolute about the prolonged tubercle,

papery: bristles 6, extremely tenuous, irregularly ascending, upwardly serrulate, equalling to exceeding the tubercle: achene ovoid, swollen, 1.2–1.4 mm. wide, 1.4–1.6 mm. long, dark brown to black, longitudinally wrinkled as if shrunken, especially toward the apex, faintly rugulose from side to side: tubercle 1.1–1.8 mm. long, whitish, encrusted at the base, abruptly narrowed, then stoutly prolonged to a blunt apex. PLATE 828, FIGS. 1A and 1B; MAP 56.—Fl. Cub. Fanerog. ii. 294 (1853); Clarke in Urban, Symb. Ant. ii. 131 (1900), in part *R. stenophylloidea* (Kük.) Gale; Britton, Mem. Soc. Cubana Hist. Nat. ii. 199 (1916), in part *R. stenophylloidea* (Kük.) Gale. *R. deflexa* Grisebach, Cat. Pl. Cub. 243 (1866); C. Wright in Sauvalle, Anál. Acad. Ci. Habana, viii. 84 (1871) and Fl. Cub. 179 (1873).—Damp usually shaded hillsides of eastern and western Cuba. CUBA: in a low wood, north slope of Loma Pelada de Buenavista, Cayajabos, Pinar del Rio, alt. 420 m., León, no. 13565 (NY); La Magdalena, Cayamos, Havana, Boker, no. 4644 (NY); Baños de Casanova, Loma de la Pita, San Miguel de Casanova, Havana, León, no. 12480 (NY); Loma de la Coca, near Campo Florido, Havana, León, no. 2939 (NY); along brook, vicinity of Madruga, Havana, Britton, Britton & Shafer, no. 709 (NY); edge of creek-bank, dry open serpentine savannah, 10 kilometers west of Santa Clara, Santa Clara, Howard, no. 5089 (G, A); deep woods, limestone outcrop, Loma Ventana, Trinidad Mt., Santa Clara, Howard, no. 6533 (G, A); grassy shaded hillsides, Jucaral, Cienfuegos Bay, Santa Clara, Britton & Wilson, no. 5742a (NY); not uncommon in wet shaded grassy lands, Cieneguita, southwest district of Cienfuegos, Santa Clara, Combs, no. 419 (G, NY); Monte Verde, Oriente, Aug. 28, 1859?¹ and Mayari-Abajo, Oriente, Wright, no. 3399 (G. This number cited without locality by Grisebach in type-description of *R. deflexa*); in tall clumps, gorge of the Rio Yamuri, Oriente, Shafer, no. 7809 (NY); dry, rocky hillsides, Sierra Nipe along trail Piedra Gorda to Woodfred, Oriente, Shafer, no. 3315 (NY); hills about Tabajo, base of El Yunque, Oriente, Shafer, no. 8370 (NY); prope litus, prope Baracoa ad Navas, Oriente, Ekman, no. 3853 (NY).

Grisebach apparently described *R. deflexa* in ignorance of the already existing *R. cubensis* A. Rich. He cited as the type, Wright no. 3399. The Wright sheet of this number at the Gray Herbarium bears two specimens, both of which are *R. deflexa* Griseb. (*R. cubensis* A. Rich.) as labeled; but no 3399 at the National Herbarium, although similarly labeled, bears by some mischance several specimens of the utterly different *R. fascicularis* (Michx.) Vahl, var. *typica*.

¹ See Underwood, Bull. Torr. Bot. Cl. xxxii. 294 (1905).

48. *R. stenophylloidea* (Kük.), stat. nov. In habit identical with *R. cubensis*, caespitose with hard bases: leaves 1.5–2.5 mm. wide, flat, long, slender, flexuous-ascending; the tips triquetrous with serrated angles: culms obtusely 3-angled, 0.3–1 m. high, lax, wiry, often extremely tenuous, with the upper of the long internodes filiform: cymes 2–3, compound to decompound, 1–3 cm. wide, loosely globose, subtended by a foliaceous bract; the wiry filiform branchlets divaricate to reflexed; lateral panicles on subexserted peduncles: spikelet 4–5 mm. long, basally ovoid with a prolonged acute apex, 1-fruited, with no trace of a succeeding rudimentary floret, solitary on slender divaricate to reflexed pedicels: lower fertile scale ovate-aristate; upper scale lance-acuminate and tightly convolute about the prolonged tubercle, papery: bristles 6, extremely fragile and tenuous, irregularly ascending, upwardly serrulate, variable in length, the tallest approximating the tubercle: achene rhombic-elliptic in outline, conspicuously flattened, longitudinally wrinkled as if shrunken, faintly rugulose from side to side, 1–1.2 mm. wide, 1.6–1.8 mm. long: tubercle slenderly conical or slightly compressed, somewhat sunken at the base, whitish, 1–1.6 mm. long. PLATE 828, FIG. 2A; MAP 57.—*R. cubensis* A. Rich., var. *stenophylloidea* Kükenthal, Fedde Rep. Spec. Nov. xxxii. 78 (1933).—Mountainsides on northern coast of Hispaniola. HISPANIOLA: edge of the Estère, Le Borgue, Massif du Nord, Haiti, Sept. 13, 1925, *Ekman*, no. 4853 (G, US); in sylvestribus ad Jamao, Santo Domingo, alt. 150 m., June 23, 1887, *Eggers*, no. 2600 (NY, US); mountainside, M. Bonpere, Gros-Morne, Massif du Nord, Haiti, c. alt. 800 m., Sept. 30, 1925, *Ekman*, no. 4958 (NY); in fruticetis ad Isabel de Torres, Apr. 23, 1887, *Eggers*, no. 1658 (NY, US).

Kükenthal described *R. cubensis* var. *stenophylloidea* of Hispaniola thus: "Corymbi perparce spiculosi, nux oblonga (haud late ovalis sicut in forma typica) enervis (non longitudinaliter striata), setae hypogynae 3 breves nucem superantes (nec 6 cum nuce aequilongae)." He concluded with "Vielleicht eine gute Art, aber das vorhandene Material reicht nicht aus, um diese Frage zur entscheiden."

According to this description Kükenthal's specimens differed from the material which I am designating as *R. stenophylloidea* with regard both to the bristles and the longitudinal wrinklings on the nut. It is possible, therefore, that Kükenthal's type, *Ekman*, no. 14873, which is not available at the present time, is a different entity. But the fact that this specimen came, as it did, from Hispaniola, to which island my species is apparently

limited, and had a "nux oblonga," described above as rhombic-elliptic but which is in any case larger than that of the typical *R. cubensis*, makes me suspect that the two are conspecific. Possibly three of the six extremely fragile bristles may have broken off at their bases prior to the time of Kükenthal's examination; for when this occurs it is nearly impossible to ascertain their place of previous attachment. Kükenthal's statement as to the comparative length of the bristles is inaccurate, for those of *R. cubensis* equal or even exceed the tubercle in length and are longer than the bristles of the new species. The achenes of the specimens I have examined are, in all cases, more or less longitudinally wrinkled as if shriveled. I cannot suggest why this feature should be absent on the achenes seen by Kükenthal unless they were in this respect atypical.

Series 9. **Harveyae**, ser. nov. Culmis rigide erectis: cymis rigidis vel diffuse fasciculatis vel congestis glomerulosisque: squamis pallidis vel castaneis: spiculis turgidis monocarpis: setis antrorse serrulatis: achaenio saepissime supra tumido, infra compresso fusco leviter alveolato (rare lenticulari rugoso): tuberculo conico; basi haud discoideo sed saepe in achaenii apicem intruso.

Often growing on white sandhills of the Coastal Plain from North Carolina to Florida and west to Texas; inland in the southern and midwestern states; rare in Cuba. Stoloniferous or caespitose: leaves 1.5–7 mm. wide, not filiform: culms stiffly erect: cymes stiff, diffusely fasciculate or congested and glomerulate: scales pale or castaneous: spikelets turgid, 1-fruited: bristles upwardly serrulate: achenes usually tumid above and compressed below, dark mahogany in color, lightly pitted or cancellate in a honey-comb pattern, rarely lenticular and ridged with oblong alveoli: tubercle always grayish or whitish, conical, not projecting at the base but slightly buttressed and overgrown by the summit of the achene.—*Rhynchospora* V. *Glomeratae* Small, Man. 175 (1933), in part. *Rhynchospora*, Series B. *Diplostyleae*, Divisio 5. *Eu-Rhynchospora*, Sect. iii. *Fuscae* Clarke, Kew Bull. Add. Ser. viii. 120 (1908), in part.

KEY TO SPECIES IN SERIES HARVEYAE

Spikelets 6–7 mm. long, remote, some if not all slenderly pedicellate; achenes large, 2.8–3.4 mm. wide, 3–4 mm. long. 49. *R. megalocarpa*.
Spikelets not exceeding 5.5 mm. in length, sessile in small compact glomerules; achenes not exceeding 2.2 mm. in width and 2.4 mm. in length.

Achene suborbicular to broadly ovate in outline, tumid above, compressed below, the entire surface mahogany-brown at maturity.

Spikelets 4–5.5 mm. long; bristles equalling $\frac{1}{2}$ the achene to exceeding the tubercle; achene 1.8–2.2 mm. wide, 2–2.4 mm. long. 50. *R. Grayii*.

Spikelets 2.5–3 mm. long; bristles equalling or shorter than $\frac{1}{2}$ the achene; achene 1.3–1.6 mm. wide, 1.5–1.8 mm. long. 51. *R. Harveyi*.

Achene obovate, slenderly lenticular, not tumid, surface crossed by pale irregular transverse ridges. 52. *R. culixa*.

49. *R. MEGALOCARPA* Gray. Stoloniferous, the bases swollen and covered by short rusty imbricated scales: leaves rigid, subcoriaceous, flat, 4–7 mm. wide, becoming conspicuously channeled, then minutely serrulate on margins and keels: culm obtusely triquetrous, smooth, stiffly erect, 0.3–1 m. high: cymes 2–5, fastigiate to slightly spreading, loose; the terminal cyme 1.6–4 cm. wide, bearing less than 50 plump spikelets singly or in clusters on slender pedicels; lateral cymes on long exserted slender ascending peduncles: spikelets ovoid, plump to bursting, some if not all pedicellate and remote, mainly ascending, 1-flowered, 1-fruited, 6–7 mm. long: scales mucronulate, chestnut-brown: stamens 10–12: bristles 6–8, very tenuous and scarcely thickened at the base, brittle, upwardly hispidulous, falling short of to barely exceeding the achene: achene round-ovoid, turgid in the upper portion, compressed below, 2.8–3.4 mm. wide, 3–4 mm. long, emarginate, mahogany-brown to blackish, glossy excepting where covered with a honey-combed surface-pattern of minute, extremely shallow pits: tubercle buttressed and somewhat encrusted by the summit of the achene, conic-apiculate, grayish or often white, 0.7–1 mm. high. PLATE 829, FIGS. 1A and 1B; MAP 58.—Ann. Lyc. N. Y. iii. 208, pl. 6, fig. 16 (1835); Torrey, Ann. Lyc. N. Y. iii. 368 (1836); Chapman, Fl. So. U. S. 526 (1860); Boeckeler, Linnaea, xxxvii. 606 (1873). *R. dodecandra* Baldwin ex Gray, Ann. Lyc. N. Y. iii. 207, pl. 6, fig. 15 (1835); Britton, Trans. N. Y. Acad. Sci. xi. 90 (1892); Small, Fl. 196 (1903) and Man. 183 (1933). *R. pycnocarpa* Gray, Ann. Lyc. N. Y. iii. 208, pl. 6, fig. 17 (1835). *Phaeocephalum dodecandrum* House, Am. Midland Nat. vi. 202 (1920).—Deep white sand-ridges of the Coastal Plain from North Carolina southward, becoming frequent on the Florida Peninsula; less common west to Mississippi and inland along the Mississippi River (one collection). NORTH CAROLINA: sand-ridge at Carolina Beach, New Hanover Co., *Godfrey*, no. 4675 (G, NC); Wilmington, New Hanover Co., *Mr. Curtis* (NY, type of *R. pycnocarpa*); near White Lake, Bladen Co., *Oosting*, no. 33630 (D); dry open sand-barrens, 14 miles southeast of Lumberton, Robeson Co., *Wiegand & Manning*, no. 597 (G); sandy depression, Oak Island

off Southport, Brunswick Co., *Blomquist*, no. 5613 (D). SOUTH CAROLINA: excavated area in coarse white sandy pine barren, 5 miles south of Kingstree, Williamsburg Co., *Godfrey & Tryon*, no. 376 (CU, D, G, NY, P). GEORGIA: very dry sand-hills along Fifteen Mile Creek, Emanuel Co., *Harper*, no. 977 (G, NY); common, sand-scrub, Floyd's Island, Okefinokee Swamp, Charlton Co., *J. S. Harper*, no. 700 (G); very dry white sand south of open pond, Decatur Co., *Harper*, no. 1216 (G, NY, US). FLORIDA: Fort George, Duval Co., *Dr. Baldwin* (NY, TYPE); *Baldwin* (NY, type of *R. dodecandra*, immature; annotated by Gray); dry sandy soil near Jacksonville, Duval Co., *Curtiss*, no. 3161 (CU, D, G, P, US); in a scrub, 18 miles north of St. Augustine, St. Johns Co., *O'Neill*, no. 7688 (CU); Palatka, Putnam Co., April, 1869, *Canby* (G, NY); Gainesville, Alachua Co., April 12, 1897, *Crawford* (P); dry sand in scrub, vicinity of Eustis, Lake Co., *Nash*, no. 462 (G, NY, US); Lake Butler, Orange Co., *Beckwith*, no. 556 (US); dry pine barrens, Okeechobee Region, Brevard Co., *Fredholm*, no. 5734 (G, US); in a low pineland, Kissimmee, Osceola Co., *O'Neill*, no. 5121 (CU); scrub near Gadsen Hammock, vicinity of Winter Haven, Polk Co., *McFarlin*, no. 4741 (CA); sand-barrens, Ballast Point, Tampa, Hillsborough Co., March 28, 1923, *Churchill* (G); Dunedin, Pinellas Co., *Tracy*, no. 6995 (G, NY, US); scrub near Sebastian, Indian River Co., *Small, DeWinkler & Mosier*, no. 11120 (NY); in a scrub, 2 miles north of Ft. Pierce, St. Lucie Co., *O'Neill*, no. 7689 (CU); in a scrub, 8 miles east of Lake Placid, Highlands Co., *O'Neill*, no. 7687 (CU); sandy ridge beside stream in pineland, 6 miles east of Manatee, Manatee Co., *Oosting*, no. 170 (D); Indian Mound near Citrus Center, DeSoto Co., *Small*, no. 9914 (NY); flatwoods, Alva, Lee Co., *Hitchcock*, no. 417 (G, NY, US); sterile pine woods, Lantana, Lake Worth, Palm Beach Co., *Curtiss*, no. 5389 (G, NY, US); in scrub-land 9 miles north of Miami, Dade Co., *O'Neill*, no. 7691 (CA, CU); dry sand along the coast, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 860b (G, NY, US); Port St. Joe, Gulf Co., *Eyles*, no. 3723 (CU); in a high hammock, Pensacola, Escambia Co., *O'Neill*, no. 6091 (CU, US). ALABAMA: Fort Morgan, Baldwin Co., *Tracy*, no. 7684 (G, NY, US). MISSISSIPPI: Avondale, Bolivar Co., *Tracy*, no. 4840 (G, NY); moist sandy soil west of bay, Biloxi, Harrison Co., *Pennell*, no. 4388 (NY, P); Cat Island, Hancock Co., *Lloyd & Tracy*, no. 361 (NY).

R. dodecandra Baldwin, *R. pycnocarpa* and *R. megalocarpa* were simultaneously described by Gray in 1835. The type-specimen of the first was admittedly immature; that of the second only somewhat so. A year later, in his revision of the North American Rhynchospora for Dr. Torrey's¹ North Ameri-

¹ Ann. Lyc. N. Y. iii. 368 (1836).

can Cyperaceae, Gray placed *R. pycnocarpa* in the synonymy of *R. megalocarpa* with the remark: "More perfect specimens communicated by Mr. Curtis and Dr. Chapman have enabled us satisfactorily to ascertain that *R. megalocarpa* and *R. pycnocarpa* . . . are different states of the same species." He also added that: "It (*R. megalocarpa*) approaches *R. dodecandra* with which it also agrees in the prevalent number of its stamens."

Twenty-four years later Chapman, publishing his first edition of the Flora of Southern United States, reduced *R. dodecandra* to the status of a synonym under *R. megalocarpa*; and, in so doing, established a precedent for the use of the specific name, *megalocarpa*. However, in 1892, Britton¹, in his list of North American Scirpus and Rhynchospora, gave preference to the specific name, *dodecandra*, and that name has recently come into general use. I have examined the types of *R. pycnocarpa* and *R. dodecandra*, as well as that of *R. megalocarpa*. With the mass of material now available for comparison, they are unquestionably referable to one species. Applying the rules of priority, the name *R. megalocarpa*, as selected by Chapman in 1860, must be reinstated.

50. *R. GRAYII* Kunth. Coarsely tufted: leaves arching, flat, 2-4 mm. wide, smooth, becoming carinate; the upper margins and keel minutely serrulate; the midrib prominent: culms obscurely triquetrous, smooth, stiffly erect, 0.4-7.5 dm. tall, with elongated internodes: the terminal cyme 1-1.5 cm. wide, compounded of 1-3 glomerules of few spikelets on short, erect to spreading peduncles; lateral cymes 1-4, consisting of a single small glomerule on an exserted peduncle: spikelets plumply ovoid, compact, 2-3-flowered, 1-fruited, 4-5.5 mm. long: scales mucronate, sandy to castaneous, tightly imbricate and entire at maturity: stamens 3- (rarely) 6: bristles 6, upwardly hispidulous, brittle, varying in length from equalling $\frac{1}{2}$ the achene to exceeding the tubercle: achene suborbicular in outline, tumid toward the summit, with a more or less compressed base, the surface honeycombed with minute shallow pits, mahogany-brown, 1.8-2.2 mm. wide, 2-2.4 mm. long: tubercle conic-apiculate, 0.4-0.6 mm. high, buttressed and partially encrusted by the narrowed apex of the achene. PLATE 829, FIGS. 3A and 3B; MAP 54.—Enum. ii. 539 (1837); Chapman, Fl. So. U. S. 526 (1860); Small, Fl. 196 (1903) and Man. 183 (1933); Britton, Mem. Soc. Cubana Hist. Nat. ii. 197 (1916). *R. distans* Elliott,

¹ Trans. N. Y. Acad. Sci. xi. 90 (1892).

Sk. Bot. S. Car. and Ga. i. 59 (1816), non Vahl. *R. Elliottii* Gray, Ann. Lyc. N. Y. iii. 204, pl. 6, fig. 12 (1835), non Dietrich. *Schoenus distans* Muhlenberg, Descrip. Gram. 11 (1817). *Schoenus fuscus* Muhlenberg, Descrip. Gram. 6 (1817). *Phaeocephalum Grayi* House, Am. Midland Nat. vi. 202 (1920). Rare in Virginia (one collection); common southward on sandy pine-lands of the Coastal Plain from North Carolina to the tip of Florida and west to eastern Texas; also western Cuba. VIRGINIA: Norfolk, Norfolk Co., *Read* (P). NORTH CAROLINA: Minnesat Beach, near Arapahoe, Pamlico Co., *Oosting*, no. 33208 (D); dry sandy soil near Wilmington, New Hanover Co., *Biltmore Herb.*, no. 239g (CU); dry sandy pine woods, 2 miles southeast of Fair Bluff, Columbus Co., *Wiegand & Manning*, no. 606 (G); pineland at Roseboro, Sampson Co., *Godfrey*, no. 5723 (G); sandhill, 12 miles north of Laurenburg, Scotland Co., *Godfrey*, no. 5044 (D, G); Southern Pines, Moore Co., May 18, 1895, *Blankinship* (G). SOUTH CAROLINA: swampy spots in sandy land along stream, sandhills north of Hartsville, Darlington Co., Mar. 20, 1921, *Norton* (NC); Florence, Florence Co., May 18, 1912, *Bartram* (P); Columbia, Richland Co., May 16, 1912, *Bartram* (P); 10 miles east of Paxville, Clarendon Co., *Godfrey & Tryon*, no. 1018 (G, NY); open, white, sandy oak-pine woods, 1 mile east of Eutawville, Orangeburg Co., *Godfrey & Tryon*, no. 834 (G, NY); sandy open pine woods near Navy Yard, Charleston, Charleston Co., *Robinson*, no. 259 (G). GEORGIA: about Augusta, Richmond Co., June 27–July 1, 1895, *Small* (NY); sandy pinelands at Magnolia Springs, Jenkins Co., *Eyles*, no. 6255 (CU); dry pine barrens near Graymont, Emanuel Co., *Harper*, no. 806 (G, NY, US); dry sand-hills along Big Lott's Creek, Bullock Co., *Harper*, no. 916 (G, NY, US); sand-hill west of Altamaha River on State Route 38, west of Ludowici, Wayne Co., *Eyles*, no. 3159 (CU); dry pine barrens near High Point, Cumberland Island, Camden Co., *Harper*, no. 1538 (G, NY, US); Havana, *Baldwin*, in Gray's handwriting (NY, TYPE); Marshallville, Macon Co., *Earle*, no. 2975 (NY); pine barren, just north of Ashim, Turner Co., *Eyles*, no. 5569 (CU). FLORIDA: dry pine barrens near Jacksonville, Duval Co., *Curtiss*, no. 4801 (G, NY, US); sand-hills, Welaka, Putnam Co., *Laessle*, no. 19 (CU); hammock land, Ormond, Volusia Co., Apr. 11, 1904, *Fuller* (G); bayhead near Eustis, Lake Co., Feb. 4, 1893, *Holm* (G); high pineland, Inverness, Citrus Co., *O'Neill*, no. 5270 (CU); Seminole, Pinellas Co., *Tracy*, no. 7691 (G, NY); ancient sand dunes north of Kuhlman, DeSoto Co., *Small & DeWinkler*, no. 9991 (NY); sandy pine woods near Sebring, DeSoto Co., *Palmer*, no. 2743 (NY); pinelands, Ft. Lauderdale to Miami, Broward and Dade Cos., *Small, Carter & Small*, no. 3368 (NY); in dry sandy soil among palmettos, Buena Vista,

Dade Co., *Moldenke*, no. 607 (D, NY); near Tallahassee, Leon Co., summer, *Berg* (NY); dry pine barrens, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 239a (G, in part; NY, US); DeFuniak, Walton Co., *Tracy*, no. 9010 (G, NY, US). ALABAMA: Tensaw, Baldwin Co., *Tracy* no. 8028 (G, NY, US); common in woods, Spring Hill, Mobile Co., *Bush*, no. 335 (NY, US). MISSISSIPPI: Biloxi, Harrison Co., *Baker*, no. 1129 (NY). LOUISIANA: *Hale* (G). TEXAS: Liberty, Liberty Co., Mar. 25, 1892, *Plank* (NY). CUBA: Laguna Los Indios and vicinity, Pinar del Rio, *Shafer*, no. 10820 (NY).

Gray in his monograph pointed out that Elliott's *R. distans*, as described in the Sketch of the Botany of South Carolina and Georgia, is not *Schoenus distans* Michx. on which it was nomenclaturally based. Accordingly Gray designated the former species *R. Elliottii* in commemoration of its discoverer. He then placed in its synonymy two of Muhlenberg's species, *Schoenus distans* and *S. fuscus*, with the explanation that, as the Muhlenberg Herbarium contains no specimen labeled *S. distans*, Muhlenberg probably derived his material from Elliott. *S. fuscus* Muhl., on the other hand, is represented in the herbarium by a specimen labeled "*S. fuscus* Elliott." This, Gray states, is definitely *R. Elliottii* Gray. That Muhlenberg himself apparently suspected *S. distans* and *S. fuscus* to be conspecific (and incidentally that he also perpetuated Elliott's mistaken reference to Michaux's species) is evident from his suggestion, appended to the description of *S. fuscus*: "An *S. distans* Michaux?"

The legitimate name, *R. Grayii*, came from Kunth who, in 1837, on the basis of the priority of Dietrich's *R. Elliottii* 1833, renamed the species in honor of Asa Gray.

51. *R. HARVEYI* Wm. Boott. Caespitose: leaves flat, obscurely carinate, with upper margins finely serrulate, ascending to curly, 1.5–3 mm. wide: culms obtusely triquetrous, stiffly erect, smooth, 0.3–1.1 m. high: terminal cyme 0.8–2.2 cm. wide, usually compounded of 1–4 small glomerules on stiff ascending to spreading peduncles; lateral glomerules 1–2, usually solitary on wiry erect peduncles: spikelets ovoid, turgid, castaneous, 2-flowered, 1-fruited, 2.5–3 mm. long: scales with midribs continuing into conspicuously recurved mucros: stamens 3: bristles 6, delicate, equalling to falling short of $\frac{1}{2}$ the achene, upwardly hispidulous: achene broadly ovate to suborbicular in outline, tumid above, somewhat compressed below, 1.3–1.6 mm. wide, 1.5–1.8 mm. long, rich mahogany-brown when mature; the surface honey-

combed by small shallow isodiametric pits which may be obscured, appearing as faint rugulosity: tubercle squat, conic-apiculate, 0.4–0.5 mm. long, grayish, buttressed by the narrowed apex of the achene. PLATE 829, FIGS. 2A and 2B; MAP 59.—Bot. Gaz. ix. 85 (1884); Small, Man. 183 (1933). *R. Earlei* Britton ex Small, Fl. 197, 1328 (1903) and Man. 184 (1933); Fernald, RHODORA, xxxix, 338 (1937) and xl. 398 (1938). *R. Plankii* Britton ex Small, Fl. 196, 1328 (1903); Small, Man. 183 (1933), in syn. of *R. Harveyi* Wm. Boott. *Phaeocephalum Plankii* House, Am. Midland Nat. vi. 202 (1920). *Phaeocephalum Earlei* House, l. c.—Low or frequently dry open areas in pine-lands of the Coastal Plain from southeastern Virginia to Florida and west to Texas; scattered inland stations in the coastal states, in western Tennessee, and on the lower drainage of both the Missouri and Arkansas Rivers, and on the Sabine River. VIRGINIA: argillaceous and siliceous boggy depressions about 3 miles southeast of Petersburg, at head of Poo Run, Prince George Co., Fernald, Long & Smart, no. 5647 (G, NY, P); pinelands at western side of Wilcox Lake, Petersburg, Dinwiddie Co., Fernald & Long, no. 8596 (G, in part, P); very local, open pineland near Mason's Siding, about 1 mile north of Henry, Sussex Co., Fernald & Long, no. 13274 (G); depression in dry open sandy pine and oak thickets near County Line, north of Emporia, Greensville Co., Fernald & Long, no. 8114 (G, P). NORTH CAROLINA: moist humus soil, open woodland 4 miles southeast of Wilson, Wilson Co., Randolph & Randolph, no. 723 (G); savanna, 1 mile east of Middlesex, Nash Co., Blomquist, no. 6358 (D); sandy soil, Cumberland Co., Biltmore Herb., no. 239f (CU); damp sand near brook, Pinehurst, Moore Co., Wiegand & Manning, no. 595 (G); Winston-Salem, Forsyth Co., Denke in Botanical Science Series, no. 5003 (D). SOUTH CAROLINA: cart-road through pineland-clearing, 5 miles south of Andrews, Georgetown Co., Godfrey & Tryon, no. 1371a (G, NY); pine barren, 2 miles west of Pineville, Berkeley Co., Godfrey & Tryon, no. 619 (G, NY, P). GEORGIA: Marshallville, Macon Co., Earle, no. 2977 (NY, type of *R. Earlei*) and same locality, no. 2976 (NY, annotated as isotype of *R. Earlei*); rather dry pine barrens near Cobb, Sumter Co., Harper, no. 2217 (G, NY, US). FLORIDA: 1839, Torrey (G). ALABAMA: low pineland, Elberta, Baldwin Co., Aug. 13, 1926, Wolf (StB); Mobile, Mobile Co., May, 1845, Sullivant (G). TENNESSEE: dry hill, Henderson, Chester Co., Bain, no. 244 (G). MISSOURI: ferruginous sandstone glade south of Birdsong, St. Clair Co., Steyermark, no. 13416 (Mo). ARKANSAS: Benton Co., 1899, Plank, no. 29 (NY, type of *R. Plankii*); Grand Prairie, eastern Arkansas, Harvey, no. 2 (G, TYPE). OKLAHOMA: Sapulpa, Bush, no. 656 (G, Mo, NY). LOUISIANA: vicinity of Covington, St. Tammany Parish, Arsène, no. 11879 (US); along drain in

Seymour Prairie, north of Bastrop, Morehouse Parish, *Brown*, no. 6510 (La); long-leaf pine-hills, north of Pollock, Grant Parish, *Brown*, no. 6458 (La). TEXAS: sandy woods, Mineola, Wood Co., *Reverchon*, no. 2278 (Mo, NY); damp sands, Will's Point, Van Zandt Co., *Reverchon*, no. 2277 (Mo); Angelina Co., *Tharp*, no. 3056 (US); 14½ miles northwest of White Ranch, Chambers Co., *Cory*, no. 22402 (CU, G); 2 miles northwest of Benchley, Robertson Co., *Cory*, no. 21682 (CU); moist sandy soil, Kurten, Brazos Co., *Palmer*, no. 13486 (Mo); low prairie, Hempstead, Waller Co., *Hall*, no. 714 (Mo, NY, US); Alvin, Brazoria Co., Apr. 20, 1894, *Plank* (NY); in wet ditch in red sand on clay subsoil; in railroad right-of-way cut through oak woods just east of Elgin, Bastrop Co., *Innes*, no. 874 (G); ½ mile south of Kicaster School, Wilson Co., *Parks*, no. 18795 (G); Indianola, Calhoun Co., *Ravenel*, no. 139 (NY).

William Boott published *R. Harveyi* in the Botanical Gazette of June, 1884, and cited "Grand Prairie, E. Arkansas, F. L. Harvey, 1883." At the Gray Herbarium are three Harvey collections of this species from this locality. One of these is dated July, 1884, so could not have been the original material seen by Boott. The two remaining specimens are not dated; one is unnamed. The other, however, is labeled *R. Harveyi* in Watson's hand. This I take to be the type, presuming the material collected by Harvey to have been sent to Watson and finally turned over to Boott for study.

The achene of *R. Earlei* Britton ex Small has a low conic tubercle which is uplifted by the narrowed summit of the mahogany-brown achene. These characters, seen in conjunction with the general size of the achene, indicate at once the close relationship of this plant to *R. Harveyi*. Unfortunately *R. Earlei* was published in Small's Manual, and thus appeared without a word of discussion. Nor does its position between *R. Torreyana* and *R. Edisoniana* (*R. microcarpa* Baldw. ex Gray) in the text of that work give an indication that its relationship with *R. Harveyi* was appreciated. In the key, *R. Earlei* is separated from the former by the following character: "achenes transversely wrinkled" as against "achenes cancellate." However, in *R. Harveyi* the shape of the alveoli, on which the degree of wrinkling depends, is subject to considerable variation. Typically, the alveoli are shallow and isodiametric without any accentuation of the transverse walls, but occasionally they are crowded



S. G. del.

RHYNCHOSPORA MEGALOCARPA: FIG. 1A, portion of inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.
R. HARVEYI: FIG. 2A, portion of inflorescence, $\times 2$; FIG. 2B, achene, $\times 20$.
R. GRAYII: FIG. 3A, portion of inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.



S. G. del.

RHYNCHOSPORA COMPRESSA: FIG. 1A, portion of inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.

R. PUNCTATA: FIG. 2A, portion of inflorescence, $\times 2$; FIG. 2B, achene, $\times 20$.

R. SAXICOLA: FIG. 3A, portion of inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.

R. OBLITTERATA: FIG. 4A, portion of inflorescence, $\times 2$; FIG. 4B, achene, $\times 20$.

into irregular transverse rows and take on narrowly oblong outlines, the shorter horizontal walls of which are then accentuated and appear as fine ridges. More rarely the alveoli are nearly obliterated and the surface becomes as smooth and glossy as that of the achene of *R. megalocarpa* Gray. Earle's specimen from Marshallville, Georgia, was one with a finely ridged achene, and I presume that Britton, in recognizing it as a new species, was unacquainted with the amount of variation in the achenes of *R. Harveyi*.

However, the decompound, somewhat lax cyme of *R. Earlei* does vary from the smaller, stiffly upright, capitate cyme of typical *R. Harveyi*. This larger, looser inflorescence appears to be the only possible basis for segregation. Further collections from Georgia and Florida will be necessary in order to determine whether or not plants which were the basis of *R. Earlei* should receive recognition as a variety of *R. Harveyi*.

52. *R. culixa*, sp. nov. ?Caespitosa: foliis basilaribus 2 mm. latis planis interdum brevibus et crispis; apicem versus leviter carinatis et subtiliter serrulatis; foliis caulinis brevibus: culmis triquetris gracilibus attenuatis erectis, circa 3-foliatis; internodis longis: glomerulo terminali circa 1 cm. lato; glomerulo laterali minore pedunculato; pedunculo erecto: bracteis setaceis brevibus: spiculis late ovoideis tumidis 2-floris 1-carpis 3 mm. longis dense aggregatis: squamis late ovatis, pallide castaneis dense imbricatis; apicibus fissilibus, mucronulatis: setis 6 antrorse serrulatis, achaenio duplo brevioribus aut minus; achaenio lenticulari-obovoideo biconvexo 1.2 mm. lato, 1.4 mm. longo, alveolato fusco; inter alveolas rugis transversis prominentibus pallidis: tuberculo breviter conico, interdum apiculato, 0.3 mm. alto. PLATE 828, FIGS. 3A and 3B; MAP 55.—Rare in southern Georgia and northern Florida. GEORGIA: Irby, Tift Co., Aug. 28, 1890, *Tracy*, no. 1498 (US, TYPE). FLORIDA: *Chapman* (G, in part).

The two specimens which I have designated as *R. culixa* differ from those of *R. Harveyi* Wm. Boott and *R. globularis* (Chapm.) Small, var. *recognita* Gale in the attenuate appearance of their slender culms, in the abbreviated cauline leaves and the compact, unbranched, small, terminal glomerules. Specimens of *R. Harveyi* and *R. globularis*, var. *recognita* are, when well developed, robust, with stiffly erect culms, linear-attenuate cauline leaves and usually compound, stiffly branched ultimately glomerulate cymes.

The achene of *R. culixa* combines characters of both *R. Harveyi* and *R. globularis*, var. *recognita*. It has the unmistakable grayish, squat, conical tubercle of *R. Harveyi* but the achene, like that of *R. globularis*, var. *recognita*, is obovate, lenticular, biconvex, not swollen above, and the transverse walls of the prominent alveoli are accentuated as ridges. However, unlike the ridges on the achene of var. *recognita*, those of *R. culixa* are pale, broader, and developed at the expense of the alveoli which, in the central area, have been rounded and thrown out of the orderly parallel alignment so conspicuous in the achene of var. *recognita*.

Series 10. **Globulares**, ser. nov. Culmis rigide erectis vel rare tenuibus et laxe ascendentibus: cymis saepissime rigidis, glomerulosis vel fasciculatis; cymis lateralibus pluribus: spiculis turgidis, 1-3-carpis: squamis dense imbricatis: setis antrorse serrulatis saepe achaenio duplo brevioribus: achaenio late ovato vel suborbiculato ruguloso vel valde rugoso, cancellato vel striato, emarginato.

Growing in low peaty areas, often in pineland, of the Coastal Plain; inland in the midwestern states; also in the West Indies and Central America. Habit often coarse; leaves never filiform, 1.5-5 mm. broad, often forming a coarse basal tuft: culms usually stiffly erect, rarely slender and loosely ascending: cymes glomerulate or fasciculate, usually stiff: lateral cymes several: spikelets turgid, 1-3-fruited: scales tightly imbricate: bristles upwardly serrulate, often poorly developed: achenes broadly ovate to suborbicular, rugulose to ridged (with the exception of *R. globularis* var. *pinetorum*), cancellate to striate, emarginate, compressed or swollen in the upper portion: tubercle short, basally conical.—*Rhynchospora* V. *Glomeratae* Small, Man. 175 (1933), in part. *Rhynchospora*, Series B. *Diplostyleae*, Sect. v. *Glaucacae* Clarke in Urban, Symb. Ant. ii. 106 (1900), in part.

KEY TO SPECIES IN SERIES GLOBULARES

- a. Achene flat or centrally sunken; habit coarse; the basal leaves 4-5 mm. wide....b.
- b. Tubercle with a subulate apex rising abruptly from a pronounced basal flange; achene dark reddish-brown...53. *R. compressa*.
- b. Tubercle deltoid-apiculate, the base somewhat decurrent, not projecting; achene castaneous.....54. *R. punctata*.
- a. Achene biconvex or somewhat plano-convex, castaneous; habit slender or weak; the basal leaves 4 mm. wide or less....c.
- c. Bristles exceeding the achene in height....d.
- d. Achene 1.2-1.3 mm. wide, 1.3-1.5 mm. long, the transverse ridges numerous; tubercle depressed, discoid-apiculate.....55. *R. saxicola*.
- d. Achene 0.8 mm. wide, 0.9 mm. long, the transverse ridges less than 6; tubercle deltoid-compressed.....56. *R. sulcata*.

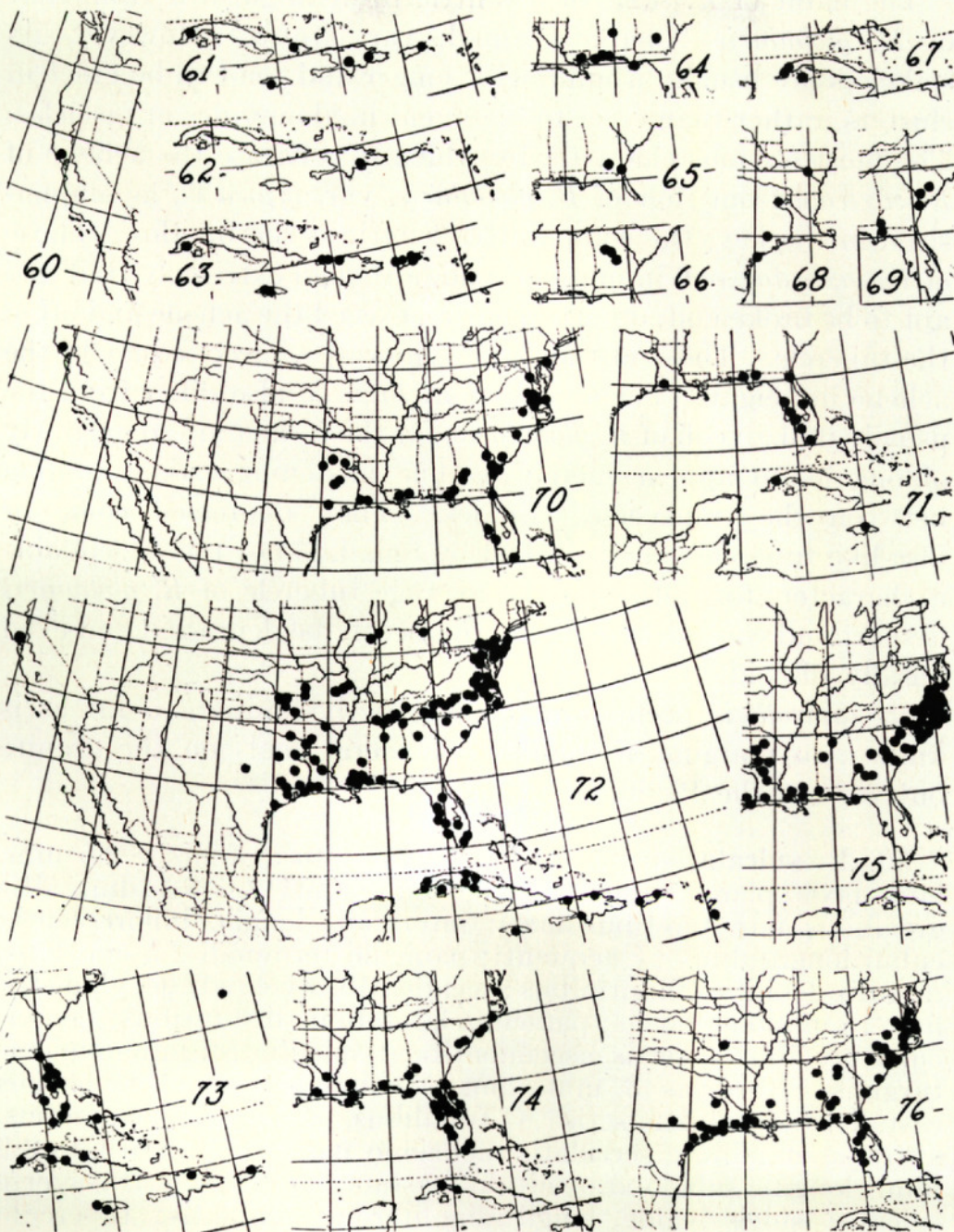
- c. Bristles not exceeding $\frac{2}{3}$ the achene....e.
- e. Species limited to western Cuba; achene 0.8 mm. wide, 0.9 mm. long.....57. *R. Brittonii*.
- e. Species continental; achene 1 mm. wide, usually wider, 1.2 mm. long....f.
- f. Transverse ridges widening, becoming lighter and obscuring the alveoli over the central portion of the achene; spikelets ascending, not more than 6 in small ultimate fascicles.....58. *R. obliterated*.
- f. Transverse ridges not widening or becoming light-colored, the alveoli not less distinct over the central area of the achene; spikelets ascending to divergent and numerous in ultimate fascicles or glomerules 59. *R. globularis*.

53. *R. COMPRESSA* Carey ex Chapman. Caespitose: basal leaves flat, smooth or with margins finely serrulate, 4–5 mm. wide, forming a coarse rigid tuft: culms obtusely trigonous, stiffly erect, leafy, 6.6–9.6 dm. high: cymes 2–4, 1.8–3 cm. wide, densely bracteate, consisting of several glomerules on slender erect to spreading branchlets; lateral cymes remote, exerted on slender erect peduncles: spikelets ovoid, with a slightly irregular contour, 2–3-flowered, 1–2-fruited, castaneous, 3.5–4 mm. long: scales papery; the lowest mucronulate, the others acute: bristles 6, upwardly serrulate, stiff, rarely equalling, never exceeding, the achene: achene obovate to nearly orbicular, 1.4–1.6 mm. wide, 1.4–1.7 mm. long, characteristically flattened, often centrally depressed; the dark reddish-brown surface cancellate and transversely ridged: tubercle compressed-subulate, 0.6–0.8 mm. high, abruptly rising from a conspicuous basal collar. PLATE 830, FIGS. 1A and 1B; MAP 64.—Fl. So. U. S. 525 (1860); Small, Fl. 197 (1903) and Man. 184 (1933); Robinson & Fernald in Gray, Man. ed. 7: 199, fig. 316 (1908). *R. cymosa* var. *compressa* (Chapman) Clarke ex Britton, Trans. N. Y. Acad. Sci. xi. 91 (1892). *Phaeocephalum compressum* House, Am. Midland Nat. vi. 201 (1920).—Low pinelands and swamps, southern Georgia, Florida and west to eastern Louisiana. GEORGIA: flat pine barrens east of Ocilla, Irwin Co., *Harper*, no. 1414 (G, NY, US). FLORIDA: *Carey* (G); low pine barrens, Apalachicola, Franklin Co., *Saurman* (P); Apalachicola, Franklin Co., *Chapman* (NY). ALABAMA: Wilcox Co., May, 1841, *Buckley* (US); brackish swamps, Baldwin Co., June 15, 1893, *Mohr* (NY); Gateswood, Baldwin Co., *Tracy*, no. 8462 (G, US); low pinelands, Point Clear, Baldwin Co., May 11, 1940, *Sargent* (Sargent Herb.); Mobile, Mobile Co., May, 1845, *Sullivant* (G). MISSISSIPPI: Biloxi, Harrison Co., *Tracy*, no. 4883 (NY, US); in low pine barrens, Pass Christian, Harrison Co., June 26, 1885, *Langlois* (CU); Ocean Springs, Jackson Co., May 9, 1895, *Skehan* (G, US). LOUISIANA: vicinity of Covington, St. Tammany Parish *Arsène*, no. 11750 (NY, US).

Old records from Missouri were based on misidentifications.

54. *R. PUNCTATA*, Ell. Caespitose, with a large clump of coarse basal leaves: leaves 5 mm. wide, carinate, becoming triquetrous at the tip, with setaceous margins: cauline leaves short, erect: culms stiffly erect, triquetrous, smooth, approximately 7.6 dm. high: cymes 4, decompound, the stiff wiry ascending branchlets of varying lengths and terminating in small glomerules; terminal cymes 4 cm. wide; lateral cymes smaller, on long slender ascending peduncles: spikelets ovoid, 5 mm. long, approximately 4-flowered, 1-2-fruited: scales pale chestnut, frayed; the midribs of the lower scales free at their tips and slightly projecting: bristles 6, equalling $\frac{1}{2}$ the tubercle in length, upwardly hispidulous, ascending: achene obovate to suborbicular in outline, extremely compressed, cancellate, with fine transverse rugulosities, pale chestnut, 1.8 mm. wide, 2.2 mm. long: tubercle deltoid-apiculate, compressed, pale, 0.9 mm. high. PLATE 830, FIGS. 2A and 2B; MAP 65.—Sk. Bot. S. Car. and Ga. i. 60 (1816); Gray, Ann. Lyc. N. Y. iii. 203, pl. 6, fig. 11 (1835); Chapman, Fl. So. U. S. 526 (1860); Small, Fl. 198 (1903) and Man. 185 (1933). *Phaeocephalum punctatum* House, Am. Midland Nat. vi. 202 (1920).—Wet pine parrens, southern Georgia and northern Florida. GEORGIA: wet pine barrens, about 1 mile southeast of Douglas, Coffee Co., *Harper*, no. 2200 (G, NY, US). FLORIDA: St. Mary's, *Baldwin* (NY); "St. Mary's & Savan," *Baldwin* (P).

55. *R. SAXICOLA* Small. Caespitose: basal leaves forming a coarse curly tuft; cauline leaves 1.5-3 mm. wide, harsh, mostly erect, flat, becoming trigonous near the summit; margins finely serrulate: culms triquetrous, slender, erect, short, 2.6-3 dm. high: inflorescence of 2-4 cymes; the terminal one 1.3-2 cm. wide, with a few slender erect branchlets bearing small clusters of sessile spikelets: bracts short, inconspicuous: scales tightly imbricate, castaneous; lowermost mucronate and usually split: spikelets ovoid, turgid, 3-flowered, 1-2-fruited, sessile, 3.5-4 mm. long: bristles 6, fragile, well exceeding the tubercle, upwardly serrulate: achene obovoid, compressed except for the slightly swollen region of the umbo, finely cancellate, ridged, castaneous, 1.2-1.3 mm. wide, 1.3-1.5 mm. long: tubercle depressed, conic-apiculate, with a discoid base, 0.2-0.3 mm. high. PLATE 830, FIGS. 3A and 3B; MAP 66.—Man. 185, 1503 (1933).—Granite outcrops in the Piedmont of Georgia. GEORGIA: boggy slope on south side of Little Stone Mt., DeKalb Co., *Harper*, no. 2308 (NY, TYPE; US, ISOTYPE), and no. 2309 (NY); dry thickets on flat granite rocks, 1 mile east of Logansville, Walton Co., *Pyron & McVaugh*, no. 549 (US); shallow soil about granite outcrops, 9 miles southeast of Greensboro, Greene Co., *McVaugh*, no. 5328 (USNA); shallow soil about granite outcrops, 4 miles southeast of Sparta, Hancock Co., *McVaugh*, no. 5345a (USNA).



Range of 60, *RHYNCHOSPORA CALIFORNICA*; 61, *R. MARISCULUS*; 62, *R. CACUMINICOLA*; 63, *R. RUGOSA*; 64, *R. COMPRESSA*; 65, *R. PUNCTATA*; 66, *R. SAXICOLA*; 67, *R. BRITTONII*; 68, *R. OBLITERATA*; 69, *R. SULCATA*; 70, *R. GLOBULARIS*, var. *TYPICA*; 71, *R. GLOBULARIS*, var. *PINETORUM*; 72, *R. GLOBULARIS*, var. *RECOGNITA*; 73, *R. ODORATA*; 74, *R. MILIACEA*; 75, *R. INEXPANSA*; 76, *R. CADUCA*

The habit of *R. saxicola* has little to distinguish it from that of *R. globularis* (Chapm.) Small, var. *typica*. However, its spikelets are usually a millimeter longer and tend to be erect in clusters, rather than erect to divergent in glomerules or fascicles. The most obvious character by which to separate the achene of *R. saxicola* from that of *R. globularis*, var. *typica* is, as emphasized in the key, the comparative length of the bristles. Those of *R. saxicola* are 6 in number, and, although extremely frail and apt to be broken off, do, when entire, exceed the achene and often the tubercle. Those of the former, however, rarely equal $\frac{1}{2}$ the achene in height. The alveoli of *R. saxicola* also differ from the usually dull alveoli of *R. globularis*, for the former are so narrowly oblong as to appear merely as fine glistening striae running between the transverse wrinkles. The "depressed conic or disc-like tubercle", as described by Small, is not too dependable a character; for, although the average tubercle of *R. globularis* is short and conical, it may less frequently be depressed and even basally discoid.

R. saxicola is peculiar in being strictly limited, so far as is known, to margins of shallow ephemeral pools on the granite outcrops in the Piedmont of Georgia.

56. *R. sulcata*, sp. nov. Planta caespitosa: foliis 1–2.5 mm. latis laxis planis; apicibus trigonis: culmis 3.6–6.5 dm. altis gracilibus fere teretibus laxis; internodis longis: inflorescentia culmi longitudinis $\frac{3}{4}$ aequanti; paniculo terminali 2.5 cm. lato; ramulis debilibus filiformibus ascendentibus vel patulis; glomerulis terminalibus parvis; paniculis lateralibus distantibus; pedunculis brevibus exsertis ascendentibus: spiculis rotundo-ovoideis turgidis 1–6-carpis 3 mm. longis: squamis fere orbicularibus castaneis deciduis: setis 6 fragilibus, achaenio aequalibus, antrorse et minute serrulatis: achaenio parvo (0.8 mm. lato 0.9 mm. longo) subgloboso nitido castaneo profunde transverse sulcato; sulcis valde longitudinaliterque striolatis: tuberculo compresso-deltaideo albescente 0.2 mm. alto. PLATE 831, FIGS. 3A and 3B; MAP 69.—Infrequent along streams, on pond-shores, and in low places of the Coastal Plain from Southern South Carolina to northern Florida. SOUTH CAROLINA: damp soils, Santee Canal, Berkeley Co., Sept., *Ravenel* (G); sedge-meadow at Bostick Pond near Allendale, Allendale Co., Aug. 5, 1939, *Eyles*, no. 6465 (CU). GEORGIA: pond near Luciene Bay, Effingham Co., July 25, 1939, *Eyles*, no. 6378 (G, TYPE; CU, ISOTYPE); sandy shore of Open Pond, Decatur Co., Aug. 12,

1901, *Harper*, no. 1204 (G, NY, US). FLORIDA: Quincy, Gadsden Co., *Chapman* (NY, in part); Tologee Creek, in John Carey's handwriting (G).

R. sulcata is closely related to both *R. Brittonii* Gale of Cuba and *R. microcarpa* Baldw. ex Gray of the southern United States and the Greater Antilles. The danger of confusion with *R. Brittonii* is small due to the geographical separation of the two species, but the similarity in habit is so striking as to deserve a short discussion. Both species have in common slender flexuous culms which customarily bear small cymes at every node including the first. The lax branchlets in *R. sulcata* are, however, spreading to divergent so that, as a result, its panicles do not have the somewhat congested appearance of the inflorescence, with spikelets borne on the mainly ascending branchlets, of *R. Brittonii*. The achenes of *R. Brittonii* are slightly larger than those of *R. sulcata*. Both are ridged, but those of the latter more abruptly so and with the concomitant grooves deeper. Lastly, the 5-6 bristles surrounding the achene of *R. Brittonii* are short, not exceeding $\frac{1}{2}$ its height; whereas the achene of *R. sulcata* is surrounded by 6 bristles which equal it in height.

R. microcarpa, on the other hand, is found within the range of *R. sulcata*, and in its smaller attenuated specimens simulates the typical habit of the latter. In *R. sulcata*, however, as mentioned above, the second, if not the first, node of the culm bears the first lateral panicle, so that the inflorescence occupies $\frac{2}{3}$ - $\frac{3}{4}$ the length of the culm. In *R. microcarpa* the first, second, usually the third, and often the fourth nodes are barren, and the inflorescence occupies only the upper $\frac{1}{4}$, rarely $\frac{1}{2}$ the culm. A comparison of the sculpturing on the surface of the achenes of the two species is even more conclusive, for that of the new species is emphatically ridged, whereas that of *R. microcarpa* is typically pitted, with the transverse walls only rarely accentuated so as to produce a rugulose effect.

57. *R. Brittonii*, sp. nov. Planta caespitosa: foliis 1 mm. latis aut minus, planis, apicem versus trigonis et minute serrulatis: culmis vel obtuse trigonis gracilibus vel filiformibus teretibusque, flexilibus, 2.8-5 dm. altis: paniculo terminali decomposito, leviter congesto, 0.8-1 cm. lato; ramulis ascendentibus vel divergentibus; paniculis lateralibus exsertis pedunculatis: spiculis rotunde ovoideis, turgidis, 3-5-floris, 2-4-carpis, 2-2.5 mm.

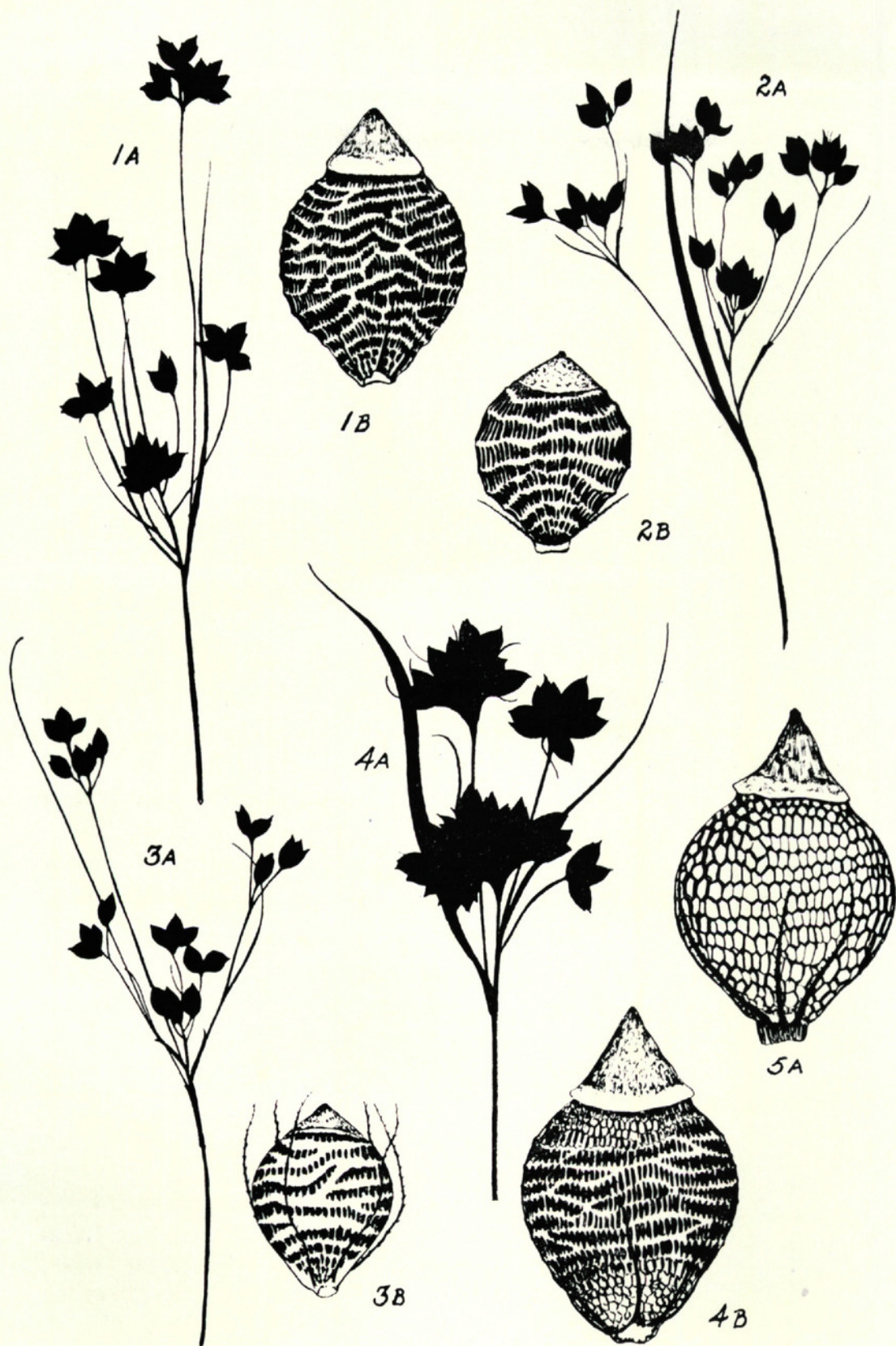
longis: squamis fere orbiculatis dense imbricatis fuscis: setis 5-6 achaenio duplo brevioribus, antrorse et minutissime serrulatis: achaenio subhemisphaerico, parvo (1 mm. lato, 1 mm. longo) inter rugas paucas profundas transversas longitudinaliter striolato: tuberculo compresso-deltoido, 0.2 mm. alto. PLATE 831, FIGS. 2A and 2B; MAP 67.—Borders of lagoons, Isle of Pines and western Cuba. CUBA: savanna, San Pedro and vicinity, Isle of Pines, Feb. 12-Mar. 22, 1916, *Britton & Wilson*, no. 14301 (NY, US); shore of Laguna de Junco, Pinar del Rio City, Pinar del Rio, Oct. 31, 1923, *Ekman*, no. 17862 (US); lagoon in savanna, vicinity of Pinar del Rio City, Pinar del Rio, Mar. 8-15, 1911, *E. G. Britton*, no. 10023 (NY, TYPE; US, ISOTYPE); dryish sand, Laguna Jovero and vicinity, Pinar del Rio, Dec. 12, 1911, *Shafer*, no. 1090 (NY); border of lagoon, vicinity of Pinar del Rio City, Pinar del Rio, Sept. 5-12, 1910, *Britton, Britton & Gager*, no. 6946 (NY); Laguna de la Maguina, south of Pinar del Rio City, Pinar del Rio, Nov. 28, 1940, *León & Alain*, no. 19410 (G).

This species has been named in honor of Dr. NATHANIEL LORD BRITTON. It is most closely related to *R. sulcata* Gale, and the discussion of the two species follows the description of the latter.

58. *R. obliterata*, sp. nov. Planta caespitosa: foliis 1.5-2 mm. latis planis setaceis ascendentibus; marginibus sparse serratis: culmis trigonis gracilibus, 5.9-9.2 dm. altis, apicem versus flexuosis: fasciculis 2-3 decompositis corymbiformibus 2-3 mm. latis; lateralibus compositis minoribus erectis pedunculatis exsertis: spiculis ovoideis, 1-3-floris, 1-2-carpis, 3.5-4 mm. longis: squamis aristulatis, laxe imbricatis: setis 6, achaenio duplo brevioribus vel saepe rudimentariis, antrorse serrulatis: achaenio late lenticulari-obovoideo biconvexo 1.2-1.3 mm. lato 1.2-1.3 mm. longo nitido castaneo; alveolis in medio a rugis validis pallidis transversis obscuratis: tuberculo depresso apiculato 0.3 mm. alto. PLATE 830, FIGS. 4A and 4B; MAP 68.—Borders of ponds in Arkansas and southeastern Texas. ARKANSAS: borders of ponds, E. Ark.¹ July, 1884, *Harvey*, no. 12 (G). TEXAS: Cypress City, Harris Co., Aug., 1877, *Boll*, no. 793 (Mo); ponds, Hempstead, Waller Co., April 16, 1872, *Hall*, no. 709 (G, TYPE; Mo, NY, US, ISOTYPES); prairie near Indianola, Calhoun Co., May 30, 1869, *Ravenel*, no. 144 (NY, in part *R. globularis* (Chapm.) Small, var. *recognita* Gale).

The specimens of *R. obliterata* cited above were segregated from collections of *R. globularis* (Chapm.) Small, var. *recognita* Gale (*R. cymosa*). They differ in general from the latter species

¹ Located on the map as in the vicinity of Grand Prairie.



S. G. del.

RYNCHOSPORA GLOBULARIS, var. *TYPICA*: FIG. 1A, portion of inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.

R. BRITTONII: FIG. 2A, portion of inflorescence, $\times 2$; FIG. 2B, achene, $\times 20$.

R. SULCATA: FIG. 3A, portion of inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.

R. GLOBULARIS, var. *RECOGNITA*: FIG. 4A, portion of inflorescence, $\times 2$; FIG. 4B, achene, $\times 20$.

R. GLOBULARIS, var. *PINETORUM*: FIG. 5A, achene, $\times 20$.

both in their cauline leaves, which are narrower and setaceous, and in their lack of a coarse, curling tuft of basal leaves. The inflorescence of *R. obliterata* is loosely fasciculate. The numerous small clusters of spikelets, each borne on a flexuously ascending branchlet, are inconspicuously bracteate. The inflorescence of *R. globularis* var. *recognita*, on the other hand, has comparatively short, stiffly erect to divergent branchlets bearing tight ultimate corymbs or glomerules which are penetrated by short stiff bracts. The lenticular achene of *R. obliterata* has a precise, broad-obovate outline. The transverse walls of the alveoli are aligned and pushed up into small ridges which, over the central portion of the achene, become conspicuously wider and paler, obscuring the alveoli. The achene of *R. globularis* var. *recognita* is by contrast irregularly obovate to suborbicular in outline, and tends to be more tumid above. Its small ridges are evenly continued across the face of the achene, and the alveoli of the central portion remain undiminished in size. The name of the new species derives from the characteristic blotting out of the central alveoli.

59. *R. GLOBULARIS* (Chapm.) Small. Caespitose, with a tuft of coarse often curling basal leaves: leaves 1.5–4 mm. wide, flat; the edges finely serrulate; tips triquetrous: culms trigonous to subterete, 1.4–9.2 dm. tall, robust and stiffly erect to slender, attenuate and flexuous: cymes 1–4, rarely 5; the branchlets rigid, short and spreading or contracted, terminating in capituli: spikelets broadly ovoid to nearly rotund, turgid, 1–3-fruited, 2.5–4 mm. long: scales papery, tightly involute; the lowermost suborbicular, commonly split at the apex, blunt or mucronate: bristles 5–6, not exceeding $\frac{2}{3}$ the achene in height, upwardly serrulate: achene broadly obovoid to subglobose, tumid above, compressed below, cancellate, transversely ridged to rugulose, castaneous, 1–1.5 mm. wide, 1.2–1.6 mm. long: tubercle conical, with or without a compressed apex, 0.3–0.6 mm. high.

KEY TO VARIETIES OF *R. GLOBULARIS*

- Achenes transversely ridged or rugulose, their cancelli oblong.
 Habit frequently depressed; branchlets of the cymes terminating in small knobby glomeruli; bracts inconspicuous; spikelets 2.5–3 mm. long; achenes 1–1.2 mm. wide, 1.2–1.3 mm. long, finely cancellate, transversely ridged to rugulose 59a. var. *typica*.
 Habit robust; branchlets of the cymes usually terminating in dense glomerules; setaceous bracts conspicuous; spikelets 3–4 mm. long; achenes 1.2–1.5 mm. wide, 1.3–1.6 mm. long, coarsely cancellate to striate, transversely ridged. 59b. var. *recognita*.
 Achenes flat-surfaced except for a faintly raised isodiametric reticulation. 59c. var. *pinetorum*.

59a. Var. **typica**. Leaves 1.5–2 mm. wide: culms often short, but ranging from 1.4–6.8 dm. in height, slender, obtusely trigonous to subterete, often attenuate, wiry and flexuous: branchlets of the cymes terminating in small knobby capituli of 3–8 spikelets: bracts inconspicuous: spikelets 2.5–3 mm. long, 1–2 fruited: bristles 5 (rarely 6), usually less than $\frac{1}{2}$ the achene in height: achene finely cancellate, transversely ridged to rugulose, 1–1.2 mm. wide, 1.2–1.3 mm. long: tubercle short, conical. PLATE 831, FIGS. 1A and 1B; MAP 70.—*R. globularis* Small, Man. 184 (1933). *R. cymosa* var. *globularis* Chapman, Fl. So. U. S. 525 (1860); Britton, Trans. N. Y. Acad. Sci. xi. 91 (1892); Small, Fl. 197 (1903); Fernald, RHODORA, xxxvii. 380, 405 (1935) and xxxix. 391, 480 (1937).—Sandy or peaty depressions from Delaware south along the Coastal Plain to the tip of Florida and west to eastern Texas; inland to the upper Sabine and the Red Rivers; also in swamps of the coastal ranges of northern California. DELAWARE: swamps, Newport, New Castle Co., July 12, 1863, *Commons* (NY). VIRGINIA: ledges along Potomac River, Great Falls, Fairfax Co., *Blake*, no. 5277 (US); low woodroad north of Savedge, Surry Co., *Fernald & Long*, no. 8121 (G, P); sandy and peaty depression (exsiccated shallow pond) about 4 miles northwest of Homeville, Sussex Co., *Fernald & Long*, no. 6071 (G, P); wet argillaceous depressions south of Petersburg, Dinwiddie Co., *Fernald & Long*, no. 8120 (G, P); peaty and argillaceous clearing about 4 miles southeast of Emporia, Greenville Co., *Fernald & Long*, no. 8122 (G, P); near Northwest, Norfolk Co., *Kearney*, no. 1536 (US); sandy barrens, Rifle Range, south of Rudy Inlet, Princess Anne Co., *Smith & Hodgdon* in Pl. Exsic. Gray., no. 625 (CU, G, NY, P, US). NORTH CAROLINA: argillaceous-siliceous clearing, 2 miles east of Conway, Northampton Co., June 14, 1939, *Godfrey*, (CU, D, G, P); open pine woods, acid soil, south of Bennett Memorial, Durham Co., *Blomquist*, no. 9799 (CU, D); damp thickety school yard, 7 miles east of Lumberton, Robeson Co., *Wiegand & Manning*, no. 614 (G). SOUTH CAROLINA: sand pit, Combahee River, south of Hendersonville, Colleton Co., *Wiegand & Manning*, no. 617 (G). GEORGIA: Smithville, Lee Co., *Earle*, no. 2979 (NY); low grounds between Millen and Ogeechee River, Burke Co., *Harper*, no. 792 (G, US); rather dry sandy roadside in pine barrens, Bullock Co., *Harper*, no. 880 (G, NY, US); margins, Bouhin's Pond, Chatham Co., *Eyles*, no. 6093 (CU); ditch along U. S. Route 17 south of Ways, Bryan Co., *Eyles*, no. 6286 (CU); dry open sink between Newton and Elmodel, Baker Co., *Eyles*, no. 7067 (Hermann Herb.). FLORIDA: near Jacksonville, Duval Co., *Curtiss*, no. 4105 (US); Manavista, Manatee Co., *Tracy*, no. 6991 (US); in moist sandy ditch along roadside, Rialto, Lee Co., *Moldenke*, no. 1011 (US); in hammocks and pine lands, Black



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