

THE NORTH AMERICAN SPECIES OF ARISTIDA.

By A. S. HITCHCOCK.

INTRODUCTION.

The genus *Aristida*, one of the large genera of grasses, belongs to the tribe Agrostideae, and together with *Stipa* and *Oryzopsis* comprises the group Stipeae, distinguished by the hard sharp-pointed fruits with the terete lemma convolute around the palea.

The genus is well distributed over the tropical and temperate parts of the world, but mostly on plains, prairies, and open ground. In general, the species are erect bunch grasses with hard wiry culms and blades.

The awns and the sharp, barbed callus aid in dissemination. This needle-like callus or barbed point of the fruit permits it to penetrate clothing or the fur of animals and be transported. In such species as *Aristida longiseta*, of our western plains, the long divergent awns are a distinct aid in transportation by the wind. The fruits are driven through the air, the sharp callus forward, and accumulate in large masses along fences and other obstructions. In the species mentioned, the awns may be as much as 8 cm. long. In *A. pallens*, of Argentina, the awns are as much as 15 cm. long. In *A. plumosa*, of Persia and North Africa, the central awn is 5 to 8 cm. long, the upper two-thirds being beautifully feathery.

The species of *Aristida* constitute a considerable proportion of the grass flora of the plains and deserts of the Southwestern States and northern Mexico and not infrequently may be the dominant species of grass. In the early stages of their growth before the fruits have developed they are relished by stock, but after the maturity of the fruit they are too dry and hard for forage and often become troublesome because of the pestiferous fruits.

In spite of their abundance, the species of *Aristida* have received no very distinctive common names. They are sometimes called spear grasses, needlegrasses, and triple-awned grasses; the first two names are applied also to species of *Stipa*. Certain species of the group *Purpureae*, especially *Aristida longiseta*, are called dog-town grass because of the tendency to establish themselves in the new soil thrown

up by prairie dogs. It seems best to apply the name needlegrasses to the species of *Aristida* and leave the name spear grasses for the species of *Stipa*.

The North American species mostly belong to the section *Chaetaria*, in which the awns are all developed and are not articulate with the lemma. A few species belong to the section *Arthratherum*, in which the column is articulate with the lemma, and a few belong to the section *Unisetia*, in which the lateral awns are wanting or minute. A fourth section, *Stipagrostis*, in which the column is articulate with the lemma and the awns are plumose, is not represented within our range.

DESCRIPTION OF THE GENUS AND SPECIES.

ARISTIDA L.

Aristida L. Sp. Pl. 82. 1753. The only species given is *A. adscensionis*, which therefore is the type. Linnaeus states that this species is one of four collected on the island of Adscension [Ascension], the others being *Sherardia fruticosa*, *Euphorbia origanoides*, and *Portulaca*. The type specimen of *Aristida adscensionis* is in the Linnaean Herbarium.

Arthratherum Beauv. Ess. Agrost. 32, 152. 1812. See under section *Arthratherum*.

Chaetaria Beauv. Ess. Agrost. 30, 158. 1812. See under section *Chaetaria*.

Curtopogon Beauv. Ess. Agrost. 32, 159. 1812. See under section *Chaetaria*.

Streptachne R. Br. misapplied by H. B. K. Nov. Gen. & Sp. 1: 124. 1816. See under section *Unisetia*.

Stipagrostis Nees, Linnaea 7: 290. 1832. The only species described is *S. capensis* Nees. This group constitutes a section of *Aristida* not represented in North America.

Schistachne Flg. & De Not. Mem. Accad. Torin. II. 12: 252. 1852. The type is *Aristida ciliata* Desf. The group should be referred to section *Stipagrostis*.

DESCRIPTION.

Glumes narrow, acuminate or awned, equal or unequal, 1-nerved or the first sometimes with a second nerve on one side, rarely 3 or 5-nerved, the first usually scabrous on the keel, sometimes also on the back, the second glabrous, the awn terminal or sometimes from a slight notch; lemma at maturity indurate, terete or somewhat compressed, convolute around the palea, disarticulating at base and bearing a pointed barbed callus as much as 2 mm. long (rarely 4 mm.), the body glabrous or sometimes scabrous on the upper half or toward the tip, often narrowed above and passing into the base of the awns; awns 3, united at base, the basal portion or column sometimes elongate and sometimes twisted, rarely articulate with the body, the lateral awns sometimes reduced or wanting, the central awn sometimes coiled at base in a spiral, all the awns sometimes contorted at base in a loose partial spiral, ascending or reflexed, sometimes the central awn reflexed by a semicircular bend.

Annual or perennial grasses with narrow flat or involute blades, very short ligules (cillolate and usually not over 0.5 mm. long) and narrow or open panicles.

KEY TO THE SECTIONS.

Lemma articulate with the column of the awns; awns nearly equal.

SECTION *Arthratherum* (p. 519)

Lemma not articulate.

Lateral awns minute (less than 1 mm. long) or wanting. (See also *A. dichotoma* and *A. ramosissima* of section *Chaetaria*).

SECTION *Uniseta* (p. 523)

Lateral awns more than 1 mm. long (rarely obsolete in *A. ramosissima*), usually well developed-----SECTION *Chaetaria* (p. 529)

SECTION *Arthratherum* (Beauv.) Reichenb. Consp. Reg. Veg. 50. 1828.

Arthratherum Beauv. Ess. Agrost. 32, 152. pl. 8. f. 8, 9. 1812. *Arthraterum* Roem. & Schult. Syst. Veg. 2: 398. 1817. The type species is *Aristida hygrometrica* R. Br., the first one figured. Beauvois mentions two others, *A. stipoides* R. Br. and *A. pungens* Desf.

Lemma articulate with the column of the awns, the latter finally deciduous, not plumose; glumes 1-nerved; awns nearly equal. Species of this section are found also in Asia, Africa, and Australia.

KEY TO THE SPECIES.

Plants annual.

Culms glabrous; awns arcuate-contorted at base.

Column very short----- 1. *A. desmantha*.

Column 10 to 15 mm. long, twisted----- 2. *A. tuberculosa*.

Culms pubescent; awns divergent but not arcuate-contorted at base.

3. *A. peninsularis*.

Plants perennial.

Culms pubescent----- 4. *A. californica*.

Culms glabrous----- 5. *A. glabrata*.

1. *Aristida desmantha* Trin. & Rupr.

Aristida desmantha Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5²: 109. 1842. "Texas (*Drummond* n. 285)." Trinius and Ruprecht state that no. 333 in the Vienna Herbarium is the same. The type has been examined in the Trinius Herbarium at Petrograd.

DESCRIPTION.

Plants annual; culms erect, branching, smooth, as much as 80 cm. tall; sheaths glabrous, or the lower villous or appressed hispid, villous on the margin and at the throat; blades folded or involute, glabrous beneath or scabrous toward the upper end, scabrous and striate-nerved on the upper surface, scabrous on the margins, as much as 20 cm. long, 2 to 3 mm. wide, tapering to a fine point; panicle usually long-exserted, as much as 20 cm. long, the branches stiffly ascending, very scabrous, mostly in pairs of unequal length, rather distant, the lower as much as 8 cm. long, bearing 1 to few spikelets toward the summit; spikelets brownish or yellowish, the pedicles 1 to 10 mm. long; glumes slightly unequal, the body about 1 cm. long, tapering into an awn about half as long, the first scabrous on the keel; lemma 7 to 8 mm. long, glabrous below, somewhat laterally compressed and slightly twisted at summit, the densely pubescent callus about 2 mm. long; awns scabrous, 2 to 2.5 cm. long, united for 1 to 2 mm., the bases curved in a semicircular somewhat contorted bend, the upper part thus usually deflexed.

DISTRIBUTION.

Open sandy soil or sandy woods, Illinois to Texas.

ILLINOIS: Mason County, *Bebb* in 1861. Without locality, *Vasey*.

TEXAS: Dallas, *Reverchon* 1057, 3479, 4202, 3428* (in *Curtiss*, N. Amer. Pl.). Without locality, *Wright*; *Drummond* 285, 333.

2. *Aristida tuberculosa* Nutt.

Aristida tuberculosa Nutt. Gen. Pl. 1: 57. 1818. "In the sandy pine forests of Georgia a few miles from Augusta."

Chaetaria tuberculosa Schult. Mant. 2: 211. 1824. Based on *Aristida tuberculosa* Nutt.

DESCRIPTION.

Plants annual; culms erect, branching, smooth, 30 to 60 cm. or even as much as 1 meter tall; sheaths glabrous, sparsely villous at the throat or the lowermost sparsely villous throughout; ligule a ciliate membrane about 1 mm. long; blades involute, glabrous beneath except toward the tip, strongly nerved and scabrous on the upper surface, scabrous on the margin, 10 to 20 cm. long, 2 to 4 mm. wide, more or less flexuous; panicles mostly 10 to 20 cm. long, the branches stiffly ascending, very scabrous, rather distant, mostly in pairs, the longer one naked at base, bearing a few spikelets on the upper half, the shorter one branching near the base and bearing usually two spikelets; spikelets pale or dark brown, the shorter pedicels 3 to 5 mm. long; glumes about equal, glabrous on the back, the first scabrous on the keel, gradually narrowed into an awn, about 2.5 cm. long including the awn; fertile lemma 11 to 13 mm. long, glabrous except for the slightly scabrous summit, extending downward into a densely pubescent callus 3 to 4 mm. long; column of awns twisted, scabrous, 10 to 15 mm. long, the upper 2 to 3 mm., twisted but not united, above this forming a semicircular bend, the terminal straight part of the awns usually deflexed, 3 to 4 cm. long.

DISTRIBUTION.

Open sandy fields, Massachusetts to Georgia and Mississippi, near the coast; also around the southern end of Lake Michigan and in other localities in Wisconsin and Illinois, and in Mexico.

MASSACHUSETTS: Essex County, *Conant* in 1878.

CONNECTICUT: Bridgeport, *Winton* in 1880. Fairfield Beach, *Eames* in 1895.

NEW YORK: Lake Grove, Long Island, *Hallock* in 1879. Seldon, Long Island, *Miller* in 1872. Coney Island, *Brinton* in 1880. Crookes Point, Staten Island, *Wilson* in 1915. New Dorp, Staten Island, *Kearney* in 1894; *Tyler* in 1895.

NEW JERSEY: Forked River, *Chase* 3592.

INDIANA: Tolleston, *V. H. Chase* 322. Millers, *Umbach* in 1897; *Umbach* in *Kneuck. Gram. Exs.* 742; *Chase* 507, 633. Dune Park, *Chase* 2077.

ILLINOIS: Cobden, *Waite* in 1884. Mason County, *Hall* in 1860. Oquawka, *Patterson* in 1874.

WISCONSIN: North Bend, *Pammel* in 1886.

MINNESOTA: Winona, *Holzinger* 18 (Gray Herb.).

DELAWARE: Sussex County, *Canby* (Gray Herb.).

VIRGINIA: Chincoteague Island, *Canby* in 1878.

SOUTH CAROLINA: Aiken, *Ravenel* in 1869.

GEORGIA: Chattahoochee County, *Harper* 1794.

KENTUCKY: Without locality, *Short* (Gray Herb.).

MISSISSIPPI: Cat Island, *Tracy* 1579. Horn Island, *Tracy* 1579.

NUEVO LEÓN: Monterrey, *Abbon* in 1912.

PUEBLA: Puebla, *Nicolás* in 1908.

MICHOACÁN: Morelia, *Nicolás* in 1909.

3. *Aristida peninsularis* Hitchc., sp. nov.

DESCRIPTION.

Plants annual, bushy-branched; culms slender, ascending, branching, pubescent, 10 to 20 cm. tall; sheaths glabrous, pubescent at the throat and slightly so on the collar; blades flat or somewhat involute, glabrous beneath, puberulent on the upper surface, nerved, 1 to 3 cm. long; panicles very numerous, mostly 1 to 3-flowered; glumes unequal, 1-nerved, glabrous or the keel of the first slightly scabrous toward tip, the first about 1 cm. long, acute, the second about 2 cm. long, narrowed into a slender tip but not awned; lemma about 8 mm. long, glabrous below, minutely scaberulous toward the summit, the callus densely pubescent, about 2 mm. long; column about 2 cm. long, twisted, the 3 awns about equal, 4 to 5 cm. long, diverging but not arcuate-contorted at base.

Type in the U. S. National Herbarium, no. 745524, collected on sandy beaches at Los Angeles Bay, Lower California, Mexico, November, 1887, by Edward Palmer (no. 501).

This species differs from *A. californica* in being an annual, and in its larger glumes, lemma, and awns.

This collection was included in Watson's list of Palmer's plants from Guaymas and vicinity¹ as *Aristida fugitiva* Vasey, a nomen nudum. Doctor Vasey wrote upon one of the sheets of this collection "*Aristida fugitiva* n. sp.," which he later changed to "*A. californica* var. *fugitiva* V." When the latter name was published² the only specimen mentioned was from "Colorado Desert (C. R. Orcutt)," which must be accepted as the type. The Orcutt specimen is *A. californica* and is not the same as the Palmer collection which is the only one known of this species.

4. *Aristida californica* Thurb.

Aristida californica Thurb.; S. Wats. Bot. Calif. 2: 289. 1880. "Colorado Desert (Schott); Fort Mohave, *Cooper*." The name, without description, was included earlier in a list of California grasses³ with the note "Collected by Professor Brewer," but without locality. The specimen collected by Dr. Cooper is in the U. S. National Herbarium.

Aristida jonesii Vasey, Contr. U. S. Nat. Herb. 3: 48. 1892, as a synonym of *A. californica*. The specimen so named by Vasey was collected at The Needles, California, by M. E. Jones in 1884 (no. 68a).

Aristida californica var. *fugitiva* Vasey, Contr. U. S. Nat. Herb. 3: 49. 1892. "Colorado Desert (C. R. Orcutt)." The name appeared earlier in a list of plants collected by Palmer in northwestern Mexico,⁴ but was there applied to a different plant.

¹ Proc. Amer. Acad. 24: 80. 1889.

² Contr. U. S. Nat. Herb. 3: 49. 1892. See note under *A. californica*.

³ Bolander, Grasses of the State. Trans. Agr. Soc. Calif. 1864-5: 134. 1866.

⁴ See notes under *A. peninsularis*.

DESCRIPTION.

Plants tufted, much branched at base, apparently perennial; culms branched, slender, pubescent, 10 to 30 cm. tall; sheaths glabrous or puberulent, pubescent at the throat and on the collar; blades mostly involute, scabrous beneath, puberulent on the upper surface, nerved, mostly less than 5 cm. long; panicles numerous, mostly few-flowered racemes; glumes unequal, 1-nerved, the first about 8 mm. long and about two-thirds as long as the second, 1-nerved, acutish, the second narrowed into a slender point but scarcely awned; lemma 5 to 7 mm. long, glabrous below, scaberulous toward the summit, the strongly pubescent callus 1.5 to 2 mm. long, the mature fruit mottled; column 15 to 20 mm. long, terete and very scabrous below, twisted and less scabrous above, the free ends of the awns about equal, 2.5 to 3.5 cm. long, spreading horizontally or somewhat ascending, the bases arcuate and slightly contorted.

DISTRIBUTION.

Dry sandy or gravelly soil, southern California and northwestern Mexico.

CALIFORNIA: Fort Mohave, *Cooper* 2217. Baxter Sink, Mohave River, *Parish* 9886. Palmita Springs, Colorado Desert, *Orcutt* in 1890. Borregos Springs, *Brandegge* 106 in 1894. The Needles, *Jones* in 1884. Travertine Peak, Salton Basin, *Parish* 8238.

SONORA: MacDougal Pass, Pinacate Mountains, *MacDougal* 32 in 1907.

LOWER CALIFORNIA: Lagoon Head, *Palmer* 654 in 1889; *Orcutt* in 1899. Socorro, *Orcutt* 1443, 1444. Calmalli, *Orcutt* in 1899; *Purpus* 63 in 1898.

5. *Aristida glabrata* (Vasey) Hitchc.

Aristida californica var. *major* Vasey, Proc. Calif. Acad. II. 2: 212. 1889, name only. The specimen was collected by T. S. Brandegge on Magdalena Island in 1889. It is about 60 cm. tall.

Aristida californica var. *glabrata* Vasey, Proc. Calif. Acad. II. 3: 178. 1891. "San José del Cabo, Todos Santos," Lower California. Collected by T. S. Brandegge.

DESCRIPTION.

Plant perennial; culms erect, branching, glabrous, 20 to 40 cm. tall; sheaths glabrous, the collar and throat glabrous; blades mostly involute, scaberulous beneath, puberulent on the upper surface, those of the culm mostly 1 to 3 cm. long; panicles narrow, 3 to 6 cm. long, few to several flowered, the spikelets single or in pairs; spikelets appressed, the pedicels 1 to 3 mm. long; glumes unequal, 1 nerved, smooth except the first slightly scabrous on the keel above, the first acute, 5 to 6 mm. long, the second narrowed into a slender point, not awned, 10 to 12 mm. long; fertile lemma mottled at maturity, 5 to 7 mm. long, scaberulous toward summit, the callus densely pubescent, about 1.5 mm. long, the slender twisted scabrous column, 6 to 14 mm. long; awns about equal, diverging, 2 to 3 cm. long.

This species differs from *A. californica* in the glabrous culms, the shorter column, and the longer, more densely flowered panicles.

DISTRIBUTION.

Open dry ground, Arizona and Lower California.

ARIZONA: Santa Rita Mountains, *Griffiths & Thornber* 197; *Griffiths* 3917, 4372, 4783, 5965, 6229, 6954, 6998, 6999, 7276; *Thornber* 69; *Wootton* in 1911, 1912, and 1914. Desert Wells, *Griffiths* 7312. Yucca, *Jones* 3895. Phoenix, *Hitchcock* 13665. Sasabey, *Griffiths* 6931.

LOWER CALIFORNIA: San José del Cabo, *Brandege* 34 in 1890, 5 in 1889, 38 in 1893, 311 in 1901; *Rose* 16505. La Paz, *Palmer* 129 in 1890. Lagoon Head, *Palmer* 654 in 1889. Magdalena Island, *Orcutt* 41 in 1917.

SECTION *Uniset*a Hitchc.

Humboldt, Bonpland, and Kunth (Nov. Gen. & Sp. 1: 124. 1816) misapplied the name *Streptachne* R. Br. (1810) to this group, describing three species, *S. scabra*, *S. pilosa*, and *S. tenuis*. *Streptachne* R. Br. was based on *S. stipoides*, which belongs to a distinct genus.

Nees (in Seem. Bot. Voy. Herald 225. 1857) used *Ortachne* in this sense, including one species, *O. pilosa* (*Aristida jorullensis*), but the name had been used earlier by Nees,⁶ for a different genus, based upon *O. retorta* Nees. The original specimens of *Streptachne* and *Ortachne* have been studied by Miss Hughes. (For discussion see Bull. Misc. Inf. Kew 1923: 301. 1923.)

KEY TO THE SPECIES.

Awn (column) twisted at base-----7. *A. schiedeana*.
Awn not twisted.

Plants annual; axils and branchlets beset with a few long hairs; awn flexuous-----8. *A. jorullensis*.

Plants perennial; axils and branchlets devoid of long hairs; awn curved but not flexuous.

Awn more or less arcuate but not horizontally bowed; panicle open, the branches long and naked below (shorter in var. *divergens*); lateral awns mostly obsolete-----6. *A. ternipes*.

Awn curved in a semicircular bend, the terminal part horizontal or deflexed; panicle narrow, the short branches spikelet-bearing from the base or nearly so; lateral awns present, less than 1 mm. long.

Sheaths pilose at throat; first glume 6 mm., the second 8 mm. long.

9. *A. purpusiana*.

Sheaths glabrous at throat; first glume 12 mm. long, the second a little shorter-----10. *A. geminiflora*.

6. *Aristida ternipes* Cav.

Aristida ternipes Cav. Icon. Pl. 5: 46. 1799. "Habitat Panamaide, inventa A Domino Ludovico Nee." The type specimen is in the herbarium of the Botanical Garden at Madrid and a fragment of the inflorescence in the U. S. National Herbarium. The lateral awns are described as short; in the specimen they are minute, less than 1 mm. long.

Streptachne scabra H. B. K. Nov. Gen. & Sp. 1: 124. pl. 40. 1816. "Crescit in frigidis, montanis regni Mexicani juxta Toluca et Islahuaca." The type has been examined at Paris.

Aristida scabra Kunth, Rév. Gram. 1: 62. 1829. Based on *Streptachne scabra* H. B. K.

Muhlenbergia scabra Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 183. 1842. Based on *Aristida scabra* Kunth.

Streptachne cubensis A. Rich. in Sagra, Hist. Cuba 11: 311. 1850. "Crescit in locis aridis et saxosis insulae Cubae, prope Cabaña et alibi (Ramon de la Sagra)." A fragment from the type specimen in the herbarium of the Museum at Paris has been kindly sent by the Director, M. Lecomte.

⁶ Steud. Syn. Pl. Glum. 1: 121. 1854.

Streptachne floridana Chapm. Fl. South. U. S. 554. 1860. "South Florida, Dr. Blodgett." The type specimen is from Key West. This differs from the usual form of *Aristida ternipes* in having a condensed panicle, the ascending branches 3 to 5 cm. long, floriferous nearly to base, and in having more curved and flexuous awns, the point or column of the fruit being somewhat twisted as well as curved. No other specimens have been observed that are like the type collection in these respects.

Aristida floridana Vasey, Descr. Cat. Grasses U. S. 35. 1885. Based on *Streptachne floridana* Chapm.

Ortachne scabra Fourn. Mex. Pl. 2: 80. 1886. Based on *Streptachne scabra* H. B. K.

Ortachne floridana Nash in Small, Fl. Southeast. U. S. 119. 1903. Based on *Streptachne floridana* Chapm.

DESCRIPTION.

Plants perennial; culms erect, firm, several in a tuft, glabrous, mostly 50 to 100 cm. tall; sheaths glabrous or scabrous toward the summit, slightly villous or glabrate at the throat; blades flat, involute above and tapering into a fine involute point, as much as 40 cm. long, 2 to 3 mm. wide, narrower than the summit of the sheath, scabrous or glabrous beneath, scabrous or scabrous-pubescent on the upper surface, more or less villous at base and sometimes sparsely so above the base; panicle open, nodding at summit, one-third to half the entire length of the culm, the branches few, distant, spreading, scabrous, solitary or fascicled, often in threes, mostly naked at base; spikelets appressed at the ends of the branches; glumes about equal, acuminate, 1-nerved or obscurely 3-nerved, 8 to 10 mm. long, the first scabrous on the keel; lemma glabrous, the keel often strongly scabrous, gradually narrowed into a laterally compressed scabrous falcate beak 1-nerved on each side, this extending into the single arcuate scabrous nearly terete awn, the callus pilose with hairs as much as 2 mm. long, the lemma to the obsolete or minute lateral awns about 17 mm. (7 to 30 mm.) long, the central awn 10 to 15 mm. (7 to 20 mm.) long.

The spikelets vary in size, those of Palmer's no. 161 from Chihuahua being smaller than the average, while those of Rose's no. 3694 are unusually large, as much as 3 cm. to the lateral awns. In other respects these plants do not appear to differ.

DISTRIBUTION.

Rocky hills and dry plateaus, Arizona to northern South America; also in the Bahamas, Cuba, and southern Florida.

FLORIDA: Key West, *Blodgett*.

NEW MEXICO: Organ Mountains, *Wootton* in 1895; *G. R. Vasey* in 1881.

ARIZONA: Chiricahua Mountains, *Blumer* in 1907; *Toumey* in 1896. Santa Rita Forest Reserve, *Griffiths* 5961, 7271; *Griffiths & Thornber* 44; *Wootton* in 1911, 1912, 1914. Fort Huachuca, *Wilcox* 2548 and in 1894. Patagonia, *Hitchcock* 3653. San Luis Mountains, *Mearns* 2107. Clear Creek, *MacDougal* 625. Santa Catalina Mountains, *Griffiths* 7060. Tucson, *Hitchcock* 13251. Celero Mountains, *Griffiths* 6130. Without locality, *Lemmon* in 1882.

LOWER CALIFORNIA: San José del Cabo, *Brandege* 36 in 1890. Benorama, *Brandege* in 1899.

SONORA: Hermosillo, *Hitchcock* 3537, 3596, 3603. Álamos, *Palmer* 702 in 1890. Guaymas, *Palmer* 55 and 268 in 1887; *Hitchcock* 3545; *Rose, Standley & Russell* 12607.

CHIHUAHUA: Chihuahua, *Pringle* 387; *Hitchcock* 7789. Batopilas, southwestern Chihuahua, *Palmer* 115 and 161 in 1885.

TAMAULIPAS: Between Victoria and Río Blanco, *Karwinsky* in 1842.

SAN LUIS POTOSÍ: Las Palmas, *Pringle* 3776.

DURANGO: Santiago Papasquiaro, *Palmer* 472 in 1896.

SINALOA: Chilillo, *Dehesa* 1590. Lodiago, *Palmer* 1653 in 1891. Culiacán, *Rose, Standley & Russell* 14986. Fuerte, *Rose, Standley & Russell* 13511.

JALISCO: Bolaños, *Rose* 3694. San Nicolás, *Hitchcock* 7209.

GUANAJUATO: Irapuato, *Hitchcock* 7428.

VERACRUZ: Camerón, *Rose & Rose* 11453.

PUEBLA: Tehuacán, *Hitchcock* 6093, 6094. Río de San Francisco, *Purpus* 4217, 4219.

MORELOS: Cuernavaca, *Hitchcock* 6831, 6872; *Pringle* 6496; *Rose, Painter & Rose* 10227.

COLIMA: Manzanillo, *Palmer* 1091 in 1890; *Orcutt* 4463; *Hitchcock* 7038.

GUERRERO: Balsas, *Hitchcock* 6785, 6798.

OAXACA: Tomellín, *Hitchcock* 6203, 6219. Oaxaca, *Pringle* 4857; *Hitchcock* 6100, 6137, 6142, 6151, 6161. Ejutla, *Liebmann* 658.

YUCATÁN: Izamal, *Gaumer* 1024.

GUATEMALA: Amatitlán, *Popenoe* 700. Aguas Calientes, *Deam* 6133.

HONDURAS: Amapala, *Hitchcock* 8770.

SALVADOR: Santa Ana, *Hitchcock* 8797. La Unión, *Hitchcock* 8786.

NICARAGUA: Grenada, *Flint* in 1868; *Levy* 385. Masaya, *Hitchcock* 8640. Corinto, *Hitchcock* 8742. San Juan del Sur, *Hitchcock* 8591.

COSTA RICA: Nicoya, *Tonduz* 13756. Guanacaste, *Jiménez* 716. Puntarenas, *Hitchcock* 8573. Atenas, *Hitchcock* 8527.

PANAMA: Panama, *Hitchcock* 8402.

BAHAMAS: Nassau, *Curtiss* 75; *Hitchcock* in 1890. Inagua, *Nash & Taylor* 926.

CUBA: Guanabo, *Léon* 8518. Río Almendares, *Wilson* 9488; *Léon* 280. Marianao, *Léon* 958, 959. Guanabacoa, *Léon & Shafer* 3443. Cojimar, *Hitchcock* 497. Tricornia, *Hitchcock* 496. Santiago, *Britton, Britton & Cowell* 12857. Pinar del Río, *Wright* 3835.

COLOMBIA: Honda, *Pennell* 3576. Santa Marta, *Smith* 134, 141.

6a. *Aristida ternipes divergens* (Vasey) Hitchc

Aristida schiedeana var. *minor* Vasey, Bull. Torrey Club 13: 28. 1886. "Collected in Arizona by *Pringle* in 1884 * * * and by M. E. Jones at Bowie, Arizona, 1884." The first specimen, accepted as the type, is erect, about 25cm. tall, the spreading or deflexed panicles about 5 cm. long.

Aristida divergens Vasey, Contr. U. S. Nat. Herb. 3: 48. 1892. Based on *Aristida schiedeana minor* Vasey.

DESCRIPTION.

Smaller and often prostrate or ascending, the panicle usually more than half the entire length of the plant, less diffuse, the shorter branches usually stiffly spreading or somewhat deflexed. In Griffith's no. 6970 the lateral awns are 2 to 3 mm. long or in some spikelets half as long as the central awn.

DISTRIBUTION.

Rocky hills and plains, Texas to Nicaragua.

TEXAS: Limpia Canyon, *Nealley* 135, 165. Marfa, *Havard* in 1883. El Paso, *Stearns* 196; *Griffiths* 7434; *Hitchcock* 13431. Without locality, *Wright* 745; *Buckley* in 1883; *Nealley* in 1887; *Tracy* in 1887.

NEW MEXICO: Las Cruces, *Wootton* 683. Organ Mountains, *Hitchcock* 3789; *Standley* in 1906. Mangas Springs, *Metcalf* 632.

ARIZONA: Prescott, *Hitchcock* 13172. Portal, *Eggleston* 10936. Santa Rita Mountains, *Griffiths* 3385, 5925, 5928, 5962, 5964, 5969, 5978, 6970, 6995, 7275. Santa Catalina Mountains, *Griffiths* 7059. Dragoon Mountains, *Griffiths* 1872. Pearce, *Griffiths* 1900. Bisbee, *Mearns* 927, 1070. Tucson, *Hitchcock* 3496; *Toumey* in 1891, 1893, 1896; *Chase* 5514. Bowie, *Jones* 4234. Grape Vine Canyon, *Toumey* 142. Sierra Tucson, *Pringle* in 1884. White Mountains, *Griffiths* 5374.

LOWER CALIFORNIA: San José del Cabo, *Brandege* in 1899. San Francisquito Mountains, *Brandege* in 1890. Concepción Bay, *Rose* 16713.

SONORA: Alamos, *Rose, Standley & Russell* 12756.

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* in 1885.

NICARAGUA: Grenada, *Baker* 2309.

7. *Aristida schiedeana* Trin. & Rupr.

Aristida schiedeana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹:120. 1842. "Mexico: prope Jalapam (*Schiede* n. 909!)." The type specimen in the Trinius Herbarium has nearly equal, mucronate, scaberulous or puberulent glumes 10 mm. long, the lemma and column 15 mm. long, the lateral awns 1 to 2 mm. long.

Aristida virletii Fourn. Mex. Pl. 2:76. 1886. "Orizaba (*F. Mull.* n. 2104 in herb. Petrop.); San Luis de Potosi (*Virlet* n. 1421); Laguna, Talea, agosto (*Liebm.* n. 672); absque loco (*Liebm.* n. 657)." The type is the Virlet specimen, which could not be found in the Paris Herbarium. The other specimens have been examined.

Aristida flexuosa Fourn. Mex. Pl. 2: 77. 1886. "Santa Fe, Julio (*Bourq.* n. 677 part.)." This specimen has been examined at Paris.

Aristida orcuttiana Vasey, Bull. Torrey Club 13: 27. 1886. "Southern California, *C. R. Orcutt*. Arizona, *M. E. Jones*." The type is from Hansen's Ranch, Lower California (not southern California) 6,000 feet altitude, collected July 30, 1883, by *C. R. Orcutt*, no. 507. It differs from the average specimens of *A. schiedeana* in having smaller narrow panicles, the branches only about 5 cm. long. The blades are firm and closely involute. The Jones specimens from Arizona are similar. Most of the specimens from the southwestern United States are more like this form, but it seems scarcely worthy of specific rank.

Aristida hypomegas Mez, Rep. Sp. Nov. Fedde 17: 146. 1921. "New Mexiko. Cooks Spring and Copper Mines (*Bigelow*)."
Mrs. Agnes Chase has examined at Berlin authentic specimens named by Mez. *Bigelow* 34 may be considered the type. *Bigelow* 35 is diseased. Two other specimens, *Blumer* 3452 and *Nealley* 135 are also named *A. hypomegas* by Mez.

DESCRIPTION.

Plants perennial; culms erect, tufted, glabrous or slightly roughened or puberulent, 30 to 60 cm. or even as much as 1 meter tall; sheaths glabrous or minutely scaberulous, densely villous at the throat and on the well-marked collar, or glabrescent on these parts; blades flat or the upper involute (at least in drying), glabrous beneath, scaberulous on the upper surface, 10 to 30 cm. long, as much as 3 mm. wide, tapering to a fine point; panicle open, as much as 30 cm. long, nodding or drooping, the branches few, distant,

solitary or in pairs, scabrous, spreading and drooping or ascending, as much as 20 cm. long, branched at or above the middle, the branchlets or spikelets appressed; spikelets somewhat crowded at the ends of the branches, the pedicels angled, the shorter ones about 3 mm. long; glumes equal or the first longer, scabrous on the back or only on the keel, 1-nerved or the first with a pair of lateral nerves, 10 to 15 mm. long, acuminate or the second mucronate from a slightly bifid apex; lemma 8 to 10 mm. long, gradually narrowed into a scabrous twisted column, the total length to the bend 10 to 17 mm., the callus rather obtuse, densely pilose; central awn divergent as much as 45 degrees, straight, 5 to 10 mm. long, the lateral awns obsolete or as much as 1 mm. long, rarely longer, erect.

There is considerable variation in the measurements of the parts of the spikelet but the differences do not appear to be coordinated with each other or with other characters of the plant.

DISTRIBUTION.

Rocky hills and plains, southwestern United States to Guatemala.

TEXAS: Alpine, *Hitchcock* 13593. Without locality, *Buckley* in 1883; *Nealley* in 1887 and 1889.

NEW MEXICO: Lake Valley, *Beals* in 1914. Filmore Canyon, Organ Mountains, *Hitchcock* 3994; *Wooton* 1046. Pena Blanca, Organ Mountains, *Standley* in 1906. Socorro, *Plank* 55. Hanover Mountain, *Holzinger* in 1911. Silver City, *Metcalf* 703. Mangas Valley, *Smith* in 1896; *Metcalf* in 1896. Metcalfe's Ranch, Grant County, *Smith* in 1896. Without locality, *Wright* 2010, 2070.

ARIZONA: Santa Rita Reserve, *Griffiths* 5963, 7242; *Wooton* in 1914. Madero Canyon, *Wooton* in 1914. Tucson, *Toumey* 756. Webber's Camp, *Griffiths* 7175. Fort Apache, *Wooton* in 1913. Dragoon Mountains, *Griffiths* 1866. Prescott, *Toumey* 82. Fort Huachuca, *Wilcox* in 1894. Bowle, *Jones* 4233. Patagonia, *Hitchcock* 3711, 3721. Chiricahua Mountains, *Toumey* in 1896.

CALIFORNIA: San Diego, *Orcutt* in 1884.

LOWER CALIFORNIA: La Chuparosa, *Brandegge* in 1897. Sierra de San Francisquito, *Brandegge* in 1899.

CHIHUAHUA: Santa Eulalia Mountains, *Pringle* 386; *Wilkinson* 343. Chihuahua, *Pringle* 486. Sierra Madra, *Nelson* 6496a. Miñaca, *Hitchcock* 7763. Sánchez, *Hitchcock* 7671.

ZACATECAS: Plateado, *Rose* 2793.

DURANGO: Durango, *Hitchcock* 7588.

JALISCO: Río Blanco, near Guadalajara, *Palmer* 769 and 769a in 1886.

HIDALGO: Pachuca, *Hitchcock* 6752.

PUEBLA: Puebla, *Arsène* 159, 166, 245, 1669, 1903, 2289; *Purpus* 4218, 4221. San Marcos, *Hitchcock* 6526, 6539. Chalchicomula, *Hitchcock* 6273, 6299. Esperanza, *Hitchcock* 6480.

TLAXCALA: Barranca at Acuitlalpilco, *Arsène* 19.

MEXICO: Popo Park, *Hitchcock* 5971.

FEDERAL DISTRICT: *Orcutt* 3782.

MORELOS: Alarcón, *Orcutt* 3863.

MICHOACÁN: Morelia, *Arsène* 5872, 6997, 7343. Uruápan, *Hitchcock* 6975.

OAXACA: Reyes, *Nelson* 1807. Cerro de San Felipe, *Conzatti & Gonzales* 439. Talea, *Liebmann* 672.

MEXICO (Republic of): Without locality, *Liebmann* 657, 660.

GUATEMALA: Guatemala City, *Hitchcock* 9073.

8. *Aristida jorullensis* Kunth.

Streptachne pilosa H. B. K. Nov. Gen. & Sp. 1: 124. 1816. "Crescit cum praecedente [*S. scabra*]; item in planitie calidissima Mexicana, Playas de Jorullo, alt. 400 hexap." The sign for perennial is attached to the description, but the species is annual. The type has been examined in the Paris Herbarium.

Aristida jorullensis Kunth, Rév. Gram. 1: 62. 1829. Based on *Streptachne pilosa* H. B. K. Not *Aristida pilosa* Labill. 1824.

Ortachne pilosa Nees, Seem. Bot. Voy. Herald 225, 1857. Based on *Streptachne pilosa* H. B. K.

Aristida manzanilloana Vasey, Contr. U. S. Nat. Herb. 1: 282. 1893. "Collected in the mountains about Manzanillo by Dr. Edward Palmer, December 1 to 31, 1891 (No. 1084)." Type in the U. S. National Herbarium.

DESCRIPTION.

Plants annual; culms slender, tufted, branched at all the nodes, glabrous, 20 to 40 or even 60 cm. tall; sheaths glabrous; blades mostly less than 10 cm. long, 1 to 2 mm. wide or less, flat or involute in drying, tapering to a fine point, glabrous beneath, scabrous-puberulent on upper surface, also bearing scattered long hairs; panicles narrow, 19 to 20 cm. long, the axis slender, somewhat flexuous, the panicle and peduncle elongating at maturity, becoming as much as a meter long and more or less prostrate, the branches short, distant, floriferous to base, the axils of branches and branchlets with a few long hairs, these scattered on the branches also; glumes nearly equal, 5 to 7 mm. long, 1-nerved, or obscurely 3-nerved, glabrous; lemma scabrous on the keel, extending into a laterally compressed beak and this into the single terete scabrous curved or flexuous awn, the callus about 0.5 mm. long, rather sparsely pilose, the total length of lemma and awn being 15 to 35 mm. long, there being no distinction between the parts, the lateral awns wanting.

In the groups of spikelets on the short branches the awn of the upper spikelet is often longer than those of the lower spikelets.

DISTRIBUTION.

Dry open ground, Mexico to Panama.

SINALOA: Cerro Colorado, *Brandegge* in 1904. Mazatlán, *Rose, Standley & Russell* 13681.

TEPIC: Acaponeta, *Rose, Standley & Russell* 14303.

COLIMA: Collma, *Orcutt* 4569. Alzada, *Hitchcock* 7075. Tecomán, *Hitchcock* 7048. Manzanillo, *Palmer* 1084 in 1890.

GUERRERO: Acapulco, *Palmer* 36 in 1895.

MEXICO (Republic of): Without locality, *Liebmann* 666; *Hoenke*.

GUATEMALA: Chile, *Popenoe* 710.

SALVADOR: La Unión, *Hitchcock* 8777. Acajutla, *Hitchcock* 8991. San Salvador, *Hitchcock* 8859.

NICARAGUA: Grenada, *Levy* 391. Masaya, *Hitchcock* 8657.

COSTA RICA: Grecia, *Jiménez* 1128. Nicoya, *Tonduz* 13750, 13752. Pacaca, *Pittier* 3334. Turúcares, *Pittier* 513. Nuestro Amo, *Jiménez* 409.

PANAMA: Ancón, *Killip* 4194. Chorrera, *Hitchcock* 8170. Corozal, *Hitchcock* 9202. Chepo, *Pittier* 4642, 4753. Aguadulce, *Pittier* 4850. David, *Hitchcock* 8354. Panama, *Hitchcock* 8408.

9. *Aristida purpusiana* Hitchc.

Aristida purpusiana Hitchc. Contr. U. S. Nat. Herb. 17: 276. 1913. "Type * * * collected at San José del Cabo, Lower California, Mexico, in 1901, by C. A. Purpus (no. 394)." Type in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial; culms erect, slender, rigid, glabrous, 50 to 60 cm. high, the branches stiffly ascending; sheaths glabrous, pilose at the throat; blades 1 to 2 mm. wide, 5 to 10 cm. long, becoming involute; panicle narrowly pyramidal, 15 to 25 cm. long, the branches few, short, few-flowered, finally spreading or reflexed, the lower 5 to 6 cm. long, the branchlets and pedicels stiffly ascending; glumes somewhat unequal, the first about 6 mm., the second 8 mm. long, smooth, 1-nerved, slightly notched at the apex; lemma conspicuously pilose at the base, about 1 cm. long to base of awns, straight, minutely scabrous on the short beak, the lateral awns scarcely 1 mm. long; terminal awn about 8 mm. long, recurved by a semicircular bend.

DISTRIBUTION.

LOWER CALIFORNIA: San José del Cabo, *Purpus* 394; *Brandege* in 1890.

10. *Aristida geminiflora* Fourn.

Aristida geminiflora Fourn. Mex. Pl. 2: 77. 1886. "Culmo plus quam pedali, angusto glabro; foliis amplexicaulibus convolutis fere pedilibus, ligula brevi; panícula ovali, radiis patulis brevibus, infimis longioribus alternis, superioribus geminis, pedicellis unifloris geminis inaequalibus, 8-linealibus; glumis, subaequalibus, acumatis, flosculo maculato angusto basi piloso, arista basi torta geniculata post geniculum glumas aequante, setis lateralibus brevissimis. Mirador, januario (Liebm. n. 646)."

The description is drawn from the type, kindly lent by the director of the Copenhagen Botanical Garden. The specimen is fragmentary and gives little information as to the foliage and habit of the plant.

DESCRIPTION.

Blades and branches stiffly divergent; sheaths scaberulous, not hairy at the throat; panicle 10 to 15 cm. long, narrow, loose, erect, the branches stiffly ascending at an angle of about 45 degrees, distant, single but usually bearing a short basal branch, the lower about 3 cm. long, bearing 4 to 6 spikelets, the upper bearing 1 or 2 spikelets; glumes glabrous except the very slightly scabrous keel toward the apex, 1-nerved, mucronate, the first 12 mm. long, the second a little shorter; lemma about 8 mm. long, the callus short-pilose, the body glabrous, extending into the scabrous column of the awn, the lemma and column 14 mm. long, the lateral awns erect, less than 1 mm. long, the central awn curved in a semicircle at base, horizontal or somewhat recurved, about 8 mm. long.

Known only from the type collection.

SECTION *Chaetaria* (Beauv.) Trin. Gram. Unifl. 175. 1824.

Chaetaria Beauv. Ess. Agrost. 30, 158. pl. 8, f. 5, 6. 1812. Beauvois figures two species, *C. stricta*, figure 5, and *C. capillaris*, figure 6. *Chaetaria stricta*, presumably based on *Aristida stricta* Michx., is taken as the type. The

name "*C. capillaris*" occurs only in the explanation of plate, and is evidently a misprint for *C. capillacea* (presumably based on *Aristida capillacea* Lam.). The genus *Aristida* as limited by Beauvois in the work cited is based upon *Aristida lanata* Forsk., a species with plumose central awn.

Curtopogon Beauv. Ess. Agrost. 32, 159. pl. 8. f. 7. 1812. The figured species, *Curtopogon dichotomus*, is based on *Aristida dichotoma* Michx.

Trixostis Raf. Bull. Bot. Sering. 1: 221. 1830. Based on *Aristida gracilis*, but the combination under *Trixostis* is not made.

Moulinsia Raf. Bull. Bot. Sering. 1: 221. 1830. Based on *Aristida lanosa*, but the combination under *Moulinsia* is not made.

Lateral awns usually at least half as long as the central, shorter in a few species, nearly always more than 1 mm. long (rarely obsolete in *A. ramosissima*).

KEY TO THE SPECIES.

Central awn spirally coiled at the base, the lateral straight. Plants annual.
(Group DICHOTOMAE.)

Lateral awns half to two-thirds as long as the central, somewhat spreading.

11. *A. basiramea*.

Lateral awns much shorter than the central, 1 to 3 mm. long, erect.

Glumes nearly equal, 6 to 8 mm. long; lemma sparsely appressed-pilose,
5 to 6 mm. long.-----12. *A. dichotoma*.

Glumes unequal, the second longer, about 1 cm. long; lemma glabrous,
except the keel, scabrous toward the apex, about 1 cm. long.

13. *A. curtissii*.

Central awn not spirally coiled (in a few species all the awns are loosely contorted in the lower part.)

Plants annual. (Group ADSCENSIONES.)

Awns mostly 4 to 7 cm. long, about equal, divergent.-----14. *A. oligantha*.

Awns mostly less than 2 cm. long, often unequal.

Central awn with a semicircular bend at base, spreading or reflexed.

Lateral awns much reduced; lemma about 2 cm. long.

15. *A. ramosissima*.

Lateral awns one-third to half as long as the central; lemma 4 to 5
mm. long.-----16. *A. longespica*.

Central awn not sharply curved, the awns about equally divergent.

Column as long as lemma, twisted; awns about 5 mm. long; plant very
slender and delicate.-----17. *A. capillacea*.

Column short or wanting, not twisted.

Glumes unequal; awns flat at base, 10 to 15 mm. long.

18. *A. adscensionis*.

Glumes about equal; awns terete, 15 to 20 mm. long.

19. *A. intermedia*.

Plants perennial.

Panicle open, the branches spreading (in *A. pansa* ascending), naked at
base. (Group DIVARICATAE.)

Branches of panicle stiffly and abruptly spreading or reflexed at base.

Branchlets divaricate and implicate.-----20. *A. havardii*.

Branchlets appressed.-----21. *A. divaricata*.

Branches drooping or ascending, not abruptly spreading at base.

Lateral awns one-fourth to half as long as the central one.

22. *A. patula*.

Lateral awns about as long as the central, at least more than half as long.

Glumes unequal, the first 5 to 7 mm. the second 7 to 10 mm. long; branches of panicle stiffly ascending-----23. *A. pansa*

Glumes about equal; branches of panicle drooping, mostly long and slender-----24. *A. spadicea*.

Panicle narrow, the branches ascending or appressed (branches sometimes somewhat spreading in *A. parishii*).

Column 1 cm. or more long, twisted; glumes awned.

First glume shorter than the second; blades all involute.

25. *A. spiciformis*.

First glume longer than the second; basal blades flat--26. *A. implexa*.

Column less than 1 cm. long.

First glume about half as long as the second (as much as two-thirds as long in *A. glauca*). (Group PURPUREAE.)

Lemma tapering into a slender somewhat twisted beak 5 to 6 mm. long; awns 1.5 to 2.5 cm. long, widely spreading.

27. *A. glauca*.

Lemma beakless or only short-beaked.

Branches of the rather loose and nodding panicle slender and flexuous. (See also *A. longiseta variflora*.)--28. *A. purpurea*.

Branches of the erect panicle stiff and appressed, or the lowermost sometimes somewhat flexuous.

Panicle mostly more than 15 cm. long, the branches several-flowered; awns about 2 cm. long. Sheaths with a villous line across the back at the collar-----30. *A. wrightii*.

Panicle mostly less than 15 cm. long, the branches few flowered; awns 2 to several cm. long.

Culms slender and wiry, spreading at base; sheaths with a hispidulous line across the collar-----31. *A. eggersii*.

Culms closely cespitose, erect; no hispidulous line on collar. Awns 1 to 1.5 cm. long-----29. *A. curvifolia*.

Awns 2 to 8 cm. long.

Lemma gradually narrowed above, scaberulous on the upper half; leaves mostly in a short curly cluster at the base of the plant-----32. *A. fendleriana*.

Lemma scarcely narrowed above, scaberulous only at the tip; leaves not conspicuously basal--33. *A. longiseta*.

First glume more than half as long as the second. (Usually the glumes about equal or the first sometimes a little longer.)

Sheaths lanate-pubescent.

Awns unequal, the central longer, recurved-----34. *A. lanosa*.

Awns about equal, somewhat spreading-----35. *A. scribneriana*.

Sheaths not lanate-pubescent.

Column of awn at maturity 3 to 5 mm. long, distinctly twisted. (Compare *A. recurvata*.)

Awns 10 to 15 mm. long; blades usually less than 5 cm. long, firm and straight, mostly involute-----36. *A. neglecta*.

Awns 1.5 to 3 cm. long; blades elongate, the older ones usually flat, curley or flexuous.

Lower blades flat; sheaths glabrous at throat.

37. *A. arizonica*.

Lower blades involute; sheaths villous at throat.

38. *A. barbata*.

Column of awn less than 3 mm. long, or if so long, not twisted.

Blades villous on upper surface near base, involute.

39. *A. stricta*.

Blades not involute and villous at base.

Awns at maturity about equally divergent, sometimes slightly twisted but not spirally contorted at base.

Blades flat with an involute point or becoming loosely involute, but some remaining flat at least toward the base; awns 1.5 to 2.5 cm. long. (Compare glabrous specimens of *A. lanosa*.)

Culms mostly over 1 meter tall; blades 3 to 5 mm. wide.

40. *A. erecta*.

Culms mostly less than 70 cm. tall; blades usually less than 2 mm. wide.

Lemma about 7 mm. long; awns horizontally spreading; panicle usually more than 20 cm. long.

41. *A. purpurascens*.

Lemma 10 to 12 mm. long; awns somewhat spreading but scarcely horizontal; panicle mostly less than 15 cm. long.

Awns 1.5 to 2 cm. long; glumes equal, about 10 mm. long-----

42. *A. liebmanni*.

Awns 2.5 cm. long; glumes unequal, the first 12 mm. long, the second a little longer--

43. *A. parishii*.

Blades involute.

Blades short and stiff, mostly less than 3 cm. long, usually approximate in pairs; culms very stiff and wiry.

44. *A. curtifolia*.

Blades mostly over 5 cm. long, not approximate in pairs.

Panicle loose, the branches stiffly ascending or spreading, few-flowered; awns 2 to 3 cm. long.

45. *A. portoricensis*.

Panicle rather dense, the branches appressed, rather densely several-flowered; awns 1 to 2.5 cm. long.

Callus of lemma nearly 2 mm. long; first glume 1 cm. long; lemma a little longer than the glumes; awns 2 cm. long-----

46. *A. chaseae*.

Callus of lemma about 0.5 mm. long.

Culms erect; blades as much as 30 cm. long; first glume about 7 mm. long; lemma about 8 mm. long; awns 1.5 to 2.5 cm. long.

47. *A. swartziana*.

Culms spreading and branching at base; blades 5 to 15 cm. long; first glume 4 to 5 mm. long; lemma 6 to 7 mm. long; awns 1 to 1.5 cm. long.

48. *A. cognata*.

Awns at maturity unequally divergent, or spirally contorted at base.

Central awn horizontally spreading or reflexed by a semi-circular bend, the lateral awns erect or spreading.

Lateral awns erect, two-thirds to three-fourths as long as the central.

Glumes about 12 mm. long-----

49. *A. palustris*.

Glumes about 6 mm. long-----

50. *A. virgata*.

Lateral awns spreading or reflexed.

Lateral awns half as long as the central; panicle rather dense, 8 to 15 cm. long-----51. *A. torta*.

Lateral awns nearly as long as the central; panicle slender, few-flowered, 10 to 30 cm. long.

Glumes 6 to 7 mm. long; spikelets mostly in pairs.

52. *A. simpliciflora*.

Glumes about 1 cm. long; spikelets solitary.

53. *A. mohrii*.

Central awn not distinguished by a semicircular bend; all the awns spirally contorted at base.

Blades flat.

Panicle slender, the branches short, rather distant, few-flowered-----54. *A. tenuispica*.

Panicle rather stout, the branches as much as 10 cm. long, rather densely many-flowered.

Lemma 8 mm. long, the beak less than 1 mm. long.

55. *A. condensata*.

Lemma 4 mm. long, the beak 2 to 3 mm. long.

56. *A. recurvata*.

Blades involute.

Callus very slender, 1.5 mm. long-----57. *A. gyrans*.

Callus 0.5 to 1 mm. long.

Awns 1.5 to 2 cm. long-----58. *A. brittonorum*.

Awns about 1 cm. long.

First glume glabrous on the keel-----59. *A. rosei*.

First glume scabrous on the keel--60. *A. refracta*.

11. *Aristida basiramea* Engelm.

Aristida basiramea Engelm.; Vasey, Bot. Gaz. 9: 76. 1884. "This species was discovered last season by Mr. Warren Upham at Minneapolis, Minn. The late Dr. Englemann suggested the name, in a letter, as indicative of its habit, and would have published it if he had lived." Type in U. S. National Herbarium.

DESCRIPTION.

Plants annual; culms branched at base, erect, rather slender, glabrous or minutely scaberulous, usually 30 to 50 cm. tall; sheaths glabrous; blades flat, involute toward the attenuate apex, scabrous on the upper surface, strongly nerved, beset with a few long delicate hairs, glabrous on the lower surface, as much as 15 cm. long and 1.5 mm. wide; panicles terminal and axillary, the terminal narrow, loose, 5 to 10 cm. long, the short branches with 1 to a few spikelets, the axillary panicles mostly enclosed in the sheaths but breaking through at the side; glumes 1-nerved, somewhat unequal, mucronate or short-awned, the second mostly 12 to 15 mm. long, the first 2 to 3 mm. shorter, scabrous on the keel; lemma scabrous on the keel and somewhat appressed-hispid near the keel, about 1 cm. long, the callus short-pilose, the column obsolete; central awn coiled at base in 2 to 3 loose spirals, somewhat divergent, 10 to 15 mm. long, the lateral awns half to two-thirds as long, somewhat spreading.

This species differs from *A. dichotoma* and *A. curtissii* in the longer glumes and long spreading lateral awns.

DISTRIBUTION.

Open barren or sandy soil, Wisconsin to Kansas.

ILLINOIS: Barstow, *McDonald* in 1903. Oregon, *Waite* in 1888.

Oquawka, *Patterson* 232. Cahokia, *Eggert* in 1874.

WISCONSIN: Camp Douglas, *Mearns* 736. St. Croix Falls, *Hale* in 1861.

MINNESOTA: St. Cloud, *Campbell* in 1883. Minneapolis, *Upham* in 1883; *Wollan* in 1893. St. Anthony Park, *Oswald* in 1911.

NORTH DAKOTA: Red River, *Wibbe* in 1888.

IOWA: Iowa City, *Somes* 197, 3796. Ames, *Pammel* 174. Wapsipinicon River, *Wilcox* 30. Guthrie Center, *Burgess* in 1879.

NEBRASKA: Lone Pine, *Bates* 1126, 1127. Thedford, *Rydberg* 1847. Rock Creek, *Clements* 2899.

KANSAS: Riley County, *Norton* 586, 590; *Hitchcock* 411.

12. *Aristida dichotoma* Michx.

Aristida dichotoma Michx. Fl. Bor. Amer. 1: 41. 1803. "Hab. in Carolina superiore, juxta Lincoln, in glareosis." A supplementary description of the type is given by Hitchcock in Types of American Grasses.⁶

Curtopogon dichotomus Beauv. Ess. Agrost. 32, 159. pl. 8. f. 7. 1812. Based on *Aristida dichotoma* Michx. Sprengel spells the name *Cyrtopogon*.⁷

DESCRIPTION.

Plants annual; culms usually much branched at base, erect or ascending, slender, glabrous or sometimes minutely scaberulous, mostly 20 to 40 cm. tall; sheaths glabrous; blades scabrous and strongly nerved on upper surface, glabrous beneath, the lower mostly flat, less than 10 cm. long and 1 mm. wide, the upper short and involute; panicles terminal and from the upper and middle axils, narrow, almost spikelike, the terminal usually less than 10 cm. long, the axis angled, scaberulous, the branches short and appressed, the lowermost as much as 2 cm. long and bearing a few spikelets, the upper bearing single spikelets, the lateral panicles small, more or less inclosed in the sheaths; glumes 1-nerved, about equal or the first a little shorter, scabrous on the keel and more or less scaberulous on the back, mucronate, mostly 6 to 8 mm. long; lemma 5 to 6 mm. long, 3-nerved, somewhat compressed above, sparsely appressed-hispidulous, the callus short, rather blunt, sparingly pubescent, the column obsolete, the central awn spirally 1 to 2 coiled at base, horizontally bent or somewhat reflexed, mostly 3 to 6 mm. long, the lateral awns a continuation of the lateral nerves, erect, usually about 1 mm. long.

DISTRIBUTION.

Dry open ground, Maine to eastern Kansas, south to Georgia and Texas.

MAINE: North Berwick, *Parlin* in 1892 (Gray Herb.).

NEW HAMPSHIRE: Seabrook, *Eaton* in 1897.

VERMONT: Without locality, *Carey*.

MASSACHUSETTS: Dennis, *Weatherby* in 1915. Dedham, *Faxon* in 1895. Medford, *Boott* in 1872. Bourne, *Pl. Exs. Gray*. 27. Essex County, *Conant* in 1879.

⁶ Contr. U. S. Nat. Herb. 12: 144. 1908.

⁷ Spreng. Syst. Veg. 1: 266. 1825.

CONNECTICUT: Columbia, *Weatherby* 4414. South Windsor, *Bissell* in 1904. Bridgeport, *Eames* in 1895. Glastonbury, *Wilson* 1279. Hartford, *Driggs* 20.

RHODE ISLAND: Providence, *Collins* in 1900 (Gray Herb.). Block Island, *Fernald*, *Long & Torrey* 8695, 8696, 8698 (Gray Herb.).

NEW YORK: Clove, *Standley & Bollman* 12272. Shushan, *Dobbin* in 1915. Greenport, *Latham* 10.

NEW JERSEY: Farmingdale, *Pearce* in 1884.

PENNSYLVANIA: Lancaster County, *Small* in 1892; *Heller* 703. Easton, *Porter* in 1896. Philadelphia, *Smith*.

INDIANA: Grantsburg, *Deam* 30, 265.

ILLINOIS: Southern Illinois, *Vasey*.

MISSOURI: Noel, *Bush* 5271. St. Louis, *Engelmann*. Swan, *Bush* 578. Jefferson County, *Eggert* 171. Eagle Rock, *Bush* 678. Allentown, *Letterman* in 1893.

KANSAS: Cherokee County, *Hitchcock* 887.

DELAWARE: Newark, *Jackson* 1829. Mount Cuba, *Commons* 335. Carpenters Station, *Commons* 334. Silverside Station, *Commons* 118. Christiana, *Commons* 117.

MARYLAND: Chevy Chase, *Chase* 2654. Great Falls, *Chase* 2648. Millstone, *Tidestrom* 5299. Garrett County, *J. D. Smith* in 1879.

DISTRICT OF COLUMBIA: *Lapham* in 1856; *Chase* 2120; *Chase* in *Kneuck. Gram. Exs.* 562; *Dewey* 406; *Scribner* in 1894; *Vasey* in 1882; *Williams* in 1896; *Ball* 106; *Ward* in 1876.

VIRGINIA: Princess Anne County, *Kearney* 2171.

WEST VIRGINIA: Aurora, *Steele* in 1898.

NORTH CAROLINA: Black Mountain, *Standley & Bollman* 10313. Magnetic City, *Wetherby* 170.

SOUTH CAROLINA: Aiken, *Ravenel* in 1866. Oconee County, *Anderson* 1519.

GEORGIA: Stone Mountain, *Chase* 4513.

KENTUCKY: Silver Creek, *Short* in 1842.

TENNESSEE: Chattanooga, *Ball* 1814. Nashville, *Gattinger* in *Curtiss N. A. Pl.* 3423. Knoxville, *Scribner* in 1893; *Ruth* 24.

ALABAMA: Montgomery, *Mohr* in 1886. Anniston, *Mohr* in 1892. Mentone, *Mohr* in 1868. Cullman, *Eggert* 98.

MISSISSIPPI: Starkville, *Kearney* 26. Waynesboro, *Kearney* 124.

TEXAS: Burnet, *Plank* 13.

OKLAHOMA: Without locality, *Sheldon* in 1892.

13. *Aristida curtissii* (A. Gray) Nash.

Aristida dichotoma var. *curtissii* A. Gray, *Man.* ed. 6. 640. 1890. No specimen or locality is mentioned. In the Gray Herbarium is a specimen collected by A. H. Curtiss in Bedford County, Virginia, upon which has been written "var. *Curtissii*." This appears to be the type. There is a note by Curtiss, "I suppose this would come under the name *A. dichotoma*, with which it grows, but the flowers are remarkably long and the glumes unequal."

Aristida curtissii Nash in Britton; *Man.* 94. 1901. Presumably based on *A. dichotoma curtissii* A. Gray, as A. Gray is cited in parenthesis.

DESCRIPTION.

Plants annual; culms slender, branched at the base but commonly less so than in *A. dichotoma*, usually minutely scaberulous, mostly 30 to 40 cm. tall; sheaths glabrous; blades flat or often involute, as much as 1 mm. wide, ex-

tending into a fine point; scabrous on the upper surface, glabrous beneath; panicles narrow, terminal and sometimes from the axils of the upper leaves, 5 to 10 cm. long, nearly simple; glumes unequal, 1-nerved, mucronate, the first half to two-thirds as long as the second, the latter about 1 cm. long; lemma about 1 cm. long, glabrous, scaberulous on the keel toward apex, the central awn with one or two spiral coils at base, horizontally bent, about 1 cm. long, the lateral awns erect, 2 to 4 mm. long.

This species differs from *A. dichotoma* in the less branching habit, the longer and more conspicuous leaves, the looser panicles of larger spikelets, the more unequal glumes, the longer second glume, the longer smooth lemma and central awn, and the usually longer lateral awns.

DISTRIBUTION.

- Open dry ground, Maryland to Wyoming, south to Florida.
 ILLINOIS: Urbana, *Waite* in 1888. Starved Rock, *Lansing* 3749. Oregon, *Waite* in 1885.
 NEBRASKA: Atkinson, *Bates* 1076. Without locality, *Wibbe*.
 MISSOURI: St. Louis, *Eggert* 170. Willard, *Standley* 9916. Allenton, *Kellogg* 34. Eagle Rock, *Bush* 670. Redings Mill, *Bush* 5082.
 KANSAS: Kingman County, *Carleton* 542.
 MARYLAND: Sandy Landing, near Great Falls, *Holm* in 1898.
 VIRGINIA: Bedford County, *Curtiss* in 1873, 1874, 1875.
 FLORIDA: Duval County, *Curtiss* in 1874.
 OKLAHOMA: Ponca, *Stevens* 1926.
 WYOMING: Merino, *Griffiths* 630.

14. *Aristida oligantha* Michx.

Aristida oligantha Michx. Fl. Bor. Amer. 1: 41. 1803. "Hab. in vastissimis pratensibus Illinoensibus." The type is in the herbarium of the Paris Museum.

Chaetaria olygantha Beauv. Ess. Agrost. 30, 158. 1812. Based on *Aristida oligantha* Michx. (spelled *olygantha* by Beauvois).

Aristida micropoda Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 107. 1842. "Arkansas. (*Beyrich*.)" The type in the Trinius Herbarium at the Academy of Sciences, Petrograd, is labeled "Arkansas 115."

Aristida macrochaeta Steud. Syn. Pl. Glum. 1: 134. 1854. Described from a panicle only, collected in Virginia by M. A. Curtis. The type has been examined at Paris.

Aristida pauciflora Buckl. Proc. Acad. Phila. 1862: 92. 1863. "Northern Texas." This is *A. oligantha* according to Gray,⁸ with which species the description agrees.

Aristida oligantha var. *nervata* Beal, Grasses N. Amer. 2: 202. 1896. "Oregon (Grant's Pass), *Howell*." The specimen of this collection in the National Herbarium has shorter awns (2 to 2.5 cm.) than usual for this species and the first glume has 3 nerves on one side (said by Beal to be 7-nerved). Spikelets with glumes 3-nerved on one side are found in many specimens in the Eastern States.

DESCRIPTION.

Plants annual, branched at the base and all the nodes; culms slender, scaberulous below the nodes and below the panicle, mostly 30 to 50 cm. tall; sheaths glabrous; blades narrower than the sheath, flat or loosely involute, tapering into a fine point, scabrous and nerved on the upper surface, glabrous

⁸ Proc. Acad. Phila. 1862: 334. 1863.

beneath, 10 to 20 cm. long, usually not over 1 mm. wide; panicles loose, 10 to 20 cm. long, the axis scabrous; spikelets single on pedicles about 1 mm. long, or the lower branches with supplementary short branches bearing 1 or 2 spikelets, ascending or spreading; glumes about equal, 2 to 3 cm. long, gradually tapering into an awn, the first 3 to 5 nerved, or sometimes with a third nerve on one side, scabrous on the keel, the second 1-nerved, minutely scaberulous on the keel; lemma 3-nerved, minutely scaberulous on the keel, short pilose on the short callus, about 2 cm. long, narrowed into a short beak, the three awns about equal, divergent, finally horizontally spreading or even reflexed, 4 to 7 cm. long, rarely only 2 cm. long, somewhat spirally curved at base.

This species is distinguished from all our other annuals by the long divergent equal awns.

DISTRIBUTION.

Open dry ground, Massachusetts to South Dakota, south to Florida and Texas; also in Oregon and California.

MASSACHUSETTS: South Boston, *Faxon* in 1878 (Gray Herb.).

NEW JERSEY: Mickleton, *Heritage* in 1894.

PENNSYLVANIA: Philadelphia, *Krout* in 1898. Gettysburg, *Brinton* 148.

INDIANA: Miller, *Shull* in 1903; *Umbach* in 1898. Greencastle, *Grimes* 676, Marble Hill, *Deam* 30170.

ILLINOIS: Athens, *Hall* in 1869. Carlyle, *Buckley*. Barstow, *McDonald* 64. Lyons, *Hill* 168 in 1898. Medora, *McDonald* in 1903. Chester, *Reeher* 600. Augusta, *Mead* in 1845. Princeville, *V. H. Chase* 1248, 1261.

MICHIGAN: Port Huron, *Dodge* in 1912.

SOUTH DAKOTA: Jamesville, *Bruce* 57.

IOWA: Murray, *Morris* 295. Decatur County, *Fitzpatrick* in 1897. West Davenport, *Barnes & Miller* 130. Elmira, *Somes* 3914.

NEBRASKA: Weeping Water, *Williams* 3007. Lone Pine, *Bates* in 1899.

MISSOURI: Greene County, *Bush* 386. St. Louis, *Kellogg* 35, 38. Springfield, *Standley* 8336, 8906. Eolia, *Davis* 1433. Clarksville, *Davis* 1225. Jefferson County, *Eggert* 174. Sheffield, *Bush* 924. Eton, *Bush* 7746. Allenton, *Letterman* in 1892.

KANSAS: Barton County, *Hitchcock* 587, 669. Bucklin, *Smyth* 159. Riley County, *Norton* 588; *Hitchcock* 426. Wichita, *Smyth* 252.

DELAWARE: Wilmington, *Commons* in 1896. Townsend, *Canby* in 1896.

DISTRICT OF COLUMBIA: *Chase* 2755, 2756; *Dewey* 127; *Kneuck. Gram. Exs.* 563; *Pollard* in 1896; *Scribner* in 1894; *Vasey* in 1882; *Williams* in 1896.

VIRGINIA: Bedford County, *Curtiss* 3428. Arlington, *Ball* 32. Alexandria, *Shull* 222.

FLORIDA: Chipley, *Combs* 539.

KENTUCKY: Madison County, *Bain* in 1892.

TENNESSEE: Knoxville, *Ruth* 25; *Scribner* in 1853. Carroll County, *Eggert* 77.

ALABAMA: Tuskegee, *Carver* 77.

MISSISSIPPI: Starkville, *Kearney* 4. Agricultural College, *Pollard* 1299. Natchez, *Smith* in 1885.

ARKANSAS: Fayetteville, *Hitchcock* 16077. Texarkana, *Heller* 4136.

LOUISIANA: Calhoun, *Ball* 40. Shreveport, *Ball* 98; *Tracy* 3719.

TEXAS: Texarkana, *Letterman* in 1894. Terrell, *Tyler* in 1904. Cleburne, *Griffiths* 6211. Galveston, *Poor* in 1884. Fort Worth, *Ruth* 168. Gonzales, *Plank* 59. Dallas, *Reverchon* 1058, 4204, 4205. Weatherford, *Tracy* 8236. Chillicothe, *Ball* 897, 1163. Without locality, *Drummond* 341; *Wright; Nealley* in 1889.

OKLAHOMA: False Washita, *Palmer* 388, 389 in 1868. Lamont, *Stevens* 1808. Sapulpa, *Bush* 1341. Alva, *Stevens* 2877. Ponca, *Stevens* 1910. Stillwater, *Hitchcock* 16170.

OREGON: Salem, *Nelson* 985. Grants Pass, *Howell* 229. Roseburg, *Pringle* in 1881. Waldo, *Brandege* in 1885.

CALIFORNIA: Merced Falls, *Kelsey* in 1891. Chico, *Copeland* 3488. Lake County, *Tracy* 2365. Redding, *Heller* 12450. Butte County, *Heller* 11576.

15. *Aristida ramosissima* Engelm.

Aristida ramosissima Engelm.; A. Gray, *Man.* ed. 2. 550. 1856. "Dry prairies of Illinois (Engelmann), and Kentucky (herb. Michaux)." The type in the Gray Herbarium, is labeled "Dry slopes. St. Clair Co., Illinois, *Engelmann*." A note by Gray reads "same in herb. Michaux (see notes in my copy Michx. Fl.)"

Aristida ramosissima var. *uniaristata* A. Gray, *Man.* ed. 5. 618. 1867. "With lateral awns wanting. Odin, s. Illinois, *Vasey*." The type, in the Gray Herbarium, was received from Vasey. The lateral awns are obsolete or reduced to short points.

DESCRIPTION.

Plants annual, branched at the base and all the nodes; culms slender and wiry, glabrous, 30 to 50 cm. tall; sheaths glabrous; blades scabrous and strongly nerved on upper surface, glabrous beneath, flat or involute, 5 to 10 cm. long, about 1 mm. wide; panicles terminating the culms and branches, narrow, loose, 8 to 12 cm. long, the axis scabrous, the spikelets single or sometimes the lower in pairs, distant 1 to 2 cm., ascending on pedicels mostly 1 to 2 mm. long; glumes 3 to 5-nerved, unequal, smooth, scaberulous toward the summit of the keels, the first acuminate, about 15 mm. long, the second about 2 cm. long including an awn 3 to 5 mm. long; lemma about 2 cm. long, including the acute short-pilose callus and a short neck, 3-nerved, smooth on the sides, scaberulous on the keel and near it, gradually narrowed above into a neck about 5 mm. long, the central awn with a semicircular bend or part of a coil at base, 15 to 20 mm. long, the terminal portion spreading or reflexed, the lateral awns much reduced (rarely obsolete) or as much as 6 mm. long, usually unequal.

DISTRIBUTION.

Open sterile soil, Indiana to Louisiana and Oklahoma.

INDIANA: Gibson County, *Deam* 29195. Leavenworth, *Deam* 18549. Washington, *Deam* 7618.

ILLINOIS: Odin, *Vasey* in 1862. Mount Carmel, *Schneck* in 1879 and 1898. Wabash County, *Patterson* in 1878.

IOWA: Mount Pleasant, *Mills* in 1894.

MISSOURI: St. Francois County, *Bush* 159. Springfield, *Standley* 9159. Campbell, *Bush* 6247.

TENNESSEE: Hollow Rock, *Biltmore Herb.* 5552.

LOUISIANA: Lake Charles, *Chase* 4411.

OKLAHOMA: Vinita, *Bush* 749; *Letterman* in 1880. Page, *Stevens* 2632.

16. *Aristida longespica* Poir.

Aristida longespica Poir. in *Lam. Encycl. Suppl.* 1: 452. 1810. Collected by Bosc in "Caroline." The type could not be found in the Webb Herbarium in Florence (where many of Poiret's types are preserved) nor in Paris, but the description of the branched stem, slender spike, equal glumes and un-

equal awns, the central one divergent, can apply only to what has commonly been called *A. gracilis* Ell.

Aristida gracilis Ell. Bot. S. C. & Ga. 1: 142. pl. 8. f. 3. 1816. "Grows in the vicinity of Charleston." The type is in the Elliott Herbarium, now in the Charleston Museum, where it was examined by Merrill.⁹

Aristida geniculata Raf. Amer. Month. Mag. 2: 119. 1817. "Very common on the Hempstead plains, and on the seashore near Oyster Bay, Gravesend, etc., on Long Island." A specimen of this from Rafinesque has been examined at the Delessert Herbarium. According to Merrill¹⁰ there is another in the Elliott Herbarium.

Aristida gracilis var. *depauperata* A. Gray, Man. ed. 5. 618. 1867. "On micaceous hills near Philadelphia (C. E. Smith)." The type, in the Gray Herbarium, has lateral awns about 2 mm. long, the central awn 5 to 10 mm. long.

Aristida simplicifolia [error for *simpliciflora*] var. *texana* Vasey, Contr. U. S. Nat. Herb. 3: 44. 1892. "Texas." I have been unable to find the type specimen of this. The meager description says "spikelets smaller [than in *A. simpliciflora*], lateral awns 1 to 2 lines long," which would indicate *A. gracilis*.

Trixostis gracilis Raf. Ind. Kew. 4: 1131. 1895. Based on *Aristida gracilis* Ell.

DESCRIPTION.

Plants annual, branched at base and some of the lower nodes; culms erect or geniculate at base, slender, glabrous, mostly 20 to 40 cm. tall; sheaths glabrous; blades flat or involute, scabrous and strongly nerved on the upper surface, glabrous beneath, mostly less than 10 cm. long and 1 mm. wide; panicles narrow and slender, the terminal mostly 10 to 15 cm. long, sometimes as much as 20 cm., the axis scaberulous, the spikelets appressed, single or as many as six on short branches, rather distant, especially below, the axillary panicles often much reduced; glumes about equal, scabrous on the keel, about 5 mm. long, the first 3-nerved, acuminate, the second 1-nerved, mucronate from between two very short lobes; lemma 3-nerved, scabrous along the keel, scarcely beaked, 4 to 5 mm. long, the short callus minutely pilose, the central awn sharply curved at base, horizontally spreading or somewhat reflexed, 5 to 15 mm. long, the lateral awns erect or somewhat divergent, usually one-third to half as long as the central, sometimes only 1 mm. long.

DISTRIBUTION.

Sterile or sandy soil, New Hampshire to Michigan, south to Florida and Texas.

NEW HAMPSHIRE: Pelham, *Batchelder* in 1902 (Gray Herb.)

VERMONT: Vernon, *Grout* in 1895 (Gray Herb.)

MASSACHUSETTS: Sturbridge, *Knowlton* 996. Salem, *Scars*. Middlesex County. *Conant* in 1880.

CONNECTICUT: Old Lyme, *Bissell* in 1904.

NEW YORK: Northville, *Young* in 1872.

NEW JERSEY: Camden, *Scribner* in 1881. Medford, *Commons* 332. Batsto, *Commons* 337.

PENNSYLVANIA: Germantown, *Scribner* in 1879.

OHIO: Erie County, *Mosley* in 1902.

⁹ U. S. Dept. Agr. Div. Agrost. Circ. 29: 10. 1901.

¹⁰ Loc. cit.

INDIANA: Corydon, *Deam* 18678. North Vernon, *Deam* 10267.

ILLINOIS: Athens, *Hall* in 1869. Mount Carmel, *Schneck* in 1879. Union County, *Wolf*.

MICHIGAN: Port Huron, *Dodge* in 1900 (Gray Herb.).

MISSOURI: Jefferson County, *Eggert* 172. St. Louis, *Glatfelter* in 1895. Eagle Rock, *Bush* 674. Strafford, *Standley* 9424. Webb City, *Palmer* 3840.

DELAWARE: Woodland Beach, *Commons* 333. Centerville, *Commons* 119. New Castle, *Commons* 338. Greenbank, *Commons* 336. Georgetown, *Commons* 78.

MARYLAND: Lanham, *Hitchcock* 2394.

DISTRICT OF COLUMBIA: *Steele* in 1896; *Vasey* in 1882; *Blanchard* in 1891; *Chase* 305.

VIRGINIA: Bedford County, *Curtiss* in 1871 (Gray Herb.).

NORTH CAROLINA: Wilmington, *Chase* 4596. Biltmore, *Biltmore Herb.* 1106a.

SOUTH CAROLINA: Santee Canal, *Ravenel* (Gray Herb.).

GEORGIA: Stone Mountain, *Hitchcock* in 1905.

FLORIDA: Jacksonville, *Curtiss* 4043; *Kearney* 172. Quincy, *Nash* 2558. Grasmere, *Combs* 1118.

KENTUCKY: Wasioto, *Kearney* 368. Bowling Green, *Eggert* 96.

TENNESSEE: Nashville, *Curtiss N. A. Pl.* 3424. Knoxville, *Ruth* 30.

ALABAMA: Auburn, *Tracy* 3779.

MISSISSIPPI: Biloxi, *Tracy* 3776, 6475; *Kearney* 2364; *Chase* 4335, 4339, 4363. Waynesboro, *Kearney* 142. Nicholson, *Kearney* 364. Scranton, *Tracy* 4664. Ocean Springs, *Tracy* 4666.

ARKANSAS: Pine Bluff, *Hitchcock* 16122. Texarkana, *Letterman* in 1894. Benton County, *Plank* 29. Red River Parish, *Ball* 128. Calhoun, *Ball* 57. Oberlin, *Ball* 198. Natchitoches, *Ball* 155.

LOUISIANA: Covington, *Arsène* 11212. Mandeville, *Langlois* 145.

TEXAS: Texarkana, *Heller* 4250. Marshall, *Riggs* 79. West Point, *Plank* 4. Jefferson, *Plank* 15. Dallas, *Reverchon* 1214. Milano, *Griffiths* 6553.

OKLAHOMA: Sapulpa, *Bush* 754 (Gray Herb.).

17. *Aristida capillacea* Lam.

Aristida capillacea Lam. Tabl. Encycl. 1: 156. 1791. "Ex America merid. Communic. à D. Richard." The type, in the Paris Herbarium, is from Cayenne.

Aristida elegans Rudge, Pl. Guian. 22. pl. 30. 1805. The species is described from British Guiana, but no definite locality is cited. Type not seen.

Chaetaria capillacea Beauv. Ess. Agrost. 30. 158. pl. 8. f. 6. 1812. Based on *Aristida capillacea* Lam. The name is given erroneously in the Atlas as *capillaris*.

Aristida sanctae-luciae Trin. Gram. Pan. 25. 1826. "V. spp. Brasil." The type, in the Trinius Herbarium, is *Martius* 850.

Chaetaria capillaris Nees, Agrost. Bras. 388. 1829. Based on *Aristida capillacea* Lam. Nees seems to have changed the name inadvertently. He cites as synonyms *Chaetaria capillacea* Beauv., *Aristida capillacea* Lam., and *A. "capillaris* Cav. Ic. tab. 468. f. 1." The name is given by Cavanilles as *A. capillacea* Lam., but the plant described is an allied species from the Philippines, afterwards named *A. cumingiana* Trin. & Rupr.

DESCRIPTION.

Plants annual, mostly much branched and closely cespitose at base; culms erect, slender and delicate, glabrous, 10 to 20 cm. tall, sometimes taller; sheaths glabrous; blades flat or more or less involute, scaberulous and beset with

scattering long hairs on the upper surface, glabrous beneath, mostly less than 5 cm. long, 0.5 to 1.5 mm. wide; panicles oblong, open, rarely more than 7 cm. long, 2 to 3 cm. wide, the branches capillary, scaberulous, naked below, the lower mostly in three's, often branching in three's above the middle, the spikelets long-pediceled; glumes unequal, acuminate, scaberulous on the nerves, the first 3-nerved, 2.5 mm. long, the second 1-nerved, about 3 mm. long; lemma slender, scarcely 2 mm. long, minutely pilose on the callus, glabrous below, minutely scaberulous toward summit, extending into a slender twisted scaberulous column of about 2 mm., the total length of the lemma and column being 3 to 4 mm.; awns nearly equal, about 5 mm. long, very slender and delicate, somewhat divergent, slightly spirally curved toward base.

Distinguished from all other species of *Aristida* by the delicate habit.

DISTRIBUTION.

Dry savannas, pastures, and open ground, southern Mexico to Brazil and Bolivia.

VERACRUZ: Minatitlán, *Smith* 565. Without locality, *Karwinsky* (a fragment from the *Trinius* Herb.)

BRITISH HONDURAS: In 1871, the collector not given.

COSTA RICA: Boruca, *Pittier* 4451. Terraba, *Pittier* 3629. Mano de Tigre, *Tonduz* 4631. Buenos Aires, *Tonduz* 3635, 3690. Rodeo, *Pittier* 1613. Hacienda La Argentina, *Jiménez* 1124, 1125.

PANAMA: San Felix, *Pittier* 5194. Corozal, *Hitchcock* 9197. Tortuga, *Pittier* 3315. Pacora, *Killip* 4203. Bajo Boquete, *Killip* 4588.

COLOMBIA: Santa Marta, *Smith* 138. Without locality, *Linden* 1557.

VENEZUELA: Tovar, *Fendler* 2520.

BRITISH GUIANA: Mount Roraima, *Loyd* 12. Without locality, *Jenman* 7280; *Schomburgk* 799.

DUTCH GUIANA: Without locality, *Hostmann* 1024; *Weigelt*; *Hering*.

BRAZIL: Cuyabá, *Malme* 1556. Buritzinho, *Lindman* 3361. Dimantino, *Lindman* 3397. Without locality, *Burchell* 5419, 8757; *Jard. Bot. Herb.* 3608; *Riedel* 967; *Glaziou* 17438, 22566. Lagoa Santa, *Warming* in 1863.

BOLIVIA: Guanai, *Rusby* 208.

ARISTIDA SETIFOLIA H. B. K. Nov. Gen. & Sp. 1: 122. 1816. "Crescit in apricis Novae Andalusiae [Venezuela], inter Bordones et Cumana."

Differs from *A. capillacea* in the more robust habit, involute-setaceous blades, the narrower panicles, and the larger spikelets.

COLOMBIA: Without locality, *Linden* 1563.

VENEZUELA: Caracas, *Pittier* 8245.

BRAZIL: São João d'El Rey, *Dorsett & Popenoe* 275b. Piauhý, *Jard. Bot. Herb.* 5542; *Gardner* 2371. Pratenha, *Dorsett & Popenoe* 192b. Cuyabá, *Malme* 1494, 3529.

Aristida cumingiana Trin. & Rupr. of the Philippines differs from *A. capillacea* in having a short untwisted column to the fruit.

18. *Aristida adscensionis* L.

Aristida adscensionis L. Sp. Pl. 82. 1753. "In Insula Adscensionis," one of four species of plants found on the island, according to Linnaeus. I have not examined the type, which is in the Linnaean Herbarium.

Chaetaria ascensionis Beauv. Ess. Agrost. 30. 151, 158. 1812. Based on *Aristida a[d]scensionis* L.

Aristida humilis H. B. K. Nov. Gen. & Sp. 1: 121. 1816. "Crescit in exustis Cumanae." Described as being 3 to 6 inches tall and having simple panicles 2 to 3 inches long. Type not seen.

Aristida bromoides H. B. K. Nov. Gen. & Sp. 1: 122. 1816. "Crescit in montanis regni Quitensis, juxta Tambo de Guamote et Llanos de Tiocaxas, alt. 1600 hexap." Type not seen.

Aristida coarctata H. B. K. Nov. Gen. & Sp. 1: 122. 1816. "Crescit in alta planitie Mexicana, inter Burros et Guanaxuato, alt. 1060 hexap." The type has been examined at Paris. There are two plants on the sheet, only one of which, the left-hand specimen, accepted as the type, corresponds to the description in having unequal glumes. The description notes "Praecedente [*A. bromoides*] valde affinis." All three of the above are said to be perennial.

Chaetaria humilis Roem. & Schult. Syst. Veg. 2: 396. 1817. Based on *Aristida humilis* H. B. K.

Chaetaria bromoides Roem. & Schult. Syst. Veg. 2: 396. 1817. Based on *Aristida bromoides* H. B. K.

Chaetaria coarctata Roem. & Schult. Syst. Veg. 2: 396. 1817. Based on *Aristida coarctata* H. B. K.

Chaetaria coarctata Roem. & Schult. Syst. Veg. 2: 396. 1817. Based on *Aristida coarctata* H. B. K.

Aristida fasciculata Torr. Ann. Lyc. N. Y. 2: 154. 1826. "In forests of the Canadian river." The exact locality is not known, but probably is in Oklahoma or northern Texas. The type specimen, in the Torrey Herbarium at the New York Botanical Garden, is the somewhat open-panicled form.

Chaetaria fasciculata Schult. Mant. 3: 578. 1827. Based on *Aristida fasciculata* Torr.

Aristida nigrescens Presl, Rel. Haenk. 1: 223. 1830. "Hab. in Mexico." The type has been examined at the German University, Prague. No locality is given on the label. A duplicate in the Bernhardt Herbarium is illustrated by Scribner.¹¹

Aristida dispersa Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 129. 1842. A group name including five varieties, of which the first, "*A. nana* Steudel Nomencl. 1841," may be taken as the type of the group.

Aristida dispersa nana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 129. 1842. This variety is cited as quoted in the preceding paragraph. The name only appears in Steudel's Nomenclator¹² as "*A. nana* Steud. Chili," with the synonym *Chaetaria nana* Nees, which also is a nomen nudum, and the citation of a specimen "Festuca? nr. 994. Bertero. hrb." Trinius and Ruprecht cite three specimens, all from Chile: Valparaíso, Cuming; Concon, Pöppig; Quillota, Bertero 994. The Bertero specimen, being also cited by Steudel, may be accepted as the type of variety *nana*, and hence also of *A. dispersa*. This specimen has been examined at the Trinius Herbarium.

Aristida dispersa humilis Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 129. 1842. The variety is cited as "*β. A. humilis* H. B. K."

Aristida dispersa bromoides Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 130. 1842. "*γ. A. bromoides* H. B. K."

Aristida dispersa coarctata Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 130. 1842. "*δ. A. coarctata* H. B. K."

Aristida dispersa nigrescens Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 130. 1842. "*ε. A. nigrescens* Presl."

¹¹ Grasses of the Bernhardt Herbarium. Rep. Mo. Bot. Gard. 10: 39. pl. 27. 1899.

¹² Steud. Nom. Bot. 1: 131. 1841.

Aristida maritima Steud. Syn. Pl. Glum. 1: 137. 1854. "In maritimis Guadeloupe." The type has been examined at Paris.

Aristida nana Steud. Syn. Pl. Glum. 1: 137. 1854. "*A. dispersa* a (Rupr. Trin.) Festuca? nr. 994. Bert. hrbr. Chili."

Aristida schaffneri Fourn. Mex. Pl. 2: 78. 1886. Several specimens are cited, the first being Liebmann 661, which is *A. adscensionis*. The type, Schaffner 181, from Orizaba, has been examined at Paris.

Aristida grisebachiana Fourn. Mex. Pl. 2: 78. 1886. Two specimens are cited, Schaffner 175 in part, Pl. Hohenacker, and Schaffner 53. Fournier also describes a variety *decolorata*, "Glumis et flosculis decoloratis," based upon Liebmann 663 and 664, both of which are *Aristida adscensionis*. In the Paris Herbarium, Schaffner 175 (ed. Hohenacker) is labeled "*Aristida stricta* var. Griseb." This is selected as the type, as it appears to be the basis of Fournier's specific name.

Aristida americana bromoides Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. 32: 5. 1901. Based on *Aristida bromoides* H. B. K. Scribner and Merrill in the circular cited and also in circular 34 (page 3) misapply the name *Aristida americana* to *A. adscensionis* (see page 586).

Aristida debilis Mez, Repert. Sp. Nov. Fedde 17: 151. 1921. "Venezuela (Moritz); Jamaica (MacNab)." The cited specimens, bearing the name in Mez's script, were examined by Agnes Chase at Berlin. The Moritz specimen (no. 1522) is not the same as the MacNab specimen, which is *A. adscensionis*. As the description applies better to the MacNab specimen (especially as to the spikelet), this is taken as the type.

I have not attempted to give synonymy of *A. adscensionis* in the Old World.

DESCRIPTION.

Plants annual, much branched at base; culms erect or geniculate at base, glabrous, 10 to 80 cm. tall; sheaths glabrous; ligule a densely ciliate membrane nearly 1 mm. long; blades scabrous on the upper surface, glabrous beneath, on the smaller plants mostly short and involute, on the larger plants sometimes flat and as much as 10 cm. long and 2 mm. wide; panicles terminal, narrow, erect and 5 to 10 cm. long in the smaller plants, often loose, somewhat drooping, and as much as 15 cm. long or even longer in the larger plants, the axis mostly glabrous below, scabrous above; glumes unequal, 1-nerved, the first 5 to 7 mm. long, obtuse or acutish, scaberulous on the keel, the second 8 to 10 mm. long, narrowed to a bluntish, notched, or acute point, the keel slightly scaberulous toward the summit; lemma about as long as the second glume, 6 to 9 mm. long, densely short-pilose on the rather obtuse callus, compressed toward the scarcely beaked summit, scabrous on the upper part of the keel, and sometimes on the sides toward the summit; awns about equal, mostly 10 to 15 mm. long, about equally divergent at an angle of as much as 45 degrees, very scabrous, flat, and without torsion at base, gradually narrowed to a fine terete point.

DISTRIBUTION.

Dry open ground, southern Kansas to Texas, west to southern California, south through Mexico and the West Indies and through the Andean region to Chile; also in the warmer regions of the Old World.

MISSOURI: Courtney (introduced), Bush in 1891.

KANSAS: Comanche County, Hitchcock 888. Clark County, Carleton 516.

- TEXAS: El Paso, *Rose & Fitch* 18158; *Hitchcock* 7813, 13335, 13424; *Griffiths* 7330. Alpine, *Hitchcock* 13607. Big Spring, *Hitchcock* 13380. Abilene, *Bentley* in 1899. Limpia Canyon, *Nealley* 163. Amarillo, *Hitchcock* 16183, 16217. Magenta, *Ball* 1649. Rio Pecos, *Havard* 63. Tascosa, *Reverchon* 2830. Fort Stockton, *Ball* 1515. Guadalupe Mountains, *Havard* in 1881. Without locality, *Wright* 740, 741.
- COLORADO: Canyon City, *Shear* 974b. Bayfield, *Wooton* 2797.
- NEVADA: Rioville, *Jones* 5034. Mica Spring, *Jones* 5064.
- NEW MEXICO: Grant County, *Blumer* 173. Mangas Springs, *Metcalf* 643. Mangas Valley, *Smith* in 1896. White Sands, *Wooton* 396. Las Cruces, *Wooton* 2003; *Griffiths* 7415. Fierro, *Holzinger* in 1911. Filmore Canyon, *Hitchcock* 3785, 3805. Mesilla Park, *Hitchcock* 3831. Ojo Caliente, *Wooton* 2864. Socorro, *Plunk* 46; *Vasey* in 1881. Queen, *Hitchcock* 13525, 13554, 13559. West of Guadalupe Mountains, *Hitchcock* 13568. Carlsbad, *Hitchcock* 13480, 13494. Santa Fe, *Heller* 3754. Anton Chico, *Rose & Fitch* 17641, 17667. Chamita, *Wooton* 2986. Roswell, *Earle* 559; *Griffiths* 5754. Deming, *Griffiths* 3323; *Hitchcock* 3744. Trujillo Creek, *Metcalf* 1360. Cimarron Canyon, *Griffiths* 5577, 5586. Without locality, *Wright* 2001; *Fendler* 975 (Gray Herb.).
- ARIZONA: Santa Rita Mountains, *Pringle* in 1884; *Griffiths* 198, 253, 292, 3392, 3419, 3814, 4163, 6083, 6980, 7191, 7272, 7274. Tucson, *Griffiths* 1528, 3346, 3636, 7301, 7311; *Hitchcock* 3487, 3508; *Chase* 5510. Phoenix, *Wooton* 7010. Santa Catalina Mountains, *Griffiths* 7132. Portal, *Eggleston* 10732, 10933. Oracle, *Hitchcock* 13258, 13264. Cibola Valley, *Jepson* 5282. Celero Mountains, *Griffiths* 6131, 6132. Rincon Mountains, *Griffiths* 1808. Camp Lowell, *Pringle* in 1881. Canoa, *Griffiths* 3566. Benson, *Griffiths* 1853. Pearce, *Griffiths* 1926. Harts Ranch, *Rusby* 875. Valley of Colorado, *Palmer* 542 in 1876. Paradise, *Blumer* 1717. South of Bisbee, *Mearns* 861, 1027, 1029. Quitovaquito, *Mearns* 2759. Patagonia, *Hitchcock* 3672. White Water, *Mearns* 2264.
- CALIFORNIA: Santa Catalina Island, *Brandegge* 56. Baxter, *Parish* 9888. Palm Canyon, *Johnston* 1011. San Diego, *Baker* 832. Mecca, *Parish* 8122. Near Monument 233, *Schoenfeldt* 3227. Dixieland, *Parish* 8239. Palo Verde Valley, *Jepson* 3262. San Luis Obispo, *Jones* 3245. Andreas Canyon, *Wilder* 1046. Murray Canyon, *Wilder* 1080. Funeral Mountains, *Coville & Funston* 259. Needles, *Jones* 3788; *Chase* 5793. Marshall Canyon, *Hall* 5797. Colorado River, *Hall* 5963.
- LOWER CALIFORNIA: Calmali, *Purpus* 231; *Orcutt* in 1899. Carmen Island, *Palmer* 858 in 1890. Santa Gertrudis, *Orcutt* in 1899. Indian Wells, *Orcutt* 2033. Volcán de las Tres Vírgenes, *Orcutt* in 1899. San José del Cabo, *Brandegge* in 1890. San Julio, *Brandegge* in 1889. Sierra de San Francisquito, *Brandegge* in 1899. La Paz, *Palmer* 127 in 1890. Lagoon Head, *Palmer* 651 in 1889. Los Angeles Bay, *Palmer* 503 and 504 in 1887. Cedros Island, *Palmer* 665 in 1889. Guadalupe Island, *Palmer* 669 and 675 in 1889. Santa Rosalia, *Palmer* 270 in 1890. Signal Mountain, *Schoenfeldt* 2951. Cape San Lucas, *Rose* 16936. Guadalupe Island, *Rose* 16951.
- SONORA: Guadalupe Canyon, *Merton* 2033. Yaqui River, *Palmer* 2 in 1869. Alamos, *Rose, Standley & Russell* 12699. Guaymas, *Palmer* 273 in 1890, 66, 503, and 504 in 1887; *Hitchcock* 3555; *Maltby* 197. Hermosillo, *Hitchcock* 3540, 3589. Llano, *Hitchcock* 3529. Quitovaquito, *MacDougal* in 1907. La Colorada, *Clokey* 1924.
- CHIHUAHUA: Chihuahua, *Pringle* 390; *Hitchcock* 7796. Miñaca, *Hitchcock* 7755. Sierra en Media, *Nelson* 6466. Between Casas Grandes and Sabinal, *Nelson* 6369.

COAHUILA: Saltillo, *Palmer* 333 in 1904; *Hitchcock* 5632; *Palmer* 388 in 1898. Parrás, *Palmer* 1352 in 1880.

NUEVO LEÓN: Monterrey, *Hitchcock* 5526½.

TAMAULIPAS: Buena Vista Hacienda, *Wootton* in 1919.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 165; *Hitchcock* 5674, 5710.

ZACATECAS: Zacatecas, *Hitchcock* 7498, 7511. Plateado, *Rose* 2703.

DURANGO: Durango, *Palmer* 535 in 1896, 767 in 1896; *Hitchcock* 7581, 7602.

Tlahualilo, *Pittier* 469. Torreón, *Holway* 16½; *Hitchcock* 7544.

SINALOA: Fuerte, *Rose*, *Standley* & *Russell* 13521. Topolobampo, *Rose*, *Standley* & *Russell* 13269.

JALISCO: Guadalajara, *Hitchcock* 7264. Near San Pedro, *Hitchcock* 7266. Río Blanco, *Palmer* 474, 501, 501a, 517 in 1886. Zapotlán, *Hitchcock* 7116.

San Nicolás, *Hitchcock* 7191. Chapala, *Holway* 3472; *Rose* & *Painter* 7624.

Colotlán, *Rose* 2812.

AGUASCALIENTES: Aguascalientes, *Hitchcock* 7447, 7478.

GUANAJUATO: Irapuato, *Hitchcock* 7429. Acámbaro, *Hitchcock* 6924, 6954.

QUERÉTARO: Querétaro, *Hitchcock* 5832.

HIDALGO: Dublán, *Pringle* 9597. Pachuca, *Hitchcock* 6727. Telles, *Orcutt* 4130.

PUEBLA: Tehuacán, *Hitchcock* 6048½, 6075.

FEDERAL DISTRICT: Pedregal, *Hitchcock* 5937; *Pringle* 6227; *Schaffner* 164; *Rose* & *Painter* in 1903; *Arsène* 8874.

MORELOS: Cuernavaca, *Hitchcock* 6865.

MICHOACÁN: Morelia, *Arsène* 3097, 5890.

OAXACA: Oaxaca, *Hitchcock* 6100½, 6138, 6165. Cuicatlán, *Nelson* 1654. Tomelín, *Rose*, *Painter* & *Rose* 10086; *Hitchcock* 6194. Las Sedas, *Smith* 918, 931.

YUCATÁN: Mérida, *Schott* 601.

GUATEMALA: Guatemala, *Hitchcock* 9026, 9097. Santa Ana, *Türkheim* 468.

BAHAMAS: Long Cay, *Brace* 4077. Crooked Island, *Brace* 6309. Long Island, *Britton* & *Millsbaugh* 6309. Fortune Island, *Hitchcock* in 1890.

JAMAICA: Kingston, *Harris* 11500, 12452; *Britton* & *Hollick* 1746. Gordon Town, *Harris* 11513. Flamstead, *Harris* 11474. Musgrave Road, *Harris* 11480.

PORTO RICO: Boqueron, *Chase* 6506, 6510. Guanica, *Sintenis* 3438, 3766. Cabo Rojo, *Sintenis* 553. Mona Island, *Hess* 437.

VIRGIN ISLANDS: St. Croix, *Ricksecker* 64; *Rose*, *Fitch* & *Russell* 3211.

LEEWARD ISLANDS: Guadeloupe, *Duss* 3159. Antigua, *Wulfschlaegel*.

WINDWARD ISLANDS: Montserrat, *Shafer* 18.

CURAÇAO: *Curran* & *Haman* 11, 23 in part, 126; *Britton* & *Shafer* 2958.

VENEZUELA: San Joaquín, *Pittier* 8228. Tovar, *Fendler* 1668. Caracas, *Rose* 21643. Barquisivieta, *Pittier* 6408.

COLOMBIA: Santa Marta, *Smith* 2184.

PERU: Obrajillo, *Wilkes Exped.* Ollantaytambo, *Cook* & *Gilbert* 520. Tingo, *Rose* 18802.

BOLIVIA: Illimani, *Buchtien* 208. Tarija, *Fries* 1065.

ARGENTINA: Córdoba, *Stuckert* 1705, 11707, 13139, 17307. Sierra Achala, *Galandier* 1281.

CHILE: Nahuelbuta, *Claude-Joseph* 100. Pudahuel, *Claude-Joseph* 114. La Ligua, *Rose* 19461. Province of Aconcagua, *Philippi* in 1888.

19. *Aristida intermedia* Scribn. & Ball.

Aristida intermedia Scribn. & Ball, U. S. Dept. Agr. Div. Agrost. Bull. 24: 44. f. 18. 1901. "Type collected by T. H. Kearney, jr., No. 204, near Biloxi, Mississippi, October 5, 1896." Type in the U. S. National Herbarium.

DESCRIPTION.

Plants annual, branched at base or often simple; culms slender, erect, glabrous, or scaberulous below the panicle, 20 to 40 cm. tall; sheaths glabrous; blades flat or involute, scabrous and strongly nerved on the upper surface, glabrous or scaberulous beneath, mostly less than 10 cm. long and 2 mm. wide; panicles narrow, slender, loosely flowered, 10 to 20 cm. long, the axis scabrous, the spikelets single or a few on short appressed branches, the lower usually distant; glumes about equal, 1-nerved, about 1 cm. long, narrowed into a short awn, scabrous on the keel; lemma about 8 mm. long, 3-nerved, scaberulous toward the summit, scarcely beaked, minutely pilose on the acute callus, the awns about equal, or the lateral sometimes shorter, all somewhat divergent, mostly 1.5 to 2 cm. long.

This species differs from *A. longespica* in the looser racemes, the longer glumes and lemma, and the longer lateral awns, these about as long as the central.

DISTRIBUTION.

Low sandy soil, Indiana and Iowa to Mississippi and Texas.

INDIANA: Pine, *Hill* 187 in 1898. Millers, *Umbach* in 1897; *Chase* 683; *Lansing* 4017.

IOWA: Wapsipinicon River, *Wilcox* 31.

NEBRASKA: Simeon, *Bates* 1115. Ewing, *Bates* 1075.

MISSOURI: Courtney, *Bush* 649, 7090.

KANSAS: Riley County, *Hitchcock* 425.

MISSISSIPPI: Scranton, *Tracy* 4664. Biloxi, *Tracy* 236, 3774, 3776. Horn Island, *Tracy* 1578.

ARKANSAS: Jefferson County, *Eggert* 125.

LOUISIANA: Arcadia, *Ball* 78.

TEXAS: Dallas, *Reverchon* 1858. Galveston, *Tracy* 7410. Handley, *Reverchon* 3480A. Sarita, *Hitchcock* 5475. Gonzales, *Plank* 58. Houston, *Fischer* 2050. Without locality, *Nealley*; *Buckley*; *Thurrow*.

OKLAHOMA: Morrison, *Stevens* 2804. Hattenville, *Stevens* 2479.

20. *Aristida havardii* Vasey.

Aristida havardii Vasey. Bull. Torrey Club 13: 27. 1886. "Collected in western Texas by Dr. Havard." The type, in the U. S. National Herbarium, was collected by Havard (no. 28), October, 1883, in "W. Texas. Prairie. Ft. Davis, Marfa, &c." The specimen includes two culms about 30 cm. tall.

DESCRIPTION.

Plants perennial, forming hemispheric tufts as much as 30 cm. in diameter, the culms rather stiffly radiating in all directions; culms densely cespitose, glabrous, slender, 15 to 30 cm. tall; sheaths glabrous, villous at the throat, more or less hispidulous on the collar; blades closely involute, slender, scabrous or scabrous-pubescent on the upper surface, glabrous or somewhat roughened beneath, scaberulous near the tip, scabrous on the margins, mostly less than 10 cm. long, mostly less than 0.5 mm. thick when rolled; panicles about half the length of the entire culm, open, the axis scabrous, the branches divaricately spreading or somewhat reflexed, mostly 3 to 6 cm. long, in pairs or with short basal branchlets, but without long naked base, the branchlets and pedicels scabrous, divaricate and implicate or flexuous, the whole panicle fragile at maturity, breaking away and rolling before the wind; glumes about equal,

acuminate or awn-pointed, about 1 cm. long, the first 1-nerved or obscurely 3-nerved, scabrous on the keel and obscurely so on the lateral nerves, the second 1-nerved, scaberulous only near the tip; lemma gradually narrowed into a straight or twisted scaberulous beak, the entire length 8 to 10 mm. and usually a little shorter than the glumes, the pubescent or hispidulous callus about 1 mm. long; awns somewhat divergent, scabrous, scarcely curved or warped at base, nearly equal, mostly 15 to 20 mm. long.

This species is closely allied to *A. divaricata*, but is distinguished by the hemispheric habit of growth and the flexuous or implicate branchlets and pedicels. In *A. divaricata* the culms are often prostrate or nearly so but do not form hemispheric tufts; the main branches are naked at base and the pedicels usually appressed along the upper part of the branches. In *A. havardii* the branches are shorter and bear a basal branch, so that the spikelets are evenly distributed through the panicle.

DISTRIBUTION.

Hills and plains, western Texas to Arizona and central Mexico.

TEXAS: Limpia Canyon, *Nealley* 134. Alpine, *Hitchcock* 13620. Amarillo, *Ball* 1146, 1265, 1610; *Reverchon* 4118; *Hitchcock* 16215. Marfa, *Havard* 28.

NEW MEXICO: Artesia, *Hitchcock* 13447. Bonito Crossing, *Wooton* in 1905. West of Guadalupe Mountains, *Hitchcock* 13576. Red Lake, *Wooton* in 1913. Carlsbad, *Hitchcock* 13466; *Tracy* 8198. Gray, *Earle* 561; *Skehan* 57. Grants, *Jones* in 1884. Fort Bayard Watershed, *Blumer* 204. Albuquerque, *Jones* in 1884. Roswell, *Griffiths* 5730, 5733. Stanley, *Wooton* 2954. Grant County, *Rusby* 447. Deming, *Hitchcock* 3747.

ARIZONA: Cochise, *Griffiths* 1885. San Francisco Mountains, *Rusby* 447c. Fort Huachuca, *Wilcox* 423.

CHIHUAHUA: Miñaca, *Hitchcock* 7736.

ZACATECAS: Zacatecas, *Hitchcock* 7518.

DURANGO: Durango, *Hitchcock* 7642.

AGUASCALIENTES: Aguascalientes, *Hitchcock* 7446.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 175 (1057).

21. *Aristida divaricata* Humb. & Bonpl.

Aristida divaricata Humb. & Bonpl.; Willd. Enum. Pl. 1: 99. 1809. "Habitat in Mexico." In a later work²³ the original locality is given as "regione subfrigida regni Mexicani, inter Salamanca, Guanaxuato et Ovexeras." There is some confusion as to the species referred to by Willdenow. He cites "*Aristida divaricata* Humboldt et Bonpland" and gives the locality as Mexico. The description is short, but applies well enough to the Mexican species. But an appended note applies, according to Trinius and Ruprecht, to *A. jacquiniana* Tausch, which appears to have been growing in the Berlin Garden (see the following paragraph, under *A. humboldtiana*). I have assumed that the name is based on the Humboldt and Bonpland plant from Mexico rather than upon the garden plant. The type has been examined at Paris.

Chaetaria divaricata Beauv. Ess. Agrost. 30, 158. 1812. Based on *Aristida divaricata* Humb. & Bonpl.

Aristida humboldtiana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 118. 1842. Based upon *A. divaricata* H. B. K., Humboldt and Bonpland's speci-

²³ H. B. K. Nov. Gen. & Sp. 1: 123. 1816.

men "inter Salamanca, Guanaxuato et Ovexeras" being cited. The authors think that *A. divaricata* Humb. & Bonpl. is the species afterwards described as *A. jacquiniana* Tausch (*A. divaricata* of Jacquin¹⁴) and hence change the name of *A. divaricata* H. B. K. to *A. humboldtiana*.

Aristida palmeri Vasey, Bull. Torrey Club 10: 42. 1883. "Collected in southern Arizona in 1869 by Dr. E. Palmer." The type in the U. S. National Herbarium, marked no. 1, is a rather slender plant 35 cm. tall, with slender involute blades and an open panicle, 15 cm. long, the branches ascending or somewhat spreading but not strongly divaricate, the branchlets and pedicels mostly ascending rather than appressed; lemma with a twisted beak mostly longer than the glumes.

Aristida humboldtiana var. *minor* Vasey, Contr. U. S. Nat. Herb. 3: 47. 1892. No specimens are cited, but the range is given as "Texas, Arizona, to California." Doctor Vasey wrote the name upon two sheets in the U. S. National Herbarium, one from Texas, collected by Nealley in 1887, and the other from California, collected by Hasse in 1890. The first is selected as the type. The specimens have short panicle branches, the lower being 5 to 7 cm. long, but do not differ from much of the material assigned to *A. divaricata*.

Aristida lemmoni Scribn. Trans. N. Y. Acad. Sci. 14: 23. 1894. No specimen is cited, but the description is in a list of plants collected by T. E. Wilcox and others in southeastern Arizona. The type specimen, in the U. S. National Herbarium, was collected by Dr. T. E. Wilcox at Fort Huachuca in 1894. It closely resembles the type of *A. palmeri* Vasey. The slender twisted beak of the lemma exceeds the glumes.

DESCRIPTION.

Plants perennial; culms erect or often prostrate-spreading, glabrous or scaberrulous, usually 30 to 60 cm. long, sometimes longer; sheaths glabrous, or scaberrulous toward the summit, puberulent on each side of the collar and often villous at the throat; blades flat or usually loosely involute, or the basal closely involute, scabrous and strongly nerved on the upper surface, a few long weak hairs near the base, glabrous beneath, as much as 20 cm. long, mostly less than 3 mm. wide; panicles large and diffuse, usually as much as half the entire length of the culm, the branches spreading or deflexed, naked below, mostly in two's, scabrous, as much as 15 cm. long, branching two or three times, the ultimate branchlets and pedicels somewhat appressed; glumes nearly equal, scabrous on the keels, about 1 cm. long, the first acuminate, 1-nerved or obscurely 3-nerved, the second gradually narrowed into a short awn, 1-nerved; lemma about 1 cm. long, including the pubescent callus less than 1 mm. long, the upper part (about 2 mm.) narrowed into a scabrous, more or less twisted beak; sometimes longer, sometimes shorter than the glumes; awns about equal or the central a little longer, somewhat divergent, not twisted or warped at base, mostly 10 to 15 mm. long.

In aspect this species is rather variable, erect or usually prostrate, sometimes only 20 cm. long, the branches of the panicle at maturity always divaricately spreading but variable in length. The mature panicles become rather easily detached at maturity and are blown about by the wind. The beak of the mature lemma may be short and straight or rather long and twisted, and when twisted may be about as long as the glumes or exceeding them. A specimen collected by Orcutt on Hanson's Mountain in 1884 has the

¹⁴ Jacq. Eclog. Gram. 7. pl. 6. 1814.

lateral awns only 1 to 3 mm. long, thus approaching *A. schiedeana*, but the stiffly divergent branches of the panicle are as in *A. divaricata*.

DISTRIBUTION.

Dry hills and plains, Kansas to southern California. south to Guatemala.

KANSAS: Haskell County, *Hitchcock* 591, 646. Meade County, *Carleton* 537.

TEXAS: El Paso, *Griffiths* 7433. Alpine, *Hitchcock* 13613. Limpia Mountains, *Havard* in 1881. Texline, *Griffiths* 5619, 5626. Burnet, *Plank* 27. Amarillo, *Hitchcock* 16216. Without locality, *Wright* 742, 2013; *Nealley* in 1887.

OKLAHOMA: Without locality, *Carleton* in 1891.

NEW MEXICO: Queen, *Hitchcock* 13528. East of Dona Ana Mountains, *Wootton & Standley* 3970. Deming, *Hitchcock* 3738. Black Range, *Metcalf* 1494. El Caso, *Talbot* in 1915. Cimarron Canyon, *Griffiths* 5571. Gallinas Mountains, *Wootton* 2966. Without locality, *Fendler* 976; *Wright* 2012, 2013.

ARIZONA: Pedrogosa Mountains, *Mearns* 839. Santa Rita Mountains, *Griffiths & Thornber* 25, 296; *Shear* 1954; *Griffiths* 3417, 5970, 6979, 7269, 7270. Cottonwood, *Rothrock* (*Wheeler's Exped.*) 348. Fort Huachuca, *Wilcox* in 1894. South of Bisbee, *Mearns* 857. Camp Lowell, *Pringle* in 1881. Mescal, *Griffiths* 1816. Phoenix, *Griffiths* 7331. Show Low, *Wootton* in 1913. Empire Ranch, *Thornber* 28. Patagonia, *Hitchcock* 3701. Celero Mountains, *Griffiths* 6133. Tucson to Nogales, *Griffiths* 6743. Santa Catalina Mountains, *Griffiths* 7072. Canyon Padre, *Hitchcock* 13241. Oracle, *Hitchcock* 13259. Without locality, *Lemmon* 386; *Palmer* in 1869.

CALIFORNIA: Glenn County, *Heller* 11432. San Bernardino, *Parish* 1029. Pasadena, *Jones* 3216. San Jacinto, *Hasse* in 1892. Pedly, *Reed* 1128. Bakersfield, *Dary* 1895. Hansons Mountain, *Orcutt* in 1884.

LOWER CALIFORNIA: Santa Catalina Mountains, *Orcutt* in 1884.

SONORA: 10 miles south of Nogales, *Hitchcock* 3635. Nogales to Cocospora, *Griffiths* 6795.

CHIHUAHUA: Near White Water, *Mearns* 355. Sánchez, *Hitchcock* 7730. Chihuahua, *Hitchcock* 7785; *Pringle*, 387, 388. Miñaca, *Hitchcock* 7754, 7760, 7761.

SAN LUIS POTOSÍ: San Luis Potosí, *Hitchcock* 5687.

ZACATECAS: Zacatecas, *Hitchcock* 7517.

DURANGO: Durango, *Palmer* 873 in 1896, *Hitchcock* 7577.

JALISCO: Zapotlán, *Hitchcock* 7119. Guadalajara, *Hitchcock* 7280, 7299, 7308.

AGUASCALIENTES: Aguascalientes, *Hitchcock* 7448.

QUERÉTARO: Querétaro, *Basile* 29.

HIDALGO: Pachuca, *Hitchcock* 6717.

VERACRUZ: Jalapa, *Hitchcock* 6545.

PUEBLA: San Marcos, *Hitchcock* 6515, 6536. Chalchicomula, *Hitchcock* 6289, 6303. Esperanza, *Hitchcock* 6481. Puebla, *Arsène* 156, 238, 244, 247, 328, 1879.

MÉXICO: Toluca, *Hitchcock* 6894. Popo Park, *Hitchcock* 6028, 6029.

FEDERAL DISTRICT: *Pringle* 5204, 5907, 6408, 9576; *Orcutt* 3976; *Bourgeau* 677; *Arsène* 8877.

MICHOACÁN: Morelia, *Arsène* 2681.

OAXACA: Oaxaca, *Hitchcock* 6106, 6155.

GUATEMALA: Guatemala, *Hitchcock* 9027, 9038, 9086.

22. *Aristida patula* Chapm.

Aristida patula Chapm.; Nash. Bull. Torrey Club 23: 98. 1896. Based on *Aristida scabra* Chapm.¹⁵ In the U. S. National Herbarium is a specimen received from Chapman, collected in 1875, labeled "*Aristida patula* n. sp. S. Fl. ined.", which is probably a duplicate type. The lateral awns are about 7 mm. long.

DESCRIPTION.

Plants perennial; culms erect, cespitose, often loosely so, sometimes with short rhizomes, glabrous, as much as 1 meter tall; sheaths overlapping, glabrous, slightly villous at the throat; blades firm, flat, becoming involute, especially at the slender tip, scabrous on the upper surface, glabrous beneath, as much as 50 cm. long, mostly 2 to 4 mm. wide; panicles loose and open, one-third to half the entire length of the culm, the branches single or in pairs, distant, drooping, naked below, very scabrous, as much as 20 cm. long, branching at or above the middle, the spikelets on short pedicels appressed at the ends of the branchlets; glumes 12 to 15 mm. long, nearly equal, awn-pointed, 1-nerved, the first scabrous on the keel, the second smooth except at the summit of the keel; lemma 10 to 12 mm. long, glabrous, pubescent on the callus, scarcely beaked, the awns scabrous, scarcely diverging, the middle one straight, mostly 2 to 2.5 cm. long, the lateral scarcely diverging below, somewhat so above, mostly 5 to 10 mm. long.

DISTRIBUTION.

Moist sandy pine barrens, and low open ground, Florida.

FLORIDA: Indian River, *Curtiss* 3431*. Titusville, *Nash* 2295. Jupiter, *Curtiss* 5535. Manatee River, *Rugel* 380. Sanibel, *Hitchcock* in 1900. Homosassa, *Combs* 933. Grasmere, *Combs* 1149. Old Town, *Combs* 898. Ellzey, *Combs* 827. Cedar Key, *Combs* 779, 779a. Braidentown, *Combs* 1326. Arcadia, *Combs* 1275. Enterprise Junction, *Hood* 54. Cutler, *Small*; *Mosier & Small* 6725. Fort Myers, *Standley* 325; *Hitchcock* 445. Crocodile Hole, *Small & Small* 6833. Okeechobee region, *Fredholm* 5997. Miami, *Chase* 3841, 3868, 3887; *Tracy* 8855. Turkey Hammock, *Simpson* in 1890. Marco, *Hitchcock* in 1900. Tampa, *Garber* in 1877. Hernando County, *Hitchcock* 2272. Alapattah, *Eaton* 1278. Sneed's Island, *Tracy* 6456.

23. *Aristida pansa* Woot. & Standl.

Aristida pansa Woot. & Standl. Contr. U. S. Nat. Herb. 16: 112. 1913. "Type in the U. S. National Herbarium, no. 690259, collected on Tortugas Mountain, Dona Ana County, October 6, 1904, by E. O. Wooton."

DESCRIPTION.

Plants perennial; culms stiffly erect, slender and wiry, minutely scaberulous or puberulous, 20 to 40 cm. tall; sheaths minutely puberulous, at least between the nerves, densely short-villous at the throat and pubescent on the collar; blades closely involute, more or less flexuous, scabrous, puberulent on the upper surface, glabrous beneath, as much as 15 mm. long, usually less, about 0.5 mm. thick when rolled; panicles narrow, open, rather stiffly upright,

¹⁵ Fl. South. U. S. 663. 1884. Chapman misapplies the name, as he credits it to Kunth.

10 to 20 cm. long, the axis scaberulous, the branches stiffly ascending, 4 to 8 cm. long, single or with a basal shorter branch or a single spikelet, the spikelets appressed toward the summit of the branches; glumes unequal, 1-nerved, acuminate or awn-pointed, the first minutely scaberulous on the keel, 5 to 7 mm. long, the second smooth on the keel, 7 to 10 mm. long, lemma about as long as the second glume, sometimes a little longer, short-pilose on the 1 mm. long callus, smooth on the lower part, scaberulous above and gradually narrowed into a scabrous slightly twisted beak of about 2 mm., the whole 7 to 10 mm. long; awns about equal, divergent or finally nearly horizontally spreading, 10 to 20 mm. long, the bases finally somewhat curved or warped.

This species differs from *A. havardii* in the stiff branches and appressed pedicels, and from *A. divaricata* in the short branches of the panicle, and from both in the unequal glumes.

DISTRIBUTION.

Plains and open ground, western Texas to Arizona.

TEXAS: Marfa, *Havard* 29 in 1883. Sierra Blanca, *Rose & Fitch* 17942.

Fort Stockton, *Wootton* in 1913. El Paso, *Griffiths* 7432; *Plank* 64. Pecos River, *Havard* 62 in 1881. Without locality, *Nealley* in 1887.

NEW MEXICO: Tortugas Mountains, *Wootton* in 1904. Little Mountain, *Wootton* in 1904. Albuquerque, *Rose & Fitch* 17818. Las Cruces, *Griffiths* 7414, 7417. Jornada Range Reserve, *Wootton* in 1912. Lake Valley, *Beals* in 1914.

ARIZONA: Grand Canyon, *Hitchcock* 13068. Without locality, *Lemmon* 388.

24. *Aristida spadicea* H. B. K.

Aristida spadicea H. B. K. Nov. Gen. & Sp. 1: 123. 1816. "Crescit locis apricis, subfrigidis juxta Guanaxuato et Mina de Belgrado," Mexico, and also on the Orinoco near Carichana and "in inundatis fluminis Guayaquilensis." The Orinoco and Guayaquil specimens are in the Paris Herbarium. In the segregated H. B. K. Herbarium in the same herbarium is a specimen without data, but bearing the name in Kunth's handwriting. This is doubtless the Mexican specimen. In this and in the Orinoco specimen the lateral awns are about half as long as the middle one; in the Guayaquil specimen they are shorter.

Chaetaria spadicea Roem. & Schult. Syst. Veg. 2: 397. 1817. Based on *Aristida spadicea* H. B. K.

Aristida longiramea Presl, Rel. Haenk. 1: 224. 1830. "Hab. in Mexico." The type is in the herbarium of the German University at Prague. The locality is not indicated.

Aristida karwinskiana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 121. 1842. "Mexico (*L. B. Karwinsky*). The type, from Zuccarini, in the Trinius Herbarium, is labeled "in Imperio Mexicano, Karwinski." The lateral awns are 2 to 6 mm. long and the glumes about 8 mm. long.

In a preceding work (Contr. U. S. Nat. Herb. 17: 279. 1913) I applied the name *A. spadicea* to what is called in this revision *A. arizonica*.

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, as much as 1 meter tall; sheaths glabrous; ligule very short, less than 0.5 mm. long; blades flat, the old ones curled or flexuous, becoming involute, narrowed into a filiform tip,

scaberulous on the upper surface, glabrous beneath, as much as 40 cm. long, 1 to 2 mm. wide; panicle large and open, 15 to 30 cm. long, the axis scabrous or the lower internode nearly glabrous, the branches few and distant, mostly solitary, as much as 15 cm. long, naked below, drooping, very scabrous, branched at or above the middle, the spikelets appressed along the upper part of the branches and branchlets; glumes about equal or the first a little shorter, 8 to 12 mm. long, awn-pointed, the first 1-nerved or with 1 or 2 lateral nerves, scabrous on the keel and often on the lateral nerves, the second 1-nerved, glabrous; lemma mostly longer than the glumes, 10 to 15 mm. long, including the twisted beak 3 to 5 mm. long, pubescent on the callus; awns about equal or the lateral shorter, sometimes only half as long, only slightly divergent, the central 10 to 15 mm. long.

DISTRIBUTION.

Prairies and sterile hills, Mexico to northern South America.

JALISCO: Guadalajara, *Hitchcock* 7274, 7275. Río Blanco, *Palmer* 284, 476, 768, 768a in 1886. Zapotlán, *Hitchcock* 7112. San Nicolás, *Hitchcock* 7227, 7233.

PUEBLA: Tochimilco, *Nelson* in 1893. Puebla, *Arsène* 302, 1602, 1627.

FEDERAL DISTRICT: *Pringle* 6493, 6544; *Hitchcock* 5960.

MICHOACÁN: Morelia, *Arsène* 2432, 2474, 2594a, 2629, 2647, 2652, 2922, 5113.

BRITISH HONDURAS: *Peck* 72 (Gray Herb.).

COLOMBIA: Bogotá, *Pennell* 2182.

25. *Aristida spiciformis* Ell.

Aristida spiciformis Ell. Bot. S. C. & Ga. 1: 141. 1816. "Grows in wet pine barrens," presumably in the vicinity of Charleston.

Aristida stricta Muhl. Descr. Gram. 174. 1817. Not *A. stricta* Michx. 1803. "Habitat in Georgia." No mention of this species is made by Scribner and Merrill in their account of the grasses of the Muhlenberg Herbarium.¹⁵ Muhlenberg's description leaves no doubt as to the identity, as he mentions the awned glumes and the long column.

Aristida squarrosa Trin. in Spreng. Neu. Entd. 2: 62. 1821. "Hab. in America boreali." The type, in the Trinius Herbarium, was sent from Vienna under the name of *A. oligantha* Michx. The locality other than "Am. bor." is not given.

Chaetaria squarrosa Schult. Mant. 3: 577. 1827. Based on *Aristida squarrosa* Trin.

DESCRIPTION.

Plants perennial; culms cespitose, strictly erect, glabrous, 50 to 100 cm. tall; sheaths glabrous, sometimes slightly villous at the throat; blades erect, flat, or usually inrolled or tightly involute, scabrous or scabrous-pubescent on the upper surface, glabrous beneath, as much as 30 cm. long, 1 to 3 mm. wide; panicle erect, dense and spikelike, mostly 10 to 15 cm. long, the branches short and appressed, the whole panicle more or less spirally twisted; glumes unequal, 1-nerved, abruptly long-awned, the first about 4 mm. long, scabrous on the keel, the awn usually 10 to 12 mm., sometimes only 5 mm. long; the second 8 to 10 mm. long, nearly smooth, the awn usually 10 to 12 mm., sometimes only 7 mm. long; lemma 5 to 6 mm. long including the sharp densely

¹⁵ U. S. Dept. Agr. Div. Agrost. Circ. 27. 1900.

short-pubescent 2 mm. long callus, extending upward into a slender twisted column 1 to 3 cm. long, sometimes only 7 mm. long; awns about equal, 2 to 3 cm. long, divergent or horizontally spreading, more or less curved or warped at base.

DISTRIBUTION.

Pine barrens along the coast, South Carolina to Florida and Texas; also in Cuba and Porto Rico.

SOUTH CAROLINA: Beaufort, *Mellichamp* in 1882.

GEORGIA: Camp Cornelia, *Ricker* 935. Coffee County, *Harper* 686.

FLORIDA: Lake City, *Bitting* 868. Palm Beach, *Hitchcock* 2277. Sanford, *Pieters* 310. Fort Myers, *Standley* 362; *Hitchcock* 442, 871. Okeechobee region, *Fredholm* 5995. Grasmere, *Combs* 1115. Apalachicola, *Biltmore Herb.* 1121b; *Kearney* 122. Santa Rosa, *Combs* 499. Bartow, *Combs* 1200. Braidentown, *Combs* 1315. Cedar Key, *Combs* 784. Citrus, *Combs* 951. Lake City, *Combs* 111. Fellsmere, *Tracy* 9255. Waldo, *Combs* 696. Palma Sola, *Tracy* 6510. Tampa, *Nash* 2418; *Combs* 1349. Eustis, *Nash* 1689. Jacksonville, *Curtiss* 3427, 4047. Jensen, *Hitchcock* 731. Marco, *Hitchcock* in 1900. Orange Glade, *Eaton* 586. Titusville, *Chase* 3985. Osceola County, *Fredholm* 6082. Without locality, *Rugel* 305, 537.

ALABAMA: Mobile, *Mohr* in 1879.

MISSISSIPPI: Horn Island, *Tracy* in 1875.

TEXAS: Rio San Pedro, *Thurber* in 1850.

CUBA: Isle of Pines, *Britton*, *Britton & Wilson* 14198.

PORTO RICO: Campo Alegre, white sand barren, *Chase* 6614.

26. *Aristida implexa* Trin.

Aristida implexa Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 2¹: 48, 1836. "V. spp. Bras." The type specimen in the Trinius Herbarium at the Academy of Sciences, Petrograd, was collected by Riedel at Itapetininga, São Paulo, Brazil, "in campis siccis." The twisted column is about 6 cm. long and the central awn 4.5 cm. long, the lateral ones 2.5 cm. long.

Aristida implexa β *aequa* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 124, 1842. "In graminosis siccis Serra da Chapada." The type, in the Trinius Herbarium, has a column about 2.5 cm. long, the equal awns about 5 cm. long.

Aristida paraguayensis Lindm. Svensk. Akad. Handb. 34⁶: 14, pl. 7. f. B. 1900. "Hab. in Paraguay, in colle saxoso Cerro Perou prope Paraguari, *Balansa* 187." The type was examined in the herbarium at Stockholm.

Specimens of *A. implexa* have been distributed with the name *A. megapota mica* Spreng.¹⁷ The type specimen of this, in the Berlin Herbarium, collected by Sello in Rio Grande do Sul, Brazil, is a species of *Stipa*. Sprengel's description indicates a species of *Stipa* rather than of *Aristida*, "arista corillae longissima patula scabra." Doell¹⁸ refers this to *Stipa filifolia* Nees.

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, 30 to 50 cm. tall or even as much as 1 meter; sheaths numerous and overlapping at the base of the plant, glabrous; blades flat at base becoming involute toward the fine tip, as

¹⁷ Syst. Veg. Cur. Post 31. 1827.

¹⁸ Mart. Fl. Bras. 2³: 25. 1878.

much as 35 cm. long, the basal as much as 3 mm. wide, the upper narrower and more involute, glabrous beneath, finely scaberulous-pubescent on the upper surface; panicle dense and spikelike, 10 to 20 cm. long, the branches short and appressed, 5 to 10 mm. long, the ultimate pedicels 1 to 2 mm. long, the axis angular, scaberulous; first glume about 15 mm. long, 1-nerved, lateral nerves sometimes present, scabrous on the keel and faintly scaberulous on the back, tipped with a straight awn about 5 mm. long; second glume 10 to 12 mm. long, glabrous on back and keel, the awn 2 to 3 mm. long; lemma about 7 mm. long, including the 1 mm. long pubescent callus, glabrous, the column strongly twisted, scaberulous, 2 to 2.5 cm. long; awns about equal, divergent, about 3 cm. long, or in Paraguayan specimens as much as 5 cm. long.

This species is closely related to *A. chapadensis* Trin. The latter has looser more open panicle and shorter column and for the present is ranked as a distinct species.

DISTRIBUTION.

Plains and rocky slopes, Panama to Paraguay.

SALVADOR: Cerra de la Olla, *Calderón* 1054.

PANAMA: Cerro Vaca, eastern Chiriquí, in savannas, at 900 to 1,136 meters altitude, *Pittier* 4350.

BRAZIL: Crux Alta, Rio Grande do Sul, *Jürgens* 249. Curvalho, Minas Geraes, *Lund* in 1835. Pinhaes, Paraná, *Dusén* 7764. Desvio, Paraná, *Dusén* 7619. Minas Geraes, *Requell* III. 1397. Barreiras, Bahia, *Jard. Bot. Rio de Janeiro* 5541. Without locality, *Glaziov* 15624.

PARAGUAY: Central Paraguay, *Morong* 488. Northern Paraguay, *Piebrig* 5189; *Hassler* 10354, 12010.

ARGENTINA: Posadas, Misiones, *Ekman* 687.

27. *Aristida glauca* (Nees) Walp.

Chaetaria glauca Nees, *Linnaea* 19: 688. 1847. "Mexico. Aschenb. exs. n. 251." The type, with the name in Nees's script, was examined in the Berlin Herbarium. The awns are about 2 cm. long.

Aristida glauca Walp. *Ann.* 1: 925. 1849. Based on *Chaetaria glauca* Nees.

Aristida reverchonii Vasey, *Bull. Torrey Club* 13: 52. 1886. "Collected by Reverchon on rocky hills in Crockett [Crockett] County, Texas." The type, in the U. S. National Herbarium, is labeled in Vasey's hand, "Aristida Reverchonii Vasey. 18. Texas. *J. Reverchon*, 1885." The awns are about 2.5 cm. long, and the spikelets somewhat larger than in the type of *A. glauca*, the panicles few-flowered and somewhat interrupted.

Aristida stricta var. *nealleyi* Vasey, *Contr. U. S. Nat. Herb.* 1: 55. 1890. "Chenote Mountains (Presidio County)." This was included (no. 709) in a list of plants collected in Texas by G. C. Nealley. The type is in the U. S. National Herbarium, the name in Vasey's hand, afterwards changed by him to *A. nealleyi*. The awns are only about 1.5 cm. long and the spikelets are somewhat smaller, as in the type of *A. glauca*.

Aristida nealleyi Vasey, *Contr. U. S. Nat. Herb.* 3: 45. 1892. Based on *Aristida stricta nealleyi* Vasey.

Aristida reverchonii var. *angusta* [*angusta*] Vasey, *Contr. U. S. Nat. Herb.* 3: 46. 1892. "Comanche Peak (*Reverchon*), Texas (*G. C. Nealley*)." The first specimen cited is selected as the type. The name is in Vasey's hand. The specimen (no. 10) was collected at Comanche Peak, Texas, September, 1881, by J. Reverchon. The panicle is past maturity. The awns are as much as 2 cm. long.

Aristida vaseyi Woot. & Standl. N. Mex. Coll. Agr. Bull. 81: 55. 1912; Contr. U. S. Nat. Herb. 16: 113. 1913. In the bulletin cited first, the species is characterized in a key to the species of *Aristida* in New Mexico, but no synonym is cited. In the second work cited there is a full description and *Aristida reverchonii augusta* Vasey is given as a synonym.

DESCRIPTION.

Plants perennial; culms caespitose, erect, glabrous, 20 to 40 cm. tall; sheaths glabrous, sparsely villous at the throat, especially on the innovations; blades involute, mostly curved or flexuous, scabrous on the upper surface, glabrous beneath, mostly 5 to 10 cm. long, about 1 mm. wide; panicle narrow, erect, rather few-flowered, mostly 8 to 15 cm. long, the branches stiffly appressed, bearing 1 to few spikelets; glumes unequal, 1-nerved, more or less mucronate or awn-pointed, the first scabrous on the keel, 5 to 8 mm. long, the second glabrous, usually about twice as long, sometimes only one and a half times as long; lemma 10 to 12 mm. long, the callus pubescent, 0.5 mm. long, the body glabrous, tapering into a minutely scabrous, slender, somewhat twisted beak about half the total length of the lemma; awns about equal, scabrous, nearly glabrous at the flat, slightly contorted base, divergent or nearly horizontally spreading, 1.5 to 2.5 cm. long.

The material of this species now at hand is much more ample than that available to Vasey and shows that the three types described by him are forms of a single somewhat variable species.

DISTRIBUTION.

Dry or rocky hills and plains, Texas to southern California and south to Puebla.

TEXAS: Big Spring, *Hitchcock* 13373. El Paso, *Vasey* in 1881; *Griffiths* 7430; *Plank* 85; *Jones* in 1884; *Hitchcock* 13422, 13427, 13438. Kerrville, *Smith* in 1897; *Hitchcock* 5302. Cherry Springs, *Jerry* 541. Pecos, *Hanson* 783. Dallas, *Bebb* 1295. Crockett County, *Reverchon* 1237. San Angelo, *Smith* in 1897; *Reverchon* 4122. Comanche Peak, *Reverchon* in 1881, 3426a. Langtry, *Nealley* 116, 117. Alpine, *Hitchcock* 13589. Eagle Mountains, *Havard* in 1881. San Antonio, *Hitchcock* 5340. Chenate Mountains, *Nealley* 709.

UTAH: La Verken, *Jones* 5183.

NEVADA: Horse Spring, *Jones* 5069g. St. Thomas, *Tidestrom* 9091. Bunkerville, *Goodding* 754.

NEW MEXICO: Las Cruces, *Griffiths* 7128, 7416. Jornada Range Reserve, *Wooton* 7070. Queen, *Hitchcock* 13508. Pena Blanca, *Standley* in 1906. Alamogorda, *Hitchcock* 2542. Tortugas Mountain, *Wooton* in 1904; *Standley* 6455. Bishops Cap, *Standley* in 1906. Socorro, *Plank* 56. Mangas, *Metcalf* in 1897. Lake Valley, *Beals* in 1914. Without locality, *Wright* 2002.

ARIZONA: Phoenix, *Toumey* 158. Bright Angel Trail, Grand Canyon, *Hitchcock* 13067; *MacDougal* 229. Jerome Junction, *Tidestrom* 923a. Kingman, *Wooton* in 1911. Tucson, *Hitchcock* 13669. Santa Rita Mountains, *Griffiths* 7190. Fort Huachuca, *Wilcox* in 1894. Apache Smelter, *Griffiths* 7124. Without locality, *Rothrock* 481.

CALIFORNIA: Needles, *Jones* 3833. Newberry, *Chase* 5788. Funeral Mountains, *Jepson* 6907. Cottonwood Springs, *Parish* 10850. Palm Springs, *Reed* 1010, 4316.

COAHUILA: Saltillo, *Hitchcock* 5618; *Palmer* in 1898.

CHIHUAHUA: Santa Eulalia Mountains, *Pringle* 389.

NUEVO LEÓN: Monterrey, *Hitchcock* 5520.

ZACATECAS: Hacienda de Cedros, *Lloyd* 195.

PUEBLA: Esperanza, *Hitchcock* 6492. Tehuacán, *Pringle* 7535.

28. *Aristida purpurea* Nutt.

Aristida purpurea Nutt. Trans. Amer. Phil. Soc. II. 5: 145. 1837. "On the grassy plains of Red River, in arid situations," in the southwest corner of Arkansas. The type is in the Academy of Natural Sciences, Philadelphia. The spikelets of the type are described by Merrill,¹⁹ from a fragment in the U. S. National Herbarium. The awns are 3.5 to 4.5 cm. long; any shorter ones appear to be broken.

Aristida purpurea γ . *hookeri* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 107. 1842. "Texas (a *Drummond*, n. 293, lect. com. ill. Hooker)." The type, in the Trinius Herbarium, is labeled, "Texas II 293 [plants thus labeled are collected by Drummond] Hooker 1836." This is the typical form of *A. purpurea*.

Aristida purpurea β . *berlandieri* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 107. 1842. "Texas pr. Bejar. (*Berland*, n. 1777.)" The type, in the Trinius Herbarium, has lemmas 1 cm. long and awns 3 cm. long.

Aristida aequiramea Scheele, *Linnaea* 22: 343. 1849. Described in an article on the flora of Texas. "Neubraunfels . . . *Lindheimer*." The type has not been examined, but a specimen of the type collection, Lindheimer's no. 562, collected at New Braunfels, September 1846,²⁰ is in the U. S. National Herbarium.

Aristida curtiseta Buckl. Proc. Acad. Phila. 1862: 92. 1863. "Northern Texas." Merrill²¹ states that the type, in the Philadelphia Academy, is a specimen with spikelets "aborted by a species of *Ustilago*. It is probably *Aristida purpurea* Nutt., or some closely related form."

Aristida filipendula Buckl. Proc. Acad. Phila. 1862: 93. 1863. "Western Texas." Merrill states²² that Lindheimer's no. 562 in the Philadelphia Academy is named "*Aristida filipendula*" by Buckley and that it is identical with this number in the U. S. National Herbarium. (See *A. aequiramea* above.)

Aristida purpurea var. *californica* Vasey, Contr. U. S. Nat. Herb. 3: 47. 1892. "Western Texas to California." The specimen upon which Vasey has written the name is *Lemmon* 5474, from Capay Valley, Yolo County, California.

Aristida fasciculata var. *californica* Beal, Grasses N. Amer. 2: 207. 1896. Based on *A. purpurea californica* Vasey.

Aristida fasciculata var. *hookeri* Beal, Grasses N. Amer. 2: 207. 1896. Based on *A. purpurea hookeri* Trin. & Rupr.

Aristida purpurea aequiramea Merr. U. S. Dept. Agr. Div. Agrost. Circ. 34: 7. 1901. Based on *A. aequiramea* Scheele.

Aristida longiseta hookeri Merr. U. S. Dept. Agr. Div. Agrost. Circ. 34: 5. 1901. Based on *A. purpurea hookeri* Trin. & Rupr.

Aristida purpurea capillarifolia Merr. U. S. Dept. Agr. Div. Agrost. Circ. 34: 8. 1901. "Type specimen collected in Texas by G. C. Nealley. No locality given." The type is in the U. S. National Herbarium. It differs from the

¹⁹ U. S. Dept. Agr. Div. Agrost. Circ. 34: 6. 1901.

²⁰ See Ann. Rep. Mo. Bot. Gard. 18: 151. 1907.

²¹ U. S. Dept. Agr. Div. Agrost. Circ. 34: 8. 1901.

²² U. S. Dept. Agr. Div. Agrost. Circ. 34: 7. 1901.

ordinary form of *A. purpurea* only in the elongate blades, these as much as 30 cm. long.

Aristida berlandieri Hitchc. Contr. U. S. Nat. Herb. 17: 280. 1913. Based on *A. purpurea berlandieri* Trin. & Rupr.

DESCRIPTION.

Plants perennial, often in large tufts, the innovations usually numerous, forming a basal cushion; culms cespitose, erect, or somewhat decumbent at base in the outer part of the tuft, glabrous, mostly 30 to 50 cm. tall; sheaths glabrous or the lower somewhat scaberulous, villous at the throat; blades usually involute, scabrous on the upper surface, glabrous or sometimes scaberulous beneath, usually less than 10 cm. long, 1 to 1.5 mm. wide; panicles narrow, nodding, rather lax and loose, usually purplish, 10 to 20 cm. long, the branches and longer pedicels capillary, more or less curved or flexuous, as much as 5 cm. long, some of these naked for 1 to 2 cm. at base; glumes unequal, 1-nerved, acuminate and bearing an awn 1 to 2 mm. long, this often between 2 slender thin teeth, the first 6 to 8 mm. long, scabrous on the keel, the second glabrous, about twice as long as the first; lemma about 1 cm. long, the callus less than 1 mm. long, short-pilose, the body gradually tapering to the scarcely beaked summit, tuberculate-scabrous in lines from below the middle to the summit, the background usually purplish, the raised parts whitish; awns nearly equal, very slender, nearly smooth at the scarcely contorted base, scabrous above, finally widely spreading, mostly 3 to 5 cm. long.

DISTRIBUTION.

Dry hills and plains, Kansas to southern California, south to northern Mexico.

KANSAS: Liberal, *Rose & Fitch* 17142. Fort Dodge, *Griffiths* 6555.

TEXAS: Sarita, *Hitchcock* 5441, 5443, 5482. El Sordo, *Griffiths* 6437, 6438. Dallas, *Bush* 634, 665; *Bebb* 1295, 2488; *Reverchon* 1062, 1877, 3423*, 4203A, 4264. Abilene, *Tracy* 7933. Estelline, *Reverchon* 4121. Magenta, *Ball* 1650. Fort Stockton, *Ball* 1510, 1514. Junction, *Ball* 1534. Texline, *Griffiths* 5648. Kent, *Tracy & Earle* 372. Bracket, *Canby* 267. Devils River, *Orcutt* 6018. Big Spring, *Hitchcock* 13363. Midland, *Tracy* 7932. Robstown, *Hitchcock* 5390. Tarrant County, *Ruth* 169. Austin, *Hall* 767, 768. New Braunfels, *Hitchcock* 5209, 5210; *Lindheimer* 562. San Antonio, *Hitchcock* 5137, 5186, 5191, 5494; *Ball* 930; *Lindheimer* 563. Corpus Christi, *Hitchcock* 5351; *Orcutt* 5909. Kingsville, *Tracy* 8906. Colorado, *Tracy* 7930. Spofford, *Griffiths* 6299. Without locality, *Nealley* in 1887; *Palmer* 1350; *Wright*; *Buckley* in 1883; *Berlandier* 949; *Reverchon* 1061. Laredo, *Reverchon* 4125A; *Nealley* 104. Gregory, *Heller* 1579. El Paso, *Griffiths* 7435; *Hitchcock* 5913. Alpine, *Hitchcock* 13590. Sanford, *Griffiths* 6257. Limpia Canyon, *Nealley* 146. Bracken, *Groth* 164. Colorado, *Tracy* 7930. Isabel, *Hitchcock* 5432. Minerva, *Reverchon* 4126. Bejar, *Berlandier* 1777.

OKLAHOMA: "Indian Territory," *Sheldon* in 1891. Alva, *Stevens* 552. Altus, *Stevens* 1181. Limestone Gap, *Butler* in 1877. False Washita, *Palmer* 389. Pearsall, *Griffiths* 6547.

COLORADO: Colorado Springs, *Griffiths* 6706.

UTAH: St. George, *Hall* 558.

NEW MEXICO: Roswell, *Griffiths* 4248, 5689, 5752. Las Cruces, *Wootton* 3102. Socorro, *Plank* 90. Carlsbad, *Hitchcock* 13463. Mesilla Valley, *Standley* in 1906. Albuquerque, *Griffiths* 7394. Without locality, *Wright* 2004.

ARIZONA: Santa Catalina Mountains, *Griffiths* 7125. Santa Rita Mountains, *Griffiths & Thornber* 310. Tucson, *Toumey* 808. La Noria, *Mearns* 1203. Santa Rosa, *Griffiths* 4044. Flagstaff, *Griffiths* 4965. Camp Lowell, *Pringle* in 1881. Oracle, *Hitchcock* 13260, 13263. Dos Cabezas, *MacDougal* 776. Patagonia, *Hitchcock* 3703.

CALIFORNIA: Banning, *Griffiths* 8007. Rialto, *Parish* in 1893. San Bernardino, *Parish* 2123, 3668. Fall Brook, *Parish* 2242. San Jacinto, *Parish Brothers* 1549. Juniper Hills, *Wilder* 1047. Avondale, *Reed* 1129. Needles, *Jones* in 1884. Mentone, *Leiberg* 3295.

COAHUILA: Saltillo, *Palmer* 392 in 1898; *Hitchcock* 5616.

SAN LUIS POTOSÍ: San Mateo, *Griffiths* 8028.

28a. *Aristida purpurea micrantha* Vasey.

Aristida roemeriana Scheele, *Linnaea* 32: 343. 1849. "Prope Neubraunfels leg. Römer." The type has not been examined. The description shows that the plant belongs to the *purpurea* group. The lemma is described as "subulatus glaber 4-lineatus gluma superiori brevior." This indicates *A. purpurea micrantha*.

Aristida mühlenbergioides Fourn. Mex. Pl. 2: 79. 1886. "San Luis de Potosí (*Virlet* n. 1424); Cañon de las Minas (*Karw.* n. 1008)." The Karwinsky specimen has been examined at the herbarium of the St. Petersburg Botanical Garden, a fragment being in the U. S. National Herbarium. The Virlet specimen has been examined at Paris. The name appeared without description in the *Biologin*.²²

Aristida purpurea var. *micrantha* Vasey, *Contr. U. S. Nat. Herb.* 3: 47. 1892. "Western Texas." The selected type is a specimen collected in Texas by C. G. Nealley, upon which Vasey has written the name.

Aristida fasciculata var. *micrantha* Vasey; *Beal, Grasses N. Amer.* 2: 207. 1896. Based on *A. purpurea micrantha* Vasey.

Aristida micrantha Nash in *Small, Fl. Southeast. U. S.* 117. 1903. Based on *A. purpurea micrantha* Vasey.

DESCRIPTION.

Plants perennial; culms cespitose, erect, slender, glabrous, 30 to 50 cm. tall; sheaths glabrous or minutely roughened, naked or sparsely villous at the throat; blades flat or involute, scabrous on the upper surface, glabrous or minutely roughened beneath, mostly less than 10 cm. long, about 1 mm. wide; panicle narrow, lax, usually pale, 10 to 20 cm. long, the branches curved or flexuous, capillary, with short ones intermixed, several-flowered; glumes unequal, acuminate, 1-nerved, the first 4 to 5 mm. long, scabrous on the keel, the second about twice as long, glabrous; lemma 7 to 8 mm. long, the callus 0.5 mm. long, pubescent, the body glabrous, narrowed into a slightly scaberulous beak; awns about equal, slender, divergent, somewhat contorted at base, about 2 cm. long.

DISTRIBUTION.

Plains and rocky hills, Texas to northern Mexico.

TEXAS: Del Rio, *Hitchcock* 13625, 13638; *Plank* 82; *Wootton* in 1913. Spoford, *Griffiths* 6295. Corpus Christi, *Ravenel* in 1869. Pearsall, *Griffiths* 6548. San Diego, *Smith* in 1899. Big Spring, *Hitchcock* 13342, 13378. Encinal, *Griffiths* 7934. Kingsville, *Tracy* 8897. Boquillas, *Bailey* 341. Without locality, *Nealley* in 1888 and 1889; *Buckley* in 1883; *Wright* 743.

²² *Biol. Centr. Amer. Bot.* 3: 534. 1885.

NEW MEXICO: Carlsbad, *Hitchcock* 13481.

COAHUILA: Saltillo, *Palmer* 1351 in 1880; *Hitchcock* 5616.

NUEVO LEÓN: Monterrey, *Hitchcock* 5526, 5567.

TAMAULIPAS: Victoria, *Palmer* 429 in 1907. Buena Vista, *Wooton* in 1919.

SAN LUIS POTOSÍ: Micos, *Pringle* 3790.

28b. *Aristida purpurea laxiflora* Merr.

Aristida purpurea laxiflora Merr. U. S. Dept. Agr. Div. Agrost. Circ. 34: 8. 1901. "Type specimen collected in Texas, no locality, No. 12, *J. Reverchon*, May, 1881," is in the U. S. National Herbarium.

DESCRIPTION.

Differs from the species in the few-flowered panicle, the branches capillary and flexuous, bearing 1 or 2 spikelets.

DISTRIBUTION.

Dry plains, Texas to Arizona.

TEXAS: Dallas, *Reverchon* 3481A, 4203. Without locality, *Nealley* in 1887.

NEW MEXICO: Carlsbad, *Hitchcock* 13496. Hope, *Wooton* in 1905.

ARIZONA: Cochise, *Griffiths* 1880.

29. *Aristida curvifolia* Fourn.

Aristida curvifolia Fourn. Mex. Pl. 2: 78. 1886. "Inter La Noria del Viejo et Tanquecillos (*Karw.* n. 1007); San Luis de Potosí (*Virl.* n. 1449)." Both specimens are in the Paris Herbarium.

DESCRIPTION.

Plants perennial; culms erect, wiry, cespitose, glabrous, 20 to 40 cm. tall; sheaths glabrous, villous at the throat; blades involute, firm, glabrous on the outer side, 5 to 20 cm. long, usually curved or flexuous; panicle erect, narrow, 5 to 15 cm. long, the branches appressed; glumes unequal, rather broad, obtuse and somewhat mucronate, or slightly lobed at summit, glabrous, rather firm, the first about 8 mm. long, the second 2 or 3 mm. longer; lemma about 1 cm. long, scaberulous on the narrowed slightly twisted summit; awns equal, spreading, somewhat warped at base, 10 to 15 mm. long.

The specimens cited below have a shorter and more slender lemma than the specimens mentioned by Fournier, and may belong to a different species.

DISTRIBUTION.

Dry ground, northern Mexico.

NUEVO LEÓN: Monterrey, *Hitchcock* 5566.

SAN LUIS POTOSÍ: Minas de San Rafael, *Purpus* 5010.

30. *Aristida wrightii* Nash.

Aristida wrightii Nash in Small, Fl. Southeast. U. S. 116. 1903. On page 1327: "Type, Dallas, Tex., *Reverchon*, no. 1061, in Herb. Nash." This specimen, now in the herbarium of the New York Botanical Garden, was kindly lent by Dr. Britton.

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, 30 to 60 cm. tall or sometimes taller; sheaths glabrous or sometimes on the innovations scaberulous,

villous at the throat and usually with a more or less hispid or villous line across the collar; blades involute, curved or flexuous, scabrous on the upper surface, glabrous or sometimes scaberulous beneath, 10 to 20 cm. long, about 1 mm. wide; panicle erect, narrow, 15 to 20 cm. long, the rather distant branches appressed or ascending, as much as 6 cm. long, several-flowered, the lower sometimes somewhat flexuous; glumes unequal, 1-nerved, acuminate or mucronate but scarcely awn-tipped, the first 6 to 7 mm. long, scabrous on the keel, the second about twice as long, glabrous; lemma 10 to 12 mm. long, the callus about 1 mm. long, pubescent, the body glabrous below, gradually narrowed toward the summit, scaberulous on the upper half; awns nearly equal, about 2 cm. long, divergent, sometimes nearly horizontally spreading, somewhat contorted at base.

DISTRIBUTION.

Dry plains and hills, Texas to southern California and central Mexico.

TEXAS: El Paso, *Hitchcock* 7810, 13318, 13437, 13439; *Chase* 5895, 5910, 5912, 5913, 5914, 5917½; *Griffiths* 7431; *Rose & Fitch* 17844. Kerrville, *Hitchcock* 5277. Dallas, *Reverchon* 769, 1409. Fort Worth, *Ruth* 169. Kent, *Tracy & Earle* 416. Weatherford, *Tracy* 7929. Alpine, *Hitchcock* 13619. Big Spring, *Hitchcock* 13345, 13351, 13419; *Havard* 60. Sterling, *Hitchcock* 13388. Spofford, *Griffiths* 6296. Cherry Spring, *Jermy* 531. Fort Stockton, *Ball* 1511. Fort McKavett, *Ball* 1549. Estelline, *Reverchon* 4120. Amarillo, *Hitchcock* 16184. Plains west of Pecos, *Tracy & Earle* 414. Limpla Canyon, *Nealley* 146. Without locality, *Nealley* 330; *Wright* 739.

COLORADO: Canyon City, *Tracy* 477.

UTAH: St. George, *Goodding* 812.

NEW MEXICO: Carlsbad, *Hitchcock* 13479. Artesia, *Hitchcock* 13456, 13457. West of Guadalupe Mountains, *Hitchcock* 13565. Las Cruces, *Griffiths* 7413. Roswell, *Griffiths* 5722. Cimarron Canyon, *Griffiths* 5576. Organ Mountains, *Wootton* in 1904; *Hitchcock* 3803. Deming, *Hitchcock* 3746. Without locality, *Wright* 2003, 2015.

ARIZONA: Washingtons Face, *Griffiths* 2480. Camp Grant, *Rothrock* 374. Phoenix, *Dewey* in 1891.

CALIFORNIA: Split Mountain, Colorado Desert, *Parish* 9121.

COAHUILA: Saltillo, *Palmer* 265 in 1898.

SAN LUIS POTOSÍ: Cárdenas, *Hitchcock* 5724.

PUEBLA: Tehuacán, *Pringle* 8556.

31. *Aristida eggersii* Hitchc., sp. nov.

DESCRIPTION.

Plants perennial; culms cespitose, slender, spreading or decumbent at base, glabrous, 20 to 40 cm. tall; sheaths glabrous or minutely scaberulous, minutely pilose around the throat and hispidulous in a line across the collar; ligule a very short ciliate membrane; blades involute, scaberulous on the upper surface, glabrous beneath, falcate or flexuous, mostly less than 10 cm. long, often much shorter, mostly less than 1 mm. wide when flattened out; panicle narrow, 3 to 10 cm. long, the branches distant, short and appressed, few-flowered; glumes unequal, the first 5 to 6 mm. long, about half as long as the second, mucronate but scarcely awned, 1-nerved, scabrous on the keel, the second similar to the first but glabrous on the keel; lemma about 1 cm. long including the 1 mm. long, short-pilose callus, gradually narrowed and scaberulous above, but not distinctly beaked; awns about equal, 2 to 2.5 cm. long, all spreading or nearly horizontal, flat at base and scarcely contorted.

Type in the U. S. National Herbarium, no. 820940, collected "in calcariis," near the sea at La Caimanera, Cuba, May, 1889, by H. Eggers (no. 5389).

The only other specimen seen was collected on a coral limestone beach at Fishermans Point, Guantánamo Bay, Cuba, by N. L. Britton (no. 2177).

This species resembles *A. cognata* in habit, but the strongly unequal glumes place it in the group *Purpureae*.

32. *Aristida fendleriana* Steud.

Aristida fendleriana Steud. Syn. Pl. Glum. 1: 420, 1854. "Coll. *Fendler* nr. 973. N. Mexico." The type has been examined at Paris. A duplicate type is in the U. S. National Herbarium.

Aristida purpurea var. *fendleriana* Vasey, Contr. U. S. Nat. Herb. 3: 46, 1892. Based on *A. fendleriana* Steud. The name appeared earlier in a different form, without description, as *A. purpurea* var. *fendleri* Vasey.*

Aristida fasciculata fendleriana Scribn. Trans. N. Y. Acad. Sci. 14: 23, 1894. Based on *A. fendleriana* Steud.

Aristida subuniflora Nash in Small, Fl. Southeast. U. S. 116, 1903. "Type N. Mex., *Vasey*, in Herb. Nash," (op. cit. page 1327). A portion of the type is in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial, often forming large bunches with numerous short curly leaves; culms erect, glabrous, 10 to 30 cm. tall; sheaths mostly basal, glabrous, villous at the throat; blades involute, curved or flexuous, scabrous on the upper surface, glabrous or somewhat scaberulous beneath, mostly less than 10 cm., often less than 5 cm. long, the innovations numerous; panicle erect, narrow, nearly simple, 2 to 6 cm. long, the pedicels appressed, mostly single or the lower in pairs; glumes unequal, 1-nerved, acute but not awned, the first about 7 mm. long, the second about twice as long; lemma about 12 mm. long, the callus nearly 1.5 mm. long, pubescent, the body glabrous, gradually narrowed to the summit, scaberulous on the upper half; awns about equal, divergent, 2 to 5 cm. long.

DISTRIBUTION.

Dry plains and hills Nebraska to Texas and Lower California.

NEBRASKA: Lavaca, *Bates* 870.

KANSAS: Seward County, *Hitchcock* 1011.

TEXAS: Palo Duro Canyon, *Ball* 1247. Canyon, *Reverchon* 4119. Tuscola, *Reverchon* 2827. Texline, *Griffiths* 5618, 5632. El Paso, *Jones* 3740; *Chase* 5915. Delhart, *Hitchcock* 2536.

MONTANA: Billings, *Williams & Griffiths* 223.

WYOMING: Pinebluff, *Nelson* 3617. Powder River, *Nelson* 9396. Jelm, *Wootton* in 1914.

COLORADO: Los Pinos, *Baker* 89, 154. Durango, *Eastwood* in 1891. Buena Vista, *Sheldon* 605. Grand Junction, *Jones* 5469. Colorado Springs, *Williams* 9113; *Jones* 116. Salida, *Shear* 953. Hugo, *Tidestrom* 65. Trinidad, *Standley* 6031. Arboles, *Baker* 153. McCoy, *Shear & Bessey* 1364. Sedalia, *Hitchcock* 16230.

UTAH: Glenwood, *Ward* 70. Becks Hot Springs, *Garrett* 2371. Santa Clara, *Jones* 5114. Natural Bridge, *Rydberg & Garrett* 9489. Moab, *Rydberg & Garrett* 9104. Diamond Valley, *Goodding* 886.

* Cat. Pl. U. S. Geogr. & Geol. Surv. W. 100th Merid. 55. 1874.

- NEW MEXICO: Tunitcha Mountains, *Standley* 7813. Farmington, *Standley* 7058, 7093. Shiprock Agency, *Standley* 7273. Tierra Amarilla, *Eggleston* 6517. Quemado, *Wooton* in 1906. Cimarron Canyon, *Griffiths* 5520. Los Pilares, *Wooton* in 1906. Carlsbad, *Hitchcock* 13448. Organ Mountains, *Hitchcock* 3813. Sierra Grande, *Standley* 6101. Las Cruces, *Wooton* 1087. Santa Fe, *Standley* 6488. Brazos Canyon, *Standley & Bollman* 10744. Without locality, *Wheeler's Exped.*, *Rothrock* 18; *Fendler* 973.
- ARIZONA: Santa Rita Reserve, *Griffiths* 4162. Tucson, *Pringle* in 1884. Celero Mountains, *Griffiths* 6132. Hawthorn, *Griffiths* 5824. Mount Eldon, *MacDougal* 355. Mormon Lake, *MacDougal* 91. Flagstaff, *Jones* in 1884; *Leiberg* 5506; *Griffiths* 4969, 7365; *Chase* 5836; *Hitchcock* 13207. Fort Apache, *Palmer* 575 in 1890. Jerome Junction, *Tidestrom* 923. Williams, *Barber* 51. Carrizo Mountains, *Standley* 7337. White Mountains, *Gray* 5430. Canyon Padre, *Hitchcock* 13238, 13248, 13249. Prescott, *Hitchcock* 13191; *Griffiths* 7336. Cosnino, *Jones* 4046. Adamana, *Chase* 5856; *Hitchcock* 10433. Bill Williams Mountain, *Chase* 5832. Phoenix Park, *Corille* 1089. Fort Huachuca, *Wilcox* 21. Ash Fork, *Griffiths* 7353.
- CALIFORNIA: Banning, *Griffiths* 8008. San Bernardino County, *Parish* 10329. San Bernardino Mountains, *Parish* 3299, 3828.
- LOWER CALIFORNIA: Topo, *Orcutt* 1146.

33. *Aristida longiseta* Steud.

Aristida longiseta Steud. Syn. Pl. Glum. 1: 420. 1854. "Fendler coll. nr. 978. N. Mexico." The duplicate type in the U. S. National Herbarium consists of two plants, one 20 cm. tall and the other 30 cm. tall, with slender, mostly basal blades, the first glume awnless, 1 cm. long, the second glume slightly awned, 2 cm. long, the lemma nearly glabrous, 15 mm. long, the awns 6 to 8 cm. long.

Aristida purpurea var. *longiseta* Vasey in Wheeler, Rep. U. S. Surv. 100th Merid. 6: 286. 1878. Based on *A. longiseta* Steud.

Aristida fasciculata var. *nuttalli* Thurb.; Beal, Grasses N. Amer. 2: 208. 1896. Based on *A. longiseta* Steud.

DESCRIPTION.

Plants perennial, often in large bunches, the innovations numerous; culms erect, glabrous, mostly 20 to 30 cm. tall; sheaths glabrous, those of the innovations strongly villous at the throat; blades involute, curved or flexuous, scabrous on the upper surface, sometimes scaberulous beneath, usually less than 15 cm. long; panicle narrow, erect but not stiff, few-flowered, the axis only a few cm. long, the branches ascending or appressed, or the lower more or less curved or flexuous; glumes unequal, 1-nerved, narrowed to an awnless or only mucronate summit; the first mostly 8 to 10 mm. long, scabrous on the keel, the second about twice as long, glabrous; lemma terete, mostly 12 to 15 mm. long, the callus about 1 mm. long, densely short-pilose, the tip glabrous, the body only slightly narrowed above, glabrous or the upper part scaberulous but scarcely tuberculate-scabrous in lines as in *A. purpurea*; awns about equal, divergent, finally widely spreading, flat and sometimes a little contorted at base, mostly 6 to 8 cm. long.

This species differs from *A. purpurea* in the short upright panicle, longer glumes and awns, and the glabrous or only scaberulous fruit less narrowed above. Its tendency to invade fresh soil, such as fire guards and especially the dirt thrown up from the burrows of prairie dogs (*Cynomys ludovicianus*),

has given this and allied species the name of dogtown grass. At maturity the fruits are blown about by the wind and, on the plains, are produced in great quantities. These fruits become very troublesome to man and beast as they are swept across the country by the strong winds, the spreading awns holding the sharp points forward to catch in clothing, in the wool of sheep, and in the eyes and nostrils of grazing animals.

DISTRIBUTION.

Plains and foothills, North Dakota to northern Mexico and westward to Montana and Arizona.

NORTH DAKOTA: Mandon, *Sarvis* 98. Devils Lake, *Geyer* in 1839.

SOUTH DAKOTA: Stearns, *Wallace* 33. Indian Creek, *Williams* in 1891. Edgemont, *Hitchcock* 11082.

NEBRASKA: North Platte, *Shear* 279; *Rydberg* 2025. Thedford, *Rydberg* 1300. Lavaca, *Bates* 871. Long Pine, *Bates* 1121.

KANSAS: Rockport, *Bartholomew* in 1889. Ulysses, *Thompson* 63. Osborne, *Shear* 158. Ellsworth County, *Hitchcock* 589a. Manhattan, *Kellerman* 58. Fort Dodge, *Griffiths* 6554.

TEXAS: Amarillo, *Hitchcock* 16196; *Ball* 1611. Kerrville, *Hitchcock* 5267. San Antonio, *Hitchcock* 5182, 5193. Fort Worth, *Ruth* 168. Alpine, *Hitchcock* 13609. Big Spring, *Hitchcock* 13364. Bravo, *Ball* 1592. Fort McKavett, *Ball* 1544. New Braunfels, *Hitchcock* 5211. Midland, *Tracy* 7931, 7934. Spofford, *Griffiths* 6300. Fort Stockton, *Wooton* in 1913. Without locality, *Pringle* in 1883; *Nealley* in 1889.

OKLAHOMA: Hollis, *Sterens* 1057. Waynoka, *Sterens* 601.

MONTANA: Upper Big Horn River, *Blankinship* 184. Billings, *Williams & Griffiths* 222; *Hitchcock* 11206. Laurel, *Wooton* in 1915.

WYOMING: Platte Canyon, *Goodding* 136. Devils Tower, *Griffiths* 544. Newcastle, *Griffiths* 699. Torrington, *Nelson* 8296. Douglas, *Nelson* 8368.

COLORADO: Walsenburg, *Shear* 790. Denver, *Holzinger* 11; *Eastwood* 31. Julesburg, *Plank* 24. Fort Collins, *Crandall* 518. Colorado Springs, *Williams* 2118; *Redfield* 588. Durango, *Earle & Tracy* 973, 974. Grand Junction, *Jones* 5476x. McElmo Canyon, *Eastwood* in 1892. Manitou, *Hitchcock* 1779. Sedalia, *Hitchcock* 16237. Arboles, *Baker* 14. Silver Reef, *Jones* 5163w. Rocky Ford, *Griffiths* 3304a. Trinidad, *Shear* 12.

UTAH: Antelope Island, *Watson* 1297. Springdale, *Jones* 5249.

NEW MEXICO: Ute Park, *Standley* 13670, 13961. Knowles, *Wooton* in 1909. El Rito, *Wooton* 2984. Cimarron Canyon, *Griffiths* 5521, 5522, 5591. Albuquerque, *Jones* in 1884. Pecos, *Standley* 4943. Zuni Reservation, *Wooton* 1086. Raton, *Standley* 6317. Deming, *Hitchcock* 3750. Roswell, *Griffiths* 5727, 5755. Mangas, *Metcalf* in 1897. White Sands, *Wooton* 404. Santa Fe, *Heller* 3535; *Wooton* 2935. Socorro, *Plank* 74. Las Vegas, *Chase* 5859. Rosa, *Baker* 152. Chamita, *Wooton* 2924. Without locality, *Fendler* 978.

ARIZONA: Canyon Padre, *Hitchcock* 13246. Prescott, *Wooton* in 1911. Seligman, *Wooton* in 1911. Tucson, *Toumey* in 1892. Oak Creek, *Rusby* 23. Ash Fork, *Griffiths* 4343, 4752, 7355. St. Johns, *Griffiths* 5794. Canyon Duchelly, *Griffiths* 5860. Fort Apache, *Palmer* 575 in 1890. Adamana, *Chase* 5851, 5852, 5858. Hackberry, *Jones* in 1884. Carrizo Mountains, *Standley* 7487. Congress, *Orcutt* 2532. Santa Rita Mountains, *Griffiths & Thornber* 308.

CHIHUAHUA: Chihuahua, *Pringle* 473.

TAMAULIPAS: Buena Vista, *Wooton* in 1919.

33a. *Aristida longiseta robusta* Merr.

Aristida longiseta robusta Merr. U. S. Dept. Agr. Div. Agrost. Circ. 34: 5. 1901. "Indian Creek [Montana], 336 *F. L. Scribner*, July 5, 1883 (type)." The specimen is in the U. S. National Herbarium. Culms about 40 cm. tall; no tuft of innovations; axis of panicle 10 cm. long; awns 5 cm. long; fruiting lemma 13 mm. long, slightly scaberulous toward summit.

DESCRIPTION.

Differs from *A. longiseta* in being taller and more robust, 30 to 50 cm. tall, the innovations fewer and the blades longer, not in conspicuous basal tufts or cushions; panicle longer; stiffer, and the branches stiffly ascending rather than curved or flexuous; awns mostly 4 to 5 cm. long.

Its greater size, stiffer panicle, and shorter awns give the plant a different aspect, though the technical characters are similar to those of the species.

DISTRIBUTION.

Range and habitat similar to that of the species; more common northward.

BRITISH COLUMBIA: Spencers Bridge, *Macoun* in 1889.

SOUTH DAKOTA: Rosebud, *Wallace* 34. Lebanon, *Griffiths* 252. Jamesville, *Bruce* 126. Redfield, *Griffiths* 68. Belle Fourche, *Griffiths* 404. Canning, *Griffiths* 43. Frozen Mans Creek, *Williams* 67. Aurora County, *Wilcox* 35. Custer, *Rydberry* 1118.

IOWA: Rock Rapids, *Ball* 410.

NEBRASKA: Long Pine, *Bates* 1123. St. Helena, *Clements* 2629. McCook, *Pammel* 392.

KANSAS: Riley County, *Norton* 589; *Hitchcock* 263. Osborne, *Shear* 156. Wakeeney, *Reed* in 1892. Tribune, *Rose & Fitch* 17080.

TEXAS: Amarillo, *Hitchcock* 16194. Spofford Junction, *Wooton* 2004. San Antonio, *Hitchcock* 5339. Big Spring, *Hitchcock* 13349, 13377, 13418. Sarita, *Hitchcock* 5460.

OKLAHOMA: Avard, *Stevens* 1696. Whitehorse, *Stevens* 722.

MONTANA: Belt Creek, *Scribner* 336. Prickly Pear Canyon, *Williams* 559. Missoula, *Williams & Griffiths* 250. Glendire, *Ward* in 1883.

WYOMING: Clear Creek, *Williams & Griffiths* 116. Devils Tower, *Griffiths* 517. Whalen Canyon, *Nelson* 540. Sheridan, *Nelson* 311. Newcastle, *Nelson* 8439.

IDAHO: Idaho Falls, *Merrill & Wilcox* 435. Without locality, *Wilcox* in 1881.

WASHINGTON: Alma, *Elmer* 536; *Hunter* 637. Rock Island, *Sandberg & Leiber* 439. Spokane, *Sandberg, Heller & MacDougal* 906; *Piper* 2597; *Suksdorf* 8753. Lyons Ferry, *Griffiths & Cotton* 547. Prosser, *Cotton* 639.

OREGON: Wallowa County, *Sheldon* 8298. Without locality, *Wilkes Exped.*

COLORADO: Hugo, *Wooton* in 1914. Akron, *Wooton* in 1913. Sedalia, *Hitchcock* 16225, 16227. Colorado Springs, *Tracy* 496. Greeley, *Hitchcock* in 1901. Manitou, *Chase* 5300; *Hitchcock* 1780. Trinidad, *Shear* 20. Trail Glen, *Clements* 40. Without locality, *Powell's Exped.* 671, 672; *Hall & Harbour* 652.

UTAH: Uinta, *Jones* in 1880. Becks Hot Springs, *Garrett* 2346. Salt Lake City, *Smith* 1827.

NEW MEXICO: Mesilla, *Wooton* 42. Los Pilares, *Wooton* in 1906. Tucumcari, *Wooton* in 1914.

ARIZONA: Williams, *Griffiths* 4928. Payson, *Toumey* in 1892. Tucson, *Toumey* in 1892. North Arizona, *Lemmon* 4632.

COAHUILA: Diaz, *Pringle* 9037.

33b. *Aristida longiseta rariflora* Hitchc., subsp. nov.

DESCRIPTION.

Differs from the species in the few-flowered panicle with capillary flexuous branches bearing 1 or 2 spikelets.

Type in the U. S. National Herbarium, no. 745501, collected in Tom Green County, Texas, May 1880, by Frank Tweedy.

This form bears the same relation to *A. longiseta* that *A. purpurea laxiflora* does to *A. purpurea*. The two subspecies have the same aspect, but differ in the spikelet characters. More information is needed on both forms. They may prove to be distinct species. Being scattered here and there through the range of the respective species they are referred to them as subspecies.

DISTRIBUTION.

Dry plains, Texas to Arizona, and Colorado.

TEXAS: Del Rio, *Hitchcock* 13637. San Antonio, *Havard* in 1882; *Hitchcock* in 1903; *Plank* 45. Tom Green County, *Tweedy* in 1880. Llano, *Plank* 6.

COLORADO: Without locality, *Vasey* in 1868; *Hall*.

NEW MEXICO: Without locality, *Vasey*.

ARIZONA: Apache Smelter, Santa Catalina Mountains, *Griffiths* 7123. Ash Fork, *Griffiths* 7354.

34. *Aristida lanosa* Muhl.

Aristida lanata Poir. in Lam. Encycl. Suppl. 1: 453. 1810. Not *A. lanata* Forsk. 1775. Poiret says, "Cette plante a été recueillie par M. Bosc dans la Caroline (V. s. Comm. Bosc)." In the Padua Herbarium is a specimen collected in South Carolina by Bosc. There is no fruit, but the tall stiff stem and the lanate sheaths are characteristic. The specimen is labeled *A. lanuginosa* Bosc, which name appears to have been changed by Poiret to *lanata*. In the Delessert Herbarium is a specimen of Bosc's collection of this species with fruiting panicles. Trinius²⁶ mentions *A. lanuginosa* Bosc in a note under *A. stricta*. Later Trinius²⁸ mentions it again under *A. stricta*, giving the author as Clarion, and states at the end of his note "V. spec. Clar. ex Am. bor. in Hb. Mertens s. n. *A. lanuginosa* Bosc."

Aristida lanosa Muhl; Ell. Bot. S. C. & Ga. 1: 143. 1816. Elliott cites no special locality, but the vicinity of Charleston would be assumed. Muhlenberg²⁷ gives the locality as "Carolina." The type has been examined in the Elliott Herbarium.

Chaetaria gossypina Beauv.; Roem. & Schult. Syst. Veg. 2: 391. 1817. Based on *Aristida lanata* Poir. The name only was used earlier by Beauvois²⁹ and credited to Bosc.

Aristida perennis Panzer, Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 104. 1842. Trinius and Ruprecht append to *A. virgata* a note on *A. perennis* Panzer "in Hb. Willd! n. 1799 e Carolina," showing how the latter differs from the former. The description applies to *A. lanosa*.

Aristida lanuginosa Clarion; Steud. Syn. Pl. Glum. 1: 133. 1854. "Am. sptr." This is based on the Bosc specimen cited above (under *A. lanata* Poir.).

²⁶ Mém. Acad. St. Pétersb. VI. Sci. Nat. 2¹: 46. 1836.

²⁸ Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 103. 1842.

²⁷ Descr. Gram. 174. 1817.

²⁹ Ess. Agrost. 30, 158. 1812.

inasmuch as Steudel refers to "Trin. Act. Petr. 1836. p. 46" and "Stipac. p. 103."

Moulingia lanosa Raf. Ind. Kew. 3: 267. 1894. Based on *Aristida lanosa* Muhl.

DESCRIPTION.

Plants perennial; culms solitary or few in a tuft, erect, rather robust, glabrous, 1 to 1.5 meters tall; sheaths lanate-pubescent or rarely glabrous, overlapping; blades flat, tapering to a fine involute point, scabrous on the upper surface, glabrous beneath, as much as 50 cm. long and 4 mm. wide; panicle narrow, rather loose, as much as 40 cm. long, the branches ascending or appressed, the lower distant, as much as 10 cm. long, lanate-pubescent at base; glumes unequal, 1-nerved, acute or awn-pointed, the first 12 to 14 mm. long, scabrous on the keel and more or less on the back, the second about 1 cm. long, glabrous on the keel; lemma 8 to 19 mm. long, pubescent on the callus, scabrous on the keel and on the sides toward the summit, scarcely beaked; awns unequal, the central horizontally spreading, or reflexed from a curved base, 1.5 to 2.5 cm. long, the lateral half to two-thirds as long, erect or horizontally spreading, the base a little contorted.

DISTRIBUTION.

Dry sandy soil of the Coastal Plain, Delaware to Florida and Texas.

MISSOURI: Stoddard County, *Bush* 158 (Gray Herb.).

DELAWARE: Millsboro, *Canby* in 1880. Cedar Neck, *Commons* 326. Seaford, *Commons* 121. Faulkland, *Commons* in 1883.

MARYLAND: Salisbury, *Canby* in 1863.

VIRGINIA: Prince Edward County, *J. D. Smith* in 1880.

NORTH CAROLINA: Wilmington, *Hitchcock* in 1905.

SOUTH CAROLINA: Isle of Palms, *Chase* 4523; *Hitchcock* 165. Aiken, *Ravenel* in 1869.

GEORGIA: Leslie, *Harper* 1715. Lumpkin, *Latimer* in 1885.

FLORIDA: Gainesville, *Chase* 4215. Grasmere, *Combs* 1093. Aspalaga, *Biltmore Herb.* 1109a. Jacksonville, *Curtiss* 3430, 4044, 5350; *Kearney* 168 (glabrous). Orange County, *Baker*. Baldwin, *Combs* 66½ (glabrous).

ALABAMA: Gateswood, *Tracy* in 1903. Mobile, *Mohr* in 1878. Wilson, *Mohr* in 1891. Auburn, *Earle & Baker* in 1897; *Earle & Earle* 5.

MISSISSIPPI: Biloxi, *Tracy* 1394, 3502, 3721, 3902; *Kearney* 304. Ocean Springs, *Skehan* 22528. Waynesboro, *Kearney* 187.

TEXAS: Dallas, *Reverchon* 2243; *Bush* 1617. Texarkana, *Letterman* 7.

OKLAHOMA: Sapulpa, *Bush* 757.

35. *Aristida scribneriana* Hitchc.

Aristida lanuginosa Scribn. Contr. U. S. Nat. Herb. 17: 278. 1913. Not *A. lanuginosa* Clarion, 1854. The type of *A. lanuginosa* Scribn. is "in the U. S. National Herbarium, no. 691230, collected on 'Hills near Guadalajara, Jalisco,' Mexico, October 28, 1889, by C. G. Pringle (no. 2375)."

DESCRIPTION.

Plants perennial; culms cespitose, about 1 meter tall, erect, lanate-pubescent except in the region of the nodes, scabrous below the panicle; leaves mostly basal, the sheaths lanate-pubescent except above the nodes, this portion glabrous; blades 10 to 25 cm. long, 1 to 2 mm. wide, ending in a long fine

point, sparsely lanate-pubescent, the older culm blades flat and curled, the upper culm blades and those of the innovations involute; panicle 10 to 25 cm. long, narrow, the branches appressed, the lowermost as much as 10 cm. long, naked below, a short branchlet at base; spikelets on short appressed pedicels; glumes 1-nerved, acuminate or short-awned, sparsely lanate, scabrous on the keels, the first 6 to 7 mm. long, the second about 1 to 2 mm. longer; lemma smooth below except the short-pilose callus, scabrous above, tapering into a scabrous, slightly twisted beak, the entire length, including the beak, about 11 mm.; awns subequal, somewhat spreading, the central one about 15 mm. long, the lateral about 12 mm. long.

Griffiths' no. 8131 is only slightly lanate on the culms and sheaths, but the glumes are beset with long flexuous hairs.

DISTRIBUTION.

Rocky hills and gravelly plains, Pacific slope of Mexico.

DURANGO: Durango, *Hitchcock* 7649.

JALISCO: Guadalajara, *Pringle* 2375, 11734; *Hitchcock* 7324; *Griffiths* 8131.

MICHOACÁN: Morelia, *Arsène* 2631.

36. *Aristida neglecta* Léon, sp. nov.²⁸

DESCRIPTION.

Plants perennial; culms loosely caespitose, erect, wiry, glabrous, 40 to 60 cm. tall; sheaths glabrous, much shorter than the internodes, distributed along the culm, villous at the throat, the hairs deciduous; ligule a ciliate membrane less than 0.5 mm. long; blades stiff and firm, soon involute, sharp-pointed, usually not over 5 cm. long, often shorter, less than 1 mm. wide, glabrous beneath, scabrous-puberulent on the upper surface; panicle narrow, 5 to 10 cm. long, the branches distant, rather stiffly ascending, 1 to 2 cm. long, bearing 1 or 2 branchlets at base, few-flowered; glumes equal or the second a little longer, 7 to 9 mm. long, 1-nerved, acuminate or awn-pointed, the first scaberulous on the keel, the second glabrous; lemma about 1 cm. long, the callus pilose, less than 1 mm. long, the body glabrous, terete, gradually tapering into a scabrous twisted beak 3 to 4 mm. long; awns about equal, divergent, finally nearly horizontal, 10 to 15 mm. long, slightly contorted at base.

Type in the U. S. National Herbarium, no. 1,064,517, collected on open grassy hills, called Jata Hills or "Lomas de las Jatas," Guanabacoa, Province of Habana, Cuba, February 12, 1921, by E. L. Ekman.

This species differs from *A. curtifolia* in the twisted beak of the lemma and from *A. refracta* in the scarcely contorted awns, and from both in habit. In the former species the very short blades tend to be in pairs and in the latter they are clustered at the base. The leaves of *A. neglecta* are distributed uniformly along the culm and are not clustered at the base.

DISTRIBUTION.

Grassy barrens, Cuba and Hispaniola.

CUBA: Guanabacoa, *Léon* 871, 872, 874, 2875, 5015; *Hitchcock* 500; *Wilson & Léon* 11645. Palm barrens west of Guane, *Shafer* 10364, 10630. San Julián de Guane, *Léon* 7030, 7031. Madruga, *Léon* 3455, 6374. Cuabal

²⁸The type specimen was received from Dr. E. L. Ekman with the manuscript name here published. Brother Léon, of the Colegio de la Salle, Vedado, Habana, has done much to develop our knowledge of Cuban botany.

de Jesús María-Minas, *Léon* 5213. Between San Diego de los Baños and La Palma, *Léon* 4844. Sancti Spiritus, *Léon* 8993. Motembo Mines, *Léon* 8639. Caimanera Naval Station, *Hioram* 7. Manacas, *Léon* 5834. Placetas del Sur, *Léon* 6425. Holguin, *Shaffer* 1183. Hanábana, *Wright* 737. Isle of Pines, *Britton*, *Britton & Wilson* 14414. Without locality, *Wright* 742, 3433.

HAITI: St. Michel, *Buch* 1075.

37. *Aristida arizonica* Vasey.

Aristida arizonica Vasey, Bull. Torrey Club 13: 27. 1886. "Collected in Arizona." The specimen selected as the type was collected near Las Vegas, New Mexico, by G. R. Vasey in 1881. This specimen bore in Dr. George Vasey's hand, the name *arizonica* (since partly erased and written over in ink in another hand) and a diagnosis in Vasey's hand, showing that this is the specimen actually studied in preparing the description. Dr. Vasey probably had before him also *Rusby* 875 from the San Francisco Mountains, Arizona, collected in 1883.

Aristida orizabensis Fourn. Mex. Pl. 2: 78. 1886. "Valle de Orizaba (*Schaffn.* n. 136 in herb. Franq., *F. Mull.* n. 2103)." Both specimens have been examined, the first in the Paris Herbarium and the second in the St. Petersburg Botanical Garden. The glumes and lemma are 10 to 12 mm. long, the latter with a short beak only slightly twisted. These are doubtfully referred to *A. arizonica*.

Aristida appressa Vasey, Contr. U. S. Nat. Herb. 1: 282. 1893. "Collected at Guadalajara by Dr. Edward Palmer in 1885." The type specimen is in the U. S. National Herbarium. The date is an error for 1886, as Dr. Palmer was not in Jalisco in 1885. The beak of the lemma is slender and twisted.

Aristida appressa var. *brevior* Vasey, Contr. U. S. Nat. Herb. 1: 282. 1893. "Collected at Río Blanco by Dr. Edward Palmer (No. 516) in 1886." The type specimen is in the U. S. National Herbarium. Río Blanco is near Guadalajara. The beak of the lemma is short and scarcely twisted.

Aristida pseudospadicea Hubb. Proc. Amer. Acad. 49: 500. 1913. "Type (in the Gray Herb.) and only specimen seen, pine ridge near Manatee Lagoon, June 11, 1905, *M. E. Peck*, no. 31." A part of the type specimen is in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, slightly roughened below the panicle, 30 to 120 cm. tall; sheaths glabrous, sometimes villous at the throat; blades flat, narrowed into a fine involute point, or some of them involute throughout, scaberulous on the upper surface, glabrous beneath, 10 to 30 cm. long, 1 to 4 mm. wide, the older ones usually curled or flexuous; panicles narrow, erect or somewhat nodding, closely flowered or more or less interrupted at base, 10 to 25 cm. long, the branches appressed, crowded or rather distant, the lower mostly 5 to 10 cm. long, sometimes longer, the axis very scabrous; spikelets appressed and closely set on the branchlets; glumes equal or slightly unequal, awn-pointed, or with an awn 1 to 2 mm. long, 1-nerved, mostly 10 to 15 mm. long, the first scabrous on the keel and sometimes on the back, the second glabrous; lemma 1 to 1.5 cm. long, including the more or less twisted beak of about 3 to 5 mm., the callus pilose, about 1 mm. long; awns about equal, ascending or somewhat spreading, mostly 1 to 2 cm. long.

DISTRIBUTION.

Dry plains, stony hillsides, and open forest, mostly at 1,500 to 2,500 meters altitude, Colorado to Paraguay.

COLORADO: Spanish Peaks, 3000 meters, *Chase* 5402.

NEW MEXICO: Ute Park, *Standley* 13389, 13995, 14296, 14463.

Vermejo Park, *Wooton* in 1913. White Mountains, *Wooton & Standley* in 1907. Without locality, *Wright* 2007.

ARIZONA: San Francisco Mountains, *Rusby* in 1883; *Leiberg* 5740. Chiricahua Mountains, *Toumey* in 1896. Flagstaff, *Chase* 5848; *Griffiths* 5882, 7373; *Jones* in 1884; *Hitchcock* 13240. Coconino National Forest, *Pearson* 49. White Mountains, *Griffiths* 5275, 5368. Harts Ranch, *Rusby* 875.

SINALOA: Cerro Colorado, *Brandege* in 1904.

CHIHUAHUA: Miñaca, *Hitchcock* 7752, 7764. Sánchez, *Hitchcock* 7709, 7717. Southwestern Chihuahua, *Palmer* 5 in 1885. Santa Eulalia Mountains, *Pringle* 389 (*Gray Herb.*).

TEPIC: Tepic, *Palmer* 1916 in 1892.

JALISCO: Río Blanco, *Palmer* 517, 520 in 1886. Guadalajara, *Pringle* 1810, 2622. Zapotlán, *Hitchcock* 7115, 7145.

VERACRUZ: Orizaba, *Bourgeau* 3357.

PUEBLA: Puebla, *Arsène* 1041, 1780.

FEDERAL DISTRICT: *Pringle* 6549; *Hitchcock* 5935.

MORELOS: Cuernavaca, *Holway* 3020.

MICHOACÁN: Morelia, *Arsène* 2594, 2972.

OAXACA: Oaxaca, *Hitchcock* 6139. Las Sedas, *Smith* 918.

GUATEMALA: Amatitlán, *Popenoe* 693b. Guatemala City, *Hitchcock* 9076, 9102.

PANAMA: Olá, *Pittier* 5019, 5047, 5066.

COLOMBIA: Neiva, Dept. Huila, *Rusby & Pennell* 1036. Santa Marta, *Smith* 136.

PARAGUAY: San Salvador, *Rojas* 2734.

38. *Aristida barbata* Fourn.

Aristida barbata Fourn. Mex. Pl. 2: 78. 1886. "In valle Mexicensi (*Schaffn.* n. 513 in herb. Coss.)." This specimen has been examined at Paris. The beak of the lemma is twisted.

DESCRIPTION.

Plants perennial; culms erect, wiry, glabrous, 30 to 60 cm. tall; sheaths glabrous, villous at the throat; ligule very short; blades involute, firm, glabrous on outer surface or scabrous toward tip, 10 to 20 cm. long; panicle erect, narrow, the branches appressed, 10 to 15 cm. long; glumes equal, about 1 cm. long, gradually narrowed into an awn, the first 1-nerved, scabrous on the keel, the second obscurely 3-nerved, glabrous; lemma about as long as the glumes, the upper third narrowed into a twisted neck; awns equal, ascending or somewhat spreading, 12 to 15 mm. long.

This species differs from *A. arizonica* in the involute blades and villous throat of the sheaths.

DISTRIBUTION.

Rocky hills, central Mexico.

PUEBLA: Tehuacán, *Pringle* 8592; *Hitchcock* 6084. Esperanza, *Hitchcock* 6487

OAXACA: Las Sedas, *Smith* 918.

39. *Aristida stricta* Michx.

Aristida stricta Michx. Fl. Bor. Amer. 1: 41. 1803. "Hab. in Carolina inferiore." The type has been examined at the Paris Museum.

Chaetaria stricta Beauv. Ess. Agrost. 30, 152, 158. 1812. Based on *Aristida stricta* Michx.

? *Aristida beyrichiana* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5: 104. 1842. "In pinetis Georgiae et in territorium Arkansas. (Beyrich)". The type is in the Trinius Herbarium and a fragment is in the U. S. National Herbarium. The specimen is young, the awns only partly developed. The specimen appears to be *A. stricta*, but from the fragment examined it is impossible to state with certainty.

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, 50 to 100 cm. tall; sheaths glabrous, pubescent about the throat; blades closely involute, scabrous on the upper surface, villous above the base, glabrous beneath, firm, somewhat flexuous, as much as 30 or 40 cm. long, about 1 mm. thick when rolled; panicles long and slender, as much as 30 cm. long or even more, the branches appressed, the lower usually rather distant, as much as 5 cm. long, floriferous from the base; glumes about equal, awn-tipped, 7 to 9 mm. long, the first 1-nerved or with an additional nerve on one side, glabrous on the back, scaberulous on the keel, the second 1-nerved, glabrous on back and keel; lemma glabrous except the pubescent callus, about 6 mm. long, scarcely beaked; awns about equal, divergent, sometimes horizontally spreading, the central 1 to 1.5 cm. long, the lateral a little shorter.

DISTRIBUTION.

Common in pine barrens, North Carolina to Florida, west to Mississippi.

NORTH CAROLINA: Wilmington, *Chase* 4565, 7152; *Coville* 100; *Kearney* 256; *Hitchcock* 198.

SOUTH CAROLINA: Aiken, *Ravenel* in 1866.

GEORGIA: Albany, *Tracy* 3710, 3711, 3717. Cordele, *Tracy* 1490. Eastman, *Mohr* in 1893. Camp Cornelia, *Ricker* 937. Ruskin, *Ricker* 907. Quitman, *Harper* 1620.

FLORIDA: Fort Myers, *Standley* 13076; *J. Standley* 224; *Hitchcock* 444. Tampa, *Garber* in 1877; *Combs* 1345, 1366. Miami, *Garber* in 1877; *Chase* 3881. Freeport, *Mohr* in 1880. Brevard County, *Fredholm* 5988, 6145. Clarcona, *Pieters* 72, 76. Lake City, *Bitting* 769, 788, 1052, 1446; *Hitchcock* 2276. Eustis, *Hitchcock* 2274; *Nash* 407, 1620, 1642. Madison County, *Hitchcock* 2275. Jacksonville, *Curtiss* 3426, 4048, 5184. Titusville, *Chase* 3977. Waldo, *Combs* 697. Avondale, *Combs* 497. De Funiak Springs, *Combs* 436, 474. Dunellen, *Combs* 910. Old Town, *Combs* 850. Quincy, *Combs* 428. Braidenton, *Combs* 1258, 1290, 1317. Bartow, *Combs* 1212. Crystal, *Combs* 1018. Chipley, *Combs* 550. Felsmere, *Tracy* 9252. Homosassa, *Combs* 952. Grasmere, *Combs* 1162. Sneys Island, *Tracy* 6463. Chattahooche, *Tracy* 3713, 3714, 3718. Johns Pass, *Tracy* 7182. Coconut Grove, *Small & Carter* 569; *Small & Nash* 178. Aspalaga, *Biltmore Herb.* 1124a. Without locality, *Rugel* 236.

MISSISSIPPI: Scranton, *Tracy* 4663. Ocean Springs, *Tracy* 144.

40. *Aristida erecta* Hitchc.

Aristida erecta Hitchc. Contr. U. S. Nat. Herb. 12: 236. 1909. "The type specimen was collected by Wright in Cuba in 1865, no. 41161, in the U. S.

National Herbarium." This specimen is numbered in pencil 2432, which is an error for 3432.

DESCRIPTION.

Plants perennial; culms erect, rather stout, glabrous, as much as 1.5 meters tall; sheaths glabrous, longer than the internodes; blades flat, becoming involute, especially toward the much-attenuate tip, scabrous on the upper surface, glabrous beneath, as much as 1 meter long, 3 to 5 mm. wide; panicles narrow, as much as 50 cm. long, the numerous very scabrous branches ascending or appressed, the lower as much as 10 cm. long or even longer, all spikelet-bearing from the base, the spikelets crowded on erect rather stout pedicels 2 to 3 mm. long; glumes glabrous on the back, unequal, acuminate or awn-tipped, the first 3-nerved with one of the lateral nerves indistinct, scabrous on the keel, 12 to 15 mm. long, the second 1-nerved, smooth on the keel, 2 to 3 mm. shorter than the first; lemma 12 to 13 cm. long, glabrous on the body, the short indefinite obscurely twisted beak scabrous toward the summit, the callus pilose; awns divergent or horizontally spreading, the central 2 to 3 cm. long, the lateral somewhat shorter, the curved base not warped.

DISTRIBUTION.

Savannas of western Cuba.

CUBA: Herradura, *Tracy* 9076. San Julián, south of Guane, *Léon & Roca* 6918. San Diego, *Léon & Charles* 4852. Santa Cruz de los Piños, *Ekman* in 1923. Isle of Pines, *Britton, Britton & Wilson* 14959. Without locality, *Wright* 3432.

41. *Aristida purpurascens* Poir.

Aristida purpurascens Poir. in Lam. Encycl. Suppl. 1: 452. 1810. "Cette plante m'a été communiquée par M. Bosc, qui l'a recueillie dans la Caroline (V. s.)." Bosc's collections were made mostly in the vicinity of Charleston, South Carolina, though he made a trip to Wilmington, North Carolina. The type has not been examined.

Chaetaria purpurascens Beauv. Ess. Agrost. 30, 152, 158. 1812. Based on *Aristida purpurascens* Poir.

Aristida racemosa Muhl. Descr. Gram. 172. 1817. Not *A. racemosa* Spreng. 1807. No locality given, but assumed to be in the vicinity of Lancaster, Pennsylvania, where Muhlenberg lived. The type is in the Muhlenberg Herbarium. Elliott describes this species under *A. stricta* Michx.²⁰

Chaetaria affinis Schult. Mant. 2: 210. 1824. Based on *Aristida racemosa* Muhl.

Aristida affinis Kunth, Rév. Gram. 1: 61. 1829. Based on *Chaetaria affinis* Schult.

Aristida elliottiana Steud. Syn. Pl. Glum. 1: 133. 1854. Based on *Aristida stricta* Ell.

Aristida geyeriana Steud. Syn. Pl. Glum. 1: 133. 1854. "*A. stricta* in Hrbo. Ch. A. Geyer sec. spec. a Kampmannio communicatum. [sign for perennial]. Illinois." The type has not been examined. The locality and description indicate *A. purpurascens*, except that the leaves are described as convolute. In the Gray Herbarium there is a specimen, probably a duplicate type, labeled "*Aristida stricta* Mich. Sandy, Beardstown, Ill. Aug. 1842. Ch. A. Geyer."

²⁰ Bot. S. C. & Ga. 1: 142. 1816.

Aristida purpurascens var. *minor* Vasey, Contr. U. S. Nat. Herb. 1: 46. 1892. "Southern States to Texas." Several specimens are labeled with the varietal name in Vasey's hand. A specimen collected on Horn Island, Mississippi, in 1891 by S. M. Tracy (no. 1564) may be accepted as the type.

Aristida purpurascens glaucissima Kearney, U. S. Dept. Agr. Div. Agrost. Bull. 24: 45. 1901. "Type [in the U. S. National Herbarium] collected by T. H. Kearney, jr., No. 321, in very dry, sterile soil in an opening in the pine forest, 6 miles above Biloxi, Mississippi, October 7, 1896."

DESCRIPTION.

Plants perennial, rarely glaucous; culms cespitose from a rather thin weak base, erect or somewhat decumbent at base, slender, glabrous, mostly 40 to 70 cm. tall, sometimes as much as 1 meter, the lower internodes sometimes somewhat zigzag; sheaths glabrous or the lower with a few loose hairs, more or less compressed and keeled, especially the lower overlapping ones; blades flat, rather lax and flexuous, scabrous on the upper surface, sometimes with a few loose hairs toward the base, glabrous beneath, mostly 10 to 20 cm. long, usually less than 2 mm. wide; panicle narrow, rather lax and nodding, one-third to half the length of the culm, the branches rather laxly appressed, 1 to 2 cm. long, sometimes more; glumes about equal or the lower a little longer, 9 to 12 mm. long, usually mucronate, 1-nerved or the first with a weak nerve on one side, the first scabrous on the keel and often on the back, the second glabrous or nearly so; lemma a little shorter than the glumes, about 7 mm. long, slightly pubescent on the 0.5 mm. long callus, glabrous on the body, scabrous on the keel and at the scarcely beaked summit; awns about equal, or the central a little longer, finally all divergent, horizontally spreading or somewhat reflexed, 1.5 to 2.5 cm. long.

DISTRIBUTION.

Dry sandy soil, Massachusetts to Florida, west to Missouri and Texas; also Bahamas and western Cuba.

MASSACHUSETTS: Duxbury, *Knowlton* in 1911. Essex County, *Conant* in 1878. Concord, *Greenman* 3225.

RHODE ISLAND: Without locality, *Olney* (Gray Herb.).

NEW YORK: Wading River, Long Island, *Miller* in 1877.

NEW JERSEY: Freehold, *Pearce* in 1885. Atco, *Brinton* in 1889. Hammonton, *Scribner* 250. Califon, *Fisher* in 1902. Fairton, *Commons* 331.

PENNSYLVANIA: Chester County, *Bebb* in 1863. Chambersburg, *Porter* in 1897. Easton, *Porter* in 1888.

OHIO: Bowling Green, *Kneucker, Gram. Exs.* 193. Erie County, *Moseley* in 1896.

INDIANA: Tolleston, *Hill* 184 in 1898. Porter, *Chase* 684. Michigan City, *Deam* 29766. Dune Park, *Chase* 225, 1963, 1993; *Umbach* 4985. McCool, *Hill* 109 in 1910.

ILLINOIS: Mason County, *Vasey* in 1861.

MISSOURI: Monteer, *Bush* 3584. Eagle Rock, *Bush* 682. Scott County, *Eggert* 175. Graydon Springs, *Standley* 9894.

DELAWARE: Townsend, *Commons* 329. Millsboro, *Commons* 330. Greenbank, *Commons*, 328. Centerville, *Commons* 327.

MARYLAND: Great Falls, *Ball* 82.

DISTRICT OF COLUMBIA: *Chase* 253; *Dewey* 133; *Hitchcock* 2401; *Vasey* in 1874; *Van Eseltine & Moseley* 235.

VIRGINIA: Cape Charles, *Cady & Rose* 859. Princess Anne County, *Kearney* 2117.

- NORTH CAROLINA: Swannanoa, *Biltmore Herb.* 1113b. Wilmington, *Chase* 4563.
- SOUTH CAROLINA: Orangeburg, *Hitchcock* in 1905. Clemson College, *House* 2869. Isle of Palms, *Chase* 4534.
- GEORGIA: Leslie, *Harper* 590, 1719. Stone Mountain, *Chase* 4514.
- FLORIDA: Hillsborough County, *Fredholm* 6462. Tampa, *Nash* 2424; *Combs* 1365, 1367. Aspalaga, *Biltmore Herb.* 1113a. Punta Rassa, *Hitchcock* 443. Sanibel, *Hitchcock* in 1900. Apalachicola, *Kearney* 107. St. Georges Island, *Kearney* 127. Perico Island, *Tracy* 7372. Lavignes Landing, *Baker* 252. Fort Myers, *Standley* 12916. Gainesville, *Chase* 4228, 4244. Cutler, *Small & Carter* 918. Brevard County, *Fredholm* 6096. Grasmere, *Combs* 1083. Arcadia, *Combs* 1283. Lake City, *Chase* 4295. Miami, *Chase* 3870. Little River, *Easton* 490. Jenkins, *Easton* 199, 232. Jacksonville, *Curtiss* 5183. Duval County, *Curtiss* 3429*. St. Vincents Island, *McIntee* 1777.
- KENTUCKY: Wasiota, *Kearney* 314.
- TENNESSEE: Knoxville, *Ruth* 27, 663.
- ALABAMA: Pisgah, *Chase* 4486. Tensaw, *Tracy* 8017. Mobile, *Mohr* in 1878, 1879, 1882, and 1891.
- MISSISSIPPI: Panola County, *Eggert* 121. Horn Island, *Tracy* 1564, 1882. Kosh-taw, *Tracy* 4669. Biloxi, *Tracy* 3073, 3852, 3853, 4662, 4668; *Kearney* 309, 321. Waynesboro, *Kearney* 107, 164.
- ARKANSAS: Benton County, *Plank* 89. Northwest Arkansas, *Harvey* 10.
- LOUISIANA: Calhoun, *Ball* 58. Covington, *Arsène* 11138. Natchitoches, *Ball* 154. Calcasieu, *Ball* 201.
- TEXAS: Handley, *Reverchon* 3480B. Del Rio, *Hitchcock* 13638. Brazos County, *Nealley* in 1882. Texarkana, *Plank* 81; *Heller* 4274. Dallas, *Reverchon* 1060. Corsicana, *Reverchon* 3477. Weatherford, *Tracy* 8239.
- OKLAHOMA: Lincoln County, *Blankinship* in 1895 (Gray Herb.).
- BAHAMAS: New Providence, *Eggers* 4447.
- CUBA: Isle of Pines, *Taylor* 20; *Palmer & Riley* 995. Herradura, *Hitchcock* 232; *Tracy* 9095. Without locality, *Wright* 3831, 3832.

42. *Aristida liebmanni* Fourn.

Aristida liebmanni Fourn. Mex. Pl. 2: 78. 1886; Biol. Centr. Amer. Bot. 3: 534. 1885, nomen nudum. "Mirador, April (*Liebm. n.* 662)." The type, in the Copenhagen Herbarium, has been lent through the kindness of the Director. There is a duplicate type in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial; culms erect, caespitose, slender, glabrous, as much as 50 cm. tall, branching; sheaths glabrous; blades flat, involute above, narrowed to a fine involute point, the blades of the innovations involute, scabrous on the upper surface, glabrous beneath, as much as 20 cm. long and 2 mm. wide; panicle narrow, rather loose, somewhat nodding, 10 to 15 cm. long, the lower branches ascending or appressed, rather distant, as much as 4 cm. long, floriferous from base; glumes about equal, 1 cm. long, 1-nerved, glabrous, or the first scabrous on the keel, obtuse or slightly notched or mucronate at summit; lemma about as long as or a little longer than the glumes, pilose on the callus, scabrous on the upper part of the body and on the flattened somewhat twisted 2 mm. long beak; awns somewhat divergent, sometimes a little contorted at base, the central 1.5 to 2 cm. long, the lateral a little shorter.

DISTRIBUTION.

Savannas of Veracruz, Mexico; also in Guatemala.

VERACRUZ: Mirador, *Liebmann* 662. Minatitlán, *Smith* 568, 590. Without locality, *Liebmann* 665.

GUATEMALA: Los Amales to Izabal, *Blake* 7785.

43. *Aristida parishii* Hitchc.

Aristida parishii Hitchc. in Jepson, Fl. Calif. 1: 101. 1912. "Type in the U. S. National Herbarium, collected by S. B. and W. F. Parish at Agua Caliente, Colorado Desert, Apr., 1882 (no. 1029a)."

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, 30 to 50 cm. tall; sheaths glabrous, slightly villous at the throat; ligule a short ciliate membrane, the hairs as much as 1 mm. long; blades ascending, firm, flat or more or less involute, scabrous on the upper surface, glabrous beneath, scaberulous toward the involute tip, 15 to 30 cm. long, 1 to 2 mm. wide; panicle narrow, about 15 cm. long, the branches rather stout, stiffly ascending or appressed, the lower 2 to 4 cm. long; glumes somewhat unequal, short-awned, 1-nerved, the first about 12 mm. long, scabrous on the keel, the second 1 to 2 mm. longer, glabrous; lemma about 12 mm. long, the callus about 1 mm. long, pilose, the body glabrous below, gradually tapering above into a short beak, increasingly scabrous on the upper half toward the straight or obscurely twisted summit; awns about equal or the lateral a little shorter, divergent, scarcely contorted, very scabrous from the base, the central about 2.5 cm. long.

DISTRIBUTION.

Dry or rocky soil, Arizona and southern California.

ARIZONA: Sierra Tucson, *Pringle* in 1884. Tucson, *Toumey* in 1892. Yucca, *Jones* in 1884. Congress Junction, *Wootton* 7020. Without locality, *Vasey* in 1889.

CALIFORNIA: Top of Glover Mountain, Colton, *Reed* 1307. San Diego, *Cleveland* in 1882. Palm Canyon, *Johnston* 1008. New York Mountains, *Leastalk*, *Parish* 10227. Jumba Hills, Riverside County, *Wilder* 1047½. Newberry, *Chase* 5788½.

44. *Aristida curtifolia* Hitchc.

Aristida curtifolia Hitchc. Contr. U. S. Nat. Herb. 12: 235. 1909. "Type, *Wright* 736, 1865, no. 559960 in the U. S. National Herbarium, which also bears the secondary numbers 282 and 286." The type locality is uncertain, as there is no indication on the specimen. Our label has printed upon it "Plantae Cubenses Wrightianae" and "Coll. C. Wright, 1865," and bears in script the two numbers 282 and 286. Another label is similar, but omits the year and bears the number 736 only. No. 282 in the Grisebach Herbarium is said to come from "Savannas of Guanacaro, July 28." Wright collected in the vicinity of Habana and Matanzas at this time³¹ and the type may have come from the Jata Hills. Guanacaro may be an error for Guanabacoa.

³¹ Bull. Torrey Club 32: 298. 1905.

DESCRIPTION.

Plants perennial, the crown hard and woody; culms erect, glabrous, stiff and wiry, 20 to 40 or even 60 cm. tall, the alternate internodes short, thus bringing the leaves together approximately in pairs; sheaths glabrous, short, often only 5 to 10 mm. long, sometimes slightly villous at the throat; blades short, thick, stiffly spreading, flat, or soon involute, scabrous on the upper surface, glabrous beneath, those of the culm mostly 5 to 20 mm. long and 0.5 to 1 mm. wide, the basal ones sometimes longer, the upper ones often much reduced; panicle narrow, nearly simple, 5 to 10 cm. long, the spikelets subsessile or occasionally terminating short erect branches about 5 mm. long; glumes nearly equal, 8 to 9 mm. long, 1-nerved, glabrous except the scabrous upper part of the keel of the first; lemma about 7 mm. long, the callus pilose, nearly 1 mm. long, the body glabrous, tapering into a short straight beak; awns about equal, 10 to 12 mm. long, scabrous, spreading, not contorted at base.

This species is characterized by the wiry stems and the short sharp blades mostly in pairs.

DISTRIBUTION.

Dry slopes, Cuba.

CUBA: Guanabacoa, *Leon* 873, 4645, 7211; *Hitchcock* 498. Rio Sebboruco, *Shafer* 3694. Without locality, *Wright* 736 in part.

45. *Aristida portoricensis* Pilger.

Aristida portoricensis Pilger in Urban, Symb. Antill. 4: 100, 1903. "Prope Mayaguez in Monte Mesa, X flor.: *Sintenis* n. 77." A duplicate is in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial; culms cespitose, often in large tufts, more or less branched, slender, glabrous, erect or ascending from a spreading base, 30 to 50 cm. tall; sheaths glabrous, a few long hairs at the throat; blades involute, sparsely beset with long weak hairs on the upper surface, glabrous beneath, somewhat curved or flexuous, mostly 5 to 10 cm. long, scarcely 1 mm. thick when rolled; panicles narrow, loose, few-flowered, mostly 3 to 8 cm. long, the few distant branches rather stiffly ascending, mostly floriferous from the base, bearing a few appressed spikelets, the lower as much as 4 cm. long; glumes unequal, 1-nerved, awn-pointed, the first about 7 mm. long, scabrous on keel and back, the second about 1 cm. long, smooth on the keel, scabrous on the back; lemma about 12 mm. long, including the pilose callus and the scabrous, slightly twisted beak 2 to 3 mm. long; awns about equal or the central a little longer, 2 to 3 cm. long, divergent or horizontally spreading, the base slightly spirally curved or warped.

DISTRIBUTION.

Open stony slopes, on Monte Mesa, near Mayaguez, Porto Rico.

PORTO RICO: Mayaguez, *Chase* 6269, 6298, 6812; *Holm* 40; *Britton, Cowell & Brown* 4361; *Sintenis* 77.

46. *Aristida chaseae* Hitchc., sp. nov.

DESCRIPTION.

Plants perennial; culms few in a tuft, widely spreading, glabrous, 50 to 60 cm. long; sheaths glabrous, villous at the throat; ligule a ciliate membrane,

less than 0.5 mm. long; blades involute, scabrous and also villous with scattering long hairs on the upper surface, glabrous beneath, 10 to 15 cm. long; panicle narrow, 10 to 15 cm. long, the branches appressed, the lower distant about 5 cm. long; glumes equal or somewhat unequal, 10 to 13 mm. long, acuminate or awn-pointed, the first 1-nerved with a more or less distinct nerve on one side, scabrous on the keel, the second 1-nerved, glabrous; lemma about 11 mm. long, the callus densely short-pilose, the pilose area nearly 2 mm. long, the body purple-mottled, glabrous below, scaberulous on the back from about the middle, narrowed at summit but scarcely beaked; awns equal, somewhat divergent, flat but not contorted at base, very scabrous, about 2 cm. long.

Type in the U. S. National Herbarium, no. 732548, collected on an open stony hill, at Boqueron, Porto Rico, November 12, 1913, by Agnes Chase (no. 6507).

Known only from the type collection. This species differs from *A. cognata*, which it resembles in habit, in the longer glumes, lemma, and awns.

47. *Aristida swartziana* Steud.

Aristida swartziana Steud. Syn. Pl. Glum. 1: 137. 1854. "*A. adscensionis* Swartz. obs. p. 40. non Lin." Swartz³² describes this species under the name *A. ascensionis* "Syst. pl. 229." The culm is described as 1 to 2 feet, decumbent, geniculate, and the glumes as subequal. The glumes of *A. adscensionis* are distinctly unequal. Swartz describes no species of *Aristida* in his later flora³³ and no specimen of *Aristida* was found in his herbarium.³⁴ Swartz's specimen is said to come from "sabulosis aridis Jamaicae australis." Trinius and Ruprecht³⁵ discuss *Aristida adscensionis* of Swartz and conclude from the description that it can not be the same as the Linnaean plant, and think it must be *A. cognata* or an allied species. The description, with the exception of geniculate culms, corresponds very well with the specimens cited below. I am therefore taking up Steudel's name for the species.

DESCRIPTION.

Plants perennial, with numerous erect innovations; culms cespitose, erect, glabrous, 40 to 70 cm. tall; sheaths glabrous, villous at the throat; ligule a ciliate membrane, less than 0.5 mm. long; blades involute, scabrous and more or less villous with scattering long hairs on the upper surface, glabrous beneath, mostly erect, as much as 30 cm. long, about 1 mm. wide; panicle narrow, loose and interrupted, as much as 15 cm. long, the branches ascending, 1 to 3 cm. long, usually rather lax, several-flowered; glumes somewhat unequal acuminate, 1-nerved, the first about 7 mm. long, scabrous on the keel, the second about 1 mm. longer, glabrous; lemma about as long as the second glume or a little longer, scaberulous on the keel, strongly pilose on the 0.5 mm. long callus, narrowed into a straight scaberulous beak about 1 mm. long, a faint joint at the summit; awns about equal, ascending, 15 to 25 cm. long.

DISTRIBUTION.

Arid or rocky soil, Jamaica.

JAMAICA: Healthshire Hills, *Harris* 9542. Lititz Savanna, *Harris* 12440. New Forest, southern Manchester, *Hitchcock* 9845. Without locality, *Hart* 864.

³² Obs. Bot. 40. 1791.

³³ Fl. Ind. Occ. 3 vols. 1797-1806.

³⁴ See Hitchcock, Types of American Grasses, The West Indian Grasses described by Swartz. Contr. U. S. Nat. Herb. 12: 135. 1908.

³⁵ Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 139. 1842.

48. *Aristida cognata* Trin. & Rupr.

Aristida cognata Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 127. 1842. "Ins. St. Thomas—Ind. Occ." The type, in the Trinius Herbarium, was sent by Schrader.

DESCRIPTION.

Plants perennial, branching at base, the innovations usually few; culms ascending, glabrous, 20 to 40 cm. tall; sheaths glabrous, villous at the throat or soon glabrate; blades involute, scabrous and villous with scattering long hairs on the upper surface, glabrous beneath, 5 to 15 cm. long, about 1 mm. wide; panicle narrow, loose, 5 to 15 cm. long, the branches rather distant, ascending, mostly closely flowered, 1 to 2 cm. long; glumes unequal, 1-nerved, acuminate, the first 4 to 5 mm. long, scabrous on the keel, the second 1 to 2 mm. longer, glabrous; lemma 6 to 7 mm. long, strongly pilose on the 0.5 mm. long callus, gradually narrowed into a scaberulous beak about 1 mm. long, the summit faintly jointed; awns about equal, ascending, 10 to 15 mm. long.

This species is allied to *A. swartziana*, but differs in the spreading habit with few innovations, the more dense panicle, and the shorter glumes, lemmas, and awns. The different range tends to confirm the segregation of the forms as species.

DISTRIBUTION.

Sterile or rocky hills, Virgin Islands and Montserrat.

VIRGIN ISLANDS: St. Croix, *Benson*. St. Thomas, *Eggers* 119; *Britton*, *Britton & Shafer* 119; *Rose* 3189.

WINDWARD ISLANDS: Montserrat, *Shafer* 48, 430.

49. *Aristida palustris* (Chapm.) Vasey.

Aristida purpurascens β *alabamensis* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 102. 1842. "Alabama. (V. com. ab ill. *Fisher et Meyer*.)" The type has been examined in the Trinius Herbarium.

Aristida virgata var.? *palustris* Chapm. Fl. South. U. S. 555. 1860. "Margins of pine-barren ponds. West Florida." In the U. S. National Herbarium are three authentic specimens from Chapman.

Aristida palustris Vasey, Descr. Cat. Grasses U. S. 35. 1885. Based on *Aristida virgata palustris* Chapm.

DESCRIPTION.

Plants perennial; culms cespitose from a hard thickened base, glabrous, stiffly erect, rather stout, 1 to 1.5 meters tall; sheaths glabrous, naked at the throat; blades flat, becoming loosely involute, the apex fine and involute, scabrous-pubescent on the upper surface, glabrous beneath, as much as 30 cm. long and 3 mm. wide; panicle narrow and virgate, as much as 50 cm. long, the branches appressed, rather distant but mostly overlapping, the lower as much as 10 cm. long, sometimes naked at base; glumes about equal, mucronate, about 12 mm. long, the first with a distinct nerve on one side (thus 2-nerved), more or less scabrous on the back, scabrous on the keel, the second 1-nerved, glabrous on back and keel; lemma about 8 mm. long, sparingly pubescent on the callus, glabrous on the body, somewhat scaberulous on the straight 1 mm. long beak; awns unequal, the central horizontally spreading, 1.5 to 3 cm. long, the lateral erect, two-thirds to three-fourths as long.

DISTRIBUTION.

Low pine barrens and flatwoods, North Carolina to Florida and west to eastern Texas.

NORTH CAROLINA: Wilmington, *Hitchcock* 323.

SOUTH CAROLINA: Without locality, *McCarthy* in 1884.

GEORGIA: Coffee County, *Harper* 690. Sumter County, *Harper* 644.

FLORIDA: Duval County, *Curtiss* 3425. Fort Myers, *Chase* 4157; *Hitchcock* in 1900. Waldo, *Combs* 688. Fellsmere, *Tracy* 9290. Jacksonville, *Curtiss* 4045, 5182. Tampa, *Nash* 2419. Chipley, *Combs* 549. Avondale, *Combs* 500. Apalachicola, *Biltmore Herb.* 1110a. De Funiak Springs, *Combs* 448.

ALABAMA: Flomaton, *Tracy* 3716, 3720.

MISSISSIPPI: Biloxi, *Kearney* 237; *Tracy* 3071, 3705, 3775. Scranton, *Pollard* 1204. Ocean Springs, *Tracy* 108, 146. Nicholson, *Kearney* 353.

LOUISIANA: Lake Charles, *Tracy* 3706, 3707. Calcasieu, *Cocks* 3002.

TEXAS: "Long-pine belt," *Nealley* in 1885.

50. *Aristida virgata* Trin.

Aristida virgata Trin. in Spreng. Neu. Entd. 2: 60. 1821. "Hab. in America boreali." The type, in the Trinius Herbarium, is labeled, "Philadelphia. mis. s. n. *Aristida racemosa*. *Bernhardi*."

Aristida purpurascens var. *depauperata* Vasey; Beal, Grasses N. Amer. 2: 201. 1896. "Mississippi, *Tracy*." In the U. S. National Herbarium is a specimen which I have referred to *A. virgata*, labeled by Vasey "*A. purpurascens* variety, Ocean Springs, Miss., Sept. 2, 1889, *Tracy* 107." A note on the sheet says, "depauperate." This specimen is probably a type or duplicate type of the variety cited above.

Aristida chapmaniana Nash in Small, Fl. Southeast. U. S. 118, 1327. 1903. "Type, Apalachicola, Fla., *Chapman*, in Herb. C. U." The type is in the herbarium of Columbia University, now at the New York Botanical Garden.

DESCRIPTION.

Plants perennial; culms cespitose from a rather slender soft base, erect, glabrous, 50 to 80 cm. tall, sometimes as much as 1 meter; sheaths glabrous, scarcely flattened or keeled; blades flat, rather lax, tapering to a fine point, scabrous on the upper surface, glabrous beneath, as much as 30 cm. long, usually not over 2 mm. wide; panicle slender, erect though not very stiff, rather loosely flowered, one-third to half the entire length of the culm, the branches mostly short and somewhat appressed, mostly 1 to 2 cm. long, not closely overlapping, bearing several approximate spikelets; glumes about equal, 6 to 7 mm. long, acuminate or awn-tipped, the first 1-nerved, sometimes with a weak nerve on one side, scabrous on the keel and on the back, the second glabrous; lemma 4 to 5 mm. long, often mottled, somewhat laterally compressed, glabrous except the short pubescent callus and the very short slightly scaberulous beak; awns unequal, the central horizontally spreading or somewhat reflexed, 1.5 to 2 cm. long, the lateral erect, about two-thirds as long as the central, the base of the central more robust and glabrous on the under side of the curve.

This species differs from *A. longespica* in being perennial and in the glabrous lemma; from *A. purpurascens* in the erect lateral awns. The fruit is distinguished by its size, glabrous surface, and the smooth robust basal curve of the central awn, which is sharply bent, the smaller lateral awns being erect.

DISTRIBUTION.

Moist sandy soil of the Coastal Plain, New Jersey to Florida and Mississippi.

NEW JERSEY: Port Norris, *Holmes* in 1890. Medford, *Commons* 332.

DELAWARE: Georgetown, *Commons* 120.

VIRGINIA: Dismal Swamp, *Chase* 3664.

NORTH CAROLINA: Wilmington, *Canby* in 1867. Southeastern North Carolina, *Ashe* 2219.

GEORGIA: Albany, *Tracy* 3712. Americus, *Tracy* 3708. Meansville, *Harper* 2246.

FLORIDA: Chipley, *Combs* 623. Orange City, *Hood* 4649. Old Town, *Combs* 885. Grasmere, *Combs* 1089, 1165. Crystal, *Combs* 1006. Eustis, *Nash* 1634, 1642, 1682. Jacksonville, *Curtiss* 4046, 5183, 5801. Bay Head, *Combs* 642.

ALABAMA: Mobile, *Mohr* in 1886. Cullman County, *Eggert* 97. Auburn, *Tracy* 3778.

MISSISSIPPI: Nicholson, *Kearney* 346. Waynesboro, *Kearney* 107½, 135, 169. Pass Christian, *Langlois* in 1882. Biloxi, *Tracy* 3072, 3722, 4667. Ocean Springs, *Tracy* 107; *Earle* in 1898. Deer Island, *Tracy* in 1892. Bay St. Louis, *Langlois* in 1883.

51. *Aristida torta* (Nees) Kunth.

Chaetaria torta Nees, *Agrost. Bras.* 386. 1829. "Habitat in campis altis provinciae Minarum (*Mart.*)" The type has been examined in the Munich Herbarium. It is labeled "Martius Iter Bras."

Aristida torta Kunth, *Enum. Pl.* 1: 190. 1833. Based on *Chaetaria torta* Nees.

Aristida tinctoria Trin. & Rupr. *Mém. Acad. St. Pétersb.* VI. *Sci. Nat.* 5¹: 111. 1842. The name is based on "*Chaetaria spadicea* Nees * * * non R. & S." *C. spadicea* Roem. & Schult.²⁶ was based on *Aristida spadicea* H. B. K.²⁷ from Mexico. Nees²⁸ described a different species, collected by Martius in Brazil, under this name. The Martius specimen in the Munich Herbarium is therefore the type of *Aristida tinctoria* Trin. & Rupr.

Aristida breviglumis Mez, *Rep. Sp. Nov. Fedde* 17: 152. 1921. "Costarica, Buenos Aires (*Tonduz*).²⁹" The type is probably one of the two Tonduz numbers cited below.

DESCRIPTION.

Plants perennial; culms cespitose, erect glabrous, 40 to 80 cm. tall; sheaths glabrous; blades erect, flat and firm, becoming involute toward the tip or involute throughout, glabrous beneath, finely scaberulous-pubescent on the upper surface, 15 to 30 cm. long, as much as 3 mm. wide, usually less; panicle narrow, rather dense but interrupted toward base, 8 to 15 cm. long, the branches appressed, branched at base and floriferous nearly to base; glumes nearly equal, the first slightly longer, about 6 mm. long including the short awn about 1 mm. long, usually dark-purple, 1-nerved, the first scabrous on the keel and scaberulous on the back, the second glabrous; lemma about 5 mm. long, including the very short slightly pubescent callus and the straight scaberulous beak about 1 mm. long; awns unequal, the central with a long semicircular curve, 1.5 to 2 cm. long, the lateral about half as long, ascending, somewhat divergent but not recurved-spreading.

²⁶ *Syst. Veg.* 2: 397. 1817.

²⁸ *Agrost. Bras.* 385. 1829.

²⁷ *Nov. Gen. & Sp.* 1: 123. 1816.

DISTRIBUTION.

Dry plains and grassy hillsides, Costa Rica to Brazil.

COSTA RICA: Buenos Aires, *Tonduz* 3680, 4879.

PANAMA: Ancón, Canal Zone, *Killip* 4197.

BRAZIL: Lagoa Santa, *Warming* in 1864. Curvelho, *Lund* in 1835. Minas, *Glaziou* 17894. Without locality, *Glaziou* 7978, 22568; *Riedel*.

52. *Aristida simpliciflora* Chapm.

Aristida simpliciflora Chapm. Bot. Gaz. 3: 18. 1878. "Damp pine barrens, West Florida." In the U. S. National Herbarium is a specimen sent to Vasey by Chapman which has been selected as a duplicate type. There are several other sheets from Chapman. One is from the Biltmore Herbarium, marked "Herb. Chapman." Another received through John Donnell Smith is marked "Ex. Herb. Flora of the Southern United States, and Supplement. A. W. Chapman, M. D." The name of the species is inadvertently spelled *A. simplicifolia* by Dr. Vasey.²⁰

DESCRIPTION.

Plants perennial; culms cespitose from a rather delicate base, slender, erect, glabrous, 30 to 60 cm. tall; sheaths glabrous, mostly shorter than the internodes; blades flat, with a fine involute point, scabrous on the upper surface and also sometimes beset with scattering long hairs, glabrous beneath, 5 to 15 cm. long, about 1 mm. wide; panicles slender, somewhat nodding, 10 to 20 cm. long, few-flowered, the spikelets mostly in pairs, one long-pedicel, one short-pedicel, scarcely overlapping or the lower pairs distant, the pedicels ascending or laxly appressed; glumes about equal, 6 to 7 mm. long, gradually narrowed to an awn-tipped point, the first scabrous on the keel and back, the second glabrous; lemma a little shorter than the glumes, glabrous except the short-pubescent callus, scaberulous on the scarcely beaked summit; awns somewhat unequal, the central finally reflexed by a semicircular and sometimes contorted bend above the base, about 1.5 cm. long, the lateral awns horizontally spreading, more or less contorted at base, a little shorter than the central one.

This species is distinguished by the slender, almost racemose panicle and the divergent awns, the central with a strong bend above the base.

DISTRIBUTION.

Moist pine woods, western Florida.

FLORIDA: Milligan, *Curtiss* 6911. Walton, *Curtiss* 3424*. Apalachicola. *Chapman*. Without locality, *Chapman*, several sheets.

53. *Aristida mohrii* Nash.

Aristida mohrii Nash, Bull. N. Y. Bot. Gard. 1: 436. 1900. "On sandy ridges. Collected by Dr. Charles Mohr * * * at Spring Hill, Mobile Co., Oct. 4, 1886, and distributed as *A. simpliciflora*; also secured at the same place by R. F. Bush, Aug. 26, 1897, no. 5, and distributed as *A. stricta*." A duplicate type is in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial; culms erect, sometimes a little geniculate at base, slender, glabrous, 40 to 60 cm. tall; sheaths glabrous, the lower pilose at the throat; blades flat or those of the innovations involute, scabrous on the upper surface,

²⁰ Contr. U. S. Nat. Herb. 3: 44. 1892.

the lower also pilose, glabrous beneath, the margins thickened, those of the lower culm mostly 10 to 15 cm. long, 1 to 2 mm. wide, the uppermost reduced; panicle slender and strict, as much as 30 cm. long, the spikelets solitary, appressed, distant, even the upper not overlapping, the pedicles firm, 2 to 3 mm. long; glumes equal, firm, stramineous, rather broad toward the mucronate apex, about 1 cm. long, the first slightly scabrous on the keel toward the summit; lemma terete, glabrous, a little shorter than the glumes, the callus very sharp, about 1 mm. long, pilose, the summit beakless; awns divergent, the central one reflexed by a semicircular bend near the base, 1.5 to 2 cm. long, the lateral ones scarcely shorter than the central, horizontally spreading or reflexed, the bend not markedly semicircular, the base more or less contorted.

This species is allied to *A. simpliciflora* but differs in the solitary distant appressed spikelets, and the longer glumes and lemma.

DISTRIBUTION.

Known only from a single locality near Mobile, where it grows on sands of sterile pine barren ridges.

ALABAMA: Spring Hill, *Mohr*, October 10, 1884, in 1886, in 1891.

54. *Aristida tenuispica* Hitchc., sp. nov.

DESCRIPTION.

Plants perennial; culms cespitose, slender, glabrous, 60 to 100 cm. tall; sheaths glabrous, somewhat pilose around the throat; ligule a short ciliate membrane, less than 0.5 mm. long; blades flat, narrowed into an involute point, 10 to 20 cm. long, 1 to 2 mm. wide, glabrous beneath, scabrous and bearing scattering long hairs on the upper surface; panicle slender and narrow, about half the entire length of the culm, the branches short and appressed, somewhat distant, few-flowered; glumes nearly equal, somewhat awn-pointed, the first about 8 mm. long, scabrous on the keel, having a lateral nerve on one side, the second a little longer than the first, 1-nerved, glabrous on the keel; lemma about 7 mm. long including the 1 mm. long callus and the 1 mm. long beak, dark colored; awns equal mostly 12 to 15 mm. long, spreading or reflexed, somewhat spirally contorted at base.

Type in the U. S. National Herbarium, no. 990944, collected in "flat woods" [low pine barrens] at Hillsboro, Florida, October 6, 1898, by Robert Combs (no. 1384).

This species differs from *A. gyrans* in the flat blades, taller culms, shorter callus, and more nearly equal glumes.

DISTRIBUTION.

Low pine barrens, peninsular Florida.

FLORIDA: Cedar Keys, *Combs* 988. Braidentown, *Tracy* 7104. Hillsboro, *Combs* 1360, 1384. Miami, *Chase* 3876. Between Cocoanut Grove and Cutler, *Small & Carter* 572.

55. *Aristida condensata* Chapm.

Aristida condensata Chapm. Bot. Gaz. 3: 19. 1888. "Dry sandy soil, West Florida." A duplicate type in the U. S. National Herbarium, sent to Dr. Vasey by Chapman, is from Apalachicola. The lower sheaths are sparsely appressed-villous.

Aristida stricta var. *condensata* Vasey, Contr. U. S. Nat. Herb. 3: 45. 1892. Based on *Aristida condensata* Chapm.

Aristida combsii Scribn. & Ball, U. S. Dept. Agr. Div. Agrost. Bull. 24: 43 f. 17. 1901. "Type specimen collected by Robert Combs and C. H. Baker, No. 1069, at Grasmere, Florida, September 21, 1898." This specimen, in the U. S. National Herbarium, has glabrous lower sheaths.

DESCRIPTION.

Plants perennial; culms rather robust, erect, glabrous, a meter or more tall; sheaths glabrous, or the lower appressed-villous, usually overlapping; blades firm, flat, becoming involute, especially toward the fine point, scabrous on the upper surface, glabrous beneath, as much as 30 cm. long, 2 to 3 mm. wide; panicle narrow, as much as 30 cm. long, the branches 5 to 10 cm. long, ascending, closely flowered; glumes about equal, 8 to 9 mm. long, acuminate or awn-pointed, 1-nerved, the first scabrous on the keel; lemma terete, about 8 mm. long, the callus over 1 mm. long, very sharp, densely short-pilose, the beak very short, slightly scaberulous; awns about equal, divergent or horizontally spreading, 10 to 15 mm. long, the base more or less contorted, finally forming a loose spiral.

This species has the aspect of *A. lanosa*, but the sheaths are glabrous, except sometimes for a sparse pubescence on the lower ones.

DISTRIBUTION.

Sandy pine or oak barrens, Georgia to Florida and Alabama.

GEORGIA: Montgomery County, *Harper* 1982.

FLORIDA: Eustis, *Nash* 1736; *Chase* 4079. Clarcona, *Meislahn* 81. Miami, *Eaton* 71. Cocoanut Grove, *Small & Carter* 573. Levy County, *Combs* 869. Cedar Key, *Palmer* 613 in 1874. Tampa, *Combs* 1386. Crystal, *Combs* 1015. Old Town, *Combs* 898a. Apalachicola, *Chapman; Biltmore Herb.* 1125. Grasmere, *Combs & Baker* 1069. Bartow, *Combs* 1190.

ALABAMA: Spring Hill, near Mobile, *Mohr* in 1886.

56. *Aristida recurvata* H. B. K.

Aristida recurvata H. B. K. Nov. Gen. & Sp. 1: 123. 1816. "Crescit in planitie Orinocensi, amoeno gramine tecta, prope Santo Thomas de la Angostura." The type has been examined at Paris.

Chaetaria recurvata Roem. & Schult. Syst. Veg. 2: 397. 1817. Based on *Aristida recurvata* H. B. K.

Aristida neesiana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 113. 1842. Based on *Chaetaria recurvata* Nees, not Roem. & Schult. Nees describes "a specimen from the Province of Minarum, Brazil. This specimen, in the Munich Herbarium, and a duplicate in the Trinius Herbarium I should refer to *Aristida recurvata* Trin. Trinius and Ruprecht state that *A. neesiana* is similar to *A. recurvata* but differs in certain particulars, such as the length of the glumes and awns. Doell " refers *A. neesiana* to *A. recurvata*.

Aristida riedeliana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 114. 1842. "In campis prope Ypanema," Brazil. I have examined the type in the Trinius Herbarium. The awns are spirally contorted at base.

¹⁰ Agrost. Bras. 386. 1829.

¹¹ Mart. Fl. Bras. 2³: 18. 1878.

DESCRIPTION.

Plants perennial; culms cespitose, erect, glabrous, 60 to 100 cm. tall; sheaths numerous at the base of the plant, overlapping, glabrous, those of the culm elongate; blades flat with a long slender involute point, 15 to 30 cm. long, as much as 2 mm. wide, glabrous beneath, faintly scaberulous on the upper surface, the margins smooth, thickened, the old blades often flexuous around the base of the plant; panicle narrow, rather loose, 10 to 30 cm. long, the branches ascending or appressed, branched from base, scabrous, rather densely flowered, the lower as much as 10 cm. long, the lower internodes as much as 3 cm. long, the upper short, the branches, all except the lowermost, overlapping, the main axis scabrous; glumes about equal, the first slightly longer, narrow, 1-nerved, gradually narrowed to an awn-point, about 1 cm. long including the awn, the first scabrous on the keel; lemma about 4 mm. long including the short obtuse pubescent callus, glabrous, the column 2 to 3 mm. long, slightly twisted; awns equal, about 1 cm. long, divergent, the base curved in a warped twist.

DISTRIBUTION.

Prairies and rocky slopes, Panama to Brazil.

PANAMA: Corozal, Canal Zone, *Hitchcock* 9194.

VENEZUELA: Tovar, *Fendler* 1689. Galipán, *Pittier* 6209. Santa Marta, *Smith* 2576.

BRAZIL: Lagoa Santa, *Warming* in 1864. São Paulo, *Löfgren*, 2365. Minas, *Glaziou* 17446, 17895. Without locality, *Riedel*.

57. *Aristida gyrans* Chapm.

Aristida gyrans Chapm. Bot. Gaz. 3: 18. 1878. "Roberts Key in Caximbo Bay, South Florida." A duplicate type, sent by Chapman to Vasey, is in the U. S. National Herbarium.

DESCRIPTION.

Plants perennial; culms cespitose, erect, slender, glabrous, 40 to 70 cm. tall; sheaths glabrous; blades involute, scabrous or scabrous-pubescent on the upper surface, often beset with scattering long hairs toward the base, glabrous beneath, mostly 10 to 15 cm. long, about 1 mm. wide; panicle slender, rather lax, 15 to 30 cm. long, the branches appressed, not at all or only slightly overlapping, bearing 1 to 3 spikelets or rarely as many as 6; glumes unequal, awn-pointed, the first 7 to 8 mm. long, having a rather faint nerve on one side, usually nearly glabrous on the keel, the second 10 to 11 mm. long, glabrous on the keel; lemma about 6 mm. long, terete, the body glabrous, usually mottled, the callus 1.5 mm. long, sharp, strongly short-pilose, the beak about 0.5 mm. long, at maturity lighter in color than the body, appressed-scaberulous; awns about equal, divergent, 1 to 1.5 cm. long, all about equally contorted at base in a loose spiral.

DISTRIBUTION.

Dry sandy soil, Georgia and Florida.

GEORGIA: Montgomery County, *Harper* 1988.

FLORIDA: Tampa, *Combs* 1389. Fellsmere, *Tracy* 9251, 9316. Brevard County, *Fredholm* 6069. Caxambas Bay, *Chapman*. Braidentown, *Combs* 1289, 1331. Grasmere, *Combs* 1101. Eustis, *Chase* 4060.

58. *Aristida brittonorum* Hitchc., sp. nov.

DESCRIPTION.

Plants perennial; culms rather stout, erect, glabrous, about 60 cm. tall; sheaths glabrous; ligule a ciliate membrane, about 0.5 mm. long; blades firm, involute, scabrous on the upper surface, glabrous beneath, stiffly erect, the basal as much as 20 cm. long and 0.8 mm. in diameter when rolled; panicle narrow, interrupted, 30 cm. long, the branches appressed, the lower as much as 5 cm. long; glumes unequal, acuminate, the first 7 to 10 mm. long, scabrous on back and keel, the second 10 to 12 mm. long, glabrous; lemma about 7 mm. long, the sharp callus 1 mm. long, pubescent, the body glabrous, the beak about 1 mm. long, scabrous; awns about equal, 1.5 to 2 cm. long, all contorted in a loose spiral at base.

Type in the U. S. National Herbarium, no. 907580, collected in white sand in the vicinity of Los Indios, Isle of Pines, Cuba, February 13, 1916, by N. L. Britton, E. G. Britton, and Percy Wilson (no. 14169).

Known only from the type collection.

59. *Aristida rosei* Hitchc., sp. nov.

DESCRIPTION.

Plants perennial; culms cespitose, slender, wiry, glabrous, erect, or somewhat spreading at base, 30 to 50 cm. tall; sheaths glabrous, much shorter than the internodes, villous at the throat; ligule a very short ciliate membrane, less than 0.5 mm. long; blades involute, ascending or spreading, scabrous on the upper surface, glabrous beneath, mostly less than 5 cm. long, sometimes as much as 10 cm. long; panicle narrow, rather lax, 5 to 15 cm. long, the branches and pedicels delicate, somewhat lax or flexuous, ascending or appressed, few-flowered, the lower distant; glumes unequal, 1-nerved, glabrous, even the keels scarcely scaberulous, the first about 5 mm. long, acuminate, the second 1 to 2 mm. longer than the first, acuminate and more or less mucronate; lemma about 6 mm. long, terete, glabrous, the callus rather sparingly short-pilose, 0.5 mm. long, rather blunt, the beak about 0.5 mm. long, smooth; awns about equal, divergent, about 1 cm. long, the base of each contorted in a loose spiral, scarcely roughened, and only minutely scabrous above.

Type in the U. S. National Herbarium, no. 760164, collected at Azua, Santo Domingo [Dominican Republic], March 1, 1913, by J. N. Rose, Wm. R. Fitch, and Paul G. Russell (no. 4027).

This species was referred by Hitchcock and Chase to *Aristida gyrans* Chapm.⁴² which also has the base of the awns spirally contorted, but which has a much longer callus and a scaberulous beak. *Aristida rosei* is allied to *A. refracta*, from which it differs in the glabrous first glume and glabrous summit of the lemma. The habit is different, there being no basal tuft of leaves, and the culms are more spreading. Further collections may connect the two species.

DISTRIBUTION.

Dry soil, Hispaniola.

HAITI: Habitation Prince, Picard 1554.

DOMINICAN REPUBLIC: Azua, Rose, Fitch & Russell 4027.

⁴² Contr. U. S. Nat. Herb. 18: 366. 1917 (Grasses of the West Indies).

60. *Aristida refracta* Griseb.

Aristida refracta Griseb. Cat. Pl. Cub. 228. 1866. "Cuba occ. (Wr. 3431)." A specimen of Wright's no. 3431 is in the U. S. National Herbarium. The type, in the Grisebach Herbarium, consists of three separate, rather short culms, the longest being about 25 cm. long. The awns are distinctly contorted at base.

DESCRIPTION.

Plants perennial; culms usually densely cespitose with numerous innovations, erect, slender, glabrous, 20 to 60 cm. tall; sheaths glabrous, villous at the throat, the leaves usually in a conspicuous basal tuft; blades filiform-involute, glabrous beneath, mostly less than 10 cm. long, the basal tuft 5 to 15 cm. long; panicle narrow, rather lax, 5 to 15 cm. long, the branches ascending, at maturity rather stiff, few-flowered, sometimes as much as 3 cm. long; glumes unequal or nearly equal, 1-nerved, usually mucronate from a notched apex, the first scabrous on the keel, 4 to 5 mm. long, the second glabrous on the keel, usually 1 to 2 mm. longer than the first; lemma about 4.5 mm. long, the callus 0.5 mm. long, short-pilose, the summit scarcely beaked, scaberulous; awns about equal and about 1 cm. long, the base of each more or less contorted.

The specimens referred to this species are rather diverse. Most of them have a conspicuous tuft of filiform basal leaves from the numerous cespitose innovations, the culms short and erect, mostly 20 to 30 cm. tall, mostly naked above the base (such as *Hitchcock* 9853 from Jamaica). The type is a taller plant, with a less evident basal tuft. Several of the specimens seem to have been made by separating the culms of a bunch, in which case the basal tufts of leaves would not be present. In most of the specimens the awns are divergent without much contortion at base, but in the type the contortion is conspicuous. Here and there among the other specimens contorted awns are seen.

DISTRIBUTION.

Dry slopes and pine woods, Cuba, Jamaica, and Porto Rico.

CUBA: Jata Hills at Guanabacoa, *Hitchcock* 231; *Léon* 875, 2641, 4646, 4718, 5605, 5606; *Baker & Hasselbring* 7208. Loma Mencura, *Shafer* 3858. Manacas, *Léon* 5830, 5863, 5874. Woodfred, *Shafer* 2990, 3080. Herradura, *Hitchcock* 233, 499. Sabana de Chirigota, *Léon* 7444, 7454. South of Guane, *Léon* 6971, 8971. West of Guane, *Shafer* 10414. Cajalbana, *Léon* 4846. San Diego de los Baños, *Léon* 4845. Manajanabo, *Léon* 5276. Laguna Jovero, *Shafer* 10718, 10864. Mantua, *Shafer* 11254. Placetas del Sur, *Léon* 8179. Sabana de San Julián de Guane, *Léon* 6942, 7307, 7308. Isle of Pines, *Britton*, *Britton & Wilson* 15369. Without locality, *Wright* 736 in part, 3430, 3431, 3833, 3834.

JAMAICA: New Forest, southern Manchester, *Hitchcock* 9853. Ashley Hall, Lower Clarendon, *Harris* 12734. Lititz Savanna, Manchester, *Harris* 12433. PORTO RICO: Guanajibo, *Britton*, *Cowell & Brown* 4358. Boqueron, *Chase* 6508.

DOUBTFUL SPECIES.

Aristida interrupta Cav. Icon. Pl. 5: 45. pl. 471. f. 2. 1799. "Habitat prope oppidum Chalma Regni mexicaní." I did not find the cited specimen in the herbarium at Madrid and have not been able certainly to identify the species from Cavanilles's description. Trinius and Ruprecht⁴⁸ place the species next

⁴⁸ Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 130. 1842.

to *A. dispersa* (*A. adscensionis*) and say that it seems to be allied to that. Cavanilles's plant is probably a large form of *A. adscensionis*. In good soil that species is as much as 1 meter tall, as indicated in the original description of *A. interrupta*. Trinius and Ruprecht base their conclusions on the original description and the figure, not having seen the type.

Chaetaria interrupta Beauv. Ess. Agrost. 30, 158. 1812. Based on *Aristida interrupta* Cav.

Aristida pallens Nutt. Gen. 1: 57. 1818, nomen nudum. "In depressed situations, near Fort Mandan on the Missouri." No authority is given and it has been assumed that the name was proposed by Nuttall, but the names of authors are frequently omitted in Nuttall's work. It is probable that Nuttall was referring the Fort Mandan plants to *A. pallens* Cav., a South American species with exceptionally long awns. He lists the name again in his Flora of Arkansas Territory.⁴⁴ The plants were probably *A. longiseta* Steud.

LIST OF NEW SPECIES AND NEW NAMES.

	Page.
<i>Aristida brittonorum</i> Hitchc., sp. nov.-----	584
<i>Aristida chaseae</i> Hitchc., sp. nov.-----	575
<i>Aristida eggersii</i> Hitchc., sp. nov.-----	560
<i>Aristida glabrata</i> (Vasey) Hitchc.-----	522
<i>Aristida californica glabrata</i> Vasey.	
<i>Aristida longiseta rariflora</i> Hitchc., subsp. nov.-----	565
<i>Aristida neglecta</i> Léon, sp. nov.-----	567
<i>Aristida peninsularis</i> Hitchc., sp. nov.-----	521
<i>Aristida rosei</i> Hitchc., sp. nov.-----	584
<i>Aristida scribneriana</i> Hitchc.-----	566
<i>Aristida lanuginosa</i> Scribn. Not <i>A. lanuginosa</i> Clarion.	
<i>Aristida tenuispica</i> Hitchc., sp. nov.-----	581
<i>Aristida ternipes divergens</i> (Vasey) Hitchc.-----	525
<i>Aristida divergens</i> Vasey.	

EXCLUDED SPECIES.

Aristida americana L. Syst. Nat. ed. 10. 2: 879. 1759. This is *Bouteloua americana* (L.) Scribn. The misunderstanding in regard to this species seems to be due to Munro's erroneous statement⁴⁵ in his article on the grasses of the Linnaean Herbarium, that *Aristida americana* L. is *A. dispersa* Trin. (*A. adscensionis* L.) Scribner and Merrill⁴⁶ accept this statement and use the name *Aristida americana* for that species.

Aristida fuscata Poit.=*Bouteloua americana*.

Aristida antillarum Poir.=*Bouteloua americana*.

Aristida subbiflora Steud.=*Bouteloua americana*.

⁴⁴ Trans. Amer. Phil. Soc. II. 5: 145. 1837.

⁴⁵ Proc. Linn. Soc. Bot. 6: 49. 1862.

⁴⁶ U. S. Dept. Agr. Div. Agrost. Circ. 32: 5. 1901.