

# MEXICAN GRASSES IN THE UNITED STATES NATIONAL HERBARIUM.

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## INTRODUCTION.

The following list of grasses, based entirely upon specimens in the United States National Herbarium, is a preliminary paper, in which the scattered data upon Mexican grasses have been brought together and arranged in a convenient form. The species included have been accepted, for the most part, in their traditional sense. It has been impracticable to examine the types of many of the earlier described species since these specimens are located in European herbaria. For this reason the synonymy has been confined mostly to those names that could be fixed by an examination of American types, or concerning the application of which there was little doubt. The largest number of unidentified names are found in Fournier's work on Mexican grasses.<sup>1</sup> This results from the incomplete or unsatisfactory descriptions and from the fact that the specimens cited under a given species either may not agree with the diagnosis, or may belong to two or more species, at least in different herbaria. An examination of the original specimens will undoubtedly lead to the identification of the greater part of these names.

There are several specimens that have been omitted from the list because they have not been identified and are apparently undescribed species. They belong to genera, however, that are much in need of critical revision and further study of them is deferred for the present. In subsequent articles it is hoped to work out the classification of the tropical American grasses upon a type basis

## KEY TO THE GENERA.

Spikelets with one perfect terminal floret, and usually a second staminate or neutral floret below (lower floret perfect in *Isachne*); rachilla articulated below the glumes, the spikelets fall-

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Fournier, Eug. *Mexicanas Plantas. Pars secunda. Gramineae.* 1886. For discussion of the date of publication of this work see *Contr. U. S. Nat. Herb.* 15: 49. 1910 and *op. cit.* 14: 350. 1912.

ing from the pedicels entire, singly, in groups, or together with joints of an articulate rachis; spikelets, or at least the fruits, not laterally compressed (except in *Lithachne*).

Lemma and palea (the latter sometimes wanting in *Andropogoneae*) hyaline; glumes more or less indurated, the first largest; sterile lemma like the fertile in texture.

Plants monoecious. (MAYDEAE.)

Staminate spikes in a terminal panicle; pistillate spikes in the axils of the leaves, sometimes bearing also staminate spikes.....

1. EUCHLAENA (p. 195).

Staminate and pistillate florets in the same spike, the staminate uppermost.

Spikes digitate, the rachis of pistillate portion bony-indurated, disarticulating with spikelets attached.....

2. TRIPSACUM (p. 195).

Spikes paniculate, the pistillate spikelets inclosed in ovoid pearly or grayish, bead-like bodies, the staminate portion protruding from a small orifice.....

3. COIX (p. 196).

Plants not monoecious, but the inflorescence often consisting of staminate or neutral spikelets intermixed with perfect ones. (ANDROPOGONEAE.)

Spikelets all alike, perfect; inflorescence conspicuously hairy.

Rachis of spike continuous; inflorescence a narrow spike-like panicle; spikelets awnless. . .

4. IMPERATA (p. 197).

Rachis breaking up into joints.

Spikelets awned; inflorescence a narrow or open panicle. . .

6. ERIANTHUS (p. 197).

Spikelets awnless; inflorescence a dense interrupted golden brown spike-like panicle.....

5. ERIOCHRYSIS (p. 197).

Spikelets not alike, part perfect and part staminate or neutral.

Joints of the rachis much thickened and excavated, the spikelets fitting into the recesses.

First glume of perfect spikelet hemispherical, pitted; plants annual.....

10. RYTILIX (p. 198).

First glume of perfect spikelet flat or somewhat convex; plants perennial.

- Racemes cylindric, readily disarticulating..... 9. *COBLORACHIS* (p. 198).
- Racemes flattened, tardily disarticulating..... 8. *HEMARTHRIA* (p. 197).
- Joints of rachis not greatly thickened nor with excavations.
- Spikelets 2-flowered; racemes several, corymbose..... 7. *ISCHAEMUM* (p. 197).
- Spikelets 1-flowered.
- Spikelets all pedicellate, the pistillate with long feathery awns; axis indistinctly articulate... 11. *TRACHYPOGON* (p. 198).
- Spikelets sessile and pedicellate; axis distinctly articulate.
- Racemes solitary, terminating the culm, the spikelets awnless; first glume with a balsam-bearing line within the side keels 12. *ELYONURUS* (p. 199).
- Racemes 1 to many, sometimes reduced to the terminal joint of 3 spikelets, if solitary the spikelets awned.
- Sessile spikelets not all alike, some of the lower differing from the upper and bearing a short awn.
- Racemes solitary, terminating the culm or its branches, the awns long, becoming entangled..... 17. *HETEROPOGON* (p. 212).
- Racemes in pairs from a boat-shaped sheath, the short awns not becoming entangled..... 14. *CYMOPOGON* (p. 209).
- Sessile spikelets all alike.
- Inflorescence consisting of 1 to many racemes, the spikelets arranged in pairs,

- one sessile and perfect, the other pedicellate and staminate, neutral, or reduced to a scale or to the pedicel 13. *ANDROPOGON* (p. 200).
- Inflorescence compound, paniculate, the racemes reduced to 2 to 5 spikelets.
- Pedicellate spikelets staminate 15. *HOLCUS* (p. 209).
- Pedicellate spikelets reduced to the pedicel... 16. *SORGHASTRUM* (p. 210).
- Lemma and palea membranaceous or cartilaginous, not more delicate than the glumes.
- Lemma and palea membranaceous, resembling the glumes in texture.
- Spikelets paniculate, consisting of 1 perfect terminal floret bearing a geniculate or twisted awn, with a sterile floret below.. 25. *ARUNDINELLA* (p. 217).
- Spikelets single or in groups along a continuous axis forming a spike or raceme, or in the axils of the upper sheaths. (*ZOYSEAE*.)
- Glume 1, 3 to 5-awned; spikelets clustered in the axils of the upper sheaths..... 23. *SCHAFFNERELLA* (p. 217).
- Glumes 2; spikelets solitary or in groups at each joint of the main axis, the groups falling off entire.
- Spikelets solitary; plants monœcious or dioecious, creeping..... 24. *FOURNIERA* (p. 217).
- Spikelets in groups.
- Groups of spikelets surrounded by an indurated false involucre formed by the first glumes of each spikelet..... 18. *ANTHEPHORA* (p. 213).
- Groups of spikelets not involucre.
- Second glume coriaceous, bearing hooked spines on the back..... 22. *NAZIA* (p. 216).
- Second glume not spiny.
- Groups of spikelets spreading or drooping, borne along one side of the delicate axis; lowest spikelet sterile, the terminal fertile..... 21. *ARGOPOGON* (p. 215).
- Groups of spikelets erect or appressed on both sides of the rather stout axis; central spikelet fertile, the two lateral staminate.

- Plants stoloniferous..... 19. *HILARIA* (p. 213).  
 Plants producing rhizomes but  
 not stoloniferous..... 20. *PLEURAPHIS* (p. 214).
- Lemma and palea indurated, coriaceous or  
 chartaceous, firmer than the glumes.  
 (PANICEAE.)
- Spikelets unisexual; fruit bony-indurated.  
 Panicles terminal on culms or leafy  
 branches, the pistillate spikelets  
 above, the staminate below in the  
 same panicle..... 51. *OLYRA* (p. 271).
- Panicles all axillary or axillary and ter-  
 minal, the terminal when present  
 wholly staminate.  
 Fruit laterally compressed, conspic-  
 uously gibbous on upper dorsum.... 52. *LITHACENE* (p. 272).  
 Fruit dorsally compressed, lanceolate... 53. *RADDIA* (p. 272).
- Spikelets perfect (one of a pair sometimes  
 abortive).  
 Axis broad and corky, the spikelets sunken  
 in its cavities, the terminal portion  
 disarticulating at maturity..... 50. *STENOTAPHRUM* (p. 271).
- Axis not broad and corky, the spikelets not  
 sunken in cavities.  
 Spikelets subtended or surrounded by 1  
 to many bristles or spines (sterile  
 branchlets), these distinct or more  
 or less connate at base, forming a  
 false involucre.  
 Bristles falling with the spikelet at  
 maturity.  
 Bristles more or less united at base  
 into a bur-like involucre ..... 49. *CENCHRUS* (p. 268).  
 Bristles not united at base, usually  
 slender, often plumose..... 48. *PENNISSETUM* (p. 265).
- Bristles of involucre persistent, the  
 spikelets deciduous.  
 Sterile palea at maturity becoming  
 cartilaginous and winged, much  
 exceeding the spikelet in width;  
 spikelets secund along the  
 branches of a simple panicle,  
 each subtended by a single  
 viscid bristle..... 47. *IXOPHORUS* (p. 265).
- Sterile palea not enlarged at ma-  
 turity.  
 Second glume and sterile lemma  
 very broad, many-nerved,  
 the glume saccate, auriculate,  
 the lemma lyre-shaped, indu-  
 rated on the margins; spike-  
 let subtended by a single  
 flexuous bristle..... 45. *SETARIOPSIS* (p. 259).

- Second glume and sterile lemma  
neither many-nerved, saccate,  
auriculate, nor lyre-shaped;  
subtending bristles 1 to many. 46. *CHAETOCHLOA* (p. 259).
- Spikelets not subtended nor surrounded  
by bristles (axis of branchlet ex-  
tending beyond the base of the  
uppermost spikelet as a point or  
bristle in *Panicum*, subgenus  
*Paurochaetium*).
- Fruit cartilaginous-indurated, not  
rigid, papillose, usually dark-  
colored, the more or less prom-  
inent white hyaline margins of the  
lemma not inrolled.
- Fruit open at the hyaline summit. . 26. *LEPTOCORYPHIUM* (p. 218).
- Fruit not open at summit.
- Fruit lanceolate, acuminate; sec-  
ond glume and sterile lemma  
usually long-silky. . . . . 27. *VALOTA* (p. 218).
- Fruit elliptic; pubescence short  
or none.
- Inflorescence of slender ra-  
cemes, digitately or sub-  
digitately arranged. . . . . 28. *SYNTHESISMA* (p. 219).
- Inflorescence a capillary pan-  
icle. . . . . 29. *LEPTOLOMA* (p. 222).
- Fruit indurated, rigid (or if thin the  
lemma not hyaline-margined).
- Spikelets (or the primary one of a  
pair) placed with the back of  
the fruit turned away from the  
rachis, usually solitary.
- First glume as long as the spikelet  
or nearly so; spikelets in  
pairs, the secondary usually  
aborted, sometimes wanting,  
strongly tuberculate-hispid or  
uncinate at maturity, later-  
ally compressed, in unilateral  
racemes. . . . . 30. *ECHINOLAENA* (p. 223).
- First glume obsolete or not over  
one-fourth the length of the  
spikelet.
- Rachilla joint and first glume  
forming a swollen ring-like  
callus below the spikelet,  
the glume reduced to an ad-  
nate sheath of the rachilla  
joint; fruit mucronate or  
awn-tipped. . . . . 31. *ERIOCHLOA* (p. 223).
- Rachilla joint not forming a  
ring-like callus below the  
spikelet; first glume pres-  
ent or wanting.

- First glume present; racemes racemose along the main axis..... 32. BRACHIARIA (p. 224).
- First glume wanting; racemes digitate or subdigitate... 33. AXONOPUS (p. 225).
- Spikelets placed with the back of the fruit turned toward the rachis of the spike-like racemes, or pedicellate in panicles.
- First glume typically wanting (present in some of the spikelets in certain species); spikelets plano-convex, sessile in spike-like racemes..... 34. PASPALUM (p. 226).
- First glume present; spikelets usually in panicles.
- Glumes or lemmas or both awned or, if short-pointed only (*Echinochloa colonum*), the summit of the fertile palea not inclosed.
- Glumes 2-lobed, awned from between the lobes; inflorescence of several unilateral racemes along a common axis..... 42. OPLISMENUS (p. 255).
- Glumes entire, awned from the tip or only mucronate. Inflorescence of several more or less compound unilateral racemes; spikelets ovate, not having a callus-like base..... 43. ECHINOCHLOA (p. 256).
- Inflorescence a narrow, almost spike-like panicle; spikelets lanceolate, with a long callus-like base below the long-awned glumes.... 44. CHAETIUM (p. 259).
- Glumes and lemmas awnless.
- Spikelets typically with 2 fertile florets; inflorescence a panicle..... 41. ISACHNE (p. 254).
- Spikelets with a single fertile floret.
- Glumes equal, inclosing the rest of the dorsally compressed spikelet; margins of the fertile lemma flat..... 40. HOMOLEPIS (p. 254).
- Glumes not equal nor entirely inclosing the spikelet.

Fruit membranaceous,  
the palea not in-  
closed above; spike-  
lets lanceolate, sub-  
sessile in usually  
spike-like panicles.. 39. HYMENACHNE (p. 254).

Fruit chartaceous-indu-  
rated, the palea in-  
closed (rarely the tip  
free).

Second glume inflated-  
saccate, many-  
nerved, this and  
the sterile lemma  
much exceeding  
the stipitate fruit;  
panicle spike-like. 38. SACCIOLEPIS (p. 254).

Second glume not in-  
flated-saccate; pan-  
icles not spike-like.

Culms usually woody,  
bamboo-like;  
spikelets globose,  
large, the glumes  
and sterile lem-  
ma papery; fruit  
bony-indurated,  
a downy tuft at  
apex..... 37. LASIACIS (p. 251).

Culms not woody nor  
bamboo-like.

Fertile lemma  
either with  
lateral append-  
ages or exca-  
vations at base,  
the margins  
usually not in-  
rolled; first  
glume large;  
blades usually  
petiolate..... 36. ICHNANTHUS (p. 250).

Fertile lemma  
with neither  
lateral ap-  
pendages nor  
excavations at  
base, the in-  
rolled mar-  
gins clasping  
the palea; in-  
florescence  
typically pa-  
niculate ..... 35. PANICUM (p. 241).



- Spikelets 1 to many-flowered, the imperfect or rudimentary floret, if any, uppermost (except in Phalarideae); rachilla articulated above the persistent glumes (except in Oryzeae, Cinna, Polypogon, Sphenopholis, and Spartina); spikelets usually laterally compressed.**
- Culms woody; blades often with a short petiole articulated with the sheath. (BAMBUSEAE.)**
- Stamens 6..... 133. *BAMBOS* (p. 387).
- Stamens 3.
- Spikelets 1-flowered..... 132. *CHUSQUEA* (p. 387).**
- Spikelets 2 to many-flowered.**
- Glumes 1 or 2; sterile lemmas none; spikelets loose, many-flowered, elongated, paniculate or racemose..... 130. *ARUNDINARIA* (p. 386).**
- Glumes 2; sterile lemmas 1 or 2; spikelets in racemes or one-sided spikes, these arranged in tufts at the culm nodes..... 131. *ARTHROSTYLIDIUM* (p. 387).**
- Culms herbaceous.**
- Spikelets in two close rows, sessile or nearly so, forming a one-sided spike (in *Bulbilis* only the staminate so). (CHLORIDEAE.)**
- Spikelets monœcious or diœcious, the two sexes very unlike.**
- Pistillate inflorescence capitate; staminate spikelets 2 or 3-flowered..... 96. *BULBILIS* (p. 352).**
- Pistillate inflorescence a loose spike; staminate spikelets 1-flowered.**
- First glume of pistillate spikelet very small; lemma of fertile floret with 3 long awns..... 97. *OPIZIA* (p. 353).**
- First glume of pistillate spikelet somewhat shorter than the second; lemma of fertile floret 3-toothed..... 98. *FRINGLEOCHLOA* (p. 353).**
- Spikelets all alike, bearing perfect florets and often more or less rudimentary ones above.**
- Spikelets with 2 or more perfect florets.**
- Spikes digitately arranged.**
- Rachis extended beyond the spikelets as a point..... 93. *DACTYLOCTENIUM* (p. 347).**
- Rachis not extended..... 92. *ELEUSINE* (p. 346).**
- Spikes solitary or racemosely arranged.**
- Inflorescence a single spike-like raceme. 91. *TRIPOGON* (p. 346).**
- Inflorescence of several racemose spikes or spike-like racemes.**
- Racemes spikelet-bearing from the base; lemmas glabrous or only slightly pubescent..... 94. *LEPTOCHLOA* (p. 348).**
- Racemes naked below; lemmas villos on the nerves or callus..... 95. *GOUINIA* (p. 351).**
- Spikelets with one perfect floret.**
- Spikelets bearing no sterile lemmas above the perfect floret, awnless.**

- Spikelets articulated below the glumes;  
spikes several, racemose..... 84. SPARTINA (p. 329).
- Spikelets not articulated below the  
glumes.  
Spike solitary..... 82. MICROCHLOA (p. 328).  
Spikes few, digitate..... 83. CAPRIOLA (p. 329).
- Spikelets bearing sterile lemmas above the  
fertile floret.  
Spikes solitary or approximate.  
Sterile lemmas below the fertile  
floret 2..... 85. CAMPULOSUS (p. 330).  
Sterile lemmas below the fertile  
floret none.  
Fertile lemma 1-awned or awnless.. 86. CHLORIS (p. 330).  
Fertile lemma 3-awned..... 87. TRICHLORIS (p. 334).
- Spikes several, racemose.  
Spikelets usually numerous, normally  
all alike; spikes usually oblong  
or linear..... 88. BOUTELOUA (p. 335).
- Spikelets 1 to 3, normally of two forms  
in each spike (usually alike in  
*Pentarrhaphis polymorpha*); spikes  
triangular in outline.  
Spikelets 2, one of them reduced to a  
cluster of awns (or both devel-  
oped in *P. polymorpha*); sterile  
floret 1..... 90. PENTARRHAPHIS (p. 346).
- Spikelets 3, the lateral staminate or  
rudimentary, smaller than the  
terminal; sterile florets 2 or more 89. CATHESTECUM (p. 345).
- Spikelets paniculate or spicate, but not in one-  
sided spikes.  
Spikelets sessile on opposite sides of a zigzag  
jointed channeled rachis forming a spike.  
Plants dioecious; fertile spike corniculate... 125. JOUVEA (p. 384).  
Plants not dioecious.  
Spikelets solitary at each node of the rachis.  
Spikelets placed edgewise to the rachis.. 124. LOLIUM (p. 383).  
Spikelets placed flatwise to the rachis... 126. AGROPYRON (p. 384).
- Spikelets 2 or 3 at each node of the rachis.  
Spikelets 1-flowered, not all alike, the  
lateral pair pediceled, usually abor-  
tive..... 127. HORDEUM (p. 385).  
Spikelets 2 to 6-flowered, all alike.  
Axis of spike continuous, not disar-  
ticulating at maturity; glumes  
broad or narrow but not greatly  
elongated..... 128. ELYMUS (p. 385).  
Axis of spike disarticulating at ma-  
turity; glumes setaceous, elon-  
gated..... 129. SITANION (p. 386).
- Spikelets in open or spike-like panicles.

**Spikelets 1-flowered, sometimes with sterile lemmas below or with a rudiment of a second floret above.**

**Spikelets monœcious.**

Spikelets in pairs at the nodes of the panicle-branches, one large, pistillate, sessile, the other small, staminate, long-pediceled; lemma cylindrical-oblong ..... 54. PHARUS (p. 272).

Spikelets not in pairs, ovate; glumes none..... 55. LUZIOLA (p. 272).

**Spikelets perfect.**

**Sterile lemmas below fertile floret 2.**

Sterile lemmas reduced to small scales; panicle ovate or oblong, spike-like 57. PHALARIS (p. 273).

Sterile lemmas mostly as large as the fertile; panicle somewhat open, bronze-colored..... 58. SAVASTANA (p. 274).

**Sterile lemmas none.**

Spikelets strongly laterally compressed; glumes none..... 56. HOMALOCENCHRUS (p. 272).

Spikelets often laterally compressed but not strongly flattened; glumes usually present. (AGROSTIDEAE.)

Lemma firmer than the glumes, indurated, awned and provided with a strong callus.

Lemma 3-awned (the lateral awns short or wanting in some species, but in these the central awn not geniculate or twisted) 59. ARISTIDA (p. 274).

Lemma 1-awned.

Awn dorsal..... 64. TRINIOCHLOA (p. 303).

Awn terminal.

Lemma narrow, oblong or linear; awn stout, geniculate, twisted, persistent.. 60. STIPA (p. 281).

Lemma short and broad; awn slender, more or less deciduous, straight, or curved, scarcely geniculate and twisted.

Lemma not gibbous at the summit..... 61. ORYZOPSIS (p. 285).

Lemma obovate, gibbous at the summit, the awn eccentric..... 62. PIPTOCHAETIUM (p. 286).

Lemma more delicate than the glumes or of about the same texture.

Spikelets articulated below the glumes.

- Spikelets in pairs, one perfect, the other staminate or neuter, the branchlets deciduous. . . . . 65. LYCURUS (p. 304).
- Spikelets not in pairs.
- Glumes awned; lemma with a long slender terminal awn . . . . . 71. POLYPOGON (p. 317).
- Glumes awnless; lemma with a short straight awn below the apex. . . . . 72. CINNA (p. 317).
- Spikelets not articulated below the glumes.
- Spikelets with several bristles below the glumes; lemma long-awned. . . . . 66. PERILEMA (p. 305).
- Spikelets with no bristles below.
- Glumes strongly compressed, longer than the lemma; inflorescence a dense spike-like panicle. . . . . 67. PHELEUM (p. 306).
- Glumes not strongly compressed.
- Lemma and palea much more delicate than the glumes, the palea shorter than the lemma, often wanting. . . . . 73. AGROSTIS (p. 318).
- Lemma and palea of about the same texture as the glumes and as long or longer.
- Lemma with a tuft of hairs at base, the awn dorsal; rachilla usually prolonged. . . . . 74. CALAMAGROSTIS (p. 321).
- Lemma without a tuft of hairs at base or the hairs very short.
- Glumes obtuse, equal, as long as the lemma; inflorescence elongated, usually a narrow or spike-like panicle. . . . . 70. EPICAMPES (p. 314).
- Glumes shorter than the lemma, often unequal.
- Lemmas awned or mucronate. . . . . 63. MUHLENBERGIA (p. 286).
- Lemmas awnless.
- Nerves of lemma silky-villous. . . . . 69. BLEPHARONEURON (p. 314).
- Nerves of lemma glabrous. . . . . 68. SPOROBOLUS (p. 306).

**Spikelets 2 to many-flowered.**

Lemma of lower floret usually shorter than the glumes, usually with a bent awn on the back (*Koeleria* and *Sphenopholis* awnless); rachilla produced. (AVENEAE.)

Articulation below the glumes. . . . . 77. SPHENOPHOLIS (p. 326).

Articulation above the glumes.

Lemmas awnless; acuminate. . . . . 78. KOELERIA (p. 326).

Lemmas awned.

    Awns flattened, from between the lobes of the lemma.

    Spikelets in clusters of 3, 2-flowered, the upper floret fertile, the lower staminate. . . . . 80. TRISTACHYA (p. 327).

    Spikelets solitary, 3 to many-flowered, all the florets fertile, or the uppermost sterile. . . . . 81. DANTHONIA (p. 328).

    Awns not flattened, dorsal.

    Spikelets more than 1 cm. long; plants annual. . . . . 79. AVENA (p. 327).

    Spikelets less than 1 cm. long.

    Lemmas keeled; awn from above the middle. . . . . 76. TRisetum (p. 323).

    Lemmas convex; awn from below the middle. . . . . 75. DESCHAMPSIA (p. 322).

Lemma of lower floret usually longer than the glumes; awn when present usually straight and terminal. (FESTUCEAE.)

Lemma 3 to many-cleft.

Plants dicecious. . . . . 101. SCLEROPOGON (p. 354).

Plants hermaphrodite.

    Spikelets in short spike-like racemes. . . . . 104. ORCUTTIA (p. 355).

    Spikelets in panicles.

    Divisions of lemma awn-like; panicle contracted. . . . . 99. PAPPOPHORUM (p. 353).

    Divisions of lemma membranaceous, awned; panicle open. . . . . 100. COTTEA (p. 354).

Lemma entire or 2-cleft.

    Rachilla or lemma (at least of the fertile floret) bearing long hairs, as long as the lemma; tall, reed-like grasses.

    Plants dicecious. . . . . 105. GYNERIUM (p. 355).

    Plants hermaphrodite.

    Rachilla naked; lemmas hairy. . . . . 106. ARUNDO (p. 355).

    Rachilla hairy; lemmas naked. . . . . 107. PHRAGMITES (p. 356).

    Rachilla and lemmas naked or hairy, but the hairs shorter than the lemmas.

    Spikelets concealed in the leaves.

    Plants dicecious; a creeping perennial. . . . . 102. MONANTHOCHELOË (p. 354).

- Plants hermaphrodite; a tufted annual..... 103. *MUNROA* (p. 355).
- Spikelets in a more or less exerted inflorescence.
- Spikelets of two forms, perfect and sterile, in the same inflorescence, fasciculate in small one-sided panicles..... 117. *ACHYRODES* (p. 372).
- Spikelets all alike in the same inflorescence.
- Styles wiry, spirally twisted, the long terete spikelets becoming entangled above; inflorescence an elongated one-sided raceme..... 113. *STREPTOGYNE* (p. 370).
- Styles not wiry nor twisted.
- Blades broad, ovate or elliptical, with fine transverse veins between the longitudinal nerves, petiolate; inflorescence paniculate.
- Spikelets several-flowered, the lower floret perfect, unlike the upper staminate florets; glumes broad at summit..... 111. *SENITES* (p. 368).
- Spikelets 1-flowered, with a long prolongation of the rachilla; panicle capillary..... 112. *ORTHOCLADA* (p. 370).
- Blades linear, not transversely veined.
- Lemmas 3-nerved.
- Lemmas 3-toothed, pilose on the nerves and callus..... 108. *TRIDENS* (p. 358).
- Lemmas glabrous, entire. 109. *ERAGROSTIS* (p. 358).
- Lemmas 5 to several-nerved.
- Plants dioecious..... 115. *DISTICHLIS* (p. 371).
- Plants hermaphrodite (except in a few species of *Poa*).
- Spikelets broad, cordate; lemmas cordate..... 116. *BRIZA* (p. 371).
- Spikelets not broad and cordate.
- Glumes large, scarious - margined, membranaceous; upper florets 2 or 3; lemmas empty, convolute around each other..... 110. *MELICA* (p. 367).

Glumes not scarious-  
margined.

Sterile lemmas at  
base of spike-  
let several.... 114. UNIOLA (p. 370).

Sterile lemmas at  
base of spike-  
let none. (See  
continuation.)

(CONTINUATION.)

Lemmas keeled, awnless..... 118. POA (p. 372).

Lemmas convex, or keeled toward the summit.

Rachilla and callus villous..... 119. GRAPHEPHORUM (p. 376).

Rachilla and callus not villous, sometimes pubes-  
cent.

Nerves of lemma prominent, parallel..... 120. PANICULARIA (p. 376).

Nerves of lemma not prominent, often faint,  
converging at the summit.

Spikelets in a mostly simple raceme;  
palea pectinate-fringed..... 123. BRACHYPODIUM (p. 383).

Spikelets paniced; palea not pectinate-  
fringed.

Lemmas not toothed at summit, usu-  
ally awned, the awn terminal. 121. FESTUCA (p. 376).

Lemmas toothed at summit, the awn  
from between the teeth..... 122. BROMUS (p. 380).

**ANNOTATED LIST OF THE SPECIES.**

1. **EUCHLAENA** Schrad. Sem. Hort. Goettingen 1832; reprinted in *Linnaea* 8:  
Litt. 25. 1833.

1. **Euchlaena mexicana** Schrad. Sem. Hort. Goettingen 1832; reprinted in *Linnaea*  
8: Litt. 25. 1833. TEOSINTE.

Type locality, "Mexico."

RANGE: Durango to Jalisco, Oaxaca, and Chiapas.

HERBARIUM SPECIMENS:

DURANGO: Durango, along water ditches, *Palmer* 743 in 1896.

JALISCO: Zapotlán, prairie along railroad, *Hitchcock* 7146.

MICHOACÁN: Queréndaro, rocky hills, *Pringle* 4319.

OAXACA: San Agustín, in arena fluvii exsiccati prope mare Pacificum, *Lieb-  
mann* 548.

CHIAPAS: Tuxtla Gutiérrez, *Collins & Doyle* 102.

2. **TRIPSACUM** L. Syst. Nat. ed. 10. 1261. 1759.

KEY TO THE SPECIES.

Blades narrow, usually less than 12 mm. wide; plants usually 1 to  
1.5 meters high..... 1. *T. lanceolatum*.

Blades wide, usually 5 to 7 cm.; plants tall and stout as much as  
2.8 meters high.

Sheaths glabrous..... 2. *T. laxum*.

Sheaths hispid..... 3. *T. pilosum*.

1. *Tripsacum lanceolatum* Rupr.; Fourn. Mex. Pl. 2: 68. 1886.

Type locality, "Aguas Calientes," the station where Hartweg collected the specimen named *T. lanceolatum* by Ruprecht. The name was first mentioned without description by Bentham,<sup>1</sup> Hartweg's no. 252 being cited.

RANGE: Lower California and Chihuahua to southern Mexico.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Sierra de San Francisquito, *Brandege* in 1899. El Taste, *Brandege* in 1902.

SONORA: High up in Sierra de Alamos, *Rose, Standley & Russell* 13080. Guadalupe Canyon, *International Bound. Com.* 2035.

CHIHUAHUA: Sánchez, rocky ravine, *Hitchcock* 7702.

DURANGO: Durango, on Iron Mountain, a rocky hill, *Hitchcock* 7630, 7648; in deep rich soil among the higher hills, *Palmer* 537 in 1896.

SAN LUIS POTOSÍ: Las Canoás, rocky hills, *Pringle* 3811. Bagre, *Purpus* 5433.

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7358. Río Blanco, *Palmer* 509 in 1886. Between Huejuquilla and Mezquitic, *Rose* 3570.

COLIMA: Manzanillo, large bunches on rocky cliff by seashore, *Hitchcock* 7046. Alzada, rocky hillside, *Hitchcock* 7082; shady ravine, *Hitchcock* 7083.

MICHOACÁN: Morelia, *Arsène* in 1909.

GUANAJUATO: Jaral, *Schumann* 1718.

FEDERAL DISTRICT: Tacubaya, copse at edge of field, *Hitchcock* 5909; *Holway* 8.

MORELOS: Cuernavaca, rocky cliff, *Hitchcock* 6840.

GUERRERO: Balsas, on rocks of cliff, *Hitchcock* 6816.

OAXACA: Oaxaca, rocky cliff, *Hitchcock* 6160. Villa Alta, *Liebmann* 547.

2. *Tripsacum laxum* Nash, N. Amer. Fl. 17: 81. 1909.

Type locality, "Hacienda de la Laguna [Veracruz] Mexico."

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

COLIMA: Alzada, in large bunches, 6 to 8 feet high, on a rocky grassy hillside, *Hitchcock* 7103.

VERACRUZ: Mirador, *Liebmann* 549. Río Blanco, *Bourgeau* 3138.

3. *Tripsacum pilosum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 6. f. 1. 1901.

Type locality, "Between Colotlán and Bolaños, State of Jalisco," the type specimen collected by *Rose* (no. 2841).

RANGE: Southwestern Mexico.

## HERBARIUM SPECIMENS:

DURANGO: Sierra Madre, *Rose* 3513.

JALISCO: Guadalajara, Barranca de Oblatos, on open rocky hillside, *Hitchcock* 7343, 7361, 7366. Río Blanco, *Palmer* 508 in 1886; *Rose & Hay* 6278. Between Colotlán and Bolaños, *Rose* 2841.

COLIMA: Alzada, steep hillside in ravine, open, grassy ground among rocks, *Hitchcock* 7088.

## 3. COIX L. Sp. Pl. 972. 1753.

1. *Coix lacryma-jobi* L. Sp. Pl. 972. 1753.

JOB'S TEARS.

Type locality in East Indies.

RANGE: Tropics of both hemispheres, introduced in the New World.

## HERBARIUM SPECIMEN FROM MEXICO:

COAHUILA: Saltillo, *Palmer* 1337 in 1880.

<sup>1</sup> Pl. Hartw. 347. 1857.



4. *IMPERATA* Cyril. Pl. Rar. Icon. 2: 26. pl. 11. 1792.

## KEY TO THE SPECIES.

Panicle 7 to 10 cm. long, rather loose; hairs about twice as long as spikelet ..... 1. *I. brasiliensis*.  
 Panicle usually 20 to 25 cm. long, dense; hairs longer..... 2. *I. hookeri*.

1. *Imperata brasiliensis* Trin. Mém. Acad. St. Pétersb. VI. Math. Phys. Nat. 2: 331. 1833.

Type locality in Brazil.

RANGE: Southern Mexico to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Mirador, *Liebmann* 86. Sanborn, *Orcutt* 3075.

2. *Imperata hookeri* Rupr.; Anderss. Öfv. Vet. Akad. Förh. 12: 160. 1855.

Type locality "in Texas," the type specimen collected by Drummond (ser. II. no. 283).

RANGE: Southwestern United States to Jalisco.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Desert canyon in northern part of territory, *Orcutt* in 1884.

SONORA: Hermosillo, bank of ditch, *Hitchcock* 3610; *Brandegge* 77.

JALISCO: Río Blanco, *Palmer* 444 in 1886.

5. *ERIOCHRYSIS* Beauv. Ess. Agrost. 8. pl. 4. f. 11. 1812.

1. *Eriochrysis cayennensis* Beauv. Ess. Agrost. 8. pl. 4. f. 11. 1812.

Type locality presumably Cayenne. (Beauvois spells the specific name "cayennensis.")

RANGE: Tropical America.

## HERBARIUM SPECIMENS FROM MEXICO:

OAXACA: Trapiche de la Concepción, *Liebmann* 2.

CHIAPAS: Ocuilapa, *Nelson* 3063.

6. *ERIANTHUS* Michx. Fl. Bor. Amer. 1: 54. 1803.

1. *Erianthus trinitii* Hack. in DC. Monogr. Phan. 6: 135. 1889.

Type locality in Brazil.

RANGE: Mexico to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Tamasopo Canyon, mountain side, *Pringle* 3135.

VERACRUZ: Borrego near Orizaba, *Bourgeau* 2970. Orizaba, open rocky hill, *Hitchcock* 6379. Mirador, *Liebmann* 38.

7. *ISCHAEMUM* L. Sp. Pl. 1049. 1753.

1. *Ischaemum latifolium* (Spreng.) Kunth, Rév. Gram. 1: 168. 1829.

*Andropogon latifolius* Spreng. Syst. Veg. 1: 286. 1825.

Type locality, "Guadalupa, Martinica," West Indies.

RANGE: Mexico and the West Indies to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Under spray of a waterfall in the barranca of Texolo near Jalapa, *Pringle* 8106. Fortín, *Kerber* 296. Córdoba, *Bourgeau* 2203. Mirador, *Liebmann* 9, 13.

8. *HEMARTHRIA* R. Br. Prodr. Fl. Nov. Holl. 207. 1810.

1. *Hemarthria fasciculata* (Lam.) Kunth, Rév. Gram. 1: 453. 1829.

*Rottboellia fasciculata* Lam. Tabl. Encycl. 1: 204. 1791.

Type locality, "Barbaria."

RANGE: Warmer regions of the Old World, introduced in the American tropics.

HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Tamasopo Canyon, river ledges, *Pringle* 3132. Rascón, *Palmer* 654 in 1905.

MORELOS: Jojutla, *Pringle* 9610.

9. **COELORACHIS** Brongn. in Duperrey, Bot. Voy. Coquille 64. pl. 14. 1829.

1. **Coelorachis ramosa** (Fourn.) Nash, N. Amer. Fl. 17: 86. 1909.

*Apogonia ramosa* Fourn. Mex. Pl. 2: 63. 1886.

Type locality in Veracruz, three localities being cited, "Rio Blanco, \* \* \* Orizaba, \* \* \* Mirador."

RANGE: Eastern Mexico.

HERBARIUM SPECIMENS:

VERACRUZ: Jalapa, low ground, among high vegetation, *Hitchcock* 6683. Mirador, *Liebmann* 116. Orizaba, *Bourgeau* 2647.

10. **RYTILIX** Raf. Bull. Bot. Seringe 1: 219. 1830.

1. **Rytlix granularis** (L.) Skeels, U. S. Dept. Agric. Bur. Pl. Ind. Bull. 282: 20. 1913.

*Cenchrus granularis* L. Mant. Pl. 575. 1771.

*Manisuris granularis* Swartz, Prodr. Veg. Ind. Occ. 25. 1788.

*Hackelochloa granularis* Kuntze, Rev. Gen. Pl. 776. 1891.

Type locality "In India orientali."

RANGE: Tropical regions of both hemispheres.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San Francisquito Mountains, *Brandegee* in 1890.

SONORA: Alamos, *Palmer* 700 in 1890.

CHIHUAHUA: Hills near Chihuahua, *Pringle* 1057.

JALISCO: Tequila, *Palmer* 366 in 1886. Guadalajara, open dry ground, side of Barranca de Oblatos, *Hitchcock* 7334. San Nicolás, sterile clay hill, *Hitchcock* 7215. Zapotlán, along railway, *Hitchcock* 7122.

COLIMA: Alzada, along railway, *Hitchcock* 7102.

GUANAJUATO: Irapuato, rocky hill, *Hitchcock* 7437.

MICHOACÁN: Uruápan, weed in old field, *Hitchcock* 6970. Sierra Madre, old cultivated fields, *Langlassé* 602.

GUERRERO: Balsas, along railroad, *Hitchcock* 6781.

MORELOS: Hills near Yautepec, *Pringle* 11228. Cuernavaca, along railway, *Hitchcock* 6870.

VERACRUZ: Orizaba, *Botteri* 1280. Consoquitla, *Liebmann* 148. Fortín, *Purpus* 2001. Córdoba, along railway, *Hitchcock* 6396.

CHIAPAS: Valley of Jiquipilas, *Nelson* 2951.

11. **TRACHYPOGON** Nees, Agrost. Bras. 341. 1829.

KEY TO THE SPECIES.

- Awns plumose on the lower half only..... 1. *T. montufari*.  
 Awns plumose throughout; spike conspicuously feathery..... 2. *T. gouini*.

1. **Trachypogon montufari** (H. B. K.) Nees, Agrost. Bras. 342. 1829.

*Andropogon montufari* H. B. K. Nov. Gen. & Sp. 1: 184. 1816.

Type locality, "in aridis, apricis regni Quitensis propter Conocoto, Pintae et Villam Chilloensem Montufari, Marchionis de Selvalegre."

RANGE: Texas and Arizona to Uruguay.

## HERBARIUM SPECIMENS FROM MEXICO:

- LOWER CALIFORNIA: San Francisquito Mountains, *Brandege* in 1890.  
 CHIHUAHUA: Chihuahua, rocky hill, *Hitchcock* 7786; *Pringle* 495. Southwestern Chihuahua, *Palmer* 26 in 1885.  
 SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 964; *Schaffner* 1063. Las Canoas, prairie, *Hitchcock* 5768.  
 DURANGO: Durango, abundant in the mountains, growing in bunches, *Palmer* 383; common on the side of rough hills, *Palmer* 858a in 1896; dry ground, *Hitchcock* 7596; rocky hill, Iron Mountain, *Hitchcock* 7625. Otinapa, *Palmer* 345 in 1906.  
 JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7344, *Palmer* 467 in 1886. Río Blanco, *Palmer* 303 in 1886. Zapotlán, hillside in pine woods, *Hitchcock* 7244.  
 QUERÉTARO: Between San Juan del Río and Cadereyta, *Rose, Painter & Rose* 9696.  
 COLIMA: Alzada, open hill, *Hitchcock* 7056.  
 MICHOACÁN: Morelia, *Arsène* 2535.  
 FEDERAL DISTRICT: Lava rock, Pedregal, *Hitchcock* 5938, 5951. Churubusco, *Orcutt* 4322.  
 MORELOS: Hills above Cuernavaca, *Pringle* 6514.  
 VERACRUZ: Mirador, *Liebmann* 88, 89, 90. Zacuapan, dry meadows, *Purpus* 1998, 2452. Orizaba, savannas, *Bourgeau* 3133, 3358; *Müller* 2085. Tierra Blanca, *Ross* 889.  
 GUERRERO: Balsas, prairie on high hill, *Hitchcock* 6793.  
 OAXACA: Las Sedas, *Conzatti* 2010, *Smith* 953.

2. *Trachypogon gouini* Fourn. Mex. Pl. 2: 66. 1886.

Type locality, "Veracruz," the type specimen collected by Gouin (no. 59).

RANGE: Veracruz and Cuba.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Veracruz, low sandy prairie back of city, *Hitchcock* 6547.

12. *ELYONURUS* Humb. & Bonpl.; Willd. Sp. Pl. 4: 941. 1806.

## KEY TO THE SPECIES.

- Rhizomes absent; culm hirsute below the nodes. . . . . 1. *E. barbiculmis*.  
 Rhizomes present; culm glabrous.  
 Spikelets not hirsute on back. . . . . 2. *E. tripsacoides*.  
 Spikelets hirsute on back. . . . . 2a. *E. tripsacoides ciliaris*.

1. *Elyonurus barbiculmis* Hack. in DC. Monogr. Phan. 6: 339. 1889.

Type locality southwestern United States, "W. Texas \* \* \* New Mexico \* \* \* Arizona," being cited.

RANGE: Texas to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

- CHIHUAHUA: Rocky hills near Chihuahua, *Pringle* 423. Mifiaca, on the mesa, *Hitchcock* 7745. Southwestern Chihuahua, *Palmer* 22 in 1885.  
 DURANGO: Durango, rocky hill, *Hitchcock* 7651; in bunches at base of hills, *Palmer* 549 in 1896. Dos Cajetes, *Palmer* 829 in 1896.  
 ZACATECAS: San Juan Capistrano, *Rose* 2407.  
 AGUASCALIENTES: Aguascalientes, along dry river, *Hitchcock* 7465.  
 JALISCO: Guadalajara, dry open ground along rim of Barranca de Oblatos, *Hitchcock* 7329, 7331. San Nicolás, sterile clay hill, *Hitchcock* 7218.  
 MORELOS: Cuernavaca, rocky hill, *Hitchcock* 6846.  
 PUEBLA: Laguna Chapulco, *Nicolas* in 1909.  
 VERACRUZ: Mirador, *Liebmann* 111.

**2. Elyonurus tripsacoides** Humb. & Bonpl.; Willd. Sp. Pl. 4: 941. 1806.

Type locality, "Caracas," Venezuela.

RANGE: Southern United States to South America.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Jalapa, prairie, *Hitchcock* 6658; *Smith* 1623½.CHIAPAS: Between San Ricardo and Ocozocuatla, *Nelson* 2990.**2a. Elyonurus tripsacoides ciliaris** (H. B. K.) Hack. in DC. Monogr. Phan. 6: 333. 1889.*Elyonurus ciliaris* H. B. K. Nov. Gen. & Sp. 1: 133. 1816.

Type locality, "in sylvis Orinocensibus prope Esmeraldam in radicibus nobilissimi montis Duidæ."

RANGE: Mexico to Venezuela.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Orizaba, grassy hill, *Hitchcock* 6360; *Bourgeau* 2844; *Botteri* 163, 669, 1264.**13. ANDROPOGON** L. Sp. Pl. 1045. 1753.

## KEY TO THE SPECIES.

Spikes solitary at the ends of the stem or branches from bract-like sheaths (spikes sometimes solitary in *A. furcatus* of group 2).

Plants annual.

Outer glumes of sterile or pediceled spikelet enlarged, thin and bract-like, imbricated and partially hiding the spikelets..... 12. *A. fastigiatus*.

Outer glumes of sterile spikelets not enlarged.

Culms weak and decumbent; blades oblong, 2 to 4 cm. long; peduncles capillary, spreading... 1. *A. brevifolius*.

Culms erect; blades linear, usually 8 to 20 cm. long; peduncles slender but not capillary, erect.

Sessile spikelet scabrous, not pilose; rachilla joint with a few hairs at summit only.. 2. *A. gaumeri*.Sessile spikelet and rachilla joint pilose..... 3. *A. malacostachyus*.

Plants perennial (sometimes flowering the first year).

Blades broad, short, firm, stiffly spreading, scattered along the wand-like culm; joints of rachis and sterile pedicels long-hairy.

Axis of spike straight and stiff; spikes more loosely scattered along the culm..... 11. *A. mexicanus*.

Axis of spike slender and flexuous; spikes aggregated toward the summit, sometimes forming a flat-topped inflorescence.

Plants without rootstocks; fertile lemma deeply 2-cleft. .... 9. *A. condensatus*.Plants with running rootstocks; fertile lemma entire or 2-toothed..... 10. *A. muelleri*.

Blades long and narrow, lax and flexuous, the culms not wand-like.

Spikes glabrous, awnless. .... 8. *A. salzmanni*.

Spikes more or less hairy, the spikelets awned.

Sterile spikelet 2 mm. long, the pedicel very woolly. . . . . 5. *A. myosurus*.

Sterile spikelet 4 to 6 mm. long, the pedicel hairy or ciliate but not woolly.

Spike hairy on the entire rachis and sterile pedicels. . . . . 4. *A. feensis*.

Spike hairy only along the edge of the sterile pedicel or at top of joints.

Sessile spikelets 5 mm. long; sterile pedicel slightly hairy. . . . . 7. *A. tener*.

Sessile spikelets 6 mm. long; sterile pedicel fringed with long hairs. 6. *A. cirratus*.

Spikes more than one from each sheath (rarely solitary in *A. furcatus*).

Spikes 2 to 4 from a bract-like leaf sheath at the ends of the stems and from the axils of the leaves, sometimes aggregated in a compound inflorescence.

Spikes in pairs, aggregated in a dense narrow inflorescence, widened above; sheaths inclosing the base of spikes; stems tall, stiffly erect; spikes delicate, woolly with long hairs.

Spikelets awnless; sheaths of inflorescence narrow and tightly rolled. . . . . 16. *A. bicornis*.

Spikelets awned; sheaths of inflorescence broad, not tightly rolled. . . . . 13. *A. glomeratus*.

Spikes 2 to 4, not aggregated in a dense inflorescence.

Spikes somewhat hairy but not conspicuously woolly, the axis stout. . . . . 20. *A. furcatus*.

Spikes conspicuously woolly or silky with long white or tawny hairs.

Axis of spike straight and rather stout; spikes 2, exserted from the slender sheath; sessile spikelets awned; pediceled spikelet well developed. . . . . 21. *A. hirtus*.

Axis of spike slender, often flexuous.

Spikelets awnless.

Spikes 5 to 8 cm. long, usually inclosed at base; spikelets large; sterile pedicel 6 mm. long; culms about 60 cm. high. . . . . 18. *A. bourgaei*.

Spikes about 2.5 cm. long, the group long-exserted on a slender peduncle; spikelets small, these and the sterile pedicel less than 3 mm. long; culms 65 to 100 cm. high. . . . . 17. *A. leucostachyus*.

Spikelets awned.

Hairs of the rachis and sterile pedicels scarcely half as long as the spikelets; axis nearly straight. 19. *A. pringlei*.

Hairs of the rachis and sterile pedicels longer than the spikelets; axis flexuous.

- Culms about 1.5 meters high;  
spikes inclosed at base by  
the sheath; clusters of  
spikes scattered along the  
upper part of the culm.... 14. *A. virginicus*.
- Culms about 60 cm. high; cluster  
of spikes long-exserted at  
the end of the culm..... 15. *A. liebmanni*.
- Spikes several or many (sometimes only two in *A. piptatherus*), aggregated on a short or elongated axis, raised on a naked peduncle at the summit of the culm.
- Plants annual; culms weak and straggling..... 28. *A. piptatherus*.
- Plants perennial; culms erect or nearly so.  
Spikes few, not woolly, short-peduncled, loosely spreading ..... 23. *A. hirtifolius*.
- Spikes usually numerous, woolly with long white or tawny hairs.  
Outer glume not pitted.  
Nodes bearded; plant stout..... 25. *A. barbinodis*.  
Nodes glabrous; plant more delicate..... 24. *A. saccharoides*.
- Outer glume of sessile spikelet with a pinhole-like pit about the middle.  
Spikes few, stiffly erect..... 22. *A. wrightii*.  
Spikes numerous, more loosely ascending.  
Spikes approximate, forming a flabel-  
late cluster..... 26. *A. perforatus*.  
Spikes in a dense oblong panicle, 15  
to 20 cm. long..... 27. *A. altus*.

1. *Andropogon brevifolius* Swartz, Prodr. Veg. Ind. Occ. 26. 1788.

Type locality, "Jamaica."

RANGE: Tropical regions of both hemispheres.

HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Cerro Colorado, *Brandege* in 1904.

JALISCO: Guadalajara, moist fields, *Pringle* 1771; Río Blanco, *Palmer* 593 in 1886;  
San Nicolás, sterile clay hill, *Hitchcock* 7217.

COLIMA: Alzada, *Orcutt* 4681.

MORELOS: Hills near Yautepec, *Pringle* 11210.

2. *Andropogon gaumeri* (Nash).

*Schizachyrium gaumeri* Nash, N. Amer. Fl. 17: 102. 1912.

Type locality, "Izamal, Yucatan," the type specimen collected by Gaumer (no. 1037).

RANGE: Known only from the type collection.

3. *Andropogon malacostachyus* Presl, Rel. Haenk. 1: 337. 1830.

Type locality, "Acapulco."

RANGE: Southern Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, dry gravelly soil, *Pringle* 4514.

PUEBLA: Puebla, *Nicolas* in 1909.

GUERRERO: Balsas, along railroad, *Hitchcock* 6806.

YUCATÁN: Tekax, *Gaumer* 1134.

**4. *Andropogon feensis* Fourn. Mex. Pl. 2: 62. 1886.***Andropogon hirtiflorus feensis* Hack. in DC. Monogr. Phan. 6: 372. 1889.

Type locality, "Barranca prope Santa Fe in valle Mexicensi," the type specimen collected by Bourgeau (no. 752).

RANGE: Arizona to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San Francisquito Mountains, *Brandege* in 1890. El Taste, *Brandege* in 1893. Sierra de Laguna, *Brandege* in 1890.SONORA: Fronteras, *Hartman* 11.CHIHUAHUA: Chihuahua, rocky hill, *Hitchcock* 7790, *Pringle* 383. Mifaca, rocky hill, *Hitchcock* 7743. Sierra Madre near Colonia García, in rocks, *Townsend & Barber* 335 (the type collection of *Schizachyrium semiglabrum* Nash,<sup>1</sup> with rachis, internodes, and pedicels glabrous on the back, and ciliate on the margins as in typical *A. feensis*).DURANGO: Durango, rocky hill, *Hitchcock* 7589.SAN LUIS POTOSÍ: San Luis Potosí, prairie, *Hitchcock* 5690; *Parry & Palmer* 966; *Schaffner* 153. Cárdenas, railway cut, *Hitchcock* 5775.JALISCO: Guadalajara, prairie, *Hitchcock* 7271. San Nicolás, sterile hill, *Hitchcock* 7232. Zapotlán, prairie, *Hitchcock* 7144.FEDERAL DISTRICT: Lava rock in pedregal, *Hitchcock* 5936, 5938<sup>1</sup>; *Holway* 3063.MÉXICO: Popo Park, edge of woods, *Hitchcock* 6018.MICHOACÁN: Morelia, Lomas de la Huerta, *Arsène* 2634.PUEBLA: Cholula, *Nicolas* in 1910.MORELOS: Cuernavaca, rocky hill, *Hitchcock* 6845.VERACRUZ: Orizaba, rocky hill, *Hitchcock* 6354, 6361. Alta Luz, *Purpus* 5069. Zacuapan, Barranca de Tenampa, *Purpus* 6208.OAXACA: Oaxaca, rocky hill, *Hitchcock* 6132.**5. *Andropogon myosurus* Presl, Rel. Haenk. 1: 337. 1830.**

Type locality, "Mexico."

RANGE: Only known from the type and the following.

## HERBARIUM SPECIMEN:

JALISCO: Guadalajara, *Palmer* 506 in 1886.**6. *Andropogon cirratus* Hack. Flora 68: 119. 1885.**

Type locality, "America borealis: Inter civitatem Texas orient. et El Paso in civit. Neo-Mexicana," the type specimen collected by Wright, his numbers 204 and 2105 cited.

RANGE: Southwestern United States and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Rocky hills near Chihuahua, *Pringle* 382. Mifaca, rocky hill, *Hitchcock* 7744. Sánchez, rocky pine woods, *Hitchcock* 7672. Southwest Chihuahua, *Palmer* 7 in 1885.DURANGO: Durango, rocky hill, *Hitchcock* 7650.**7. *Andropogon tener* (Nees) Kunth, Rèv. Gram. 2: 565. 1832.***Schizachyrium tenerum* Nees, Agrost. Bras. 336. 1829.

Type locality, "Monte Video. \* \* \* in confinibus Regni Paraguayani in provincia Rio grande do Sul dictu," the type specimen collected by Sello.

RANGE: Southern United States to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, sides of rough hills, *Palmer* 858 in 1896.SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 965.<sup>1</sup> N. Amer. Fl. 17: 103. 1912.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

JALISCO: Guadalajara, prairie, *Hitchcock*, 7272; *Palmer* 504 in 1886; dry banks, *Pringle* 11733. Zapotlán, hills, *Hitchcock* 7171.

MICHOACÁN: Uruápan, prairie, *Hitchcock* 6971. Morelia, *Arsène* in 1909.

VERACRUZ: Orizaba, open rocky hill, *Hitchcock* 6381; *Botteri* 671; *Bourgeau* 3134.

CHIAPAS: Tuxtla, *Nelson* 3108.

8. *Andropogon salzmanni* (Trin.).

*Rottboellia salzmanni* Trin. in Steud. Syn. Pl. Glum. 1: 361. 1854.

*Andropogon imberbis muticus* Hack. in DC. Monogr. Phan. 6: 380. 1889.

Type locality, "Bahia," Brazil, the type specimen collected by Salzmann.

RANGE: Mexico and the West Indies to Argentina.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Mirador, *Liebmann* 115.

9. *Andropogon condensatus* H. B. K. Nov. Gen. & Sp. 1: 188. 1816.

Type locality, "in temperatis, apricis Regni Novo granatensis prope Ibague et Valle de Caravajal, ad radices montis Quindiu."

RANGE: Eastern Mexico to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Tamasopo Canyon, ledges and gravelly slides, *Pringle* 3134.

VERACRUZ: Mirador, *Liebmann* 50, 52, 54. Jalapa, prairie, *Hitchcock* 6626, 6661, 6669. Córdoba, clay cut, *Hitchcock* 6412. Orizaba, *Botteri*, *Bourgeau* 2646; open rocky hill, *Hitchcock* 6373.

10. *Andropogon muelleri* (Nash).

*Schizachyrium muelleri* Nash, N. Amer. Fl. 17: 106. 1912.

Type locality, "Vera Cruz, Mexico," the type specimen collected by Müller (no. 2176).

RANGE: Known only from Veracruz.

## HERBARIUM SPECIMENS:

VERACRUZ: Veracruz, low prairie, *Hitchcock* 6548; *Müller* 2176. Jalapa, prairie, *Hitchcock* 6659.

11. *Andropogon mexicanus* sp. nov.

Perennial; culms erect and wand-like or sometimes decumbent and rhizomatous at base, 1 to few in a cluster, glabrous, flattened, about 1 meter high; sheaths glabrous, strongly compressed-keeled; ligule rather firm, 1 mm. long; blades firm, stiffly spreading, rounded at base, abruptly apiculate, glabrous except on the margins and midrib beneath, flat or, especially on the innovations, folded, 5 to 15 cm. long, as much as 1 cm. wide; racemes (spikes) solitary from each subtending sheath, 1 to 2 cm. long, more or less fascicled or clustered along the upper part of the culm; subtending sheaths 2 to 2.5 cm. long, scarcely inflated, inclosing the villous peduncle and the base of the spike; joints of the rachis about 7 mm. long, long-villous on the margins, the cup at apex scarcely oblique; sessile spikelet about as long as the rachis joint, not villous, scabrous on the keels, the awn geniculate, loosely twisted below, exerted about 1 cm.; pediceled spikelet reduced to an awned glume, the pedicel a little shorter than the joint, long-villous with ascending hairs.

Type in the U. S. National Herbarium, no. 155148, collected on "Cool slopes of the barranca near Guadalajara," Jalisco, Mexico, November 19, 1888, by C. G. Pringle (no. 1805).

RANGE: Tepic and Jalisco.

## HERBARIUM SPECIMENS:

TEPIC: Common on grassy plains and hillsides, *Palmer* 1922 in 1892.

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7341, *Pringle* 1805.

12. *Andropogon fastigiatus* Swartz, Prodr. Veg. Ind. Occ. 26. 1788.

Type locality, "Jamaica."



RANGE: Mexico and West Indies to Brazil.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, rocky hills, *Pringle* 2320. Río Blanco, *Palmer* 507 and 588 in 1886. San Nicolás, sterile clay hill, *Hitchcock* 7211.

MORELOS: Yautepec, limestone hills, *Pringle* 11211.

13. *Andropogon glomeratus* (Walt.) B. S. P. Prel. Cat. N. Y. 67. 1888.

*Cinna glomerata* Walt. Fl. Carol. 59. 1788.

*Andropogon macrourum* Michx. Fl. Bor. Amer. 1: 56. 1803.

Type locality, South Carolina.

RANGE: Eastern United States to the West Indies and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Canyon Cantillas, *Orcutt* 1144. West side of mountains, Caperegion, *Brandegge* in 1902. Sierra de San Francisquito, *Brandegge* in 1892.

DURANGO: Durango, edge of spring, *Palmer* 251 in 1896.

JALISCO: Guadalajara, along stream in Barranca de Oblatos, *Hitchcock* 7354. Río Blanco, *Palmer* 466 in 1886.

PUEBLA: Mount Orizaba, *Seaton* 111. Puebla, *Nicolas* in 1909.

VERACRUZ: Jalapa, clay cut, *Hitchcock* 6589; ditch along railway, *Hitchcock* 6671.

Mirador, *Liebmann* 61. Veracruz, along ditch, *Hitchcock* 6585. Córdoba, *Fink* 9; clay bank, *Hitchcock* 6419. Orizaba, open rocky hill, *Hitchcock* 6366, 6376; roadside ditch, *Hitchcock* 6342.

OAXACA: San Antonio Valley, *Smith* 960.

14. *Andropogon virginicus* L. Sp. Pl. 1046. 1753.

Type locality "in America," probably in Virginia.

RANGE: Eastern United States, West Indies, and eastern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Jalapa, prairie, *Hitchcock* 6660, 6670.

15. *Andropogon liebmanni* Hack. Flora 68: 132. 1885.

Type locality, "Mexico: prope Chinantla in campis," the type specimen collected by *Liebmann* (no. 590).

RANGE: Southern Mexico.

HERBARIUM SPECIMENS:

TEPIC: Sierra Madre near Santa Teresa, *Rose* 2222.

JALISCO: Guadalajara, gravelly banks, *Pringle* 11212, *Palmer* 227 in 1886.

MICHOACÁN: Uruápan, low prairie, *Hitchcock* 6995.

PUEBLA: Chinantla, *Liebmann* 77.

VERACRUZ: Orizaba, *Bourgeau* 2376.

16. *Andropogon bicornis* L. Sp. Pl. 1046. 1753.

Type locality given as "Brasilia, Jamaica."

RANGE: West Indies and southern Mexico to Brazil.

HERBARIUM SPECIMENS FROM MEXICO:

PUEBLA: On the Atoyac River, *Nicolas* in 1910.

VERACRUZ: La Luz near Córdoba, swamp, *Kerber* 92. Orizaba, *Botteri* 668. Mirador, *Liebmann* 60.

OAXACA: Tacotepec, *Hartweg* 521.

TABASCO: Los Cacaos, plains, *Rovirosa* 606.

17. *Andropogon leucostachyus* H. B. K. Nov. Gen. & Sp. 1: 187. 1816.

Type locality, "in ripa rivulorum qui vallem percurrunt Caripensem Curnanensium."

RANGE: West Indies and southern Mexico to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Zacuapan, dry ground, *Purpus* 2449. Mirador, *Sartorius*.

**18. *Andropogon bourgaei* Hack. Flora 68: 134. 1885.**

Type locality, "Mexico: Orizaba," the type specimen collected by Bourgeau (no. 2645).

RANGE: Known only from the State of Veracruz.

## HERBARIUM SPECIMENS:

VERACRUZ: Río Blanco near Orizaba, *Bourgeau* 2645. Mirador, *Liebmann* 76.

**19. *Andropogon pringlei* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 7. 1901.**

Type locality, "Valley of Mexico, Federal District," the type specimen collected by Pringle (no. 6577).

RANGE: Known only from the Federal District.

HERBARIUM SPECIMENS: Federal District, Eslava, dry soil, *Pringle* 6577, 9561.

**20. *Andropogon furcatus* Muhl.; Willd. Sp. Pl. 4: 919. 1806.**

*Andropogon provincialis* Lam. Encycl. 1: 376. 1783, not Retz. 1783.

BIG BLUESTEM.

Type locality, "in America boreali."

RANGE: Throughout eastern United States and south to southern Mexico; in the Old World known only from the coast of Provence, France.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Zapotlán, hills, *Hitchcock* 7174.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Toluca, prairie, *Pringle* 4294.

PUEBLA: San Simón, *Purpus* 4216.

**21. *Andropogon hirtus* L. Sp. Pl. 1046. 1753.**

Type locality, southern Europe, "in Lusitania, Sicilia, Smyrnae."

RANGE: Mediterranean region; sparingly introduced in Mexico and the West Indies.

## HERBARIUM SPECIMEN FROM MEXICO:

NUEVO LEÓN: Monterey, river bluffs, *Pringle* 1967.

**22. *Andropogon wrightii* Hack. Flora 68: 139. 1885.**

Type locality, "America septentrionalis: New Mexico," the type specimen collected by Wright (no. 2104).

RANGE: New Mexico and northern Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

CHIHUAHUA: Mesas near Cusihuiríachic, *Pringle* 1409.

**23. *Andropogon hirtifolius* Presl, Rel. Haenk. 1: 338. 1830.**

Type locality, "Mexico."

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

JALISCO: Guadalajara, hillsides, *Pringle* 3032. San Nicolás, prairie, *Hitchcock* 7198. Zapotlán, hills, *Hitchcock* 7175. Chapala, *Rose* 3438, *Rose & Painter* 7639.

MICHOACÁN: Pátzcuaro, *Holway* 3216. Morelia, *Arsène* in 1909.

PUEBLA: Hacienda Noria, *Nicolas* in 1910.

MORELOS: Yautepec, lava fields, *Pringle* 8702.

OAXACA: Las Sedas, calcareous hills, *Pringle* 4781. Mountain ridge on west side of valley of Cuicatlán, *Nelson* 1903, 1904. Oaxaca, *Rose* 3652.

**24. *Andropogon saccharoides* Swartz, Prodr. Veg. Ind. Occ. 26. 1788.**

Type locality, "Jamaica."

RANGE: Southwestern United States to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Cananea, *Griffiths* 4867.

CHIHUAHUA: Paso del Norte, *Pringle* 1994.

DURANGO: Durango, edge of spring, *Palmer* in 1896.

COAHUILA: Saltillo, sandy field, *Hitchcock* 5623; moist places, *Palmer* 1347 in 1880, 4, 261, and 810 in 1898.

NUEVO LEÓN: Monterey, Sierra Madre, *Pringle* 1971; edge of field, *Hitchcock* 5544.

SAN LUIS POTOSÍ: San Luis Potosí, prairie, *Hitchcock* 5716.

JALISCO: Zapotlán, prairie, *Hitchcock* 7143.

GUANAJUATO: Irapuato, moist sandy clay soil *Hitchcock* 7396. Acámbaro, prairie, *Hitchcock* 6931.

QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5834.

MÉXICO: Valley of Mexico, *Pringle* 9588. Federal District, prairie, *Hitchcock* 5896; *Pringle* 8660; *Rose* 3571.

PUEBLA: Pont del México, *Nicolas* in 1909.

MORELOS: Cuernavaca, low place in prairie, *Hitchcock* 6873; barranca, *Rose, Painter & Rose* 10194.

VERACRUZ: Jalapa, clay cut, *Hitchcock* 6595; *Smith* 1623. Mirador, *Liebmann* 82. Fortín, *Purpus* 1995. Orizaba, rocky hill, *Hitchcock* 6359; roadside ditch, *Hitchcock* 6334; *Botteri* 667; *Bourgeau* 2969.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6134; prairie, *Hitchcock* 6167. Cañada de San Gabriel, *Conzatti & González* 320.

25. *Andropogon barbinodis* Lag. Gen. & Sp. Nov. 3. 1816.

Type locality, "H. in N. H. [Habitat in Nova Hispania] \* \* \* Semina communicavit D. Sessé."

RANGE: Southwestern United States to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Carysito, *Orcutt* 514.

SONORA: Guaymas, cliffs of seashore, *Hitchcock* 3563. Nogales, prairie, *Hitchcock* 3629.

CHIHUAHUA: Chihuahua, rocky hill, *Hitchcock* 7798. Miñaca, dry rocky run, *Hitchcock* 7737. Southwestern Chihuahua, *Palmer* 2, 2a in 1885. Casas Grandes, *Nelson* 6342.

COAHUILA: Saltillo, dry ground, river bottom, *Hitchcock* 5637.

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5529.

DURANGO: Durango, prairie, *Hitchcock* 7585; hills and grassy plains, *Palmer* 538 in 1896.

ZACATECAS: Concepción del Oro, *Palmer* 262 in 1904. Plateado, *Rose* 2758.

AGUASCALIENTES: Aguascalientes, edge of field, *Hitchcock* 7449.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 158. Cárdenas, along irrigation ditch, *Hitchcock* 5747. Minas de San Rafael, *Purpus* 5436.

JALISCO: Guadalajara, prairie, *Hitchcock* 7269.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7408.

HIDALGO: Pachuca, sandy river bed, *Hitchcock* 6766. Sierra de la Mesa, *Rose, Painter & Rose* 9098. Tula, *Rose, Painter & Rose* 8360.

FEDERAL DISTRICT: *Orcutt* 3687.

26. *Andropogon perforatus* Trin.; Fourn. Mex. Pl. 2: 59. 1886.

*Andropogon saccharoides* Swartz, subsp. *leucopogon* var. *perforatus* Hack. in DC. Monogr. Phan. 6: 496. 1889.

Type locality, "envir[ons] de Mexique," according to the label on the type specimen collected by Berlandier (no. 641) in the Trinius Herbarium.

RANGE: Southwestern United States and Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Sierra Madre near Monterey, *Pringle* 1971.

DURANGO: Durango, prairie along creek, *Hitchcock* 7613;<sup>1</sup> damp place along river, *Palmer* 469 in 1896.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5681.

ZACATECAS: Zacatecas, gulch in dry hill, *Hitchcock* 7507; hills, *Pringle* 1761.

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7360.<sup>1</sup> Río Blanco, *Palmer* 305 in 1886.<sup>1</sup> San Nicolás, prairie, *Hitchcock* 7195. Zapotlán, prairie, *Hitchcock* 7126.

GUANAJUATO: Acámbaro, prairie, *Hitchcock* 6951.

QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5842.

MICHOACÁN: Morelia, hills, *Arsène* in 1909.

HIDALGO: Pachuca, rocky slopes, *Purpus* 1631.

MORELOS: Cuernavaca, prairie, *Hitchcock* 6869.

VERACRUZ: Orizaba, *Bourgeau* 2374.

27. *Andropogon altus* sp. nov.

Culms in small clumps, erect or slightly decumbent at base, about 1.5 meters high, rather slender, the nodes bearded with stiff ascending hairs, the internodes glabrous; sheaths glabrous; ligules membranaceous, 3 to 4 mm. long; blades flat, scabrous, bearing a few long hairs on the upper surface near the base, 20 to 30 cm. long, 5 to 10 mm. wide, narrowed into a fine point, the uppermost smaller; panicle long-exserted, oblong, dense, 15 to 20 cm. long, the branches appressed, naked below, these and the primary axis glabrous; racemes 2 to 3 cm. long, clustered on the upper part of the branches, the rachis joints about 4 mm. long, deeply channeled, densely long-villous with ascending hairs 5 to 8 mm. long; sessile spikelet 5 mm. long, villous at base, scabrous toward the apex, otherwise glabrous, a well-marked pinhole-like pit in the depression on the back somewhat above the middle; awn geniculate, about 2 cm. long, tightly twisted below, loosely twisted above; sterile spikelet reduced to a nerved awnless scale 3 to 4 mm. long, the pedicel somewhat longer than the rachis joint and similarly villous.

Type in the U. S. National Herbarium, no. 691232, collected "along irrigation ditch, Querétaro," State of Querétaro, Mexico, July 25, 1910, by A. S. Hitchcock (no. 5868).

*Andropogon altus* differs from *A. perforatus* in the elongated panicle and shorter racemes clustered toward the ends of the branches. The species has the aspect of *Erianthus*.

RANGE: Highlands of central Mexico.

HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: Las Canoas, moist grassy ground, *Hitchcock* 5759.

JALISCO: Guadalajara, dry open ground along rim of Barranca de Oblatos, *Hitchcock* 7327; side of Barranca de Oblatos, *Hitchcock* 7359.

QUERÉTARO: Querétaro, along irrigation ditch, *Hitchcock* 5868.

28. *Andropogon piptatherus* Hack. in Mart. Fl. Bras. 2<sup>3</sup>: 293. 1883.

Type locality, "in prov. Goyaz ad Porto Imperial et Funil," the type specimen collected by Burchell, nos. "8761-7 et 8780" cited.

RANGE: Mexico to Brazil.

HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Lodiago, hillside in shade, *Palmer* 1654 in 1891. Copradía, *Brandegge* in 1904.

<sup>1</sup> The blades and upper part of sheaths densely villous; referable to *A. saccharoides* subsp. *leucopogon* var. *palmeri* Hack. (in DC. Monogr. Phan. 6: 496. 1889.), *Amphiphlophus palmeri* Nash (Fl. N. Amer. 17: 126. 1912.), *Palmer* 305 being the type collection. This may be worthy of subspecific or specific rank.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

JALISCO: Río Blanco, *Palmer* 591 in 1886. Guadalajara, in shade near base of Barranca de Oblatos, *Hitchcock* 7367. Tequila, dry slopes of barranca, *Pringle* 4612.

COLIMA: Alzada, among bushes on rocky hill, *Hitchcock* 7109.

## 14. CYMBOPOGON Spreng. Pl. Pugill. 2: 14. 1815.

## KEY TO THE SPECIES.

Awn 2.5 cm. long..... 1. *C. bracteatus*.  
Awn 5 to 7.5 cm. long..... 2. *C. ruprechtii*.

1. *Cymbopogon bracteatus* (Willd.).

*Andropogon bracteatus* Willd. Sp. Pl. 4: 914. 1806.

Type locality, "Cumana," Venezuela.

RANGE: Mexico to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Mirador, *Liebmann* 46, *Ross* 630. Zacuapan, *Purpus* 1996.

CHIAPAS: Yajalón, *Nelson* 3399.

2. *Cymbopogon ruprechtii* (Hack.).

*Andropogon ruprechtii* Hack. in DC. Monogr. Phan. 6: 645. 1889.

Type locality, Zacuapan, Veracruz, the type specimen collected by Galeotti (no. 5697). The first description is by Hackel (loc. cit.), but the Galeotti specimen was mentioned earlier by Ruprecht in his list of Galeotti's plants (Bull. Acad. Sci. Brux. 9: 245. 1842). This specimen among others was cited by Hackel and is the type as it suggested the specific name.

RANGE: Mexico to Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7339. Río Blanco, *Palmer* 513 in 1886. Sierra Madre west of Bolaños, *Rose* 2956.

COLIMA: Alzada, prairie, *Hitchcock* 7066.

MICHOACÁN: El Ocote, rocky hill, *Langlassé* 530.

CHIAPAS: Roadside between San Ricardo and Ocozocuatla, *Nelson* 2991.

## 15. HOLCUS L. Sp. Pl. 1047. 1753.

## SORGHUM.

## KEY TO THE SPECIES.

Spikelets and pedicels densely clothed with golden brown hairs;  
panicle branches capillary..... 2. *H. trichocladus*.  
Spikelets and pedicels sparsely clothed with pale hairs; panicle  
branches not capillary..... 1. *H. halepensis*.

1. *Holcus halepensis* L. Sp. Pl. 1047. 1753.

JOHNSON GRASS.

*Andropogon halepensis* Brot. Fl. Lusit. 1: 89. 1804.

Type locality given as "in Syria, Mauritania."

RANGE: Widely distributed in the warmer parts of both hemispheres.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Hermosillo, weed in field, *Hitchcock* 3614. Guaymas, *Palmer* 64 in 1887, 687 in 1890. Magdalena, *Rose*, *Standley & Russell* 15096. Alamos, *Rose*, *Standley & Russell* 13027.

SINALOA: Culiacán, *Palmer* 1559 in 1891. Rosario, *Lamb* 478.

DURANGO: Durango, weed in field, *Hitchcock* 7562, 7660.

COAHUILA: Saltillo, weed in field, *Hitchcock* 5649.

NUEVO LEÓN: Monterey, sandy field, *Hitchcock* 5553.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

TAMAULIPAS: Victoria, *Palmer* 553 in 1907.

SAN LUIS POTOSÍ: San Luis Potosí, irrigated field, *Hitchcock* 5693.

TEPIC: Tepic, *Palmer* 1917 in 1892.

JALISCO: Guadalajara, along stream, *Hitchcock* 7350

HIDALGO: Tula, *Rose, Painter & Rose* 8355.

COLIMA: Alzada, along railroad, *Hitchcock* 7095; Paso del Río, *Emrick*, 200.

MICHOACÁN: Morelia, *Arsène* in 1909.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7394.

FEDERAL DISTRICT: Tacubaya, *Hitchcock* 5910.

VERACRUZ: Veracruz, weed along street, *Hitchcock* 6574. Orizaba, roadside ditch, *Hitchcock* 6317, *Holway* 3077.

2. *Holcus trichocladus* (Rupr.) Nash, N. Amer. Fl. 17: 131. 1912.

*Andropogon trichocladus* Rupr.; Hack. in DC. Monogr. Phan. 6: 525. 1889.

Type locality, "Mexico: in montosis graminosis inter la Galera et Pochutla prope Talca in Prov. Oajaca (Liebmann, 23, 24 in h. Havn.); loco non indicato l. Karwinsky (in h. Vindob. ubi a cl. Rupr. denominatus)."

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

TEPIC: Tepic, *Palmer* 2030a in 1892.

OAXACA: Mina de Dolores, *Liebmann* 24.

16. *Sorghastrum* Nash in Britton, Man. 71. 1901.

## KEY TO THE SPECIES.

## Plants annual.

Spikelets pale, 4 mm. long; plants mostly less than 0.5 meter high..... 1. *S. incompletum*.

Spikelets dark brown, 5 mm. long; plants mostly more than 1 meter high..... 2. *S. liebmannianum*.

## Plants perennial.

Awn poorly developed, the exerted portion usually less than 5 mm. long, with one bend, sometimes short and straight..... 3. *S. agrostoides*.

Awn well developed, the exerted portion 10 to 15 mm. long, bent twice.

Blades, especially the lower and those of the innovations, short and straight, 3 to 10 cm. long; panicle loose, few-flowered, the pedicels capillary and recurved-flexuous..... 4. *S. nudipes*.

Blades elongated; panicle rather dense, many-flowered; pedicels straight or somewhat recurved..... 5. *S. nutans*.

1. *Sorghastrum incompletum* (Presl) Nash, N. Amer. Fl. 17: 130. 1912.

*Andropogon incompletus* Presl, Rel. Haenk. 1: 342. 1830.

*Andropogon nutans incompletus* Hack. in DC. Monogr. Phan. 6: 531. 1889.

Type locality, "Mexico."

RANGE: Southern Mexico to Costa Rica.

## HERBARIUM SPECIMENS FROM MEXICO:

COLIMA: Alzada, *Orcutt* 4632; Tuxpán Canyon, *Orcutt* 4707.

JALISCO: Guadalajara, hillside, *Pringle* 2466. Open dry ground along side of Barranca de Oblatos, *Hitchcock* 7330. Río Blanco, *Palmer* 590 in 1886.

MICHOACÁN: El Ocote, rocky hill, *Langlassé* 533.

OAXACA: Huatulco, *Liebmann* 34.

**2. Sorghastrum liebmannianum** sp. nov.

Annual; culms slender, erect, 1.5 to 2 meters high, glabrous, the nodes glabrous or appressed-pubescent; sheaths scabrous or somewhat hirsute, the ligule 3 to 6 mm. long, indurated at the edges; blades 15 to 30 cm. long, 3 to 7 mm. wide, flat, scabrous; panicle narrow, rather loose, 15 to 25 cm. long; pedicels slender, appressed-villous with a few long hairs toward the summit, the apex abruptly enlarged; sessile spikelet 4 to 5 mm. long, dark brown, more or less appressed-hirsute to apex; awn well developed, 10 to 15 mm. long, with two more or less distinct bends; sterile pedicels a little shorter than the sessile spikelet, plumose with purplish hairs.

Type in the U. S. National Herbarium, no. 691222, collected on an open rocky hill, Orizaba, Veracruz, Mexico, August 24, 1910, by A. S. Hitchcock (no. 6352).

Other specimens in the National Herbarium, all from Veracruz, are: Totutla, *Liebmann* 25; Orizaba, *Botteri* 642, 646.

This species is included by Hackel<sup>1</sup> with *Andropogon nutans linneanus* Hack., the type of which comes from the southeastern United States. The latter differs in its perennial habit, larger spikelets, and longer awns and blades.

**3. Sorghastrum agrostoides** (Speg.).

*Andropogon agrostoides* Speg. Anal. Soc. Cienc. Argentina 16: 136. 1883.

*Andropogon nutans agrostoides* Hack. in DC. Monogr. Phan. 6: 529. 1889.

Type locality, "In pratis uliginosis praecipue ad limina sylvarum in 'Chaco.' Prope coloniam 'Resistencia.'"

RANGE: Southern Mexico to Argentina.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Consoquitla, *Liebmann* 37. Jalapa, large bunches, sometimes with short rhizomes, prairie, *Hitchcock* 6692. Mirador, *Liebmann* 36. Orizaba, *Botteri*.

CHIAPAS: Ricardo, *Nelson* 2967. Ocuilapa, *Nelson* 3008.

**4. Sorghastrum nudipes** Nash, N. Amer. Fl. 17: 129. 1912.

Type locality, "pine plains, base of the Sierra Madre, Chihuahua, Mexico," the type specimen collected by Pringle (no. 1433).

RANGE: Known only from Chihuahua.

HERBARIUM SPECIMENS:

CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7678. Sierra Madre, pine plains, *Pringle* 1433. Near Colonia García, *Townsend & Barber* 336. Southwestern Chihuahua, *Palmer* 11 in 1885.

**5. Sorghastrum nutans** (L.) Nash in Small, Fl. Southeast. U. S. 66. 1903.

*Andropogon nutans* L. Sp. Pl. 1045. 1753.

Type locality, "Virginia, Jamaica." The type specimen in the Linnæan Herbarium was collected by Kalm, and consequently came from somewhere in Canada or the northeastern United States and was not from Virginia or Jamaica. The latter localities refer to synonyms cited by Linnæus, both of which refer to other species.<sup>2</sup>

RANGE: Eastern United States to Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Socorro Island, *Anthony* 401.

SONORA: Cochuto, *Hartman* 88.

JALISCO: Guadalajara, in bunches, side of Barranca de Oblatos, *Hitchcock* 7346. Río Blanco, *Palmer* 511 in 1886.

MICHOACÁN: Morelia, *Nicolas* in 1909.

VERACRUZ: Alta Luz, rocky soil, *Purpus* 2897, 5592.

OAXACA: Mountain ridge on west side of valley of Cuicatlán, *Nelson* 1905a; Reyes, *Nelson* 1807a. Las Sedas, *Smith* 917.

<sup>1</sup> DC. Monogr. Phan. 6: 531. 1889.

<sup>2</sup> Hitchcock, Contr. U. S. Nat. Herb. 12: 125. 1908.

17. **HETEROPOGON** Pers. Syn. Pl. 2: 533. 1807.

## KEY TO THE SPECIES.

- Plants perennial, 60 to 100 cm. high; outer glume of staminate spikelets pilose..... 1. *H. contortus*.  
 Plants annual, 1.3 to 2.4 meters high; outer glume of staminate spikelets beset with a row of glands along the back, not pilose..... 2. *H. melanocarpus*.

1. **Heteropogon contortus** (L.) Beauv.; Roem. & Schult. Syat. Veg. 2: 836. 1817.

*Andropogon contortus* L. Sp. Pl. 1045. 1753.

Type locality, "India."

RANGE: Warmer parts of both hemispheres.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San Pablo, rocky cliffs, *Purpus* 230. San José del Cabo, *Brandege* 35.

SONORA: Llano, prairie, *Hitchcock* 3524. Guaymas, *Palmer* 267 in 1887. Alamos, *Rose, Standley & Russell* 12713. Papago Tanks, *MacDougal* 52.

CHIHUAHUA: Chihuahua, rocky hill, *Hitchcock* 7800; *Pringle* 480. Santa Eulalia Plains, *Wilkinson* in 1885. Southwestern Chihuahua, *Palmer* 115b.

DURANGO: Durango, Iron Mountain, rocky hill, *Hitchcock* 7641; *Palmer* 540 in 1896.

COAHUILA: Monclova, *Palmer* 1346 in 1880.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 154, 169; *Parry & Palmer* 955. Las Canoas, prairie, *Hitchcock* 5762.

AGUASCALIENTES: Aguascalientes, *Hartweg* 249; prairie, *Hitchcock* 7484.

JALISCO: Guadalajara, *Palmer* 767 and 767a in 1886; dry open ground, rim of Barranca de Oblatos, *Hitchcock* 7325; *Rose* 3428. Balaños, *Rose* 2938. San Nicolás, sterile clay hill, *Hitchcock* 7212.

QUERÉTARO: San Juan del Río, stony hillside, *Rose, Painter & Rose* 9560.

COLIMA: Alzada, prairie, *Hitchcock* 7058.

MICHOACÁN: Chapala, *Rose* 3445. Morelia, *Arsène* in 1909.

VERACRUZ: Orizaba, open rocky hill, *Hitchcock* 6375; *Bourgeau* 2374.

PUEBLA: Tehuacán, sterile hill, *Hitchcock* 6092.

MORELOS: Cuernavaca, prairie, *Hitchcock* 6871.

GUERRERO: Balsas, prairie, *Hitchcock* 6779.

OAXACA: Tomellín, rocky hill, *Hitchcock* 6193. Santa Catarina Canyon, *Pringle & Conzatti* 281. Huitzo, *Conzatti* 2011. Oaxaca, rocky hill, *Hitchcock* 6102, 6158; *Nelson* 1367a, 1440.

2. **Heteropogon melanocarpus** (Ell.) Benth. Journ. Linn. Soc. Bot. 14: 71. 1882 (where it is erroneously credited to Elliott).

*Andropogon melanocarpus* Ell. Bot. S. C. & Ga. 1: 146. 1816.

Type locality, "in the pine barrens between Fort Barrington on the Altamaha, and Jefferson on the Salella, Georgia," the type specimen "collected by R. Habersham."

RANGE: Warmer parts of both hemispheres.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San Francisquito Mountains, *Brandege* 33 in 1890.

SONORA: Fronteras, *Hartman* 55.

CHIHUAHUA: Mapula Mountains, canyons, *Pringle* 820.

SINALOA: Lodiago, *Palmer* 1665 in 1891.

DURANGO: Durango, Iron Mountain, *Hitchcock* 7622, 7629.

JALISCO: Guadalajara, *Holway* 2; dry open ground along rim of Barranca de Oblatos, *Hitchcock* 7326, 7337, 7369½. Río Blanco, *Palmer* 589 in 1886. Balaños, *Rose* 2956.



## HERBARIUM SPECIMENS FROM MEXICO—Continued.

COLIMA: Manzanillo, cliffs by seashore, *Hitchcock* 7045.

MORELOS: Cuernavaca, rocky soil, *Hitchcock* 6877. Yautepec, wet places, *Pringle* 8678.

GUERRERO: Balsas, prairie, *Hitchcock* 6792.

OAXACA: San Antonio, *Conzatti* 2009.

18. *ANTHEPHORA* Schreb. Besch. Gräs. 2: 105. pl. 44. 1779.1. *Antheophora hermaphrodita* (L.) Kuntze, Rev. Gen. Pl. 2: 759. 1891.

*Tripsacum hermaphroditum* L. Syst. Nat. ed. 10. 1261. 1759.

Type locality, Jamaica.

RANGE: Mexico to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cape St. Lucas, *Xantus* 114.

SINALOA: Topolobampo, *Rose, Standley & Russell* 13278. Mazatlán, dry hill, *Rose, Standley & Russell* 13687. Culiacán, moist field, *Rose, Standley & Russell* 14865. Fuerte, river valley, *Rose, Standley & Russell* 13562. Lodi-ego, wet shaded spot on river bank, *Palmer* 1662 in 1891.

TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14228.

COLIMA: Colima, *Palmer* 1255 in 1891, 146 in 1897; *Orcutt* 4567. Armería, weed along railroad, *Hitchcock* 7025. Manzanillo, rocky cliff by seashore, *Hitchcock* 7041; *Palmer* 1093 in 1891.

VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6558. Jalapa, weed along railroad, *Hitchcock* 6622.

GUERRERO: Acapulco, *Palmer* 38 and 285 in 1895.

OAXACA: Cuicatlán, banks of streams, *Pringle* 6030; *Nelson* 1864.

CHIAPAS: Tonalá, *Nelson* 2906.

YUCATÁN: Mérida, *Schott* 549.

19. *HILARIA* H. B. K. Nov. Gen. & Sp. 1: 116. pl. 37. 1816.

## KEY TO THE SPECIES.

- Spikelet cluster 6 to 7 mm. long, the inner awns of involucre ascending, slender, scabrous..... 1. *H. cenchroides*.  
Spikelet cluster 4.5 to 5 mm. long, the inner awns of involucre recurved-spreading, flattened, ciliate..... 1a. *H. cenchroides ciliata*.

1. *Hilaria cenchroides* H. B. K. Nov. Gen. & Sp. 1: 117. pl. 37. 1816.

CURLY MESQUITE.

*Hilaria cenchroides texana* Vasey, Contr. U. S. Nat. Herb. 1: 53. 1890.

Type locality, "in planitie montana regni Mexicani, inter Zelaya et Guanaxuato, locis subfrigidis."

RANGE: Southwestern United States to Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Guaymas, rocky lava hill, *Hitchcock* 3558; *Palmer* 347 in 1887.

CHIHUAHUA: Chihuahua, hills and plains, *Pringle* 493.

DURANGO: Durango, common in alkaline "bottoms," *Palmer* 541 in 1896; bank of ditch in alkaline flat, *Palmer* 379 in 1896; along road in open ground, *Hitchcock* 7580.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7537.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7477; *Hartweg* 251.

SAN LUIS POTOSÍ: Alvarez, *Palmer* 165 in 1904. Cárdenas, open grass land, *Hitchcock* 5713.

HERBARIUM SPECIMENS FROM MEXICO—Continued.

- JALISCO: Guadalajara, prairie, *Hitchcock* 7268. Río Blanco, *Palmer* 197 in 1886. La Junta, overhanging bank along railway, *Hitchcock* 7000. San Nicolás, prairie, *Hitchcock* 7188. Huejuquilla, *Rose* 2542.
- GUANAJUATO: Irapuato, dry shrubby hill, *Hitchcock* 7430. Acámbaro, prairie, *Hitchcock* 6939.
- QUERÉTARO: Querétaro, along irrigation ditch, *Hitchcock* 5865, 5870 (much elongated).
- HIDALGO: Pachuca, rocky hill, *Hitchcock* 6718½.
- MÉXICO: Toluca, rocky hill, *Hitchcock* 6905. Federal District, open grassy pasture, *Hitchcock* 5889. Pedregal, *Hitchcock* 5950. Olivar, *Orcutt* 3591.
- PUEBLA: Tochimilco, *Nelson* in 1893. Cholula, *Nicolas* in 1909.
- VERACRUZ: Orizaba, open rocky hill, *Hitchcock* 6353.
- MORELOS: Cuernavaca, prairie, *Hitchcock* 6861. Yautepec, lava field, *Pringle* 11225.
- GUERRERO: Santa Fé, along railroad, *Hitchcock* 6687.
- OAXACA: Oaxaca, sterile hill, *Hitchcock* 6096; *Nelson* 1576. Cuicatlán, *Nelson* 1906.

1a. *Hilaria cenchroides ciliata* Scribn. Proc. Acad. Phila. 1891: 293. 1892.

Type locality, "Near Guadalajara," the type specimen collected in the Valley of the Rio Grande de Santiago at Atequiza by *Pringle* (no. 3128).

RANGE: Pacific slope of Mexico.

HERBARIUM SPECIMENS:

- TEPIC: Tepic, in deserted garden, *Palmer* 1918 in 1892. Acaponeta, *Rose*, *Standley & Russell* 14304.
- SAN LUIS POTOSÍ: Cárdenas, rocky hill, *Hitchcock* 5774.
- JALISCO: Guadalajara, in shady moist place, Barranca de Oblatos, *Hitchcock* 7370. Atequiza, *Pringle* 3128. Zapotlán, along railway, *Hitchcock* 7125.
- COLIMA: Manzanillo, *Palmer* 1267 in 1890. Armería, prairie, *Hitchcock* 7022. Alzada, prairie, *Hitchcock* 7077.

20. *PLEURAPHIS* Torr. Ann. Lyc. N. Y. 1: 148. pl. 10. 1824.

KEY TO THE SPECIES.

- Culms smooth..... 1. *P. mutica*.  
 Culms felty-pubescent..... 2. *P. rigida*.

1. *Pleuraphis mutica* Buckl. Proc. Acad. Phila. 1862: 95. 1863.

*Hilaria mutica* Benth. Journ. Linn. Soc. Bot. 19: 62. 1881.

Type locality, "Northern Texas."

RANGE: Southwestern United States to northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, plains, *Pringle* 485. Santa Eulalia Plains, *Wilkinson* in 1885.

COAHUILA: Torreón, among mesquite bushes, *Palmer* 506 in 1898.

2. *Pleuraphis rigida* Thurb.; S. Wats. Bot. Calif. 2: 293. 1880. GALLETA.

*Hilaria rigida* Benth.; Scribn. Bull. Torrey Club 9: 33. 1882.

Type locality, "Fort Mojave," the type specimen collected by Cooper. Thurber (loc. cit.) cites Bolander,<sup>1</sup> the species being mentioned without description and the locality given as "Southern California, Dr. Cooper." The first Cooper specimen mentioned by Thurber is taken as the type.

RANGE: Southwestern United States to northwestern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Canyon Cantillas, *Orcutt* 1145.

SONORA: Colonia Díaz, *Mearns* 2848.

<sup>1</sup> Trans. Agr. Soc. Calif. 1864-5: 137. 1865.

**21. AEGOPOGON** Humb. & Bonpl. in Willd. Sp. Pl. 4: 899. 1806.

## KEY TO THE SPECIES.

- Glumes lanceolate, entire or sometimes obscurely toothed; pediceled spikelets rudimentary; awn of perfect spikelet inconspicuous or wanting. . . . . 3. *A. imperfectus*.
- Glumes cuneate, lobed at the summit; pediceled spikelets well developed; awns usually as long as the spikelet cluster or longer.
- Lobes of glumes rounded, broad and papery. . . . . 2. *A. tenellus*.
- Lobes of glumes acute or awned, firm, purplish. . . . . 1. *A. cenchroides*.

**1. Aegopogon cenchroides** Humb. & Bonpl.; Willd. Sp. Pl. 4: 899. 1806.*Aegopogon geminiflorus* H. B. K. Nov. Gen. & Sp. 1: 133. 1816.

Type locality, "Cumana," Venezuela.

RANGE: Mexico to Bolivia.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Saucito, *Brandegee* 69 in 1893 (type of *A. geminiflorus breviglumis* Scribn.,<sup>1</sup> *A. breviglumis* Nash<sup>2</sup>). Sierra de San Francisquito, *Brandegee* 23 in 1899, 41 in 1890. Sierra de la Laguna, *Brandegee* 6 in 1890.

CHIHUAHUA: Sánchez, rocky hill, *Hitchcock* 7675. Mapula Mountains, thin soil of ledges, *Pringle* 823. Colonia García, *Townsend & Barber* 340. Cañon de San Diego, *Hartman* 789. Southwestern Mexico, *Palmer* 28 in 1885. Road between Guadalupe y Calvo and San Julián, *Nelson* 4926.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 166, *Parry & Palmer* 942.

JALISCO: Guadalajara, prairie, *Hitchcock* 7267; dry banks, *Pringle* 11731; hills, *Pringle* 3964. Río Blanco, *Palmer* 247 in 1886.

COLIMA: Colima, *Palmer* 1270 in 1891.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6720.

MÉXICO: Popo Park, shady bank, *Hitchcock* 5961, 6024. Popocatepetl, bank of deep cut, *Hitchcock* 5976. Ixtaccihuatl, dry slopes, *Purpus* 48. Federal District, Sierra de Ajusco, *Pringle* 9106; *Holway* 16. Santa Fé, *Bourgeau*.

MORELOS: Cuernavaca, along ditch, *Hitchcock* 6850.

PUEBLA: Cholula, *Deam* in 1899.

VERACRUZ: Jalapa, clay cut, *Hitchcock* 6627. Orizaba, *Müller* 2071, *Botteri*.

OAXACA: Oaxaca, *Nelson* 1367, 1477; *Galeotti* 5750, 5889 in part.

CHIAPAS: San Cristóbal, *Nelson* 3227.

**2. Aegopogon tenellus** (Cav.) Trin. Gram. Unif. 164. 1824.*Lamarckia tenella* DC. Hort. Monsp. 120. 1813.*Cynosurus tenellus* Cav.; DC. Hort. Monsp. 120. 1813.*Hymenothecium unisetum* Lag. Gen. & Sp. Nov. 4. 1816.*Aegopogon unisetus* Roem. & Schult. Syst. Veg. 2: 805. 1817.Type locality, unknown, the type specimen from the Botanical Garden, Montpellier, France.<sup>3</sup>

RANGE: Southern Arizona and northwestern Mexico to northern South America.

<sup>1</sup> Zoe 4: 386. 1894.<sup>2</sup> N. Amer. Fl. 17: 139. 1912.<sup>3</sup> Through the kindness of M. C. de Candolle the National Herbarium has received a small portion of the type specimen collected in the Hortus Monspeliensis in 1808 by A. P. de Candolle. This proves to be the species to which Fournier (Mex. Pl. 2: 71. 1886) misapplied the name *Aegopogon geminiflorus* H. B. K.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Chuparosa, *Brandege* 60 in 1893. Sierra de la Laguna, *Brandege* in 1889 and 1899. El Taste, *Purpus* 535.

SONORA: Without locality, *Coulter* 1656.

CHIHUAHUA: Sánchez, rocky ravine, *Hitchcock* 7707; along railroad, *Hitchcock* 7692. Soldier Canyon, *Jones* in 1903. La Bufa Mountain, moist places, *Pringle* 1407. Southwestern Chihuahua, *Palmer* 153 in 1885. Sierra Madre, *Nelson* 6294.

DURANGO: Barranca below Sandías Station, *Pringle* 13625. Tejaman, *Palmer* 479 in 1906.

ZACATECAS: Plateado, *Rose* 2791.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7473.

SAN LUIS POTOSÍ: Alvarez, *Palmer* 175 in 1902.

JALISCO: Guadalajara, on roof of hotel, *Hitchcock* 7262; *Palmer* 479 and 557 in 1886. Zapatlán, rocky hill, *Hitchcock* 7255. Ferrería, *Jones* 481.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6709, 6735; *Orcutt* 3925.

MICHOACÁN: Uruápan, on stone wall, *Hitchcock* 6982. Morelia, *Arsène* in 1909.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6897; *Rose & Painter* 6763, 6794. Popo Park, *Hitchcock* 5961½. Federal District, fields near Eslaba, *Pringle* 11732; lava fields near Tlálpam, *Pringle* 9582. San Nicolás, *Bourgeau* 1027. Xochimilco, *Orcutt* 4248. Guadalupe, *Rose & Painter* 6822, 6834.

MORELOS: Cuernavaca, rocky cliff, *Hitchcock* 6834. Sierra de Tepoztlán, *Pringle* 9064. Parque Station, *Pringle* 11208.

TLAXCALA: Alpatlahua, *Liebmann* 572.

VERACRUZ: Orizaba, *Botteri* 709, 1207; *Bourgeau* 750b.

OAXACA: *Galeotti* 5750 in part, 5889 in part, 5890. Cuicatlán, *Nelson* 1703. Sierra de San Felipe, *Smith* 914.

CHIAPAS: San Cristóbal, *Nelson* 3135.

**3. *Aegopogon imperfectus* Nash, N. Amer. Fl. 17: 138. 1912.**

Type locality, "Cool mossy ledges, Arroyo Aucho, Sierra Madre, Chihuahua, Mexico," the type specimen collected by *Pringle* (no. 1408).

RANGE: Known only from Chihuahua.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Sierra Madre, Arroyo Aucho, *Pringle* 1408. Southwestern Chihuahua, *Palmer* in 1885.

**22. *NAZIA* Adans. Fam. Pl. 2: 31, 581. 1763.**

**1. *Nazia aliena* (Spreng.) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 17: 28. 1899.**  
*Lappago aliena* Spreng. Neu. Entd. 3: 15. 1822.

Type locality, "Brasilia," the type specimen collected by *Zeyher*.

RANGE: Arizona to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* in 1902.

SONORA: Santa Cruz, river near La Noria, *Mearns* 1171.

CHIHUAHUA: Chihuahua, hills and plains, *Hitchcock* 7802; *Pringle* 421; *Wilkinson* in 1885.

DURANGO: Durango, dry ground, *Hitchcock* 7600; *Palmer* 763 in 1896. Tlahualilo, barren hills, *Pittier* 472.

COAHUILA: Jaral, *Schumann* 1727. Soledad, *Palmer* 1344 in 1880. Saltillo, waste places, *Palmer* 396 in 1898. White Water, *Mearns* 2260. Sabinas, *Nelson* 6821.

NUEVO LEÓN: Monterey, field, *Hitchcock* 5539.

ZACATECAS: Concepción del Oro, *Palmer* 279 in 1904.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7479.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 151; irrigated alfalfa field, *Hitchcock* 5695; *Parry & Palmer* 952.

QUERÉTARO: Querétaro, open ground on hill, *Hitchcock* 5826.

HIDALGO: Pachuca, sandy river bed, *Hitchcock* 6757.

PUEBLA: San Marcos, railroad fill, *Hitchcock* 6509. Tultitlanapa, *Purpus* 3586.

OAXACA: Tomellín, rocky hill, *Hitchcock* 6216; *Rose, Painter & Rose* 10079.

Oaxaca, weed along railroad, *Hitchcock* 6124; *Conzatti* 2014; *Conzatti & González* 343; *Nelson* 1278.

23. *SCHAFFNERELLA* Nash, N. Amer. Fl. 17: 141. 1912.1. *Schaffnerella gracilis* (Benth.) Nash, N. Amer. Fl. 17: 141. 1912.

*Schaffnera gracilis* Benth. in Hook. Icon. Pl. 14: 59. pl. 1378. 1882.

Type locality, "Mexico; mountains of San Miguelita, in the valley of San Luis Potosí," the type specimen collected by Schaffner (no. 134).

RANGE: Known only from the type collection.

24. *FOURNIERA* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 7. f. 1, 2. 1897.1. *Fourniera mexicana* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 8. f. 1, 2. 1897.

Type locality, "in a deep cut in the mountains near Acapulco, Mexico," the type specimens "growing in loose, gravelly soil," collected by Palmer, October, 1894.

RANGE: Southern Mexico and Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

GUERRERO: Acapulco, *Palmer* 41 and 43 in 1894.

25. *ARUNDINELLA* Raddi, Agrost. Bras. 36. pl. 1. f. 3. 1823.

## KEY TO THE SPECIES.

- Awn tightly twisted below..... 1. *A. palmeri*.  
 Awn straight or only loosely twisted below.  
 Blades broad and flat, 1 to 2 cm. wide; plants robust, 1.5 to 2  
 meters tall; sheaths appressed-villous ..... 2. *A. deppeana*.  
 Blades narrow and more or less folded or convolute; plants slender,  
 mostly less than 1 meter high; sheaths smooth ..... 3. *A. peruviana*.

1. *Arundinella palmeri* Vasey in Beal, Grasses N. Amer. 2: 76. 1896.

Type locality, "Mexico, Palmer 12" in 1886.

RANGE: Central and southern Mexico.

## HERBARIUM SPECIMENS:

TEPIC: Tepic, low land in cornfield, *Palmer* 1915 in 1892.

JALISCO: Guadalajara, *Palmer* 525 in 1886; wet places, barranca, *Pringle* 11213; by brooks of barranca, *Pringle* 1746; along stream, side of Barranca de Oblatos, *Hitchcock* 7353. Río Blanco, *Palmer* 526 in 1886.

VERACRUZ: Mirador, *Liebmann* 622, 635.

GUERRERO: Acapulco, *Palmer* 434 in 1895.

2. *Arundinella deppeana* Nees in Steud. Syn. Pl. Glum. 1: 115. 1854.

Type locality, "Ad fluv. Misantla, Mexico."

RANGE: American tropics.

## HERBARIUM SPECIMENS FROM MEXICO:

TEPIC: Tepic, river banks and canyons, *Palmer* 1920 in 1892.

COLIMA: Colima, *Palmer* 1264 in 1891.

MICHOACÁN: Sierra Madre, *Langlassé* 608.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

VERACRUZ: Jalapa, river banks, *Pringle* 7764; *Smith* 1892; in low ground among high vegetation, *Hitchcock* 6682. Orizaba, *Botteri* 730, 731, 734. Mirador, *Liebmann* 630. Fortín, *Kerber* 363. Jovo, *Liebmann* 629. Zacuapan, moist open forests, *Purpus* 1997, 3771. Córdoba, low ground, *Hitchcock* 6429. Sanborn, *Orcutt* 3062.

3. *Arundinella peruviana* (Presl) Steud. Syn. Pl. Glum. 1: 115. 1854.

*Thysanachne peruviana* Presl, Rel. Haenk. 1: 253. 1830.

Type locality, "in montanis huanoccensibus Peruviae."

RANGE: Tropical America.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Victoria, *Palmer* 171½ in 1907.

SAN LUIS POTOSÍ: Rascón, *Palmer* 652 in 1905. Tamasopo Canyon, rocky banks of streams, *Pringle* 3133.

JALISCO: Guadalajara, *Palmer* 12 in 1886. Río Blanco, near water, *Palmer* 526 in 1886.

VERACRUZ: Jalapa, moist rich soil, *Hitchcock* 6618. Córdoba, clay bank, *Hitchcock* 6420; bank of cut, *Hitchcock* 6453; *Bourgeau* 1660, 2223. Panuco, *Palmer* 367 in 1910. Mirador, *Liebmann* 621. Cabrestros, *Liebmann* 634. Colipa, *Liebmann* 625. Huitamalco and Tinzutlán, *Liebmann* 632.

OAXACA: San Pedro Nolasco, *Galeotti* 5873, 7863.

26. *LEPTOCORYPHIUM* Nees, Agrost. Bras. 83. 1829.1. *Leptocoryphium lanatum* (H. B. K.) Nees, Agrost. Bras. 84. 1829.

*Paspalum lanatum* H. B. K. Nov. Gen. & Sp. 1: 94. pl. 29. 1816.

Type locality, "in regno Mexicano prope Venta del Cameron et Alto del Peregrino."

RANGE: Tropical America.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Zacuapan, *Purpus* 2451. Tejuco, *Schiede*.

OAXACA: San Juan Guichicovi, *Nelson* 2734.

27. *VALOTA* Adans. Fam. Pl. 2: 495. 1763.

## KEY TO THE SPECIES.

- Blades not over 7 cm. long; spikelets densely silky-pubescent, the hairs not exceeding the spikelets..... 3. *V. hitchcockii*.  
 Blades 10 to 25 cm. long; spikelets clothed with silky hairs much exceeding the spikelet.  
 Pubescence white or nearly so, sometimes purplish..... 2. *V. saccharata*.  
 Pubescence tawny or brown..... 1. *V. insularis*.

1. *Valota insularis* (L.) Chase, Proc. Biol. Soc. Washington 19: 188. 1906.

SOUR GRASS.

*Andropogon insularis* L. Syst. Nat. ed. 10. 2: 1304. 1759.

Type locality, Jamaica.

RANGE: Tropics and subtropics of the western hemisphere.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, *Palmer* 207 in 1885.

SINALOA: Culiacán, *Palmer* 1553 in 1891. Villa Unión, open field, *Rose, Standley & Russell* 13916.

DURANGO: Durango, in the mountains, *Palmer* 715 in 1896; rocky hill, Iron Mountain, *Hitchcock* 7631.

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5528.

TAMAULIPAS: Tampico, *Palmer* 151 in 1910.

TEPIC: Between Concepción and Acaponeta, *Rose* 1900.

SAN LUIS POTOSÍ: Las Canoas, along railway, *Hitchcock* 5769.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- JALISCO: Guadalajara, along stream, side of Barranca de Oblatos, *Hitchcock* 7352.  
 COLIMA: Paso del Río, *Emrick* 199. Caldras, along railway, *Hitchcock* 7019.  
 PUEBLA: Tehuacán, cactus hill, *Hitchcock* 6091.  
 VERACRUZ: Córdoba, waste places, *Hitchcock* 6415. Zacuapan, *Purpus* 3778.  
 Sanborn, *Orcutt* 3070.  
 MORELOS: Cuernavaca, edge of orchard, *Hitchcock* 6858.  
 GUERRERO: Acapulco, *Palmer* 288 in 1895.  
 OAXACA: Oaxaca, along railway, *Hitchcock* 6119; in water of ditch, *Hitchcock* 6183. Tomellín, along railway, *Hitchcock* 6221; *Rose* 3638. Tuxtepec, *Nelson* 341.  
 YUCATÁN: Progreso, *Millspaugh* 1681.

2. *Valota saccharata* (Buckl.) Chase, Proc. Biol. Soc. Washington 19: 188. 1906.  
*Panicum saccharatum* Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 2. 1866.  
 Type locality, "Middle Texas."

RANGE: Southwestern United States to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

- SONORA: Guaymas, rocky lava hill, *Hitchcock* 3544; *Palmer* 348 in 1887. Nogales to Cocospora Ranch, *Griffiths* 6794.  
 CHIHUAHUA: Chihuahua, rocky hills, *Pringle* 378; *Palmer* 207 in 1885, 343 in 1908; rocky hill, *Hitchcock* 7791.  
 SINALOA: Topolobampo, *Palmer* 243 in 1897.  
 DURANGO: Torreón, rocky hill, *Hitchcock* 7540. Tlahualilo, barren hills, *Pittier* in 1905. Durango, among loose rocks on hillside, *Palmer* 949 in 1896; rocky hill, Iron Mountain, *Hitchcock* 7628.  
 COAHUILA: Monclova, *Palmer* 1341 in 1880. Saltillo, rocky hill, *Hitchcock* 5615. Sabinas, *Nelson* 6826.  
 NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5543, 5546.  
 SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 177; edge of field, *Hitchcock* 5702.  
 HIDALGO: Ixmiquilpan, limestone hillside, *Rose, Painter & Rose* 8902.  
 PUEBLA: Tehuacán, cactus hill, *Hitchcock* 6090.

3. *Valota hitchcockii* Chase, Proc. Biol. Soc. Washington 24: 110. 1911.

Type locality, "dry prairie soil, San Antonio, Texas," the "type collected June 24, 1910, by A. S. Hitchcock (no. 5329)."

RANGE: Texas to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

- NUEVO LEÓN: Monterey, rocky hill among shrubs, *Hitchcock* 5521.  
 SAN LUIS POTOSÍ: San Luis Potosí, along railroad cut, *Hitchcock* 5730.

28. *SYNTHERISMA* Walt. Fl. Carol. 76. 1788.

## KEY TO THE SPECIES.

## Plants annual.

- Rachis beset with scattered, spreading long hairs. . . . . 5. *S. digitata*.  
 Rachis with no long hairs.  
 Rachis winged, triangular; pedicels angled; culms  
 creeping . . . . . 6. *S. sanguinalis*.  
 Rachis not winged; pedicels terete; culms not creep-  
 ing. . . . . 7. *S. filiformis*.

## Plants perennial.

- Plants caespitose, not producing stolons; sheaths not  
 velvety.  
 Spikelets brown-pubescent at maturity. . . . . 1. *S. badia*.  
 Spikelets white-pubescent. . . . . 2. *S. leucocoma*.

## Plants stoloniferous.

Spikelets glabrous, distant..... 4. *S. distans*.

Spikelets with lines of dense silky pubescence.

Sheaths and blades velvety-pubescent..... 3. *S. velutina*.

Sheaths, except those of the stolons, glabrous

or nearly so..... 3a. *S. velutina glabella*.

1. *Syntherisma badia* (Scribn. & Merr.) Chase, Proc. Biol. Soc. Washington 19: 191. 1906.

*Panicum badium* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 12. f. 3. 1901.

Type locality, "Sierra de San Felipe, State of Oaxaca," the type specimen collected by Smith (no. 915).

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

JALISCO: Zapotlán, pine woods, *Hitchcock* 7243.

MICHOACÁN: Uruápan, prairie, *Hitchcock* 6983.

OAXACA: Sierra de San Felipe, *Smith* 915.

2. *Syntherisma leucocoma* Nash, Bull. Torrey Club 25: 295. 1898.

Type locality, "high pine land, Florida \* \* \* Lake Ella, Lake Co."

RANGE: Southeastern United States, Cuba, and Gulf region of Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Jalapa, prairie, *Hitchcock* 6656; railway cut, *Hitchcock* 6678. Orizaba, open rocky hill, *Hitchcock* 6350.

3. *Syntherisma velutina* (DC.) Chase, Proc. Biol. Soc. Washington 19: 191. 1906.

*Milium velutinum* DC. Cat. Hort. Monsp. 126. 1813.

Type locality, "Mexico."

RANGE: Southern Mexico and Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

MICHOACÁN: Uruápan, prairie, *Hitchcock* 6973, 6974.

MÉXICO: Toluca, weed in field on rocky hill, *Hitchcock* 6916; among agaves, *Hitchcock* 6918. Amecameca, fields, *Purpus* 1636. Federal District, Xochimilco, along ditch, *Hitchcock* 5882. Base of Sierra de Ajusco, sandy fields, *Pringle* 6623. Eslava, *Pringle* 9565.

PUEBLA: Cerro Guadalupe, dry hills, *Nicolas* 1909.

- 3a. *Syntherisma velutina glabella* Chase, subsp. nov.

Plants perennial, more strongly stoloniferous than in the species; culms and nodes glabrous; culm sheaths glabrous or nearly so, those of the young shoots arising from the stolons velvety-pubescent, much less so than in the species; inflorescence as in the species, the racemes 4 to 8, 6 to 15 cm. long, scattered on a common axis 2 to 5 cm. long; spikelets bluish purple, 3 mm. long; first glume minute, hyaline; second glume and sterile lemma with rows of dense, appressed silky hairs on the lateral internerves; fruit lead color.

Type in the U. S. National Herbarium, no. 691224, "erect from creeping, stoloniferous base," collected in prairie, 1,700 meters altitude, Uruápan, Michoacán, Mexico, September 16, 1910, by A. S. Hitchcock (no. 6989).

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6554.

MICHOACÁN: Uruápan, clay bank, *Hitchcock* 6977, 6989. Pátzcuaro, *Holway* 3212.

4. *Syntherisma distans* Chase, sp. nov.

Plants perennial, stoloniferous, the compressed culms ascending from the nodes of a slender widely creeping stoloniferous base; flowering culms simple, very slender,



60 to 70 cm. high, glabrous, the lower nodes and especially those of the young shoots spreading-villous, the upper nodes glabrous or nearly so, the internodes rather conspicuously yellow; sheaths shorter than the internodes, retrorsely villous toward the base; ligule about 2 mm. long, extending down the sheath as a scarious margin; blades ascending or the lower spreading, flat, 3 to 6 cm. long, about 2 mm. wide (the uppermost sometimes reduced to a mere tip), more or less scabrous on both surfaces, the lower sometimes sparsely pilose; inflorescence finally long-exserted, consisting of 2 to 4 slender ascending racemes 6 to 11 cm. long, usually naked at the base, the rachises very slender, triangular, scabrous on the angles; spikelets in pairs (or the upper and lower solitary), one short-pedicel, the other on a slender pedicel about as long as the lower spikelet, the pairs subdistant; spikelets 3 mm. long, about 1 mm. wide, acuminate; first glume subhyaline, less than 0.5 mm. long; second glume and sterile lemma glabrous, 7-nerved, exceeding the fruit, the glume slightly longer than the lemma; fruit 2.5 mm. long, bluish lead color except the rather broad white hyaline margin.

Type in the U. S. National Herbarium, no. 691225, collected "on the bank of a large pond, 1,800 meters altitude, Orozco, Jalisco, Mexico, September 29, 1910," by A. S. Hitchcock (no. 7376).

The only other specimen seen is from the same locality, growing "in and near the water," *Hitchcock* 7372.

*Syntherisma distans* differs from *S. aequiglumis* (Hack. & Arech.) Hitchc. in its more stoloniferous habit, much scantier foliage, fewer, longer, and more slender racemes, and the glabrous, less acuminate, more distant spikelets. Notwithstanding its being nearly glabrous, it is probably more nearly related to *S. velutina* than to the *S. sanguinalis* group to which *S. aequiglumis* belongs.

**5. *Syntherisma digitata* (Swartz) Hitchc. Contr. U. S. Nat. Herb. 12: 142. 1908.**

*Milium digitatum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788.

*Digitaria setosa* Desv.; Hamilt. Prodr. Fl. Ind. Occ. 6. 1825.

Type locality, "Jamaica."

RANGE: Tropics and subtropics of the western hemisphere.

HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, *Palmer* 145 in 1910; low brushy land, *Hitchcock* 5780.

COLIMA: Jala, along railway, *Hitchcock* 7009. Caldras, along railway, *Hitchcock* 7017. Alzada, upland prairie, *Hitchcock* 7069. Colima, *Orcutt* 4541.

VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6566.

GUERRERO: Balsas, gravel along railway, *Hitchcock* 6778, 6809.

CHIAPAS: Ocuilapa, table-land, *Nelson* 3049.

**6. *Syntherisma sanguinalis* (L.) Dulac, Fl. Haut. Pyr. 77. 1867. CRAB GRASS.**

*Panicum sanguinale* L. Sp. Pl. 57. 1753.

Type locality, "Habitat in America, Europa australi."

RANGE: Temperate and warmer regions of the world.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* 17, 29, 41. Santa Agueda, *Palmer* 222 in 1890. Sierra de San Francisquito, *Brandege* 26.

SONORA: Guaymas, *Palmer* 48, 269, and 695 in 1887; weed in park, *Hitchcock* 3570. Hermosillo, cultivated soil, *Hitchcock* 3588. Yaqui River, *Palmer* 3 in 1869. Alamos, *Palmer* 685 in 1890. Sierra de Alamos, *Rose, Standley & Russell* 12983.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 110f in 1885. Sánchez, along railway, *Hitchcock* 7695.

SINALOA: Imala, in dense patches along river banks, *Palmer* 1757 and 1764 in 1891. Topolobampo, *Palmer* 234 in 1897, *Rose, Standley & Russell* 13277. Mazatlán, dry hill, *Rose, Standley & Russell* 13675; old field *Rose, Standley & Russell*

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

14166. Rosario, along river, *Rose* 1541, *Rose, Standley & Russell* 14586. Culiacán, *Rose, Standley & Russell* 14972.
- DURANGO: Durango, in fields and along fences, *Palmer* 766 in 1896. Torreón, weed in field, *Hitchcock* 7556.
- COAHUILA: Saltillo, in shaded gardens, *Palmer* 387 in 1898; weed along street, *Hitchcock* 5638.
- TAMAULIPAS: Victoria, *Palmer* 551 in 1907. Tampico, depression in sand dunes, *Hitchcock* 5795.
- TEPIC: Tepic, *Palmer* 1929 in 1892. Tres Mariás Islands, María Magdalena, *Maltby* 158. Acaponeta, moist ravine, *Rose, Standley & Russell* 14269.
- SAN LUIS POTOSÍ: Cárdenas, irrigated field, *Hitchcock* 5746.
- JALISCO: Guadalajara, prairie, *Hitchcock* 7283. San Nicolás, prairie, *Hitchcock* 7186. Zapotlán, railway right of way, *Hitchcock* 7139.
- GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6940. Irapuato, moist sandy-clay plain, *Hitchcock* 7391.
- QUERÉTARO: Querétaro, weed in park, *Hitchcock* 5839.
- COLIMA: Alzada, upland prairie, *Hitchcock* 7068. Colima, deep ravine, *Palmer* 9 and 148 in 1897. Paso del Río, *Emrick* 182. Manzanillo, *Palmer* 1082 in 1890.
- MICHOACÁN: Morelia, *Arsène* in 1909. Uruápan, along road, *Hitchcock* 6976.
- VERACRUZ: Orizaba, *Botteri, Bourgeau* 2636. Río Blanco, roadside ditch, *Hitchcock* 6321. Jalapa, railway track, *Hitchcock* 6598. Córdoba, waste places, *Hitchcock* 6408; *Fink* 6. San Sebastián, *Liebmann* 208. Sanborn, *Orcutt* 3244.
- MORELOS: Cuernavaca, pasture, *Hitchcock* 6829.
- GUERRERO: Balsas, along railway, *Hitchcock* 6796. Acapulco, ravine, *Palmer* 112 in 1894; dry river bed, 446 in 1895.
- OAXACA: Oaxaca, along hedge, *Hitchcock* 6111. Valley of Oaxaca, *Nelson* 1275. Tomellín, along ditch, *Hitchcock* 6206; *Rose, Painter & Rose* 10064.
- TABASCO: San Juan Bautista, *Rovirosa* 20.
- CHIAPAS: Valley of Jiquipilas, *Nelson* 2932.
- YUCATÁN: Progreso, *Millspaugh* 1700.

7. *Syntherisma filiformis* (L.) Nash, Bull. Torrey Club 22: 420. 1895.

*Panicum filiforme* L. Sp. Pl. 57. 1753.

Type locality, "Habitat in America septentrionali. Kalm."

RANGE: Temperate and subtropical regions of the western hemisphere.

## HERBARIUM SPECIMENS FROM MEXICO:

- CHIHUAHUA: Dry hillsides near Guerrero, *Pringle* 1405.
- DURANGO: Durango, in loose, clay soil, *Palmer* 548 in 1896.
- JALISCO: Río Blanco, *Palmer* 502 in 1886. Guadalajara, *Holway* 4; *Palmer* 502 in 1886; prairie, *Hitchcock* 7265, 7286. Zapotlán, railway right of way, *Hitchcock* 7135; rocky hill, *Hitchcock* 7177, 7252. La Junta, along railway, *Hitchcock* 6998. San Nicolás, sterile clay hill, *Hitchcock* 7210.
- VERACRUZ: Totutla, *Liebmann* 206.
- MORELOS: Cuernavaca, along railway, *Hitchcock* 6864; pasture, *Hitchcock* 6828.
- OAXACA: Hills of Las Sedas, dry gravelly soil, *Pringle* 4942. Oaxaca, rocky hill in clay loam, *Hitchcock* 6104.
- CHIAPAS: Tuxtla to San Cristóbal, roadside, *Nelson* 3118.

29. *LEPTOLOMA* Chase, Proc. Biol. Soc. Washington 19: 191. 1906.1. *Leptoloma cognatum* (Schult.) Chase, Proc. Biol. Soc. Washington 19: 192. 1906.

*Panicum cognatum* Schult. Mant. 2: 235. 1824.

Type locality, "Habitat in Carolina."

**RANGE:** Central and southern United States to central Mexico.

**HERBARIUM SPECIMENS FROM MEXICO:**

CHIHUAHUA: Chihuahua, hills and plains, *Pringle* 489; rocky hill, *Hitchcock* 7992.

COAHUILA: Sabinas, *Nelson* 6822.

NUEVO LEÓN: Monterey, agave field, *Hitchcock* 5527.

SAN LUIS POTOSÍ: Cárdenas, railway cut, *Hitchcock* 5732. Sierra de Guascama, *Purpus* 5430.

**30. ECHINOLAENA** Desv. Journ. de Bot. 1: 75. 1813.

**1. Echinolaena polystachya** H. B. K. Nov. Gen. & Sp. 1: 119. 1816.

*Panicum uncinatum* Raddi, Agrost. Bras. 41. 1823.

Type locality, "in ripa fluminis Magdalenae inter Tenerife et Zambrano," Colombia.

**RANGE:** American tropics.

**HERBARIUM SPECIMENS FROM MEXICO:**

VERACRUZ: Córdoba, shady rich loam under coffee trees, *Hitchcock* 6438; banks of rivers, *Seaton* 432. Jalapa, railway cut through jungle, *Hitchcock* 6641.

Along railway near Coatepec, *Hitchcock* 6664. Potrero de San Sebastián, *Liebmann* 396. Zacuapan, Barranca de Tenampa, moist banks, *Purpus* 1999.

OAXACA: Comaltepec, *Galeotti* 5857.

**31. ERIOCHLOA** H. B. K. Nov. Gen. & Sp. 1: 94. pl. 50, 51. 1816.

KEY TO THE SPECIES.

Fruit bearing an awn nearly as long as the fertile lemma..... 1. *E. punctata*.

Fruit mucronate or short-awned.

Blades smooth or nearly so; hairs of pedicels not conspicuous.

Second glume tapering into an awn about as long as the body; spikelet exclusive of awn about 5 mm. long.. 3. *E. aristata*.

Second glume acute or short-awned; spikelet about 4 mm. long..... 2. *E. polystachya*.

Blades velvety; hairs of pedicels conspicuous, as long as spikelet.

Spikelets 4 mm. long..... 4. *E. lemmoni*.

Spikelets 6 mm. long..... 5. *E. nelsoni*.

**1. Eriochloa punctata** (L.) Hamilt. Prodr. Fl. Ind. Occ. 5. 1825.

*Milium punctatum* L. Syst. Nat. ed. 10. 872. 1759.

Type locality, Jamaica.

**RANGE:** Southern United States to South America.

**HERBARIUM SPECIMENS FROM MEXICO:**

NUEVO LEÓN: Monterey, irrigation ditch, *Hitchcock* 5576.

VERACRUZ: Córdoba, *Hitchcock* 6406; low woods along ditch, *Hitchcock* 6224; low ground along railway, *Hitchcock* 6431. Orizaba, roadside ditch, *Hitchcock* 6324, 6341; *Botteri* 717.

MORELOS: Valley near Jojutla, *Pringle* 9605.

**2. Eriochloa polystachya** H. B. K. Nov. Gen. & Sp. 1: 95. pl. 51. 1816.

Type locality, "in pascuis inundatis prope Guayaquil (Regno Quit.);" Ecuador.

**RANGE:** Tropics of continental America.

**HERBARIUM SPECIMENS FROM MEXICO:**

SONORA: South of Nogales, *Hitchcock* 3627. Llano, along railway, *Hitchcock* 3522.

Hermosillo, meadow, *Hitchcock* 3584. Guaymas, weed in park, *Hitchcock* 3571; *Palmer* 44 in 1887. Yaqui River, *Palmer* 4 in 1869.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

CHIHUAHUA: Miñaca, along railway, *Hitchcock* 7753. Sánchez, along railway, *Hitchcock* 7703. Chihuahua, along dry run, *Hitchcock* 7778; hills and plains, *Pringle* 812.

SINALOA: Topolobampo, *Palmer* 242 in 1897.

DURANGO: Durango, water of ditch, *Hitchcock* 7656; low, moist places on hill-sides, *Palmer* 524 in 1896; among rocks and agave plants, *Palmer* 736 in 1896.

Tepehuanes, *Palmer* 532 in 1906. Torreón, weed in field, *Hitchcock* 7557.

AGUASCALIENTES: Aguascalientes, along ditch, *Hitchcock* 7480.

JALISCO: San Nicolás, weed in field, *Hitchcock* 7228. Guadalajara, prairie, *Hitchcock* 7319.

GUANAJUATO: Acámbaro, along ditch, *Hitchcock* 6926. Irapuato, moist sandy-clay plain, *Hitchcock* 7406.

QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5805.

COLIMA: Alzada, upland prairie, *Hitchcock* 7063.

GUERRERO: Balsas, along railway, *Hitchcock* 6812. Santa Fé, along railway, *Hitchcock* 6691.

OAXACA: Oaxaca, along hedge, *Hitchcock* 6108; along ditch between Tule and Oaxaca, *Hitchcock* 6169.

3. *Eriochloa aristata* Vasey, Bull. Torrey Club 13: 229. 1886.

Type locality, "S. W. Chihuahua," the type specimen collected by Palmer.

RANGE: Southwestern United States and northwestern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Hermosillo, along ditch, *Hitchcock* 3539. Alamos, *Palmer* 692 in 1890.

SINALOA: Culiacán, *Brandege* in 1904.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 110e in 1885.

4. *Eriochloa lemmoni* Vasey & Scribn. Bot. Gaz. 9: 185. pl. 2. 1884.

Type locality, "Arizona (no. 2910 Lemmon, 1882)."

RANGE: Southwestern United States to Sinaloa, Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Imala, *Palmer* 1762 in 1891.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 110a in 1885.

5. *Eriochloa nelsoni* Scribn. & Smith, Bull. U. S. Dept. Agr. Div. Agr. 4: 12. 1897.

Type locality, "hills east of Cuicatlan, Oaxaca, Mexico," the type specimen collected by Nelson (no. 1707).

RANGE: South central Mexico to Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, dry shaded ledges, *Pringle* 2317; side of Barranca de Oblatos, *Hitchcock* 7349.

MORELOS: Yautepec, lava fields, *Pringle* 11224.

GUERRERO: Balsas, rocky hill, *Hitchcock* 6784.

OAXACA: Cuicatlán, hills, *Nelson* 1707.

## 32. BRACHIARIA (Trin.) Griseb. in Ledeb. Fl. Ross. 4: 469. 1853.

## KEY TO THE SPECIES.

Spikelets 3 mm. long; blades ciliate..... 2. *B. mexicana*.  
Spikelets 5 mm. long; blades not ciliate..... 1. *B. plantaginea*.

1. *Brachiaria plantaginea* (Link) Hitchc. Contr. U. S. Nat. Herb. 12: 212. 1909.

*Panicum plantagineum* Link, Hort. Berol. 1: 206. 1827.

Type locality unknown.

RANGE: Southern United States to South America.

HERBARIUM SPECIMENS FROM MEXICO:

- DURANGO: Durango, dry ground, *Hitchcock* 7576, *Palmer* in 1896.  
 AGUASCALIENTES: Aguascalientes, along pond, *Hitchcock* 7488.  
 SAN LUIS POTOSÍ: Las Canóas, open moist soil, *Hitchcock* 5758; fields, *Pringle* 3904. Cárdenas, irrigated field, *Hitchcock* 5752.  
 JALISCO: San Nicolás, prairie, *Hitchcock* 7192. Zapotlán, railway right of way, *Hitchcock* 7136. Guadalajara, prairie, *Hitchcock* 7320.  
 GUANAJUATO: Acámbaro, along ditch, *Hitchcock* 6937. Irapuato, moist sandy-clay plain, *Hitchcock* 7410.  
 COLIMA: Jala, along railway, *Hitchcock* 7010. Colima, *Orcutt* 4616.  
 MICHOACÁN: Uruápan, weed in cornfield, *Hitchcock* 6990.  
 VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6315. Jalapa, weed along railway, *Hitchcock* 6653. Córdoba, *Hitchcock* 6405.  
 MORELOS: Cuernavaca, weed in garden, *Hitchcock* 6853; *Orcutt* 3890.  
 OAXACA: Oaxaca, weed in field, *Hitchcock* 6122. Valley of Oaxaca, *Conzatti & González* 350a.

2. *Brachiaria meziana* Hitchc. Contr. U. S. Nat. Herb. 12: 140. 1908.

Type locality, "low moist places on the plains of Mexico," Federal District, the type specimen collected by *Pringle* (no. 9592).

RANGE: Throughout interior Mexico.

HERBARIUM SPECIMENS:

- CHIHUAHUA: Valley near Chihuahua, *Pringle* 375.  
 DURANGO: Durango, low bottom lands, *Palmer* 533 in 1896; prairie of valley, *Hitchcock* 7619.  
 COAHUILA: Saltillo, along small irrigation ditch, *Hitchcock* 5593.  
 ZACATECAS: Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7516.  
 AGUASCALIENTES: Aguascalientes, along ditch, *Hitchcock* 7492.  
 SAN LUIS POTOSÍ: Cárdenas, along railway, *Hitchcock* 5770. San Luis Potosí, alfalfa field, *Hitchcock* 5668.  
 JALISCO: Río Blanco, *Palmer* 254 in 1886. San Nicolás, cornfield, *Hitchcock* 7225.  
 GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7416. Acámbaro, along railway, *Hitchcock* 6928.  
 QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5802.  
 MÉXICO: Xochimilco, pasture, *Hitchcock* 5891. Federal District, San Angel, *Bourgeau* 222; *Orcutt* 3692; prairies near Mexico City, *Bourgeau* 430; Cerro de Guadalupe, *Pringle* 9592.  
 PUEBLA: Puebla, *Nelson* in 1893.  
 OAXACA: Valley of Oaxaca, *Conzatti & González* 348.

33. *AXONOPUS* Beauv. Ess. Agrost. 12, 154. 1812.

KEY TO THE SPECIES.

Plants stoloniferous; blades 5 to 12 mm. wide.

Racemes 2 or 3, rarely 4, less than 10 cm. long; spikelets pubescent, acuminate..... 2. *A. compressus*.

Racemes 6 or more, 10 to 25 cm. long; spikelets glabrous, blunt. 1. *A. deludens*.

Plants erect, not stoloniferous; blades not over 4 mm. wide, usually less.

Spikelets 4 mm. long..... 5. *A. rosei*.

Spikelets less than 3 mm. long.

Racemes 3 to several; nodes pubescent..... 4. *A. laxiflorus*.

Racemes 2 or 3; nodes glabrous..... 3. *A. marginatus*.

1. *Axonopus deludens* Chase, Proc. Biol. Soc. Washington 24: 134. 1911.

Type locality, "Barranca near Guadalajara, Jalisco, Mexico, the type specimen collected by Pringle (no. 8761)."

RANGE: Known only from the type collection.

2. *Axonopus compressus* (Swartz) Beauv. Ess. Agrost. 12. 1812. CARPET GRASS.

*Milium compressum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788.

Type locality, "Jamaica."

RANGE: Tropics and subtropics of both hemispheres.

HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Culiacán, abundant in underbrush along arroyos, *Palmer* 1760 in 1891.

COLIMA: Manzanillo, pasture, *Hitchcock* 7033.

VERACRUZ: Córdoba, grassy bank, *Hitchcock* 6449; along cut, *Hitchcock* 6427; *Kerber* 38. Jalapa, clay cut, *Hitchcock* 6588. Veracruz, sandy prairie, *Hitchcock* 6578.

GUERRERO: Acapulco, *Palmer* 420 in 1895.

3. *Axonopus marginatus* (Trin.) Chase.

*Paspalum marginatum* Trin. Gram. Pan. 90. 1826.

Type locality, "Brasil." The type specimen in the Trinius Herbarium is labeled "In pratis siccis glareosis S. de Lapa. Brasil. Langsdorff."

RANGE: Southern Mexico to Paraguay.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Zacuapan, dry soil, *Purpus* 2450. Fortín, moist soil, *Purpus* 2155.

Jalapa, clay cut, *Hitchcock* 6628. Mirador, *Liebmann* 203.

4. *Axonopus laxiflorus* (Trin.) Chase, Proc. Biol. Soc. Washington 24: 133. 1911.

*Paspalum laxiflorum* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 148. 1834.

Type locality, Serra da Lapa, Brazil.

RANGE: Southern Mexico to southern Brazil.

HERBARIUM SPECIMENS FROM MEXICO:

OAXACA: Between Guichocovi and Lagunas, *Nelson* 2738.

5. *Axonopus rosei* (Scribn. & Merr.) Chase, Proc. Biol. Soc. Washington 24: 132. 1911.

*Paspalum rosei* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 9. f. 2. 1900.

Type locality, "Foothills of the Sierra Madre Mountains, between Pedro Paulo and San Blascito," the type specimen collected by Rose (no. 1995).

Known only from the type specimen.

34. PASPALUM L. Syst. Nat. ed. 10. 855. 1759.<sup>1</sup>

## KEY TO THE SPECIES.

Rachis with broad membranaceous wings more or less infolding the spikelets (or the latter, if not infolded, long-silky).

Spikelets clothed with long silky hairs.

Rachis 5 to 7 mm. wide, the margins rufous..... 5. *P. stellatum*.

Rachis 2 to 3 mm. wide, the margins dull green or brown.

Blades not ciliate; second glume and sterile lemma glabrous except for the long-ciliate margins.. 6. *P. cymbiforme*.

Blades papillose-ciliate on the margin; glume and usually the sterile lemma pubescent on the back; plants tufted, producing stout running rootstocks..... 7. *P. humboldtianum*.

<sup>1</sup> Contributed by Agnes Chase.

- Spikelets glabrous or minutely pubescent only; rachis green.  
 Racemes 30 or more, approximate, the rachis scabrous; spikelets pointed; aquatic plants, the sheaths of the floating stems inflated, bladder-like.  
 Spikelets in 2 rows, more or less pubescent, about 0.8 mm. wide..... 1. *P. repens*.
- Spikelets in a single row, glabrous, about 1.2 mm. wide, the tip of the rachis elongated..... 2. *P. longicuspe*.
- Racemes 4 to 12, scattered, the rachis glabrous; plants terrestrial.  
 Spikelets pointed, 3.5 to 4 mm. long, imbricated, green..... 3. *P. acuminatum*.
- Spikelets blunt, 2 to 2.2 mm. long, alternate, not imbricated, white..... 4. *P. prostratum*.
- Rachis without broad membranaceous wings, or if somewhat winged, the spikelets not long-silky.  
 Fertile lemma with five longitudinal ridges; both glumes wanting (§ ANACHYRIS)..... 40. *P. malacophyllum*.
- Fertile lemma not ridged (§ OPISTHION).  
 Racemes 2, conjugate at the summit of the culm, rarely a third below; spikelets solitary (see also *P. claviferum*).  
 Spikelets elliptical or ovate; first glume occasionally present; plants with extensively creeping rootstocks.  
 Second glume not wrinkled, the sterile lemma pubescent..... 9. *P. distichum*.
- Second glume wrinkled in the internerves; spikelets glabrous..... 8. *P. vaginatum*.
- Spikelets nearly orbicular to obovate.  
 Racemes slender, elongated; spikelets concavo-convex, light yellow, sparsely long-silky around the margin; plants stoloniferous. 10. *P. conjugatum*.
- Racemes rather stout, not elongated; spikelets plano-convex, green, glabrous; plants with short stout rootstocks but not stoloniferous.  
 Spikelets 2 to 2.5 mm. long..... 26. *P. minus*.
- Spikelets 3 to 3.8 mm. long..... 25. *P. notatum*.
- Racemes 1 to many, racemose on the axis, not conjugate at the summit of the culm, or if occasionally so the spikelets in pairs.  
 Fruit dark brown, polished; second glume and sterile lemma thin, fragile.  
 Plants perennial, erect; second glume transversely wrinkled inside the margin..... 23. *P. plicatulum*.
- Plants annual, more or less spreading or prostrate; second glume not wrinkled..... 24. *P. convexum*.
- Fruit not dark brown (brown but not polished in *P. virgatum*).  
 Spikelets clothed with long silky hairs; lower sheaths densely appressed-villous..... 39. *P. erianthum*.

Spikelets glabrous or pubescent, the pubescence short, not silky.

First glume present at least on the lower of the pair of spikelets (sometimes wanting toward the base of the raceme).

Plants annual, coarse, about 2 meters high; first glume inconspicuous, the second and the sterile lemma subchartaceous, glabrous.....

35. *P. crassum*.

Plants perennial, rarely over 1 meter high; glumes and sterile lemma thin.

Plants with stout running rootstocks, glaucous; raceme erect, usually single; spikelets glabrous, narrowly obovate, acute; first glumes well developed, dissimilar on the pair of spikelets.....

38. *P. unispicatum*.

Plants without running rootstocks, not glaucous; racemes 2 to several or, if single, not erect.

Spikelets glabrous; first glume obsolete on the upper of the pair of spikelets.

16. *P. culiacanum*.

Spikelets pubescent.

Spikelets 3.2 to 3.4 mm. long; first glumes well developed, that of the upper spikelet with a scarious undulate border.....

19. *P. variabile*.

Spikelets not over 3 mm. long, the first glume commonly obsolete in the upper spikelet, not having a scarious undulate border.

Blades usually 15 mm. wide or more; spikelets about 2.5 mm. long....

18. *P. planifolium*.

Blades rarely as much as 12 mm. wide; spikelets about 2.2 mm. long.....

17. *P. langei*.

First glume wanting, or only exceptionally present on a few spikelets (see also *P. crassum* with inconspicuous first glume).

Racemes numerous, usually 20 or more, approximate.

Spikelets about 1.3 mm. long, strongly plano-convex.....

22. *P. paniculatum*.

Spikelets 2 mm. or more long, not strongly convex, more or less ciliate around the edge; plants robust.

Plants stoloniferous, widely creeping; inflorescence V-shaped in outline; spikelets narrowly ovate, 4 to 4.5 mm. long, solitary.....

32. *P. fasciculatum*.

Plants not stoloniferous; inflorescence oblong.

Lower sheaths hirsute, not reticulate; spikelets 2 mm. long.....

34. *P. conspersum*.



- Lower sheaths glabrous, reticulate-nerved; spikelets 3 mm. or more long..... 33. *P. virgatum*.
- Racemes 1 to several, rarely as many as 15, not approximate.
- Spikelets minute, not over 1.3 mm. long; plants annual.
- Plants cespitose; blades linear, pilose; second glume glandular-pubescent. 12. *P. clavuliferum*.
- Plants stoloniferous; blades lanceolate, glabrous or nearly so; spikelets glabrous and with a ring-like margin, the midnerve of the sterile lemma suppressed..... 11. *P. orbiculatum*.
- Spikelets 1.5 mm. or more long; plants perennial.
- Culms decumbent at base, rooting at the nodes (occasional plants in dry situations erect from the base), branching; spikelets acute or subacute, 2.4 mm. or more long; rachis about 2 mm. wide; plants of moist ground.
- Spikelets glabrous, lurid purplish; axis of inflorescence slender, flexuous..... 29. *P. lividum*.
- Spikelets pubescent.
- Axis of inflorescence slender, subflexuous; spikelets not strongly convex..... 30. *P. buckleyanum*.
- Axis of inflorescence stout, not flexuous; spikelets strongly convex..... 31. *P. pubiflorum*.
- Culms erect or ascending, not rooting at the nodes; spikelets usually obtuse.
- Plants with stout scaly rootstocks; culms solitary; spikelets elliptic, subacute..... 37. *P. jaliscanum*.
- Plants without scaly rootstalks; culms tufted.
- Spikelets 2.5 mm. or more long, not turgid; culms tall, simple.
- Sheaths and blades, at least the lower, densely and softly grayish-villous; spikelets elliptical; racemes spreading.. 28. *P. crinitum*.
- Sheaths glabrous or pilose along the margin toward the summit, papillose-pilose at the junction with the blade; blades glabrous beneath, conspicuously pilose near the base above; spikelets broadly obovate; racemes erect..... 27. *P. glaberrimum*.

Spikelets not over 2 mm. long,  
turgid.

Racemes 1 to 3 at the summit of  
the culm, naked, raceme-  
bearing branches from the  
upper sheaths; culms slender;  
spikelets broadly obovate.

Spikelets glabrous..... 15. *P. stramineum*.  
Spikelets pubescent.

Blades ciliate on the margin,  
otherwise glabrous or  
nearly so..... 14. *P. ciliatifolium*.

Blades pilose on the upper  
surface, more or less pu-  
bescent beneath..... 13. *P. setaceum*.

Racemes 4 to 12.

Spikelets glabrous; plants  
branching..... 20. *P. squamulatum*.

Spikelets densely pubescent.  
Spikelets elliptic, 2 mm. long;  
culms simple, sometimes  
1 meter or more high;  
sheaths and blades pu-  
bescent..... 36. *P. tenellum*.

Spikelets broadly ovate,  
about 1.5 mm. long;  
culms freely branching.. 21. *P. lentiginosum*.

1. *Paspalum repens* Berg. Act. Helv. Phys.-Math. 7: 129. pl. 7. 1772.

*Ceresia fluitans* Ell. Bot. S. C. & Ga. 1: 109. 1816.

*Paspalum mucronatum* Muhl. Descr. Gram. 96. 1817.

*Paspalum fluitans* Kunth, Rév. Gram. 1: 24. 1829.

Type locality, "in Surinam."

RANGE: Southern United States to South America.

HERBARIUM SPECIMEN FROM MEXICO:

TABASCO: San Juan Bautista, *Rovirosa* 44.

2. *Paspalum longicuspe* Nash, N. Amer. Fl. 17: 172. 1912.

Type locality, "near Guadalajara, Jalisco," the type specimen collected by Pringle (no. 3854).

RANGE: Known only from Jalisco.

HERBARIUM SPECIMENS:

JALISCO: Guadalajara, floating in water, *Pringle* 3854. Orozco, in deeper part of large pond, among water lilies, *Hitchcock* 7386.

3. *Paspalum acuminatum* Raddi, Agrost. Bras. 25. 1823.

Type locality, Brazil.

RANGE: Southern Mexico to Paraguay.

HERBARIUM SPECIMEN FROM MEXICO:

MICHOACÁN: Morelia, *Arsène* in 1909.

4. *Paspalum prostratum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 9. 1900.

*Paspalum prostratum pygmaeum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 9. 1900.

Type locality, "low lands near Patzcuaro, State of Michoacan," the type specimen collected by Pringle (no. 3343).

**RANGE:** Southern Mexico.

**HERBARIUM SPECIMENS FROM MEXICO:**

HIDALGO: Trinidad Iron Works, wet soil, *Pringle* 8891.

FEDERAL DISTRICT: Pedregal, *Pringle* 7167.

MICHOACÁN: Pátzcuaro, low lands, *Pringle* 3343. Morelia, *Arsène* in 1909.

**5. *Paspalum stellatum*** Humb. & Bonpl. in Flügge, Monogr. Pasp. 62. 1810.

Type locality, "America meridionalis."

**RANGE:** Highlands of southern Mexico to South America.

**HERBARIUM SPECIMENS FROM MEXICO:**

CHIAPAS: Teopisco, common along water side, *Collins & Doyle* 124. Near Cancuc, *Nelson* 3424.

**6. *Paspalum cymbiforme*** Fourn. Mex. Pl. 2: 5. 1886.

Type locality, "Mirador, in campis," the type specimen collected by Liebmann (no. 224).

**RANGE:** Highlands of southern Mexico and Guatemala.

**HERBARIUM SPECIMEN FROM MEXICO:**

VERACRUZ: Mirador, *Liebmann* 224.

**7. *Paspalum humboldtianum*** Flügge, Monogr. Pasp. 67. 1810.

Type locality, "America meridionalis."

**RANGE:** Highlands of central Mexico to South America.

**HERBARIUM SPECIMENS FROM MEXICO:**

SONORA: Sierra de Alamos, *Rose, Standley & Russell* 12832.

COAHUILA: Jaral, *Schumann* 1737.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 173. Cárdenas, clay bank along railway, *Hitchcock* 5776; bank of railway cut, *Hitchcock* 5723.

JALISCO: Guadalajara, *Palmer* 286 in 1886; moist ledges of barranca, *Pringle* 1750; moist banks, *Pringle* 11757; prairie, *Hitchcock* 7297. Zapotlán, hills, *Hitchcock* 7176.

COLIMA: Alzada, open hill, *Hitchcock* 7055.

MICHOACÁN: Uruápan, side of open ravine, *Hitchcock* 6980. Morelia, *Arsène* in 1909.

PUEBLA: Mount Orizaba, rocky hills, *Seaton* 117.

VERACRUZ: Orizaba, *Müller* 2037; *Bourgeau* 2641; open rocky hill, *Hitchcock* 6355. Mirador, *Liebmann* 221. Jalapa, railway cut near Coatepec, *Hitchcock* 6679. Zacuapan, dry meadows, *Purpus* 2002; savannas, *Purpus* 2901.

MORELOS: Cuernavaca, rocky ledge, *Hitchcock* 6837; *Rose* 3510; in barranca, *Rose, Painter & Rose* 10203.

OAXACA: Sierra de San Felipe, *Conzatti & González* 440; Oaxaca, rocky hill, *Hitchcock* 6133.

**8. *Paspalum vaginatum*** Swartz, Prodr. Veg. Ind. Occ. 21. 1788.

Type locality, "Jamaica."

**RANGE:** Coasts and brackish sands, Florida to Texas, the West Indies, and South America.

**HERBARIUM SPECIMENS FROM MEXICO:**

LOWER CALIFORNIA: San José del Cabo, *Brandege* 2 in 1890.

TAMAULIPAS: Tampico, brackish marsh, *Hitchcock* 5785.

SAN LUIS POTOSÍ: Guascama, *Purpus* 5421. Hacienda de Angostura, alkaline meadows, *Pringle* 3695.

PUEBLA: Puebla, roadsides, *Nicolas* in 1908.

VERACRUZ: Veracruz, sandy beach, *Hitchcock* 6568.

**9. *Paspalum distichum*** L. Syst. Nat. ed. 10. 855. 1759.

Type locality not given, probably Jamaica.

RANGE: Along ditches and in wet places, southern United States to West Indies and South America; also in the Old World.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Agueda, *Palmer* 214 in 1890.

SONORA: Yaqui River, *Palmer* 16 in 1869. Guaymas, *Palmer* 693 in 1887. Hermosillo, along ditch, *Hitchcock* 3575; wet sand, bed of river, *Hitchcock* 3615, 3616.

CHIHUAHUA: Galleana, banks of Río de Galleana, *Hartman* 659. Miñaca, dry run, *Hitchcock* 7735.

DURANGO: Torreón, along ditch, *Hitchcock* 7561. Durango, about ponds and water courses, *Palmer* 192 in 1896; in water of ditch, *Hitchcock* 7568.

COAHUILA: Saltillo, along irrigation ditch, *Hitchcock* 5587, 5588, 5602; wet waste and cultivated ground, *Palmer* 259 and 391 in 1898.

NUEVO LEÓN: Monterrey, rocky river bed, *Hitchcock* 5522; mud bank along river, *Hitchcock* 5552; irrigation ditch, *Hitchcock* 5575.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7528.

AGUASCALIENTES: Aguascalientes, ditch, *Hitchcock* 7481.

SAN LUIS POTOSÍ: Cárdenas, water of irrigation ditch, *Hitchcock* 5743, 5748. San Luis Potosí, irrigation ditch, *Hitchcock* 5683; *Schaffner* 1071.

JALISCO: Guadalajara, *Palmer* 243 in 1886; ditch on road to Barranca de Oblatos, *Hitchcock* 7311. Orozco, margin of large pond, *Hitchcock* 7378. Zapotlán, railway right of way, *Hitchcock* 7127.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7415. Acámbaro, along ditch, *Hitchcock* 6944.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5837, 5815.

HIDALGO: Pachuca, sandy river bed, *Hitchcock* 6768.

MICHOACÁN: Morelia, *Arsène* in 1909.

MEXICO: Toluca, along ditch, *Hitchcock* 6910. Federal District, along ditch, *Hitchcock* 5884; *Pringle* 6780; *Bourgeau* 532.

PUEBLA: Rancho Posados, *Nicolas* in 1910. Tehuacán, along ditch, *Hitchcock* 6044, 6066. Chalchicomula, along ditch, *Hitchcock* 6291. Mount Orizaba, *Seaton* 61.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6312, 6314. Jalapa, along railway through jungle, *Hitchcock* 6647, 6652. Veracruz, low prairie, *Hitchcock* 6561. Córdoba, weed along track, *Hitchcock* 6400.

MORELOS: Cuernavaca, moist soil, *Hitchcock* 6844.

OAXACA: Between Tule and Oaxaca, in water of ditch, *Hitchcock* 6168, 6173. Tomellín, along ditch, *Hitchcock* 6225.

10. *Paspalum conjugatum* Berg. Act. Helv. Phys.-Math. 7: 129. 1762.

Type locality, "in Surinamo."

RANGE: Tropics and subtropics of both hemispheres.

HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Victoria, *Palmer* 419 in 1907.

SAN LUIS POTOSÍ: Las Canoás, wet soil, *Pringle* 3129.

JALISCO: Tequila, *Palmer* 367 in 1886.

COLIMA: Colima, *Palmer* 1272 in 1891, 16 in 1897. Manzanillo, weed in pasture, *Hitchcock* 7030. Paso del Río, *Emrick* 193.

MICHOACÁN: Coahuayutla, *Emrick* 48.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6318; *Botteri*; *Bourgeau* 2792. Sanborn, *Orcutt* 3248. Córdoba, *Kerber* 49; weed, *Hitchcock* 6407. Jalapa, among shrubs along railway, *Hitchcock* 6609. Mirador, *Liebmann* 160. Zacuapan, open forests, *Purpus* 2158. Pital, *Liebmann* 158.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

MORÉLOS: Cuernavaca, wet banks, *Pringle* 6215; damp place along wall, *Hitchcock* 6818.

OAXACA: Tomellín, *Rose, Painter & Rose* 10050; low woods, *Hitchcock* 6222.

CHIAPAS: Ocuilapa, *Nelson* 3055.

11. *Paspalum orbiculatum* Poir. in Lam. Encycl. Suppl. 5: 32. 1804.

*Paspalum pusillum* Vent. in Flüge, Monogr. Pasp. 100. 1810.

Type locality, "Porto Ricco," the type specimen collected by Ledru.

RANGE: Veracruz and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Hacienda de Santa Bárbara, *Liebmann* 153. Sanborn, *Orcutt* 3245.

12. *Paspalum clavuliferum* Wright, Anal. Acad. Cienc. Habana 8: 203. 1871.

*Paspalum pittieri* Hack.; Beal, Grasses N. Amer. 2: 83. 1896.

Type locality, Cuba, the type specimen collected by Wright (no. 3444 in part).

RANGE: West Indies and southern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Near Guadalajara, wet places in hills, *Pringle* 2359, 11762.

COLIMA: Alzada, along railway cut, *Hitchcock* 7065.

13. *Paspalum setaceum* Michx. Fl. Bor. Amer. 1: 43. 1803.

Type locality, "in aridis Carolinae inferioris."

RANGE: Middle eastern United States to southern Mexico and the West Indies.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, sand dunes, *Hitchcock* 5793.

VERACRUZ: Veracruz, *Orcutt* 2891 (a depauperate specimen, doubtfully referred to this species).

14. *Paspalum ciliatifolium* Michx. Fl. Bor. Amer. 1: 44. 1803.

Type locality, "in Carolina."

RANGE: Southeastern United States and the West Indies to southern Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6549.

15. *Paspalum stramineum* Nash in Britton, Man. 74. 1901.

Type locality given as "In sandy places and fields, Neb., Kans., and Ind. Terr."

RANGE: Middle northern United States to northern Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

SONORA: Nogales to Cocospora Ranch, *Griffiths* 6805.

16. *Paspalum culiacanum* Vasey, Contr. U. S. Nat. Herb. 1: 281. 1893.

Type locality, "in the mountains of Culiacan," the type specimen collected by Palmer (no. 1647) "in large bunches around a water hole."

RANGE: Known only from the type collection.

17. *Paspalum langei* (Fourn.) Nash, N. Amer. Fl. 17: 179. 1912.<sup>1</sup>

*Dimorphostachys langei* Fourn. Mex. Pl. 2: 14. 1886.

*Dimorphostachys drummondii* Fourn. Mex. Pl. 2: 15. 1886.

*Paspalum drummondii* Vasey, Contr. U. S. Nat. Herb. 3: 18. 1892, not Muell. 1861.

*Paspalum oricola* Millsp. & Chase, Field Mus. Bot. 3: 28. 1903.

Type locality, "Hacienda de Jovo," Veracruz, this being the first locality cited.

RANGE: Gulf region of the United States and Mexico.

<sup>1</sup> This name is tentatively accepted for this species on the authority of Nash, Fournier's description not fully agreeing with our plants and the type of *D. langei* not having been examined.

## HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Monterey, shady rich soil, *Hitchcock* 5562; by wet irrigation ditch, *Hitchcock* 5573.

SAN LUIS POTOSÍ: Las Canoas, fields, *Pringle* 3991.

VERACRUZ: Córdoba, clay cut, *Hitchcock* 6417. Jalapa, *Hitchcock* 6644½.

YUCATÁN: Cozumel, *Millspaugh* 1480.

18. *Paspalum planifolium* Fourn. Mex. Pl. 2: 10. 1886.

*Dimorphostachys botteri* Fourn. Mex. Pl. 2: 14. 1886.

*Dimorphostachys paspaloides* Fourn. Mex. Pl. 2: 14. 1886.

Type locality, "San Luis de Potosi" and "Orizaba" given.

RANGE: San Luis Potosí to Guatemala.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Las Canoas, low fields, *Pringle* 3779; moist grassy ground, *Hitchcock* 5760. Sierra de Guascama, *Purpus* 5423.

JALISCO: Tequila, *Palmer* 144 in 1886.

COLIMA: Alzada, rich wooded hillside, *Hitchcock* 7074.

VERACRUZ: Pital, *Liebmann* 184. Orizaba, open rocky hill, *Hitchcock* 6377; *Seaton*, 112a; *Botteri* 659. Jalapa, open edge of forest, *Hitchcock* 6603. Río Blanco, roadside ditch, *Hitchcock* 6328, 6347. Córdoba, clay cut, *Hitchcock* 6416.

MORELOS: Cuernavaca, along road, *Hitchcock* 6826.

OAXACA: Oaxaca, along streamlet, *Hitchcock* 6153; along ditch between Tule and Oaxaca, *Hitchcock* 6182, 6185. Tomelín, along ditch, *Hitchcock* 6209.

19. *Paspalum variabile* (Fourn.) Nash, N. Amer. Fl. 17: 180. 1912.

*Dimorphostachys schaffneri* Fourn. Mex. Pl. 2: 15. 1886,<sup>1</sup> not *Paspalum schaffneri* Fourn. op. cit. 6.

*Dimorphostachys variabilis* Fourn. Mex. Pl. 2: 15. 1886.<sup>1</sup>

*Paspalum schaffneri* Scribn. in Millsp. Field Mus. Bot. 2: 24. 1900, not Fourn. 1886.

Type locality, Mexico, the type specimen collected by Ghiesbreght being without data.

RANGE: KNOWN only from Veracruz.

## HERBARIUM SPECIMENS:

VERACRUZ: Córdoba, *Bourgeau* 1658; clay cut, *Hitchcock* 6411; under coffee trees, *Hitchcock* 6439. Jalapa, in shrubs along railway, *Hitchcock* 6608; railway cut through jungle, *Hitchcock* 6644, 6645. Orizaba, roadside ditch, *Hitchcock* 6323; *Bourgeau* 2598.

20. *Paspalum squamulatum* Fourn. Mex. Pl. 2: 11. 1886.

Type locality, "In graminosis prope Chinantla," the first specimen cited (agreeing perfectly with the description) being taken as the type.

RANGE: Northern Mexico to Costa Rica.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* 40 in 1899.

SINALOA: Culiacán, moist field, *Rose, Standley & Russell* 14859.

JALISCO: Zapotlán, pine woods, hillside, *Hitchcock* 7246.

MICHOACÁN: Uruápan, in bushes along road, *Hitchcock* 6961; pine woods on hill, *Hitchcock* 6978.

PUEBLA: Chinantla, *Liebmann* 198.

VERACRUZ: Orizaba, shaded rich loam near top of hill, *Hitchcock* 6387; *Bourgeau* 2640. Jalapa, *Smith* in 1894; along railway, *Hitchcock* 6654, 6638.

OAXACA: Totontepec, *Nelson* 727.

<sup>1</sup> The spikelets of the type of *D. variabilis* are smaller than those of the type of *D. schaffneri*; the two forms may prove to be distinct.

**21. *Paspalum lentiginosum* Presl, Rel. Haenk. 1: 218. 1830.**

Type locality, "Mexico."

RANGE: Pacific slope of Mexico.

## HERBARIUM SPECIMENS:

SONORA: Hermosillo, along ditch, *Hitchcock* 3601, 3621.SINALOA: Culiacán, among bushes at edge of marsh, *Palmer* 1556 in 1891.COLIMA: Alzada, prairie, *Hitchcock* 7098. Manzanillo, open place on wooded hillside, *Hitchcock* 7036.MORELOS: Cuernavaca, edge of cut in prairie, *Hitchcock* 6883 (doubtfully referred).A specimen from Mérida, Yucatán, *Schott* 597, with smaller spikelets and simple culm may belong to this species.**22. *Paspalum paniculatum* L. Syst. Nat. ed. 10. 2: 855. 1759.**

Type locality, Jamaica.

RANGE: Mexico and the West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Culiacán, common in wet meadows, *Palmer* 1555 in 1891. Rosario, *Rose* 1543.TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14229. Tepic, moist river bottom, *Palmer* 1924 in 1892.JALISCO: Guadalajara, mesa along ditch, road to Barranca de Oblatos, *Hitchcock* 7316; by streams, *Pringle* 2042.COLIMA: Colima, in rich shady moist places, *Palmer* 18 in 1897, 1265 in 1891.VERACRUZ: Mirador, *Liebmann* 164. Orizaba, *Bourgeau* 2642; roadside ditch, *Hitchcock* 6346; open rocky hill, *Hitchcock* 6374. Córdoba, *Fink* 17½; along river bank, *Hitchcock* 6397. Pital, *Liebmann* 163. Sanborn, *Orcutt* 3246. Coatzacoalcos, *Smith* 1053.MORELOS: Cuernavaca, low prairie, *Hitchcock* 6874; *Rose* 3514.**23. *Paspalum plicatulum* Michx. Fl. Bor. Amer. 1: 45. 1803.**

Type locality given as "in Georgia et Florida."

RANGE: Southern United States and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Between Rosario and Acaponeta, *Rose* 1885.TEPIC: Pedro Paulo, *Rose* 1961. Acaponeta, *Rose* 3294.SAN LUIS POTOSÍ: Cárdenas, railway cut, *Hitchcock* 5773½. Las Canoás, hillsides, *Pringle* 3772; prairie *Hitchcock* 5764.JALISCO: Guadalajara, *Palmer* 190 and 468 in 1886.COLIMA: Colima, *Palmer* 144 in 1897. Alzada along brook, *Hitchcock* 7057; upland prairie, *Hitchcock* 7059.VERACRUZ: Coatzacoalcos, *Smith* 1054. Córdoba, clay cut, *Hitchcock* 6409, 6414. Mirador, *Liebmann* 182. Zacuapan, *Purpus* 3777. Orizaba, *Botteri; Bourgeau* 2633; open rocky hill, *Hitchcock* 6358, 6371. Jalapa, clay cut, *Hitchcock* 6614.MORELOS: Cuernavaca, rocky soil, *Hitchcock* 6882½; along road, *Hitchcock* 6854.OAXACA: Efígenia, *Nelson* 2853.**24. *Paspalum convexum* Humb. & Bonpl. in Flüge, Monogr. Pasp. 175. 1810.***Paspalum hemicyptum* Wright, Anal. Acad. Cienc. Habana 8: 204. 1871.*Paspalum inops* Vasey, Contr. U. S. Nat. Herb. 1: 281. 1893.*Paspalum inops major* Vasey; Beal, Grasses N. Amer. 2: 89. 1896.Type locality, "in devexis, apricis montis ignivomi Jorullo—(Regno Mexicano)," as given in the *Nova Genera*.<sup>1</sup>

RANGE: Central Mexico to Costa Rica and in the West Indies.

<sup>1</sup> H. B. K. Nov. Gen. & Sp. 1: 91. 1816.

## HERBARIUM SPECIMENS FROM MEXICO:

- CHIHUAHUA: Sierra Madre, sandy alluvium of canyons, *Pringle* 1875.  
 SINALOA: Lodiago, banks of Culiacán River, *Palmer* 1658 in 1891.  
 DURANGO: Durango, dry ground, *Hitchcock* 7592.  
 ZACATECAS: Plateado, *Rose*, 2781.  
 JALISCO: Valencia, along railway, *Hitchcock* 7005. San Nicolás, prairie, *Hitchcock* 7190; cornfield, *Hitchcock* 7221, 7222, 7223. Zapotlán, railway right of way, *Hitchcock* 7120, 7134. Guadalajara, prairie, *Hitchcock* 7284, 7290; plains, *Pringle* 11761; *Palmer* 592 in 1886. La Junta, along railway, *Hitchcock* 6999.  
 GUANAJUATO: Guanajuato, *Dugès* in 1897.  
 COLIMA: Alzada, upland prairie, *Hitchcock* 7064.  
 MICHOACÁN: Uruápan, cornfield on hill, *Hitchcock* 6957; along road, *Hitchcock* 6958; open pasture land, *Hitchcock* 6993, 6994. Morelia, *Arsène* in 1909.  
 FEDERAL DISTRICT: Lava fields, *Pringle* 6427, 9583.  
 VERACRUZ: Jalapa, in cinders along railway, *Hitchcock* 6657, 6668.  
 MORELOS: Cuernavaca, *Orcutt* 3889; pasture, *Hitchcock* 6830; along railway, *Hitchcock* 6863, 6868.  
 GUERRERO: Santa Fé, along railway, *Hitchcock* 6692.

25. *Paspalum notatum* Flüggé, Monogr. Pasp. 106. 1810.

Type locality, "Insula St. Thomae."

RANGE: Central Mexico to West Indies and South America.

## HERBARIUM SPECIMENS FROM MEXICO:

- SAN LUIS POTOSÍ: Las Canóas, hills, *Pringle* 3774; open ground, *Hitchcock* 5765. Cárdenas, ditch of railway cut, *Hitchcock* 5727; open grassy ground, *Hitchcock* 5778.  
 JALISCO: San Nicolás, prairie, *Hitchcock* 7183. Guadalajara, *Rose* 3421; prairie, *Hitchcock* 7281; fields, *Pringle* 11240; *Palmer* 295 in 1886. Zapotlán, railway right of way, *Hitchcock* 7141. La Junta, along track, *Hitchcock* 6996.  
 COLIMA: Colima, *Palmer* 138 in 1897.  
 MICHOACÁN: Uruápan, prairie, *Hitchcock* 6984.  
 PUEBLA: Mount Orizaba, *Seaton* 112B.  
 VERACRUZ: Orizaba, *Bourgeau* 2749; roadside ditch, *Hitchcock* 6322. Córdoba, common roadside weed, *Hitchcock* 6430. Veracruz, sandy prairie, *Hitchcock* 6565; along harbor front, *Hitchcock* 6577. Jalapa, clay cut, *Hitchcock* 6591.  
 MORELOS: Cuernavaca, pasture, *Hitchcock* 6838.  
 OAXACA: Las Sedas, *Smith* 933. Valley of Oaxaca, *Conzatti & González* 341; *Nelson* 1262. Oaxaca, open ground along road, *Hitchcock* 6109. Tomellín, along ditch, *Hitchcock* 6245.  
 CHIAPAS: Ocuilapa, table-land, *Nelson* 3033.

26. *Paspalum minus* Fourn. Mex. Pl. 2: 6. 1886.

Type locality, "In valle Cordovensi," the locality of the first specimen cited.

RANGE: Southern Mexico and West Indies south to Uruguay.

## HERBARIUM SPECIMENS FROM MEXICO:

- MICHOACÁN: Uruápan, along road, *Hitchcock* 6962.  
 VERACRUZ: Mecapalco, *Liebmann* 156. Córdoba, valley, *Bourgeau* 2298. Jalapa, clay cut, *Hitchcock* 6590.

27. *Paspalum glaberrimum* Nash in Small, Fl. Southeast. U. S. 76. 1903.

Type locality, "southern peninsular Florida," the type specimen collected in the vicinity of Eustis, by Nash (no. 1619).

RANGE: Gulf Coast of the United States and in Colima.

## HERBARIUM SPECIMEN FROM MEXICO:

- COLIMA: Alzada, prairie, *Hitchcock* 7078.



**28. *Paspalum crinitum* Chase, sp. nov.**

Perennial, caespitose, leafy at the base; culms erect, slender, simple, 0.75 to 1 meter high, glabrous; sheaths mostly overlapping, the lower crowded, clothed with long gray hairs, the others densely and finely pubescent, the uppermost sometimes sparsely appressed-pubescent; ligule membranaceous, about 5 mm. long, nearly entire, rather firm; blades flat, stiffly ascending, densely and finely pubescent on both surfaces, 10 to 25 cm. long, 4 to 7 mm. wide, the lower shorter, in age disarticulating from the sheath, the uppermost reduced to a point of the elongated sheath; panicle 10 to 20 cm. long, the axis slender, usually bearing a tuft of long white hairs in the axils of the racemes, otherwise glabrous; racemes 6 to 10, slender, finally spreading, distant, rarely approximate, the lower as much as 12 cm. long, occasionally compound; rachis slender, dark purple, bearing a few scattered hairs along the angles or glabrous; spikelets in pairs, loosely imbricated, or at the very base scattered (the slender dark pedicels of the upper of the pair about 1 mm. long), light yellowish green or purple-tinged, 2.6 to 2.8 mm. long, 1.3 mm. wide, elliptic, depressed-convex on the back; second glume and sterile lemma thin, equal, covering the fruit, 3-nerved, sparsely pilose with delicate hairs or glabrous; fruit pale, minutely papillose.

Type in the U. S. National Herbarium, no. 824361, collected in alkaline meadows, Hacienda de Angostura, State of San Luis Potosí, Mexico, July 10, 1891, by C. G. Pringle (no. 3755) and distributed as "*Paspalum tenellum* Willd.?"

The spikelets of this species indicate affinity to *P. lividum*, but the habit is so different that it would seem to be but distantly allied to it.

RANGE: Highlands, San Luis Potosí and Puebla.

## HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: Hacienda de Angostura, *Pringle* 3755.

PUEBLA: Without locality, *Nicolas* in 1909.

**29. *Paspalum lividum* Trin.; Scheele, *Linnaea* 26: 383. 1854.**

Type locality, "Ad Hacienda de la Laguna," Veracruz, the type specimen collected by Schiede.

RANGE: Southern United States and the West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Culiacán, swampy places, *Palmer* 1552 in 1891; *Brandege* in 1904.

COAHUILA: Saltillo, *Palmer* 338 in 1904.

NUEVO LEÓN: Monterey, wet places, *Pringle* 2516; along irrigation ditch, *Hitchcock* 5565.

SAN LUIS POTOSÍ: Cárdenas, in water of irrigation ditch, forming runners, *Hitchcock* 5740.

JALISCO: Tequila, *Palmer* 206 in 1886. Guadalajara, *Palmer* 245 in 1886; mesa along ditch, road to Barranca de Oblatos, *Hitchcock* 7318. San Nicolás, prairie, *Hitchcock* 7182, 7197. Zapotlán, prairie along railway, *Hitchcock* 7147. Orozco, near large pond, *Hitchcock* 7382.

GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6933. Irapuato, moist sandy-clay plain, *Hitchcock* 7388, 7404, 7409.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5817, 5869.

HIDALGO: Ixmiquilpan, river banks, *Rose, Painter & Rose* 9059.

MICHOACÁN: Uruápan, low ground along railway, *Hitchcock* 6992. Morelia, *Arsène* in 1909.

PUEBLA: Mount Orizaba, *Seaton* 62.

VERACRUZ: Orizaba, *Bourgeau* 2544; *Botteri* 110, 1286; *Müller* 2061; roadside ditch, *Hitchcock* 6313. Tlacotalpan, *Nelson* 523. Córdoba, weed in field, *Hitchcock* 6451. Jalapa, along railway, *Hitchcock* 6620.

MORELOS: Cuernavaca, hillside pasture, *Hitchcock* 6823; along railway, *Hitchcock* 6880, 6881.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

OAXACA: Oaxaca, low ground near river, *Hitchcock* 6152. Valley of Oaxaca, *Conzatti & González* 349. Santa Catarina Canyon, *Pringle & Conzatti* 272. Tomellín, along ditch, *Hitchcock* 6208.

30. *Paspalum buckleyanum* Vasey, Bull. Torrey Club 13: 167. 1886.

Type locality, "Texas," the type specimen collected by Buckley.

RANGE: Texas to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Hermosillo, along ditch, *Hitchcock* 3622.

NUEVO LEÓN: Monterey, along irrigation ditch, *Hitchcock* 5564.

SAN LUIS POTOSÍ: Cárdenas, water of irrigation ditch, *Hitchcock* 5743 $\frac{1}{2}$ , 5748 $\frac{1}{2}$ ; Hacienda de Angostura, alkaline meadows, *Pringle* 3764.

JALISCO: Chapala, *Rose* 3437; San Nicolás, prairie, *Hitchcock* 7181.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7400. Acámbaro, along ditch, *Hitchcock* 6938.

MICHOACÁN: Valley of Zamora, in water, *Pringle* 9599, 9600.

MORELOS: Cuernavaca, rocky soil along railway, *Hitchcock* 6879, 6882.

OAXACA: Oaxaca, open ground along railway, *Hitchcock* 6130. Between Tule and Oaxaca, along ditch, *Hitchcock* 6177, 6189, 6190.

31. *Paspalum pubiflorum* Rupr.; Fourn. Mex. Pl. 2: 11. 1886.

*Paspalum hallii* Vasey & Scribn. Bull. Torrey Club 13: 165. 1886.

*Paspalum paucispicatum* Vasey, Contr. U. S. Nat. Herb. 1: 281. 1893.

Type locality, "Secus rivulos inter Cactos, Tehuacan de las Granadas," the type specimen collected by Galeotti (no. 5747).

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Hermosillo, along ditch, *Hitchcock* 3600, 3623.

CHIHUAHUA: Chihuahua, by streams, *Pringle* 3741; *Kurtz* in 1885.

DURANGO: Durango, along water ditch in a wet meadow, *Palmer* 871 in 1896; near pond, *Hitchcock* 7578.

COAHUILA: Jimulco Springs, *Pringle* 427. Sabinas, *Nelson* 6832. Saltillo, along irrigation ditch, *Hitchcock* 5590, 5608.

NUEVO LEÓN: Monterey, irrigation ditch, *Hitchcock* 5549, 5555, 5563, 5572.

TAMAULIPAS: Victoria, *Palmer* 261 and 395 in 1907.

SAN LUIS POTOSÍ: Cárdenas, by railway, *Hitchcock* 5735.

JALISCO: Colotlán, *Rose* 3602. San Nicolás, prairie, *Hitchcock* 7196; cornfield, *Hitchcock* 7220; weed in field, *Hitchcock* 7229, 7230. Guadalajara, *Palmer* 243 in 1886.

GUANAJUATO: Acámbaro, along road, *Hitchcock* 6948; along ditch, *Hitchcock* 6950. Irapuato, moist sandy-clay plain, *Hitchcock* 7414.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5811.

MICHOACÁN: Loma Santa María, near Morelia, *Arsène* in 1909.

PUEBLA: Tehuacán, *Seler* 5; along railway ditch, *Hitchcock* 6059.

MORELOS: Yautepec, on pedregal, *Rose, Painter & Rose* 8555.

GUERRERO: Santa Fé, along railway, *Hitchcock* 6686.

OAXACA: Between Tule and Oaxaca, *Hitchcock* 6188. Valley of Oaxaca, *Conzatti & González* 350.

32. *Paspalum fasciculatum* Willd. in Flügge, Monogr. Pasp. 69. 1810.

Type locality, "Brasilia."

RANGE: Southern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Córdoba, "lower portion of culms creeping, forming tangled mass," low ground, *Hitchcock* 6428.

TABASCO: San Juan Bautista, river banks, *Rovirosa* 260 in 1888.

**33. *Paspalum virgatum* L. Syst. Nat. ed. 10. 855. 1759.**

Type locality, Jamaica, the type specimen sent by Browne.

RANGE: Southern Mexico and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7363.

VERACRUZ: Córdoba, clay cut, *Hitchcock* 6413; low ground along railway, *Hitchcock* 6434; *Fink* 7. Jalapa, railway cut through jungle, *Hitchcock* 6643. Between Coatepec and Jalapa, *Hitchcock* 6684. Orizaba, *Bourgeau* 2979, *Botteri* 1267. Zacuapan, brush woods, *Purpus* 2906. Monte Pacho, *Liebmann* 173.

CHIAPAS: Ocuilapa, table-land, *Nelson* 3035.

**34. *Paspalum conspersum* Schrad. in Schult. Mant. 2: 174. 1817.**

Type locality, "In Brasilia."

RANGE: Southern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Mirador, *Liebmann* 169. Jalapa, along railway in high vegetation, *Hitchcock* 6613, 6617. Orizaba, in humid grassy places, *Botteri* in October, 1857.

CHIAPAS: Ocuilapa, table-land, *Nelson* 3047.

**35. *Paspalum crassum* Chase, sp. nov.**

A large coarse annual producing prop roots from the lower nodes; culms stout, erect, about 2 meters high, simple or sparingly branching from the lower nodes, papillose-hispid below the nodes and toward the summit; sheaths loose, longer than the internodes, coarsely papillose-hispid; ligule membranaceous, about 5 mm. long, lacerate; blades as much as 60 cm. long and 3 cm. wide, tapering to the base, conspicuously papillose-hispid on both surfaces, the midnerve prominent beneath; panicle about 20 cm. long, the axis strongly angled; racemes about 10, narrowly ascending, more or less arching above, the rachis about 3 mm. wide, scabrous, pilose in the axils; spikelets mostly solitary (the lower of the pair undeveloped), imbricated but scarcely crowded, pale green, 3.1 mm. long, 1.7 mm. wide, oval, turgid, slightly concave on the face, blunt, glabrous, the second glume and sterile lemma subchartaceous, covering the fruit, the first glume minute or obsolete, firm, the sterile lemma inclosing a hyaline palea and a more or less developed staminate flower; fruit minutely papillose-striate, the margin of the lemma thin.

Type in the U. S. National Herbarium, no. 691235, collected "in prairie, among high grass and weeds, 450 meters altitude, at Alzada, Colima, Mexico, September 21, 1910," by A. S. Hitchcock (no. 7093).

This striking species, known only from the type collection, is not closely related to any known species. Its coarse, hispid foliage and thick prop roots produce a resemblance in habit to *Echinochloa walteri*.

**36. *Paspalum tenellum* Willd. Enum. Hort. Berol. 89. 1809.**

Type locality, "Hort. paris," the native country unknown.

RANGE: Highlands of southern Mexico.

## HERBARIUM SPECIMENS:

These plants, doubtfully referred here, agree with Willdenow's inadequate description and appear to belong to the species referred to *P. tenellum* by Fournier<sup>1</sup> and by Nash.<sup>2</sup>

JALISCO: Zapotlán, prairie, *Hitchcock* 7121, 7133. San Nicolás, sterile clay hill, *Hitchcock* 7208. Guadalajara, fields, *Pringle* 11239.

MICHOACÁN: Maravatio, along ditch, *Hitchcock* 6922.

FEDERAL DISTRICT: Lava beds, *Pringle* 6474; clefts and depressions in lava rock, *Hitchcock* 5955; *Holway* 3065.

<sup>1</sup> Mex. Pl. 2: 11. 1886.

<sup>2</sup> N. Amer. Fl. 17: 185. 1912.

**37. *Paspalum jaliscanum* Chase, sp. nov.**

Culms simple, slender, 1 meter or more high, solitary, ascending or erect from a stout rootstock bearing densely harsh-pubescent scales; nodes appressed-hirsute or the upper nearly glabrous; sheaths sparsely papillose-hirsute along the margin and toward the summit; ligule membranaceous, brown, 3 mm. long, a ring of long white hairs at the base of the blade surrounding it; blades flat, 12 to 20 cm. long, 12 to 15 mm. wide (the elongated upper sheath bladeless or nearly so), tapering to the base, or those of the mid-culm rounded at base, dull green above, glossy beneath, pilose at the base on the upper surface, the margin inconspicuously stiffly ciliate; panicle long-exserted, brownish purple, 8 to 10 cm. long, the main axis slender but stiff; racemes 5 to 12, ascending or spreading, the lower (sometimes branching) 4 to 5 cm. long, the others gradually shorter, more or less crowded, the rachis slender (about 0.6 mm. wide) a tuft of stiff white hairs in the axil, the axis and rachises otherwise glabrous; spikelets in pairs on glabrous pedicels, 2.2 mm. long, 1.3 mm. wide, elliptical, subacute, strongly convex on the back, slightly concave on the face, the second glume scarcely equaling the fruit, 3-nerved, glandular-pubescent, the sterile lemma equaling the fruit, 3-nerved, glabrous; fruit elliptic, stramineous, smooth and shining.

Type in the U. S. National Herbarium, no. 691236, collected in the lower forest region, at about 2,300 meters altitude, Zapotlán to Nevado de Colima, Jalisco, Mexico, September 23, 1910, by A. S. Hitchcock (no. 7153).

RANGE: Known only from Jalisco, a second collection made in pine woods, hillside, Zapotlán, *Hitchcock* 7240. A specimen lacking the base, with larger panicle and pubescent sterile lemma (*Liebmann* 199, Chinantla, Puebla) may belong to this species.

**38. *Paspalum unispicatum* (Scribn. & Merr.) Nash, N. Amer. Fl. 17: 193. 1912.**

*Panicum unispicatum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 14. 1901.

Type locality, "Valley of Oaxaca," the type specimen collected by Pringle (no. 6717).

RANGE: Highlands, Nuevo León to Oaxaca.

**HERBARIUM SPECIMENS:**

NUEVO LEÓN: Monterrey, edge of field, *Hitchcock* 5561.

PUEBLA: Acatzinco, *Nicolas* in 1909.

OAXACA: Oaxaca, along hedge in town, *Hitchcock* 6098, 6099; Valley of Oaxaca, *Pringle* 6717.

**39. *Paspalum erianthum* Nees in Trin. Gram. Pan. 121. 1826.**

Type locality, "Brasil."

RANGE: Southern Mexico to South America.

**HERBARIUM SPECIMEN FROM MEXICO.**

OAXACA: Vicinity of San Juan Guichicovi, *Nelson* 2735.

**40. *Paspalum malacophyllum* Trin. Gram. Icon. 3: pl. 271. 1836.**

Type locality, Brazil, the type specimen collected by Langsdorf at "Cuyaba, Chapada" according to the data on the specimen in the Trinius Herbarium.

RANGE: Yucatán to Paraguay.

**HERBARIUM SPECIMEN FROM MEXICO:**

YUCATÁN: Mérida, *Schott* 593.

35. PANICUM L. Sp. Pl. 55. 1753.

KEY TO THE SPECIES.

- Axis of branchlets extending as a bristle beyond the base of the uppermost spikelet..... 1. *P. ramisetum*.
- Axis of branchlets not extending into a bristle.
- Plants annual.
- Inflorescence consisting of several more or less secund spike-like racemes.
- Spikelets 5 to 6 mm. long..... 9. *P. texanum*.
- Spikelets 2 to 4 mm. long.
- Spikelets strongly reticulate-veined, glabrous.
- Panicle branches long and spreading..... 6. *P. fasciculatum*.
- Panicle branches short, appressed.. 6a. *P. fasciculatum chartaginense*.
- Spikelets scarcely reticulate-veined, or near apex only.
- Spikelets not over 2 mm. long, glabrous..... 5. *P. reptans*.
- Spikelets over 3 mm. long, pubescent.
- Plants velvety; sheaths not papillose..... 7. *P. molle*.
- Plants not velvety; sheaths papillose..... 8. *P. arizonicum*.
- Inflorescence a more or less diffuse panicle.
- Spikelets 1.2 to 1.4 mm. long, pubescent; blades more than one-fourth as wide as long..... 39. *P. trichoides*.
- Spikelets 1.7 mm. or more long, glabrous.
- First glume not over one-fourth the length of the spikelet, blunt or triangular-tipped; spikelets on short appressed pedicels..... 10. *P. vaseyanum*.
- First glume usually as much as half the length of the spikelet, acute, or acuminate; spikelets on slender, usually spreading pedicels.
- Panicles more or less drooping..... 15. *P. sonorum*.
- Panicles erect.
- First glume about one-third the length of the spikelet, subacute or blunt..... 14. *P. stramineum*.
- First glume more than half the length of the spikelet, acuminate.
- Spikelets 4.5 to 6 mm. long.
- Spikelets 6 mm. long, scattered..... 16. *P. parvum*.
- Spikelets scarcely over 5 mm. long, approximate..... 13. *P. decolorans*.

Spikelets not over 4 mm.  
long.

First glume more than  
three-fourths the  
length of the  
spikelets, these 4  
mm. long, green  
or pale..... 12. *P. pampinosum*.

First glume half to two-  
thirds the length  
of the spikelets,  
these not over  
3.3 mm. long,  
commonly red-  
dish brown..... 11. *P. hirticaule*.

Plants perennial.

Spikelets short-pedicel along one side of the ra-  
chises, forming spike-like racemes.

First glume nearly as long as the glabrous ob-  
tuse spikelets..... 55. *P. obtusum*.

First glume much shorter than the spikelets.

Spikelets hispid and with two crateri-  
form glands on the sterile lemma.

Spikelets not over 2 mm. long;  
blades not over 4 cm. long... 34. *P. pulchellum*.

Spikelets 3.6 mm. long; blades 4 to  
10 cm. long..... 35. *P. biglandulare*.

Spikelets glabrous.

Blades lanceolate; glumes strongly  
carinate..... 33. *P. frondescens*.

Blades linear, often elongated;  
glumes not carinate.

Spikelets not over 1.5 mm. long.

Spikelets pointed, not ex-  
panded at maturity by  
an enlarged sterile  
palea..... 29. *P. polygonatum*.

Spikelets blunt, expanded  
at maturity by the en-  
larged sterile palea.

Rachis bearing slender  
bristles; nodes vil-  
lous..... 30. *P. pilosum*.

Rachis without bristles;  
nodes glabrous..... 31. *P. laxum*.

Spikelets 2.5 mm. or more long.

Fruit smooth; axis slender,  
pilose..... 28. *P. longum*.

Fruit transversely rugose;  
axis flattened, gla-  
brous.

Nodes bearded..... 4. *P. barbinode*.

Nodes glabrous.

Spikelets 3 mm. long;  
glumes and sterile  
lemma papery.... 3. *P. paludivagum*.

Spikelets not over 2.4  
mm. long; glumes  
and sterile lemma  
not papery..... 2. *P. geminatum*.

Spikelets in open or sometimes in contracted or  
congested panicles, but not in spike-like  
racemes.

Basal leaves usually distinctly different from  
those of the culm, forming a winter rosette;  
culms at first simple, the spikelets of the  
primary panicle not perfecting seed, later  
usually becoming much branched, the  
small secondary panicles with cleistoga-  
mous, fruitful spikelets.

Spikelets glabrous, minute; culms and  
blades pilose..... 45. *P. strigosum*.

Spikelets pubescent.

Spikelets 2.8 mm. or more long.

Sheaths pubescent; spikelets 4 mm.  
long, attenuate at base..... 51. *P. nodatum*.

Sheaths glabrous or minutely puberu-  
lent only.

Blades lanceolate, usually unsym-  
metrically falcate..... 53. *P. joorii*.

Blades linear or nearly so..... 54. *P. albomaculatum*.

Spikelets not over 2.4 mm. long.

Blades stiff, conspicuously striate, taper-  
ing from base to apex; spikelets  
pustulose-pubescent, 2.1 to 2.2 mm.  
long, obtuse..... 46. *P. ovinum*.

Blades not stiff and conspicuously stri-  
ate, linear, or lanceolate.

Sheaths retrorsely pilose; blades soft  
and lax..... 44. *P. xalapense*.

Sheaths not retrorsely pilose.

Spikelets abruptly pointed; blades  
cordate..... 52. *P. viscidellum*.

Spikelets not pointed at maturity;  
blades not cordate.

Plants glabrous as a whole, or the  
nodes and lower sheaths  
only pubescent.

Nodes villous-bearded; spike-  
lets elliptic..... 47. *P. multirameum*.

Nodes glabrous; spikelets spher-  
ical..... 50. *P. sphaerocarpon*.

Plants conspicuously pubescent  
as a whole.

Plants grayish green, velvety;  
spikelets 1.9 to 2 mm. long. 48. *P. olivaceum*.

- Plants not grayish nor velvety;  
spikelets 2.2 to 2.4 mm.  
long..... 49. *P. pseudopubescens*.
- Basal leaves similar to culm leaves, not forming a winter rosette; spikelets all fertile.  
Fruit transversely rugose.  
Culms with a corm-like base.  
Blades mostly over 5 mm. wide; culms more than 1 meter high..... 24. *P. bulbosum*.  
Blades less than 5 mm. wide; culms rarely as much as 1 meter high.... 24a. *P. bulbosum sciaphilum*.
- Culms from a strong rootstock, not corm-like at base.  
Nodes hirsute; ligules 4 to 6 mm. long; fruit strongly rugose..... 22. *P. maximum*.  
Nodes glabrous; ligules 2 mm. long; fruit very obscurely rugose..... 23. *P. plenum*.
- Fruit not transversely rugose (minutely papillose-roughened in *P. millegrana*).  
First glume very small, not over one-fourth the length of the small obovate blunt spikelet.  
Blades 12 to 16 cm. long, 2 to 3 cm. wide; fruit glabrous..... 38. *P. parviglume*.  
Blades not over 10 cm. long nor 1.8 cm. wide; fruit with scattered silky hairs.  
Blades scabrous on the upper surface, not falcate..... 36. *P. virgultorum*.  
Blades sparsely hispid on the upper surface, falcate..... 37. *P. schmitzii*.
- First glume as much as one-third the length of the spikelet (less in *P. trichanthum* with pointed spikelets).  
Spikelets papillose-hispid, obovate, obtuse..... 41. *P. millegrana*.
- Spikelets glabrous.  
Sterile paleas enlarged and indurated at maturity, expanding the crowded spikelets; blades scarcely wider than their sheaths..... 32. *P. cupreum*.  
Sterile palea, if present, not enlarged and indurated.  
Culms arising from a decumbent or creeping base, but not forming scaly rootstocks.  
Spikelets 5.5 to 6 mm. long; fruit crested at the apex..... 56. *P. zizanioides*.  
Spikelets not over 3 mm. long; fruit not crested.  
Spikelets pointed, not over 1.4 mm. long..... 40. *P. trichanthum*.



- Spikelets obtuse, 2 mm. or more long.
- First glume nearly as long as the spikelet..... 42. *P. glutinosum*.
- First glume about half as long as the spikelet..... 41. *P. millegrana*.
- Culms not creeping at base.
- Plants forming conspicuous scaly rootstocks.
- Spikelets not over 2.4 mm. long; culms rarely over 30 cm. high..... 25. *P. gouini*.
- Spikelets 3.5 mm. or more long; culms 1 meter or more high.
- Spikelets 6 to 8 mm. long; culms decumbent at base..... 27. *P. havardii*.
- Spikelets 4 to 5 mm. long; culms erect..... 26. *P. virgatum*.
- Plants not forming scaly rootstocks.
- Panicles 40 to 60 cm. long, the numerous elongated branches in verticils..... 43. *P. megiston*.
- Panicles not over 35 cm. long, usually much less, the branches not in verticils.
- Second glume and sterile lemma elongated, at least 3 times as long as the fruit..... 17. *P. capillarioides*.
- Second glume and sterile lemma not elongated.
- Blades 2 cm. or more wide.. 21. *P. hirsutum*.
- Blades not over 1 cm. wide.
- Spikelets 4 to 4.2 mm. long, the midnerves of the glumes and sterile lemma scabrous toward the apex..... 19. *P. lepidulum*.
- Spikelets usually less than 3.5 mm. long.
- Blades hirsute on both surfaces (sometimes glabrescent) not at all glaucous..... 20. *P. ghiesbreghtii*.
- Blades glabrous on both surfaces or with a few hairs on either surface, glaucous above... 18. *P. hallii*.

Subgenus **PAUROCHAETIUM** Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 42. 1910.

1. *Panicum ramisetum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 27: 9. 1900.  
Type locality, "Texas."

RANGE: Southern Texas and northern Mexico.<sup>1</sup>

**TRUE PANICUM.**

2. *Panicum geminatum* Forsk. Fl. Aegypt. Arab. 18. 1775.

Type locality, "Rosettae in pratis ad littora Nili."

RANGE: Southern United States to South America; also in warmer parts of the Old World.

3. *Panicum paludivagum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 32. f. 13. 1910.

Type locality, "'in water,' vicinity of Eustis, Lake County, Florida."

RANGE: Southern United States to Central America.

4. *Panicum barbinode* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 256. 1834.

PARA GRASS.

Type locality, Bahia, Brazil.

RANGE: Tropics and subtropics of America; escaped from cultivation in North America.

5. *Panicum reptans* L. Syst. Nat. ed. 10. 870. 1759.

Type locality, Jamaica.

RANGE: Tropics and subtropics of both hemispheres.

6. *Panicum fasciculatum* Swartz, Prodr. Veg. Ind. Occ. 22. 1788.

Type locality, "Jamaica."

RANGE: Southern United States to South America.

- 6a. *Panicum fasciculatum chartaginense* (Swartz) Doell in Mart. Fl. Bras. 2<sup>o</sup>: 205. 1877.

Type locality, "America meridionalis, Chartagena," Venezuela.

RANGE: Southwestern United States to South America.

7. *Panicum molle* Swartz, Prodr. Veg. Ind. Occ. 22. 1788.

Type locality, "India occidentalis."

RANGE: Mexico to South America.

8. *Panicum arizonicum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. 32: 2. 1901.

Type locality, "Mesas near Camp Lowell, Santa Cruz Valley, Arizona, 465 C. G. Pringle, 1881."

RANGE: Southwestern United States to Mexico.

9. *Panicum texanum* Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 3. 1866.

COLORADO GRASS.

Type locality, "Austin, Texas."

RANGE: Texas and northern Mexico.

10. *Panicum vaseyanum* Scribn.; Beal, Grasses N. Amer. 2: 140. 1896.

Type locality, wet places, pine plains, base of Sierra Madre, Chihuahua. "Mexico, Pringle 1415."

RANGE: Chihuahua to Jalisco.

<sup>1</sup> The citation of specimens has been given in a recent revision of the genus *Panicum* (Contr. U. S. Nat. Herb. 15. 1910). It is proposed to publish at an early date a supplement to this revision which shall include all the subsequent collections of this genus in the U. S. National Herbarium from North America south of the United States. For these reasons it seems desirable to omit from the present paper the detailed citation of specimens under this genus.

11. *Panicum hirticaule* Presl, Rel. Haenk. 1: 308. 1830.

Type locality, "Acapulco, Mexico."

RANGE: Southwestern United States to southern Mexico.

12. *Panicum pampinosum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 66. f. 48  
1910.

Type locality, "range reserve, altitude 2,600 feet, Wilmot, Arizona."

RANGE: Arizona and New Mexico to central Mexico.

13. *Panicum decolorans* H. B. K. Nov. Gen. & Sp. 1: 100. 1816.

Type locality, "in temperatis, apricis regni Mexicani prope Queretaro."

RANGE: San Luis Potosí to Puebla.

14. *Panicum stramineum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 67. f. 50.  
1910.

Type locality, "Guaymas, Sonora, Mexico."

RANGE: Western Mexico.

15. *Panicum sonorum* Beal, Grasses N. Amer. 2: 130. 1896.

Type locality, Lerdo, at the head of the Gulf of California, Sonora, Mexico.

RANGE: Northwestern Mexico.

16. *Panicum parcum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 68. f. 53. 1910.

Type locality, "mountain side, \* \* \* Lodiago, on the Culiacan River, Sinaloa, Mexico."

RANGE: Pacific slope, Sinaloa to Guerrero.

17. *Panicum capillarioides* Vasey in Coulter, Contr. U. S. Nat. Herb. 1: 54. 1890.

Type locality, "Point Isabel" in the region of the Rio Grande, Texas.

RANGE: Southern Texas and northern Mexico.

18. *Panicum hallii* Vasey, Bull. Torrey Club 11: 64. 1884.

Type locality, dry hills, Austin, Texas.

RANGE: Arizona to Texas and central eastern Mexico.

19. *Panicum lepidulum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 75. f. 64. 1910.

Type locality, "by streams, rocky hills near Chihuahua, State of Chihuahua, Mexico."

RANGE: Chihuahua to Jalisco and Puebla.

20. *Panicum ghiesbreghtii* Fourn. Mex. Pl. 2: 29. 1886.<sup>1</sup>

Type locality, Mexico, the particular locality unknown to the author.

RANGE: Central to southern Mexico.

21. *Panicum hirsutum* Swartz, Fl. Ind. Occ. 1: 173. 1797.

Type locality, "Jamaica."

RANGE: Mexico, Central America, and West Indies.

22. *Panicum maximum* Jacq. Coll. Bot. 1: 76. 1786.

GUINEA GRASS.

Type locality, "In insula Guadeloupe."

RANGE: Cultivated and escaped throughout the tropics and subtropics of both hemispheres.

23. *Panicum plenum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 80. f. 69. 1910.

Type locality, "Mangas Springs, 18 miles northwest of Silver City, Grant County, New Mexico."

RANGE: Southwestern United States to southern Mexico.

<sup>1</sup> See footnote, p. 181.

**24. *Panicum bulbosum*** H. B. K. Nov. Gen. & Sp. 1: 99. 1816.

Type locality, "Novae Hispaniae. . . juxta Santa Rosa, Los Joares et Guanajuato."

RANGE: Mountains of Arizona and New Mexico to southern Mexico.

**24a. *Panicum bulbosum sciaphilum*** (Rupr.) Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 83. 1910.

Type locality, "Sierra de Yavesia," Michoacán.

RANGE: With the species.

**25. *Panicum gouini*** Fourn. Mex. Pl. 2: 28. 1886.

Type locality, "Vera Cruz."

RANGE: Gulf coast of the United States and Mexico; also coast of Uruguay.

**26. *Panicum virgatum*** L. Sp. Pl. 59. 1753.

Type locality, "Virginia."

RANGE: Northern United States to Central America.

**27. *Panicum havardii*** Vasey, Bull. Torrey Club 13: 26. 1886.

Type locality, "Guadalupe Mountains, Texas."

RANGE: Western Texas, New Mexico, and northern Mexico.

**28. *Panicum longum*** Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 111. *f.* 106. 1910.

Type locality, "Swamps near Jalapa, State of Vera Cruz, altitude 1,230 m."

RANGE: Known only from Jalapa.

**29. *Panicum polygonatum*** Schrad. in Schult. Mant. 2: 256. 1824.

Type locality, "In Brasilia, ad ripas fluvii Ilhéos."

RANGE: Veracruz to Paraguay.

**30. *Panicum pilosum*** Swartz, Prodr. Veg. Ind. Occ. 22. 1788.

Type locality, "Jamaica."

RANGE: Mexico, West Indies, south to Brazil.

**31. *Panicum laxum*** Swartz, Prodr. Veg. Ind. Occ. 23. 1788.

Type locality, "Jamaica."

RANGE: Mexico, West Indies, and south to Paraguay.

**32. *Panicum cupreum*** Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 120. *f.* 113. 1910.

Type locality, "Wet hollows in prairies of Flor de Maria, State of Mexico."

RANGE: Known only from the type collection.

**33. *Panicum frondescens*** Meyer, Prim. Fl. Esseq. 56. 1818.

Type locality, "In graminosis insulae Arouabisch," British Guiana.

RANGE: Southern Mexico to South America.

**34. *Panicum pulchellum*** Raddi, Agrost. Bras. 42. 1823.

Type locality, "In sylvaticis prope Catumby \* \* \* ab Urbe Rio Janeiro."

RANGE: Veracruz to South America.

**35. *Panicum biglandulare*** Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 13. *pl.* 14. 1897.

Type locality, "Near Pinabete, Chiapas."

RANGE: Southern Mexico and Guatemala.

**36. *Panicum virgultorum*** Hack. Oesterr. Bot. Zeitschr. 51: 369. 1901.

Type locality, "Costarica: in virgultis ad La Verbena prope Alajuelito."

RANGE: Veracruz to Panama.

37. *Panicum schmitzii* Hack. Ann. Naturhist. Hofm. Wien 17: 254. 1902.

Type locality, Mexico.

RANGE: San Luis Potosí and Veracruz to Central America.

38. *Panicum parviglume* Hack. Oesterr. Bot. Zeitschr. 51: 429. 1901.

Type locality, "Costarica: in ripis fl. Rio Torres prope S. José."

RANGE: Southern Mexico to Costa Rica.

39. *Panicum trichoides* Swartz, Prodr. Veg. Ind. Occ. 24. 1788.

Type locality, "Jamaica."

RANGE: Mexico and West Indies to South America.

40. *Panicum trichanthum* Nees, Agrost. Bras. 210. 1829.

Type locality, Mexico.

RANGE: Mexico and West Indies to Paraguay.

41. *Panicum millegrana* Poir. in Lam. Encycl. Suppl. 4: 278. 1816.

Type locality, "Amérique méridionale."

RANGE: Mexico and Cuba, south to Brazil.

42. *Panicum glutinosum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788.

Type locality, "Jamaica."

RANGE: Mexico and West Indies to South America.

43. *Panicum megiston* Schult. Mant. 2: 248. 1824.

Type locality, "In sylvis humidis plantationis Hof van Holland," British Guiana.

RANGE: Mexico and Cuba to Paraguay.

Subgenus *DICHANTHELIUM* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 42. 1910.

44. *Panicum xalapense* H. B. K. Nov. Gen. & Sp. 1: 103. 1816.

Type locality, "In regno Mexicano prope Xalapa."

RANGE: Middle eastern United States to Veracruz and Hidalgo.

45. *Panicum strigosum* Muhl. in Ell. Bot. S. C. & Ga. 1: 126. 1816.

Type locality, South Carolina.

RANGE: Middle eastern United States to Guatemala.

46. *Panicum ovinum* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Circ. 16: 3. 1899.

Type locality, "Waller County, Texas."

RANGE: Southern Mississippi Valley to Veracruz.

47. *Panicum multirameum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 2. 1900.

Type locality, "Gravelly hills near Jalapa, State of Veracruz."

RANGE: Southern Mexico and Guatemala.

48. *Panicum olivaceum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 225. f. 234. 1910.

Type locality, "Coban, Department of Alta Vera Paz, Guatemala."

RANGE: Veracruz to South America.

49. *Panicum pseudopubescens* Nash, Bull. Torrey Club 26: 577. 1899.

Type locality, "Auburn, Lee Co., Alabama."

RANGE: Northeastern United States to northern Mexico.

50. *Panicum sphaerocarpon* Ell. Bot. S. C. & Ga. 1: 125. 1816.

Type locality, "Georgia."

RANGE: Northeastern United States to South America.

51. *Panicum nodatum* Hitchc. & Chase, Contr. U. S. Nat. Herb. 15: 293. f. 331. 1910.

Type locality, "Sarita, Texas."

RANGE: Southern Texas and northern Mexico.

52. *Panicum viscidellum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 2. 1900.

Type locality, "Gravelly banks near Jalapa, Veracruz."

RANGE: Veracruz to South America.

53. *Panicum jorii* Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 31. 1889.

Type locality, "Louisiana."

RANGE: Middle Atlantic States to Veracruz.

54. *Panicum albomaculatum* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 2. 1900.

Type locality, "Dry rocky hills, Patzcuaro, State of Michoacan," Mexico.

RANGE: Southwestern Mexico.

MISCELLANEOUS SPECIES.

55. *Panicum obtusum* H. B. K. Nov. Gen. & Sp. 1: 98. 1816.

Type locality, "In planitie montana regni Mexicani, prope Guanaxuato."

RANGE: Southwestern United States to southern Mexico.

56. *Panicum zizanioides* H. B. K. Nov. Gen. & Sp. 1: 100. 1816.

Type locality, "In calidissimis regni Novagranatensis, in ripa fluminis Magdalensae, inter Borjorque et Los Praxarales de Sogamozo," Colombia.

RANGE: Mexico, West Indies and south to Paraguay.

36. *ICHNANTHUS* Beauv. Ess. Agrost. 56. pl. 12. f. I. 1812.

KEY TO THE SPECIES.

Stems erect; blades firm, 1 to 1.5 cm. wide; spikelets strongly ribbed. 1. *I. lanceolatus*.  
Stems creeping and rooting; blades thin; spikelets nerved but scarcely ribbed.

Spikelets acuminate; blades ovate-lanceolate..... 2. *I. pallens*.

Spikelets obtuse; blades linear-lanceolate..... 3. *I. apiculatus*.

1. *Ichnanthus lanceolatus* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 36. pl. 5. 1897.

Type locality, "Old fields about Izamal," Yucatán, the type specimen collected by Gaumer (no. 854).

RANGE: Known only from the type collection.

2. *Ichnanthus pallens* (Swartz) Munro in Benth. Fl. Hongk. 414. 1861.

*Panicum pallens* Swartz, Prodr. Veg. Ind. Occ. 23. 1788.

Type locality, "Jamaica."

RANGE: Tropics of the Western Hemisphere.

HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Las Canoas, rich woods in barranca, Pringle 3827.

VERACRUZ: Jalapa, damp shady bank, Hitchcock 6649; shady spring, Hitchcock 6675. Córdoba, wet shady bank, Hitchcock 6454. Mirador, Liebmann 400.

3. *Ichnanthus apiculatus* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 30: 1. 1901.

Type locality, "Near Jalapa, State of Veracruz," the type specimen collected by Pringle (no. 9208).

RANGE: Southern Mexico to Panama.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Jalapa, among shrubs at edge of woods, Hitchcock 6611; Pringle 9208, type (in Hitchcock Herb.).

37. *LASIACIS* (Griseb.) Hitchc. Contr. U. S. Nat. Herb. 15: 16. 1910.

## BAMBOO PANICUM.

## KEY TO THE SPECIES.

- Spikelets globose, small, 3 mm. long..... 1. *L. globosa*.  
 Spikelets oval or obovate, 3 to 5 mm. long.  
 Blades conspicuously cordate-clasping; panicle diffuse, as  
 much as 75 cm. long..... 9. *L. procerrima*.  
 Blades not conspicuously clasping; panicle usually not more  
 than 20 cm. long.  
 Plants decumbent and creeping at base, rooting at the  
 nodes; fertile culms usually not more than about  
 1 meter high.  
 Blades narrow, glabrous above; spikelets not clus-  
 tered; stems about 0.5 meter high..... 2. *L. grisebachii*.  
 Blades scabrous above; spikelets in clusters of 2 to  
 4 at the ends of the panicle branches.  
 Blades elongated; sheaths glabrous..... 8. *L. oaxacensis*.  
 Blades ovate-lanceolate; sheaths pubescent.... 7. *L. rhizophora*.  
 Plants climbing high, forming strong central canes some-  
 times several meters long.  
 Panicle compact; blades broad, oval to lanceolate. 4. *L. compacta*.  
 Panicle open; blades lanceolate.  
 Blades smooth or somewhat scabrous; canes,  
 branches, and young shoots smooth..... 3. *L. divaricata*.  
 Blades pubescent at least below; young shoots  
 villous; branches and canes pubescent or  
 rough.  
 Blades velvety; floral branchlets not clus-  
 tered on the strong main canes, the  
 panicles large, mostly 20 to 30 cm.  
 long, the blades mostly large, as much  
 as 2 cm. wide and 15 cm. long..... 6. *L. swartziana*.  
 Blades more or less pubescent but not vel-  
 vety; floral branches often clustered  
 or fascicled on the strong main canes,  
 the panicles and blades smaller..... 5. *L. liebmanniana*.

1. *Lasiacis globosa* sp. nov.

Stems woody as in *L. divaricata*, glabrous; sheaths glabrous, ciliate on the overlapping margin; ligule a narrow pilose membrane about 0.5 mm. long; blades firm, elliptical-lanceolate, scabrous on the margins and upper surface and more or less so beneath, those of the flowering branches 1 to 2 cm. wide, 8 to 12 cm. long; panicle pyramidal, loosely flowered, 6 to 15 cm. long, the branches very scabrous, widely spreading, the longer as much as 7 cm. long; spikelets on scabrous pedicels 1 to 2 cm. long, globose, 3 mm. long; first glume circular, gibbous, nerved, scabrous on the keel, ciliate on the membranous margin, about 1 mm. long; second glume and sterile lemma glabrous and shining, equal, a little shorter than the fertile lemma, reticulate-veined, lanate-ciliate on the rounded apex; fertile lemma umbonate, the point protruding from the second glume and sterile lemma, this and the apex of the palea woolly.

Type in the U. S. National Herbarium, no. 691226, collected at Acapulco, Mexico, by Edward Palmer (no. 114 in 1894).

What appears to be the same species is found in western South America. Among the specimens is *Lechler* 2219 from Peru, which was mentioned without description by Steudel<sup>1</sup> in his list of Lechler's plants, under the name *Panicum megacarpum*. This name appears not to have been published, though it is given as a synonym by Grisebach, Doell, and others under *Panicum divaricatum* or some of its allies.

2. *Lasiacis grisebachii* (Nash) Hitchc. Bot. Gaz. 51: 302. 1911.

*Panicum grisebachii* Nash, Bull. Torrey Club 35: 301. 1908.

Type locality, Madruga, Cuba, the type specimen collected by Britton & Shafer (no. 758).

RANGE: Eastern Mexico and Central America, and the West Indies.

HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Córdoba, *Fink* in 1893.

3. *Lasiacis divaricata* (L.) Hitchc. Contr. U. S. Nat. Herb. 15: 16. 1910.

*Panicum divaricatum* L. Syst. Nat. ed. 10. 871. 1759.

Type locality, Jamaica, the type collected by Browne.

RANGE: Southern Florida, West Indies, and Mexico to South America.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandegee* in 1890.

SINALOA: Rosario, *Rose* in 1897.

JALISCO: Tequila, *Palmer* 362 in 1886.

SAN LUIS POTOSÍ: Minas de San Rafael, *Purpus* 5439, 5440.

COLIMA: Manzanillo, woods on hill near coast, *Hitchcock* 7027, 7028; wooded hillside, *Hitchcock* 7035; base of cliff on sea shore in reach of spray, *Hitchcock* 7044; *Palmer* 1089 in 1890. Alzada, shady ravine among shrubs, *Hitchcock* 7087; hillside among shrubs, *Hitchcock* 7099.

VERACRUZ: Mirador, *Liebmann* 298. Pital, *Liebmann* 294. Orizaba, near top of hill, *Hitchcock* 6393.

YUCATÁN: Mérida, *Schott* 675.

4. *Lasiacis compacta* (Swartz) Hitchc. Bot. Gaz. 51: 302. 1911.

*Panicum compactum* Swartz, Adnot. Bot. 14. 1829.

Type locality unknown.

RANGE: Mexico and West Indies to South America.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Sierra de Alamos, *Rose, Standley & Russell* 12822.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 10 in 1885.

SINALOA: Mazatlán, dry field, *Rose, Standley & Russell* 14112. Culiacán, *Brandegee* in 1904. Rosario, thickets, *Rose, Standley & Russell* 14521. San Blas, thickets along Río Fuerte, *Rose, Standley & Russell* 13369. Imala, *Palmer* in 1891. Lodiago, shady river banks, *Palmer* 1645 in 1891.

DURANGO: Huasemote, *Rose* 3502.

TEPIC: Acaponeta, *Rose, Standley & Russell* 14409.

COLIMA: Manzanillo, wooded hillside, *Hitchcock* 7034. Alzada, wooded rocky hillside, *Hitchcock* 7079.

MICHOACÁN: El Calabazal, *Langlassé* 458. Vallecitos, *Langlassé* 361.

MORELOS: Yautepec, lava fields, *Pringle* 11293.

GUERRERO: Tlaxiataquilla, *Nelson* 2254. Acapulco, *Palmer* 115 in 1894.

OAXACA: San Miguel Sadani, *Liebmann* 283. Oaxaca, *Conzatti & González* 1103.

YUCATÁN: Izamal, *Gaumer* 878. Mérida, *Schott* 600.

<sup>1</sup> Lechl. Berb. Amer. Austr. 56. 1857.



**5. *Lasiacis liebmanniana* (Fourn.) Hitchc. Proc. Biol. Soc. Washington 24: 145. 1911.**

*Panicum liebmannianum* Fourn. Mex. Pl. 2: 33. 1886.

Type locality, "Consoquitla," Mexico, the type specimen collected by Liebmann (no. 299).

RANGE: Mexico to Colombia.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 10 in 1885.

SAN LUIS POTOSÍ: Las Canoas, rocky hills, *Pringle* 3808. San Dieguito, *Palmer* 151 in 1904. Río de las Gallinas, *Purpus* 5438.

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7348, 7368. San Nicolás, sterile clay hill, *Hitchcock* 7207.

GUANAJUATO, Guanajuato, *Dugès* in 1897.

VERACRUZ: Orizaba, *Bourgeau* 2648; *Botteri* 754; shaded rich loam near top of hill, *Hitchcock* 6389. Colipa, *Liebmann* 290. Córdoba, climbing 15-20 feet high in coffee trees, *Hitchcock* 6442; in cut, *Hitchcock* 6455, 6456; climbing over bushes along road, *Hitchcock* 6458; *Seaton* 393; *Fink* in 1893; *Bourgeau* 1499, 1936. Jalapa, railway cut through jungle, *Hitchcock* 6642; in shade, edge of coffee grove, *Hitchcock* 6674; railway cut, *Hitchcock* 6680; *Rose & Hay* 6144. Mirador, *Ross* 254, 613; *Liebmann* 296. Zacuapan, *Purpus* 2905, 3779. Misantla, *Purpus* 5978.

MORELOS: Cuernavaca, rocky places, *Pringle* 6663; along deep ravine, *Hitchcock* 6824.

OAXACA: Tomellín Canyon, *Pringle* 6701. Trapiche de la Concepción, *Liebmann* 284. San Pablo Huitzo, *Conzatti* 2012.

**6. *Lasiacis swartziana* Hitchc. Bot. Gaz. 51: 302. 1911.**

*Panicum swartzianum* Hitchc. Contr. U. S. Nat. Herb. 12: 140. 1908.

*Panicum lanatum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788, not Rottb. 1776.

Type locality, "Jamaica."

RANGE: Mexico and the West Indies.

HERBARIUM SPECIMEN FROM MEXICO:

OAXACA: Tuxtepec, *Nelson* 372.

**7. *Lasiacis rhizophora* (Fourn.) Hitchc. Proc. Biol. Soc. Washington 24: 145. 1911.**

*Panicum rhizophorum* Fourn. Mex. Pl. 2: 31. 1886.

Type locality, "Orizaba," the type specimen collected by Bourgeau (no. 3025).

RANGE: Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Córdoba, edge of jungle, *Hitchcock* 6461. Orizaba, *Botteri*; *Bourgeau* 3025. Zacuapan, *Purpus* 6205.

**8. *Lasiacis oaxacensis* (Steud.) Hitchc. Proc. Biol. Soc. Washington 24: 145. 1911.**

*Panicum oaxacense* Steud. Syn. Pl. Glum. 1: 73. 1854.

Type locality, "Oaxaca."

RANGE: Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Pital, *Liebmann* 285. Zacuapan, moist ground, *Purpus* 2157.

MICHOACÁN: Sierra Madre, *Langlassé* 556. Morelia, *Arsène* in 1909.

**9. *Lasiacis procerrima* (Hack.) Hitchc. Proc. Biol. Soc. Washington 24: 145. 1911.**

*Panicum procerrimum* Hack. Oesterr. Bot. Zeitschr. 51: 431. 1901.

Type locality, "Costarica: Inter frutices ad fluvium Tiliri prope La Verbena et Alajuelita," the type specimen collected by Pittier (no. 8819).

RANGE: Central Mexico to Panama.

## HERBARIUM SPECIMENS FROM MEXICO:

- SINALOA: Colomas, foothills of Sierra Madre, *Rose* 1687.  
 TEPIC: Tepic, river banks and arroyos, *Palmer* 1921 in 1892.  
 JALISCO: Río Blanco, *Palmer* 535 in 1886. Guadalajara, barranca, *Pringle* 11760; shaded ledges, *Pringle* 1732.  
 COLIMA: Alzada, rocky hillside, *Hitchcock* 7085.  
 MICHOACÁN: El Ocote, *Langlassé* 540.  
 VERACRUZ: Córdoba, *Fink* in 1893; excavated area, clay soil, *Hitchcock* 6422. Orizaba, open woods, hilltop, *Hitchcock* 6385. Mirador, *Liebmann* 305. Veracruz, *Galeotti* 5717.  
 CHIAPAS: Ocuilapa, table-land, *Nelson* 3055.

## 38. SACCIOLEPIS Nash in Britton, Man. 89. 1901.

1. *Sacciolepis myuros* (Lam.) Chase, Proc. Biol. Soc. Washington 21: 7. 1908.

*Panicum myuros* Lam. Tabl. Encycl. 1: 172. 1791.

Type locality, Cayenne, according to the label on the type specimen.

RANGE: Mexico and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

- JALISCO: Guadalajara, shallow pools, *Pringle* 2363.  
 VERACRUZ: Potrero de Consoquitla, *Liebmann* 146.

## 39. HYMENACHNE Beauv. Ess. Agrost. 48. pl. 10. f. 8. 1812.

1. *Hymenachne amplexicaulis* (Rudge) Nees, Agrost. Bras. 276. 1829.

*Panicum amplexicaule* Rudge, Pl. Guian. 1: 21. pl. 27. 1805.

Type locality, British Guiana.

RANGE: Tropics and subtropics of the western hemisphere.

## HERBARIUM SPECIMENS FROM MEXICO:

- SINALOA: Culiacán, *Palmer* 1791 in 1891.  
 COLIMA: Colima, *Palmer* 1259 in 1891; *Orcutt* 4563.  
 VERACRUZ: Sanborn, *Orcutt* 3249.  
 OAXACA: Mazaltepec, *Rovirosa* 628.

## 40. HOMOLEPIS Chase, Proc. Biol. Soc. Washington 24: 146. 1911.

1. *Homolepis aturensis* (H. B. K.) Chase, Proc. Biol. Soc. Washington 24: 146. 1911.

*Panicum aturense* H. B. K. Nov. Gen. & Sp. 1: 103. pl. 33. 1816.

Type locality, "ad cataractas Aturensis," in the Atabapo River, between Venezuela and Colombia.

RANGE: Southern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

- VERACRUZ: Jicaltepec, *Liebmann* 391. Inter Isleta et Malvapán, *Liebmann* 395.  
 OAXACA: Comaltepec, *Galeotti* 5859.  
 TABASCO: Mayito, *Rovirosa* 425.

## 41. ISACHNE R. Br. Prodr. Fl. Nov. Holl. 196. 1810.

1. *Isachne arundinacea* (Swartz) Griseb. Fl. Brit. W. Ind. 553. 1864

*Panicum arundinaceum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788.

Type locality, "Jamaica."

RANGE: Mexico and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

- VERACRUZ: Mirador, *Liebmann* 333. Consoquitla, *Liebmann* 331. Jalapa, *Smith* 1804. Zacuapan, open woods, *Purpus* 2000.  
 OAXACA: *Galeotti* 5868.  
 CHIAPAS: Chicharras, *Nelson* 3764.

42. *OPLISMENUS* Beauv. Fl. Owar. 2: 14. pl. 58. f. 1. 1809.

## KEY TO THE SPECIES.

- Spikelets loosely arranged on the elongated axis of the spikes. . . . . 1. *O. rariflorus*.  
 Spikelets compactly arranged on the short axes of the spikes.  
   Spikes villous with long hairs. . . . . 3. *O. cristatus*.  
   Spikes not villous, or with a few long hairs. . . . . 2. *O. hirtellus*.

1. *Oplismenus rariflorus* Presl, Rel. Haenk. 1: 320. 1830.

Type locality, "ad Acapulco."

RANGE: Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Lodiago, moist shady place in deep canyon, *Palmer* 1656 in 1891.

TEPIC: Tepic, shady bank of arroyo, *Palmer* 1931 in 1892.

JALISCO: Zapotlán, open pine woods, hillside, *Hitchcock* 7237.

COLIMA: Mazanillo, *Palmer* 1090 in 1890.

MICHOACÁN: La Correa, *Langlassé* 444. Morelia, *Arsène* in 1909.

OAXACA: Sierra de San Felipe, *Pringle* 4944. Reyes, *Nelson* 1772. Between Galera and Pochutla, *Liebmann* 372.

2. *Oplismenus hirtellus* (L.) Roem. & Schult. Syst. Veg. 2: 481. 1817.

*Panicum hirtellum* L. Syst. Nat. ed. 10. 870. 1759.

Type locality, Jamaica, the type specimen collected by Browne.

RANGE: Mexico and the West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

PUEBLA: Mount Orizaba, *Seaton* 63.

VERACRUZ: Córdoba, wet springy bank, *Hitchcock* 6445; in shade of coffee trees, *Hitchcock* 6462. Jalapa, damp shady woods, *Hitchcock* 6636, 6637; shady place near Coatepec, *Hitchcock* 6681. Orizaba, *Botteri* 136; *Purpus* in 1903. Colipa, *Liebmann* 363. Mirador, *Nelson* 109. Sanborn, *Orcutt* 3067.

MORELOS: Cuernavaca, moist banks, *Pringle* 6203; damp shady place in ravine, *Hitchcock* 6839.

TABASCO: San Juan Bautista, *Rovirosa* 67, 83.

CHIAPAS: Ocuilapa, table-land, *Nelson* 3025.

QUINTANA ROO: Cozumel, *Millsbaugh* 1483.

WITHOUT LOCALITY: *Liebmann* 366.

3. *Oplismenus cristatus* Presl, Rel. Haenk. 1: 323. 1830.

Type locality, "Mexico."

RANGE: Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Miraflores, *Brandege* 22 in 1890. Sierra de la Laguna, *Brandege* 5 in 1890.

SINALOA: Lodiago, moist shady rocky canyon, *Palmer* 1666 in 1891.

TEPIC: Tepic, shady banks of arroyos, *Palmer* 1930 in 1892.

JALISCO: Guadalajara, *Palmer* 463 in 1886; along a stone wall near San Pedro, *Hitchcock* 7279. Zapotlán, damp shady place on rocks, hill, *Hitchcock* 7250.

COLIMA: Colima, *Palmer* 1258 in 1891; *Orcutt* 4529.

MICHOACÁN: La Correa, *Langlassé* 440. Morelia, *Arsène* in 1909.

VERACRUZ: Zacuapan, fields, *Purpus* 2893.

MORELOS: Cuernavaca, shaded banks, *Pringle* 6209; lava fields near Yautepec, *Pringle* 11330; *Bourgeau* 1301.

GUERRERO: Acapulco, *Palmer* 35 in 1894.

OAXACA: Cuicatlán, *Nelson* 1649. Guatulco, *Liebmann* 375.

YUCATÁN: Without locality, *Schott* 55.

48. *ECHINOCHLOA* Beauv. Ess. Agrost. 53. pl. 11. f. 2. 1812.

## KEY TO THE SPECIES.

- Spikelets awnless or mucronate only; spikes simple, rather remote. 1. *E. colonum*.  
 Spikelets more or less awned; spikes more or less compound, approximate.
- Sheaths hispid..... 4. *E. walteri*.  
 Sheaths glabrous.
- Awns conspicuous.
- Awns as much as 5 cm. long; panicle long and dense.. 5. *E. holciformis*.  
        Awns less than 2 cm. long; panicle mostly not over 15  
        cm. long, not dense..... 6. *E. spectabilis*.
- Awns not longer than the body of the spikelet.
- Panicle erect; branches stiffly ascending or appressed;  
        awns mostly less than 1 mm. long..... 2. *E. zelayensis*.  
        Panicle nodding, rather soft and lax; awns 1 to 5 mm.  
        long..... 3. *E. sabulicola*.

1. *Echinochloa colonum*<sup>1</sup> (L.) Link, Hort. Berol. 2: 209. 1833.

*Panicum colonum* L. Syst. Nat. ed. 10. 870. 1759.

Type locality, Jamaica, the type specimen from Browne.

RANGE: Warmer parts of both hemispheres.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Agueda, *Palmer* 223 in 1890. San José del Cabo, *Brandege* 26 in 1890, 38 in 1899.

SONORA: Oputo, *Hartman* 189. Nogales to Cocospora Ranch, *Griffiths* 6832. Yaqui River, *Palmer* 13 and 14 in 1869. Sierra de Alamos, *Rose, Standley & Russell* 12984. Guaymas, moist roadside, *Hitchcock* 3560; *Palmer* 51 and 202 in 1887. Hermosillo, by ditch in meadow, *Hitchcock* 3580; weed in field, *Hitchcock* 3620.

CHIHUAHUA: Sánchez, along railway, *Hitchcock* 7690. Chihuahua, depression in mesa, *Hitchcock* 7780. Santa Eulalia Plains, *Wilkinson* 42.

SINALOA: Topolobampo, *Rose, Standley & Russell* 13265. Mazatlán, moist field, *Rose, Standley & Russell* 14039. San Blas, *Rose, Standley & Russell* 13424. Culiacán, rich bottom lands, *Palmer* 1542 in 1891. Rosario, along the river, *Rose, Standley & Russell* 14574; *Rose* 1544.

DURANGO: Torreón, field, *Hitchcock* 7552. Durango, in water of ditch, *Hitchcock* 7655. Tlahualilo, *Pittier* 478.

COAHUILA: Saltillo, along irrigation ditch, *Hitchcock* 5592; field, *Hitchcock* 5599.

NUEVO LEÓN: Monterrey, irrigation ditch, *Hitchcock* 5548.

TEPIC: Acajoneta, moist ravine, *Rose, Standley & Russell* 14250; *Rose* 1923.

SAN LUIS POTOSÍ: Cárdenas, irrigated field, *Hitchcock* 5750.

JALISCO: Río Blanco, *Palmer* 193 in 1886. San Nicolás, cornfield, *Hitchcock* 7224.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7413. Acámbaro, along ditch, *Hitchcock* 6941.

QUERÉTARO: Querétaro, water of irrigation ditch, *Hitchcock* 5831.

COLIMA: Colima, in swampy ground and along water courses, *Palmer* 169 in 1897. Caldras, along railway, *Hitchcock* 7020.

PUEBLA: Tehuacán, along ditch, *Hitchcock* 6052. Cholula, *Nicolas* in 1910.

<sup>1</sup> Dr. E. L. Greene called attention to the fact that the specific name is not an adjective, and suggested that it is probably a genitive plural. The word appears to be contracted from *colonorum*, genitive plural of *colonus*, a husbandman or a colonist. Dr. J. A. Nieuwland has kindly searched Latin authorities and verifies this conclusion, though there appears to be no direct authority for the word *colonum*.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

VERACRUZ: Veracruz, weed along street, *Hitchcock* 6569. Valley of Orizaba, *Bourgeau* 2593. Río Blanco, roadside ditch, *Hitchcock* 6325.

MORELOS: Cuernavaca, weed in pasture, *Hitchcock* 6836.

GUERRERO: Balsas, along railway, *Hitchcock* 6802. Iguala, in Canyon de la Mano Negra, *Rose, Painter & Rose* 9386.

OAXACA: Tomellín, *Rose, Painter & Rose* 10048; weed in cornfield, *Hitchcock* 6228. Oaxaca, edge of water in ditch, *Hitchcock* 6125.

2. *Echinochloa zelayensis* (H. B. K.) Schult. Mant. 2: 269. 1824.

*Oplismenus zelayensis* H. B. K. Nov. Gen. & Sp. 1: 108. 1816.

Type locality, "in alta planitie montana regni Mexicani prope Zelaya, Queretaro."

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Horseshoe Bend of the Colorado River, *Palmer* 949 and 950 in 1889.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 18 in 1885. Casas Grandes, *Townsend & Barber* 353.

DURANGO: Durango, in water of ditch; *Hitchcock* 7565, 7566; along water courses and ditches, sometimes in shallow water, *Palmer* 252 in 1896. Santiago Papasquiaro, along water courses, *Palmer* 466 in 1896. Torreón, along ditch, *Hitchcock* 7725.

COAHUILA: Saltillo, in wet soil, *Palmer* 380 in 1898; wet irrigation ditch, *Hitchcock* 5600, 5606, 5607, 5612.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7526.

AGUASCALIENTES: Aguascalientes, along pond, *Hitchcock* 7486; weed along road, edge of field, *Hitchcock* 7442.

SAN LUIS POTOSÍ: San Luis Potosí, dry ditch, *Hitchcock* 5655.

JALISCO: Orozco, shallow water of large pond, *Hitchcock* 7385. Guadalajara, *Palmer* 430 in 1886; in water of ditch on road to Barranca de Oblatos, *Hitchcock* 7310, 7314. Colotlán, *Rose* 3606.

GUANAJUATO: Acámbaro, along ditch, *Hitchcock* 6935. Irapuato, along ditch, *Hitchcock* 7387; moist sandy-clay plain by ditch, *Hitchcock* 7398, 7399, 7421. Guanajuato, *Dugès* in 1897.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5820, 5835, 5850, 5851, 5867.

MÉXICO: Valley of Mexico, *Pringle* 9585; *Orcutt* 4105. Xochimilco, ditch, *Hitchcock* 5894. Santa Anita, *Bourgeau* 680. Near Mexico City, ditches, *Bourgeau* 236.

PUEBLA: Tehuacán, along railway ditch, *Hitchcock* 6061.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6326.

OAXACA: Oaxaca, water of ditch, *Hitchcock* 6175, 6181.

WITHOUT LOCALITY: *Liebmann* 386.

3. *Echinochloa sabulicola* (Nees).

*Panicum sabulicola* Nees, Agrost. Bras. 258. 1829.

Type locality, South America, "in arenosis Parae" and "in Monte Video, et in confinibus Regni Paraguayanani" cited.

RANGE: Northern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Paz, *Palmer* 130 in 1890.

SONORA: Hermosillo, along ditch, *Hitchcock* 3599.

CHIHUAHUA: Between Casas Grandes and Sabinal, *Nelson* 6355a. Between Colonia García and Pratt's ranch, *Nelson* 6244.

SINALOA: Culiacán, *Palmer* 1790 in 1891.

DURANGO: Durango, in swamps, often in water, *Palmer* 730 in 1896.

COAHUILA: Jaral, *Schumann* 1738. Saltillo, common in wet places, *Palmer* 418 in 1898.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

JALISCO: Orozco, near large pond, *Hitchcock* 7373. Guadalajara, *Palmer* 430 and 430a in 1886; along stream, side of Barranca de Oblatos, *Hitchcock* 7351.

GUANAJUATO: Acámbaro, along ditch, *Hitchcock* 6949. Irapuato, moist sandy-clay plain, *Hitchcock* 7420.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5810, 5852, 5866.

MICHOACÁN: Maravatio, *Hitchcock* 6923. Morelia, *Rose* 3591.

MÉXICO: Valley of Mexico, *Pringle* 9606; in shallow water, *Pringle* 8572; *Bourgeau* 530. Xochimilco, ditch along trolley, *Hitchcock* 5879.

VERACRUZ: Córdoba, weed in field, *Hitchcock* 6452. Orizaba, *Botteri* 718; roadside ditch, *Hitchcock* 6344. San Francisco near Veracruz, *Smith* 1329.

MORELOS: Cuernavaca, along ditch, *Hitchcock* 6849.

4. *Echinochloa walteri* (Pursh) Heller, Cat. Pl. N. Amer. ed. 2. 21. 1900.

*Panicum walteri* Pursh, Fl. Amer. Sept. 1: 66. 1814.

Type locality, South Carolina, Pursh bestowing the name on the species erroneously referred by Walter to *Panicum hirtellum*.

RANGE: United States to Southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Cárdenas, along irrigation ditch, *Hitchcock* 5737.

TABASCO: González, along river bank, *Roviroza* 703.

5. *Echinochloa holciformis* (H. B. K.) Chase, Proc. Biol. Soc. Washington 24: 155. 1911.

*Oplismenus holciformis* H. B. K. Nov. Gen. & Sp. 1: 107. 1816.

Type locality, "in humidis montanis prope Cinapecuaro, alt. 970 hexap. (Regno Mexicano.)"

RANGE: Mexico and Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, in water of pond, *Hitchcock* 7611. Along water courses, sometimes in shallow water, *Palmer* 253 in 1896.

JALISCO: Orozco, margin of large pond, *Hitchcock* 7375.

GUANAJUATO: Acámbaro, water of ditch, *Hitchcock* 6946. Irapuato, along ditch, *Hitchcock* 7393.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Valley of Mexico, *Pringle* 8622.

6. *Echinochloa spectabilis* (Nees) Link, Hort. Berol. 2: 209. 1833.

*Panicum spectabile* Nees, Agrost. Bras. 262. 1829.

Type locality, "Rio de Janeiro," the species believed by Nees to be introduced from Angola, Africa.

RANGE: Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Cananea, *Ricketts* 2.

CHIHUAHUA: Sánchez, along railway, *Hitchcock* 7696. Miñaca, along railway, *Hitchcock* 7758. Sierra Madre, wet places, *Pringle* 1404.

DURANGO: Durango, along dry creek bed, *Hitchcock* 7616; *Palmer* 253 in 1896. Otinapa, *Palmer* 333 in 1906.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7527.

AGUASCALIENTES: Aguascalientes, in dry ditch, *Hitchcock* 7441; along pond, *Hitchcock* 7489.

MICHOACÁN: Zamora, in water, *Pringle* 8480. Morelia, *Nicolas* in 1909.

MÉXICO: Toluca, along ditch, *Hitchcock* 6914.

TABASCO: Laguna de Peralta, *Roviroza* 315.

44. *CHAETIUM* Nees, Agrost. Bras. 269. 1829.

1. *Chaetium bromoides* (Presl) Benth.; Hemsl. Biol. Centr. Amer. Bot. 3: 503. 1885.

*Berchtoldia bromoides* Presl, Rel. Haenk. 1: 324. pl. 43. 1830.

Type locality, "Mexico."

RANGE: Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, *Palmer* in 1886.

JALISCO: Zapotlán, railway right of way, *Hitchcock* 7114. Guadalajara, prairie near San Pedro, *Hitchcock* 7287; plains, *Pringle* 2331; gravelly banks, *Pringle* 11736. Río Blanco, *Palmer* 619 in 1886.

MICHOACÁN: Uruápan, prairie along railway, *Hitchcock* 6985.

VERACRUZ: Orizaba, in bunches along ditch, *Hitchcock* 6330; *Botteri*; Tzuatlanchillo near Orizaba, *Bourgeau* 2597.

MORELOS: Cuernavaca, edge of orchard, *Hitchcock* 6856.

45. *SETARIOPSIS* Scribn. in Millsp. Field Mus. Bot. 1: 288. pl. 11. 1896.

## KEY TO THE SPECIES.

Sheaths hispid; glumes conspicuously widened . . . . . 1. *S. latiglumis*.  
 Sheaths smooth; glumes not conspicuously widened . . . . . 2. *S. auriculata*.

1. *Setariopsis latiglumis* (Vasey) Scribn. in Millsp. Field Mus. Bot. 1: 289. pl. 11. 1896.

*Setaria latiglumis* Vasey, Bull. Torrey Club 13: 229. 1886.

Type locality, "S. W. Chihuahua," the type specimen "collected by Dr. Ed. Palmer in 1885."

RANGE: Pacific slope of Mexico.

HERBARIUM SPECIMENS:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 117a in 1885.

JALISCO: Bolaños, *Rose* 2899.

MORELOS: Jojutla, limestone hills, *Pringle* 11246.

GUERRERO: Iguala, mountains, *Pringle* 8412. Río Balsas, *Orcutt* 4198.

CHIAPAS: Tuxtla, *Nelson* 3083.

2. *Setariopsis auriculata* (Fourn.) Scribn. in Millsp. Field Mus. Bot. 1: 289. 1896.  
*Setaria auriculata* Fourn. Mex. Pl. 2: 43. 1886.

Type locality, "Campeche," the type specimen collected by Linden.

RANGE: Sonora to Oaxaca and Yucatán.

HERBARIUM SPECIMENS:

SONORA: Alamos, *Palmer* 684 in 1890.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 78 in 1885.

JALISCO: Bolaños, *Rose* 2899.

COLIMA: Alzada, along track, *Hitchcock* 7092; in low wet spot, *Palmer* 139 in 1897.

MORELOS: Los Amates, *Orcutt* 4428. Yautepec, *Rose, Painter & Rose* 8538.

GUERRERO: Los Amates, near railway, *Hitchcock* 6693.

OAXACA: Tomellín, rocky hill, *Hitchcock* 6242. Cuicatlán, *Nelson* 1601.

YUCATÁN: Mérida, *Schott* 592. Izamal, *Gaumer* 849.

46. *CHAETOCHLOA* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 38. 1897.

## KEY TO THE SPECIES.

Bristles barbed backwards.

Collar glabrous or nearly so; spikelets elliptical . . . . . 12. *C. verticillata*.

Collar densely hirsute; spikelets globose . . . . . 13. *C. salzmanniana*.

## Bristles barbed forwards.

Blades broad, the larger ones 4 cm. or more wide, plaited, tapering at both ends. (§PTYCHOPHYLLUM.)

- Panicle rather compact, the branches ascending or appressed, 1 to 4 cm. long..... 1. *C. sulcata*.  
 Panicle loose and open, the branches slender and spreading, 10 to 20 cm. long..... 2. *C. effusa*.

## Blades narrow, not plaited.

## Plants annual.

Fertile lemma transversely striate but not deeply rugose.

- Panicle rather compact, the branches short. 6. *C. grisebachii*.  
 Panicle looser, the branches 1 to 3 cm. long. 6a. *C. grisebachii ampla*.

Fertile lemma deeply transversely rugose.

- Blades pilose beneath..... 5. *C. latifolia*.

Blades scabrous but not pilose.

- Panicle dense, spike-like; blades narrowed at base, spreading, a dense tuft of hairs 2 to 3 mm. long in the region of the ligule and collar..... 3. *C. longipila*.

- Panicle loosely spike-like; blades cordate at base, appressed, the ligule short..... 4. *C. liebmanni*.

## Plants perennial.

Inflorescence a close cylindrical spike-like panicle.

- Blades flat, averaging 1 cm. in width..... 11. *C. imberbis*.  
 Blades mostly involute, narrow..... 10. *C. gracilis*.

Inflorescence loose, tapering at apex.

- Sheaths smooth around the collar; panicle compact, usually less than 10 cm. long; blades usually narrow and folded..... 9. *C. composita*.

Sheaths hispid or villous around the collar; panicle loose and interrupted, usually more than 15 cm. long.

- Spikelets ovate-globose; blades usually broad and flat..... 7. *C. macrostachya*.

- Spikelets elliptic..... 8. *C. setosa*.

1. *Chaetochloa sulcata* (Aubl.).

*Panicum sulcatum* Aubl. Pl. Guian. 1: 50. 1775.

Type locality, British Guiana, the species growing "au bord des rivieres."

RANGE: Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Las Canóas, by streams, *Pringle* 3921.

VERACRUZ: Jalapa, along railway in low woods, *Hitchcock* 6685. Mirador, *Liebmann* 459.

CHIAPAS: Turubula, *Nelson* 3359.



**2. *Chaetochloa effusa* (Fourn.).**

*Setaria effusa* Fourn. Mex. Pl. 2: 42. 1886.

*Panicum mexicanum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 21: 40. 1900.

Type locality, Veracruz, several localities in that State being given, Orizaba being the first.

RANGE: Southern Mexico and Central America.

**HERBARIUM SPECIMENS FROM MEXICO:**

VERACRUZ: Zacuapan, brushy woods, *Purpus* 2904; shady forests, *Purpus* 2907.

Mirador, *Liebmann* 456. Córdoba, *Ross* 551; *Kerber* 110; along river bank,

*Hitchcock* 6395; valley, *Bourgeau* 1457. Orizaba, open rocky hill, *Hitchcock* 6380; *Botteri* 1986.

OAXACA: Tonagua, *Liebmann* 454.

TABASCO: Tamulté, *Roviroso* 616.

CHIAPAS: Ocuilapa, table-land, *Nelson* 3059.

**3. *Chaetochloa longipila* (Fourn.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 21: 22. 1900.**

*Setaria longipila* Fourn. Mex. Pl. 2: 47. 1886.

Type locality, presumably Mexico, the type specimen, collected by Jurgens (no. 722), being without data as to locality.

RANGE: Pacific slope of Mexico.

**HERBARIUM SPECIMEN:**

TEPIC: Between Aguacate and Dolores, *Rose* 2017.

**4. *Chaetochloa liebmanni* (Fourn.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 21: 31. 1900.**

*Setaria liebmanni* Fourn. Mex. Pl. 2: 44. 1886.

Type locality, "Manantial," the type specimen collected by Liebmann (no. 389).

RANGE: Pacific slope of Mexico.

**HERBARIUM SPECIMENS:**

LOWER CALIFORNIA: San José del Cabo, *Brandege* 12 in 1890.

SONORA: Guaymas, *Palmer* 191 in 1887; rocky lava hill, *Hitchcock* 3548. Alamos, *Palmer* 686 in 1890.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 52 and 110D in 1885.

SINALOA: Topolobampo, under shade of bushes, mountain slopes, *Palmer* 233 in 1897. Culiacán, *Brandege* 9 and 10 in 1904; common on rich bottom lands in shade, *Palmer* 1541 in 1891. Rosario, *Rose* 1840.

TEPIC: Acaponeta, *Rose* 3303.

COLIMA: Colima, in shady places on embankments, *Palmer* 8 in 1897; low grassy thicket, *Palmer* 142 in 1897.

GUERRERO: Río Balsas, *Orcutt* 4194.

OAXACA: Tomellín, side of cut along railway, *Hitchcock* 6191. Between San Gerónimo and La Venta, *Nelson* 2788.

**5. *Chaetochloa latifolia* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 11: 44. pl. 3. 1898.**

Type locality, "deep ravines, Durango, Mexico," the type specimen collected by Palmer in 1896 (no. 879).

RANGE: Pacific slope of Mexico.

**HERBARIUM SPECIMENS:**

DURANGO: Santiago Papasquiario, under bushes in a ravine, *Palmer* 470 and 879 in 1896.

OAXACA: Valley of Oaxaca, *Conzatti & González* 347.

**6. *Chaetochloa grisebachii* (Fourn.) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 39. 1897.**

*Setaria grisebachii* Fourn. Mex. Pl. 2: 45. 1886.

Type locality, Mexico, the following Mexican collections being cited: Mexico, *Berlandier* 622; Cerro de los Baños in valley of Mexico, *Bourgeau* 441; in silva de la Desierta Vieja, *Bourgeau* 1159; San Luis Potosí, *Virlet* 1337; Orizaba, *Schaffner* 36; Cañon de las Miñas et Victoria, *Karwinsky*; Tehuacán, *Liebmann* 361.

RANGE: Southwestern United States and Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Arroyo San Lagaro, *Brandege* in 1902.

SONORA: Guaymas, *Palmer* 191 in 1887. Hermosillo, rocky hill, *Hitchcock* 3607.

CHIHUAHUA: Chihuahua, shaded places, rocky hills, *Pringle* 381; along dry run, *Hitchcock* 7774. Sierra Madre, *Nelson* 6299.

DURANGO: Durango, dry ground, *Hitchcock* 7573; rocky hill, Iron Mountain, *Hitchcock* 7643; *Palmer* 716 in 1896. Torreón, rocky hill, *Hitchcock* 7546.

COAHUILA: Saltillo, *Palmer* 336 and 337 in 1904, 385 in 1898, 397 in 1904. Sabinas, *Nelson* 6820.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7461.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 957 in 1878; *Schaffner* 1044.

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7338, 7369.

GUANAJUATO: Irapuato, dry shrubby hill, *Hitchcock* 7427.

COLIMA: Manzanillo, along bluff, *Hitchcock* 7026.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Río Hondo, *Holway* 11, 3153. Federal District, *Rose* 3554; *Holway* 3040; *Hitchcock* 7836; *Pringle* 9578, 9579; *Orcutt* 4342.

PUEBLA: Atlixco, *Nelson* in 1893. Tehuacán, cactus hill, *Hitchcock* 6095. San Marcos, railway embankment, *Hitchcock* 6512. Puebla, *Nicolas* in 1909.

GUERRERO: Balsas, gravelly soil along railway, *Hitchcock* 6774; open woods on hill, *Hitchcock* 6786.

OAXACA: El Parián, dry banks, *Pringle* 4937. Oaxaca, Monte Albán, *Smith* 939; along hedge, *Hitchcock* 6105; depression in rocky hill, *Hitchcock* 6156. Between Tule and Oaxaca, in mud near ditch, *Hitchcock* 6178, 6184.

**6a. *Chaetochloa grisebachii ampla* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 21: 36. f. 21. 1900.**

Type locality, "New Mexico, Organ mountains," the type collected by Vasey in 1881.

RANGE: Southwestern United States to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Saltillo, sandy field, river bottom, *Hitchcock* 5626; weed in park, *Hitchcock* 5641.

DURANGO: Durango, near spring, *Palmer* 728 in 1896.

FEDERAL DISTRICT: Waste place, *Hitchcock* 5911; along track, *Hitchcock* 5925; lava beds, *Pringle* 6470; *Orcutt* 3697.

OAXACA: Valley of Oaxaca, *Conzatti & González* 344.

**7. *Chaetochloa macrostachya* (H. B. K.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 21: 29. f. 16. 1900.**

*Setaria macrostachya* H. B. K. Nov. Gen. & Sp. 1: 110. 1816.

Type locality, "in planitie montana Mexicana inter Salamanca et Zelaya."

RANGE: Northern Mexico to South America.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Hermosillo, meadow near river, *Hitchcock* 3590. Guaymas, *Palmer* 53 in 1887.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

DURANGO: Durango, *Palmer* 378½ and 872 in 1896; rocky hill, Iron Mountain, *Hitchcock* 7623.

COAHUILA: Torreón, among mesquite bushes, *Palmer* 505 in 1898.

NUEVO LEÓN: Monterey, hills, *Pringle* 1968; edge of field, *Hitchcock* 5542.

TEPIC: San Blas, *Nelson* 4341.

SAN LUIS POTOSÍ: Cárdenas, along irrigation ditch, *Hitchcock* 5729.

QUERÉTARO: Querétaro, field among agaves, *Hitchcock* 5808.

PUEBLA: Tehuacán, along track, *Hitchcock* 6047.

VERACRUZ: Mirador, *Liebmann* 362.

OAXACA: Oaxaca, bottom land of river, *Hitchcock* 6068. Tomellín, copses along railway, *Hitchcock* 6241.

8. *Chaetochloa setosa* (Swartz) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 39. 1897.

*Panicum setosum* Swartz, Prodr. Veg. Ind. Occ. 22. 1788.

Type locality, "Jamaica."

RANGE: Southwestern United States to West Indies and South America.

## HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Monterey, hills, *Pringle* 1968.

9. *Chaetochloa composita* (H. B. K.) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 39. 1897.

*Setaria composita* H. B. K. Nov. Gen. & Sp. 1: 111. 1816.

Type locality, "regione calidissima prope Cumana et Bordones, in Nova Andalusia."

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Ensenada, *Orcutt* in 1889. San Pablo Canyon, *Purpus* 227. La Paz, *Palmer* 125 in 1890. San José del Cabo, *Brandege* in 1890. Carmen Island, *Palmer* 857 in 1890.

SONORA: Guaymas, *Palmer* 340 in 1887. Alamos, *Rose, Standley & Russell* 13004.

CHIHUAHUA: Chihuahua, edge of field, *Hitchcock* 7775. Sabinal, *Nelson* 6368.

DURANGO: Torreón, along dry ditch, *Hitchcock* 7728. Tlahualilo, *Pittier* 471.

COAHUILA: Saltillo, along irrigation ditch, *Hitchcock* 5589, 5604, 5634; along fence rows, *Palmer* 378 in 1898. Parras, *Palmer* 1363 in 1890.

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5534.

ZACATECAS: Zacatecas, in gulch in dry, sterile hills, *Hitchcock* 7521. Concepción del Oro, *Palmer* 261 in 1904.

SAN LUIS POTOSÍ: San Luis Potosí, alfalfa field, *Hitchcock* 5665.

HIDALGO: Ixmiquilpan, limestone hillsides, *Rose, Painter & Rose* 8993.

PUEBLA: Tehuacán, hills east of city, *Rose, Painter & Rose* 10116.

10. *Chaetochloa gracilis* (H. B. K.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 21: 15. 1900.

*Setaria gracilis* H. B. K. Nov. Gen. & Sp. 1: 109. 1816.

Type locality, "inter Fusagasuga et Pandi \* \* \* (Regno Novogranatensi.)"

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, *Palmer* in 1885.

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5560.

JALISCO: Zapotlán, common in pine woods, hillside, *Hitchcock* 7239.

FEDERAL DISTRICT: Lava beds, *Pringle* 7171.

PUEBLA: Chalchicomula, rocky hill, *Hitchcock* 6278.

VERACRUZ: Córdoba, *Fink* 5.

OAXACA: Valley of Cuicatlán, mountain ridge, *Nelson* 1907.

11. *Chaetochloa imberbis* (Poir.) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 39. 1897.

*Panicum imberbe* Poir. in Lam. Encycl. Suppl. 4: 272. 1817.

Type locality, "In America septentrionale & Brasilia."

RANGE: Northeastern United States to West Indies and South America.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandegee* 15 in 1890; *Purpus* 325.

SONORA: Hermosillo, moist adobe soil, *Hitchcock* 3586; cultivated ground, *Hitchcock* 3587; sandy bed of river, *Hitchcock* 3618; along ditch, *Hitchcock* 3625; *Maltby* 241; valley of Río de Sonora, *Rose, Standley & Russell* 12496.

CHIHUAHUA: Sánchez, along railway, *Hitchcock* 7691.

SINALOA: Lodiago, river bottoms, inundated in rainy seasons, *Palmer* 1648 in 1891.

DURANGO: Durango, dry ground, *Hitchcock* 7593; *Palmer* 378, 381, 539 in 1896. Tejamén, *Palmer* 499 and 539 in 1906. Tepehuanes, *Palmer* 263 in 1906.

COAHUILA: Saltillo, rich bottom lands and gardens, *Palmer* 383 and 384 in 1898; along irrigation ditch, *Hitchcock* 5583, 5610, 5650. Jimulco Springs, *Pringle* 431.

NUEVO LEÓN: Monterey, along irrigation ditch, *Hitchcock* 5570.

TAMAULIPAS: Victoria, *Palmer* 393 and 556 in 1907. Tampico, *Palmer* 149 in 1910; among brush in low ground, *Hitchcock* 5797.

TEPIC: Santa Teresa, *Rose* 3417.

AGUASCALIENTES: Aguascalientes, weed, edge of field, *Hitchcock* 7455.

SAN LUIS POTOSÍ: Las Canóas, moist soil, *Hitchcock* 5761. San Luis Potosí, alfalfa field, *Hitchcock* 5669; *Schaffner* 149, 171. Cárdenas, moist soil, *Hitchcock* 5720; along railway, *Hitchcock* 5722.

JALISCO: San Nicolás, prairie, *Hitchcock* 7184. Zapotlán, railway right of way, *Hitchcock* 7128, 7142. Guadalajara, *Palmer* 246 and 293 in 1886. Colotlán, *Rose* 3607.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7401. Acámbaro, along railway, *Hitchcock* 6945; along road, *Hitchcock* 6953.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5821, 5849.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6712, 6726. Ixmiquilpan, *Rose, Painter & Rose* 9056. Between Pachuca and Real del Monte, *Rose, Painter & Rose* 8723.

COLIMA: Alzada, along railway, *Hitchcock* 7076; *Orcutt* 4624. Colima, moist places among thickets in fruit garden, *Palmer* 17 in 1897.

MICHOACÁN: Uruápan, in brush along railway, *Hitchcock* 6959; prairie along railway, *Hitchcock* 6986. Morelia, *Arsène* in 1909.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6898. Popo Park, open ground, *Hitchcock* 6016. Federal District, *Holway* 7, 3126, 3156; *Rose* 3556; along ditch, *Hitchcock* 5883, 5923; lava rock, *Hitchcock* 5944; lava beds, *Pringle* 6419, 11220; *Bourgeau* 231; *Orcutt* 3613, 3534.

PUEBLA: San Marcos, railway embankment, *Hitchcock* 6511. Tehuacán, along ditch, *Hitchcock* 6042. Xochimilco, *Nelson* in 1893. Chinantla, *Liebmann* 350. Acatzingo, *Nicolas* in 1909.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6320, 6327; open rocky hill, *Hitchcock* 6349, 6365, 6370; *Botteri* 157, 631, 673; *Nelson* 33. Córdoba, weed along track, *Hitchcock* 6398. Veracruz, sandy soil, *Hitchcock* 6573; sandy prairie, *Hitchcock* 6550. Jalapa, railway track, *Hitchcock* 6593, 6594, 6623; *Smith* 1547. Colipa, *Liebmann* 360. Sanborn, *Orcutt* 3237.

MORELOS: Valley of Cuantla, *Pringle* 9587. Cuernavaca, pasture, *Hitchcock* 6832. El Parque, *Orcutt* 3861.

GUERRERO: Iguala, *Rose, Painter & Rose* 9388.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

OAXACA: Oaxaca, along ditch, *Hitchcock* 6176; rocky hill, *Hitchcock* 6147, 6157. Valley of Oaxaca, *Conzatti & González* 342. Pluma, *Nelson* 2482. Las Sedas, *Smith* 935. Cuicatlán, *Nelson* 1652. Totontepec, *Nelson* 710. Tomellín, along ditch, *Hitchcock* 6210, 6223; *Rose, Painter & Rose* 10063. Without locality, *Galeotti* 5883.

CHIAPAS: Ocuilapa, table-land, *Nelson* 3023a. Turubula, *Nelson* 3336.

YUCATÁN: Izamal, *Gaumer* 756.

12. *Chaetochloa verticillata* (L.) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 39. 1897.

*Panicum verticillatum* L. Sp. Pl. ed. 2. 82. 1762.

Type locality, "in Europa australi & Oriente."

RANGE: Temperate and warmer parts of both hemispheres.

## HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Saltillo, weed in park, *Hitchcock* 5640.

JALISCO: Guadalajara, *Palmer* 484 in 1886.

GUANAJUATO: Irapuato, weed in yard, *Hitchcock* 7438.

QUERÉTARO: Querétaro, weed in field, *Hitchcock* 5806, 5807.

PUEBLA: Tehuacán, mud of ditch, *Hitchcock* 6054; weed in field, *Hitchcock* 6064; cactus hill, *Hitchcock* 6084½.

OAXACA: Oaxaca, weed in flower pot at hotel, *Hitchcock* 6118; Valley of Oaxaca, *Pringle* 4920.

13. *Chaetochloa salzmanniana* nom. nov.

*Panicum sphaerocarpum* Salzm.; *Steud. Syn. Pl. Glum.* 1: 51. 1854, not *Ell.* 1816.

Type locality, "Bahia," Brazil.

RANGE: Southern Mexico to Brazil.

## HERBARIUM SPECIMEN FROM MEXICO.

VERACRUZ: Córdoba, base of clay bluff, *Hitchcock* 6424.

47. *IXOPHORUS* Schlecht. *Linnaea* 31: 421. 1862.1. *Ixophorus unisetus* (Presl) Schlecht. *Linnaea* 31: 420, 747. 1862.

*Urochloa uniseta* Presl, *Rel. Haenk.* 1: 319. 1830.

*Ixophorus pringlei* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 6. pl. 2. 1897.

Type locality, "Mexico."

RANGE: Central western Mexico to Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14253.

SAN LUIS POTOSÍ: Rascón, *Purpus*, 5425.

JALISCO: Tequila, *Palmer* 372 in 1886. Valley of the Río Grande de Santiago, *Pringle* 2423, 2047.

COLIMA: Jala, common weed along railway, *Hitchcock* 7007. Alzada, along railway, *Hitchcock* 7070, 7091. Colima, low damp place, *Palmer* 141 in 1897, 1256 in 1891.

MORELOS: Cuernavaca, weed in garden, *Hitchcock* 6821; prostrate bunch in path, *Hitchcock* 6841. Valley of Cuantla, *Pringle* 8493. Trinenta, *Orcutt* 4407.

GUERRERO: Iguala, common weed in cornfield, *Hitchcock* 6695. Balsas, weed in moist soil along railway, *Hitchcock* 6805.

48. *PENNISETUM* Rich. in *Pers. Syn. Pl.* 1: 72. 1805.

## KEY TO THE SPECIES.

Involucral bristles about 4 cm. long; spikes oval..... 8. *P. villosum*.

Involucral bristles unequal, the longer not more than 2 cm. long; spikes cylindrical.

Spikelets 5 to 9 in each involucre ..... 7. *P. multiflorum*.

Spikelets solitary in each involucre.

Involucral bristles plumose ..... 6. *P. setosum*.

Involucral bristles not plumose.

Spikes 10 to 20 cm. long, the axis 1 to 3 mm. thick;  
one bristle longer and stouter than the others.

Shorter bristles few, scarcely exceeding the  
spikelets; spike stiff, the spikelets closely  
imbricated ..... 3. *P. crinitum*.

Shorter bristles numerous, about twice as long  
as the spikelet; spike more lax and loosely  
flowered ..... 5. *P. mexicanum*.

Spikes shorter, mostly less than 10 cm. long,  
rather lax, the axes slender, less than 1 mm.  
thick.

Spikes few to several; blades rarely over 1 cm.  
wide ..... 4. *P. pringlei*.

Spikes numerous; blades 3 to 5 cm. wide.

Bristles few, about as long as the spikelet,  
one elongated ..... 1. *P. tristachyum*.

Bristles numerous, all exceeding the  
spikelet ..... 2. *P. bambusiforme*.

**1. Pennisetum tristachyum** (H. B. K.) Spreng. Syst. Veg. 1: 302, 1825.

*Gymnothrix tristachya* H. B. K. Nov. Gen. & Sp. 1: 113, 1816.

Type locality, "prope Puembo, in humidis regni Quitensis."

RANGE: Southern Mexico to South America.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Zacuapan, open damp forests, *Purpus* 2894. Mirador, *Liebmann* 339.

Orizaba, *Botteri* 96, 631, 1209, 1214; *Seaton* 291; *Bourgeau* 2543; *Müller* 2066.

Córdoba, valley, *Bourgeau* 1664.

OAXACA: Cuicatlán, canyon, *Pringle* 5559.

**2. Pennisetum bambusiforme** (Fourn.) Hemsl. Ind. Kew. 2: 458, 1894.<sup>1</sup>

*Gymnothrix bambusiformis* Fourn. Mex. Pl. 2: 48, 1886.

Type locality, "in virgultis argillosis prope Mirador," the type specimen collected by Schaffner (no. 338).

RANGE: Mexico to Paraguay.

HERBARIUM SPECIMENS FROM MEXICO:

MICHOACÁN: Sierra Madre, *Langlassé* 849.

VERACRUZ: Mirador, *Liebmann* 338. Orizaba, *Botteri* 1214. Barranca of Metlac, rocky slopes, *Pringle* 6075.

OAXACA: Phuma, *Nelson* 2884. Oaxaca, *Galeotti* 5871.

**3. Pennisetum crinitum** (H. B. K.) Spreng. Syst. Veg. 1: 302, 1825.

*Gymnothrix crinita* H. B. K. Nov. Gen. & Sp. 1: 112, 1816.

Type locality, "in littore lacus Cuiseo, prope La Puerta de Andaracuas, et juxta S. Rosa, inter segetes, in regno Mexicano."

RANGE: Southern Mexico.

HERBARIUM SPECIMENS:

JALISCO: Río Blanco, *Palmer* 514 in 1886.

GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6936. Irapuato, moist sandy-clay plain, *Hitchcock* 7397.

<sup>1</sup> The combination is here credited to Hemsl. Biol. Centr. Amer. Bot. 3: 507, 1885, but the name is there a nomen nudum, being based on an unpublished name and without description.

## HERBARIUM SPECIMENS—Continued.

MICHOACÁN: Pátzcuaro, *Rose* 3629. Morelia, wet meadows, *Pringle* 4316; *Rose* 3593; *Arsène* in 1909.

MÉXICO: Lechería, low lands, *Pringle* 13251.

4. *Pennisetum pringlei* Leake, Zeitschr. Naturw. 79: 33. 1907.

RANGE: Pacific slope of Mexico.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Potrero Mountains, under ledges, *Pringle* 817.

OAXACA: Sierra de San Felipe, *Conzatti & González* 491; dry banks, *Pringle* 4962.

5. *Pennisetum mexicanum* (Fourn.) Hemsl. Ind. Kew. 2: 508. 1894.<sup>1</sup>

*Gymnothrix mexicana* Fourn. Mex. Pl. 2: 48. 1886.

Type locality, "Orizaba," the following specimens being cited: *Bourgeau* 3139, *Schaffner* 105, 174, *Thomas* in herb. *Buchinger*, *F. Müller* 2015, *Botteri* 143, 1486; an additional locality, Papantla (*Liebmann* 344), also cited.

RANGE: Eastern slope of Mexico.

## HERBARIUM SPECIMENS:

VERACRUZ: Orizaba, *Bourgeau* 3139; open rocky hill, *Hitchcock* 6356; *Smith* 625.

6. *Pennisetum setosum* (Swartz) Rich. in Pers. Syn. Pl. 1: 72. 1805.

*Cenchrus setosus* Swartz, Prodr. Veg. Ind. Occ. 26. 1788.

Type locality, "India occidentalis."

RANGE: Mexico and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, damp places, *Pringle* 1740. Tequila, hills, *Pringle* 4618. Río Blanco, *Palmer* 677 in 1886.

COLIMA: Colima, *Palmer* 1269 in 1891. Alzada, rocky hillside, *Hitchcock* 7080; along railway, *Hitchcock* 7094.

VERACRUZ: Zacuapan, rocky hills, *Purpus* 2154. Jalapa, along railway, *Hitchcock* 6544. Orizaba, roadside ditch, *Hitchcock* 6343.

MORELOS: Cuernavaca, *Pringle* 11241.

GUERRERO: Between Petatlán and Chilapa, *Nelson* 2149. Acapulco, *Palmer* 433 in 1895.

OAXACA: Trapiche de la Concepción, *Liebmann* 336, 342. Oaxaca, along ditch, *Hitchcock* 6187.

CHIAPAS: Tuxtla, *Nelson* 3090.

7. *Pennisetum multiflorum* Fourn. Mex. Pl. 2: 49. 1886.

Type locality, Mexico, Fournier citing no localities or specimens.

RANGE: Pacific slope of Mexico and Costa Rica.

## HERBARIUM SPECIMENS:

SONORA: Alamos, *Rose*, *Standley & Russell* 12866.

JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7342, 7364; wet canyons, *Pringle* 2044; wet slopes of barranca, *Pringle* 3849, 11327; *Holway* 3 in 1896.

GUERRERO: Balsas, rocky hill, *Hitchcock* 6791. Acapulco, *Palmer* 75 in 1895.

OAXACA: Oaxaca, *Galeotti* 5880. San Agustín, *Liebmann* 341.

CHIAPAS: Roadside between San Ricardo and Ocozocuatla, *Nelson* 2985; tableland about Ocuilapa, *Nelson* 3065.

8. *Pennisetum villosum* R. Br. in Fres. Mus. Senckenb. Abh. 2: 134. 1837.

Type locality, Abyssinia.

RANGE: Warmer parts of the Old World, sparingly introduced in California and Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

SINALOA: Topolobampo, near water ditch, *Palmer* 231 in 1897.

<sup>1</sup> See footnote, p. 181.

49. *CENCHRUS* L. Sp. Pl. 1049. 1753.

SAND BUR. BUR GRASS.

## KEY TO THE SPECIES.

- Bristles of bur barbed forwards..... 2. *C. pallidus*.  
 Bristles of bur barbed backwards.  
 Plants perennial; culms woody; spikes long and slender. .... 1. *C. myosuroides*.  
 Plants annual.  
 Bristles at base of bur numerous.  
 Burs loosely arranged, rather few; spikes usually less than 5 cm. long..... 5. *C. insularis*.  
 Burs numerous, compactly arranged; spikes often more than 5 cm. long.  
 Burs about 4 mm. wide; spikes narrowed at the summit..... 3. *C. viridis*.  
 Burs about 6 mm. wide; spikes obtuse at the summit..... 4. *C. echinatus*.  
 Bristles at base of bur few or none.  
 Burs large, 1 to 1.5 cm. wide, the spines often exceeding 1 cm. in length..... 8. *C. palmeri*.  
 Burs medium size or small.  
 Burs medium size, loosely arranged; spines slender..... 7. *C. carolinianus*.  
 Burs small, compactly arranged, the spikes slender; spines short, usually less than 3 mm. long..... 6. *C. pauciflorus*.

1. *Cenchrus myosuroides* H. B. K. Nov. Gen. & Sp. 1: 115. pl. 35. 1816.

Type locality, "in arenosis, apricis insulae Cayo Flamingo prope portum Cubensem, Batabano," the species also recorded from Pativilca, Peru.

RANGE: Florida, Mexico, and the West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Comondú, *Brandege* in 1889.

SONORA: Hermosillo, bank of ditch, *Hitchcock* 3611; along irrigating ditch, *Rose*, *Standley & Russell* 12484. Guaymas, *Palmer* 327 in 1887. Yaqui River, *Palmer* 10 in 1869.

CHIHUAHUA: Chihuahua, watercourses, *Wilkinson* in 1885; wet places, *Pringle* 429.

DURANGO: Durango, along a garden wall and beside water ditches, *Palmer* 868 in 1896; prairie along creek, *Hitchcock* 7614. Torreón, along ditch, *Hitchcock* 7560.

COAHUILA: Saltillo, dry mesa, *Hitchcock* 5647.

ZACATECAS: San Juan Capistrano, *Rose* 2453.

AGUASCALIENTES: Aguascalientes, weed, edge of field, *Hitchcock* 7450.

JALISCO: Guadalajara, *Palmer* 765 in 1886.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7402.

HIDALGO: Dublán, valley, *Pringle* 9598.

COLIMA: Revillagigedo Islands, San Benedicto Island, *Anthony* 370; *Barkeslew* 171; Socorro Island, *Barkeslew* 202.

MICHOACÁN: El Tibor, prairies, *Langlassé* 290.

PUEBLA: Tehuacán, old field, *Hitchcock* 6035.

OAXACA: Oaxaca, along ditch, *Hitchcock* 6131. Tomellín, rocky bank by river, *Hitchcock* 6199.



**2. *Cenchrus pallidus* Fourn. Mex. Pl. 2: 50. 1886.**

Type locality, "In locis ruderalis, Hacienda de Santa Cruz pr. Tehuantepec in prov. Oajacensi," the type specimen collected by Liebmann (no. 465).

RANGE: Southern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

COLIMA: Jala, along railway, *Hitchcock* 7050.

MORELOS: Yautepec, lava fields, *Pringle* 11219.

GUERRERO: Balsas, low moist ground, edge of field, *Hitchcock* 7840. Iguala, by streams, *Pringle* 8394.

OAXACA: Hacienda de Santa Cruz, *Liebmann* 465. Tomellín, along track, *Hitchcock* 6217. Oaxaca, *Galeotti* 5880.

**3. *Cenchrus viridis* Spreng. Syst. Veg. 1: 301. 1825.**

Type locality, "Guadalupa."

RANGE: Florida to Central America and the West Indies.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, *Palmer* 155 in 1910.

COLIMA: Jala, along railway, *Hitchcock* 7008. Manzanillo, *Palmer* 1086 in 1890; base of rocky cliff near seashore, *Hitchcock* 7043. Paso del Río, *Emrick* 6.

PUEBLA: Puebla, *Nicolas* in 1908.

VERACRUZ: Veracruz, low place in sandy prairie, *Hitchcock* 6579. Orizaba, *Seaton* 51. Sanborn, *Orcutt* 3074.

OAXACA: Cuicatlán, *Nelson* 1653.

TABASCO: Without locality, *Rovirosa* 477.

YUCATÁN: Mérida, *Schott* 498. Progreso, *Millsbaugh* 1682.

**4. *Cenchrus echinatus* L. Sp. Pl. 1050. 1753.**

Type locality given as "In Jamaica [et] Curassao," the type specimen probably from the first-named island.

RANGE: Warmer parts of America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Comondú, *Brandege* in 1889.

SONORA: Guaymas, *Palmer* in 1887. Alamos, *Rose, Standley & Russell* 13029.

Hermosillo, valley of Río de Sonora, *Rose, Standley & Russell* 12495; in meadow along ditch, *Hitchcock* 3602.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 22 in 1885.

SINALOA: Mazatlán, dry hill, *Rose, Standley & Russell* 13674. Rosario, *Rose* 3110.

DURANGO: Durango, dry ground, *Hitchcock* 7607; in graveyard and in mesquite bottoms, *Palmer* 880 in 1896. Torreón, weed in field, *Hitchcock* 7558.

COAHUILA: Monclova, *Palmer* in 1880.

NUEVO LEÓN: Monterrey, moist sand along river, *Hitchcock* 5556.

TAMAULIPAS: Tampico, grass land along railway, *Hitchcock* 5786. Victoria, *Palmer* 83 in 1907.

AGUASCALIENTES: Aguascalientes, weed, edge of field, *Hitchcock* 7439; weed in cornfield, *Hitchcock* 7490.

SAN LUIS POTOSÍ: Cárdenas, irrigated field, *Hitchcock* 5751.

JALISCO: Guadalajara, prairie near San Pedro, *Hitchcock* 7293. San Nicolás, cornfield, *Hitchcock* 7219. Zapotlán, railway right of way, *Hitchcock* 7124.

La Junta, along railway, *Hitchcock* 7001. Colotlán, *Rose* 3603. Chapala, *Rose & Painter* 7623.

GUANAJUATO: Irapuato, moist, sandy-clay plain, *Hitchcock* 7405.

QUÉRETARO: Querétaro, weed in park, *Hitchcock* 5841.

COLIMA: Alzada, along railway, *Hitchcock* 7100. Manzanillo, base of rocky cliff near shore, *Hitchcock* 7043½.

MICHOACÁN: Uruápan, along railway, *Hitchcock* 6988.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

PUEBLA: Tehuacán, bottom-land field, *Hitchcock* 6076.

VERACRUZ: Orizaba, *Bourgeau* 3140. Veracruz, sandy prairie, *Hitchcock* 6556; sandy beach, *Hitchcock* 6571. Jalapa, along railway, *Hitchcock* 6629. Mirador, *Ross* 644.

MORELOS: Cuernavaca, weed along railway, *Hitchcock* 6876; weed in garden, *Hitchcock* 6852.

GUERRERO: Santa Fé, along railway, *Hitchcock* 6690. Balsas, open woods on hill, *Hitchcock* 6787.

OAXACA: Oaxaca, sandy soil along railway, *Hitchcock* 6127. Tomellín, rocky bank by river, *Hitchcock* 6198; weed in cornfield, *Hitchcock* 6247.

YUCATÁN: Progreso, *Millspaugh* 1698.

5. *Cenchrus insularis* Scribn. in Millsp. Field Mus. Bot. 2: 26. 1900.

Type locality, "Pajaros Island, Alacrán Shoals," the type specimen collected by Millspaugh (Pl. Uto. no. 1759).

RANGE: Pacific slope of Mexico and off the coast of Yucatán.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Purpus* 320.

SONORA: Yaqui River, *Palmer* 12 in 1869. Alamos, in an orchard, *Rose, Standley & Russell* 13019.

SINALOA: Topolobampo, *Rose, Standley & Russell* 13280. Fuerte, in river valley, *Rose, Standley & Russell* 13561.

JALISCO: Guadalajara, *Safford* 1390.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5861.

YUCATÁN: Alacrán Shoals, *Millspaugh* Pl. Uto. 1759.

6. *Cenchrus pauciflorus* Benth. Bot. Voy. Sulph. 56. 1840.

Type locality, "Bay of Magdalena."

RANGE: Western Mexico.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: San José del Cabo, *Brandege* in 1890. Boca de las Animas, *Brandege* in 1889.

COLIMA: Armería, along railway, *Hitchcock* 7047.

7. *Cenchrus carolinianus* Walt. Fl. Carol. 79. 1788.

Type locality, presumably South Carolina.

RANGE: Northern United States to Central America and the West Indies.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Agueda, *Palmer* 220 in 1890.

SONORA: Hermosillo, rocky border, dry bed of Sonora River, *Chase* 5500; by ditch in meadow, *Hitchcock* 3578. Sierra de Alamos, *Rose, Standley & Russell* 12837. Guaymas, island in harbor, *Rose, Standley & Russell* 15019; *Palmer* 168 and 349 in 1887.

CHIHUAHUA: Chihuahua, weed in old field, *Hitchcock* 7788. Casas Grandes, *Nelson* 6327.

SINALOA: Mazatlán, dry hill, *Rose, Standley & Russell* 13794.

DURANGO: Durango, west slope of Iron Mountain, *Palmer* 196 in 1896; dry ground, *Hitchcock* 7575. Torreón, weed in field, *Hitchcock* 7559.

COAHUILA: Jaral, *Schumann* 1730. Saltillo, sandy field, river bottom, *Hitchcock* 5628.

NUEVO LEÓN: Monterrey, stony bed of river, *Hitchcock* 5523.

TAMAULIPAS: Victoria, *Palmer* 396 in 1907. Tampico, *Palmer* 156 in 1910; sand dunes, *Hitchcock* 5792.

TEPIC: Acaponeta, along the river, *Rose, Standley & Russell* 14407.

AGUASCALIENTES: Aguascalientes, weed along road, *Hitchcock* 7440; sterile rocky hill, *Hitchcock* 7470.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 167; irrigated field, *Hitchcock* 5699; field, *Hitchcock* 5654. Cárdenas, along railway track, *Hitchcock* 5733.

JALISCO: Guadalajara, prairie near San Pedro, *Hitchcock* 7292. Tecomán, *Orcutt* 4446.

QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5825.

HIDALGO: Tula, limestone hills, *Rose, Painter & Rose* 8361.

COLIMA: Manzanillo, along railway, *Hitchcock* 7049. Armería, sandy soil, *Hitchcock* 7023.

MÉXICO: Popo Park, *Hitchcock* 6688½; open ground, *Hitchcock* 6025.

PUEBLA: Tehuacán, *Seler* 7; along railway, *Hitchcock* 6045; bottom land of river, *Hitchcock* 6068½. San Cristo, *Nicolas* in 1909.

VERACRUZ: Veracruz, sandy beach, *Hitchcock* 6575. Orizaba, roadside ditch, *Hitchcock* 6339.

GUERRERO: Acapulco, *Palmer* 290 in 1894.

OAXACA: Tomellín, rocky soil, *Hitchcock* 6204; along railway track, *Hitchcock* 6218, 6249. Oaxaca, sandy soil along railway, *Hitchcock* 6128. Valley of Oaxaca, *Nelson* 1291. Santa Catarina Canyon, *Pringle & Conzatti* 274.

QUINTANA ROO: Cozumel, east shore, *Millsbaugh* 1607.

**8. *Cenchrus palmeri*** Vasey in T. S. Brandeg. Proc. Calif. Acad. II. 2: 211. 1889.

Type locality, "Guaymas, Mex.," the type specimen collected by Palmer in 1887 (no. 689).

RANGE: Northwestern Mexico.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: San José del Cabo, *Purpus* 519. Magdalena Bay, *Brandeg* in 1889. Carmen Island, *Palmer* 14 in 1870, 865 in 1890. Calmallí, *Orcutt* in 1899.

SONORA: Guaymas, *Palmer* 271 and 689 in 1887. Adair Bay, sand hills, *Sykes* 58.

**50. STENOTAPHRUM** Trin. Fund. Agrost. 175. 1820.

1. *Stenotaphrum secundatum* (Walt.) Kuntze, Rev. Gen. Pl. 2: 794. 1891.

ST. AUGUSTINE GRASS.

*Ischaemum secundatum* Walt. Fl. Carol. 249. 1788.

Type locality, presumably South Carolina.

RANGE: Southern United States and West Indies to South America.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Veracruz, *Müller* 2180.

**51. OLYRA** L. Syst. Nat. ed. 10. 1261. 1759.

1. *Olyra latifolia* L. Syst. Nat. ed. 10. 1261. 1759.

Type locality, Jamaica, the type specimen collected by Browne.

RANGE: Mexico and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Micos, *Pringle* 3795.

MICHOACÁN: La Correa, *Langlassé* 373.

VERACRUZ: Jicaltepec, *Liebmann* 259. Isthmus of Tehuantepec, *Ross* 1100. Misantla, *Purpus* 5976.

OAXACA: Lacoba, *Liebmann* 264.

TABASCO: Atasta, Arroyo de Tapijuluya, *Rovirosa* 43.

52. **LITHACHNE** Beauv. Ess. Agrost. 135. *pl. 24. f. 11.* 1812.

1. **Lithachne pauciflora** (Swartz) Beauv.; Poir. Dict. Sci. Nat. 27: 60. 1823.

*Olyra pauciflora* Swartz, Prodr. Veg. Ind. Occ. 21. 1788.

Type locality, "Jamaica."

RANGE: Mexico, Central America, and West Indies.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Colipa, *Liebmann* 269. Córdoba, *Hitchcock* 6447. Zacuapan, *Purpus* 6221.

53. **RADDIA** Bertol. Opusc. Sci. Bologna 3: 410. 1819.

1. **Raddia strictiflora** (Fourn.) Chase, Proc. Biol. Soc. Washington 21: 185. 1908.

*Strephium strictiflorum* Fourn. Bull. Soc. Bot. Belg. 15: 465. 1876.

Type locality, "Arroyo Sello," Mexico, the type specimen collected by Karwinsky (no. 1473).

RANGE: Gulf region of Mexico.

HERBARIUM SPECIMENS:

VERACRUZ: Lacoba, *Liebmann* 264 in part. Hacienda de Jovo, *Liebmann* 267.

54. **PHARUS** L. Syst. Nat. ed. 10. 1269. 1759.

KEY TO THE SPECIES.

- Culms erect..... 1. *P. glaber*.  
 Culms creeping at base and rooting at the nodes ..... 2. *P. parvifolius*.

1. **Pharus glaber** H. B. K. Nov. Gen. & Sp. 1: 196. 1816.

Type locality, "in temperatis, opacatis Provinciae Novae Andalusiae, prope coenobium Caripense."

RANGE: Mexico and West Indies to South America.

HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: Barranca of Las Canoás, rich woods, *Pringle* 3990.

VERACRUZ: Mirador, *Liebmann* 258. Zacuapan, *Purpus* 6214.

2. **Pharus parvifolius** Nash, Bull. Torrey Club 35: 301. 1908.

Type locality, "Les Roches, a few miles to the west of Plaisance, Haiti," the type specimen collected by Nash and Taylor (no. 1482).

RANGE: Veracruz, West Indies, and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Sanborn, *Orcutt* 3236.

55. **LUZIOLA** Gmel. Syst. Nat. 636. 1791.

1. **Luziola peruviana** Gmel. Syst. Nat. 637. 1791.

Type locality, Peru.

RANGE: Mexico to Uruguay.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, shallow water, *Pringle* 3867.

MÉXICO: Tlalnepantla, wet places, *Pringle* 11227.

TABASCO: Bank of González River, *Rovirosa* 555.

56. **HOMALOCENCHRUS** Mieg. Act. Helv. Phys.-Math. 4: 307. 1760.

KEY TO THE SPECIES.

- Panicle contracted, the branches ascending, spikelet-bearing from near the base..... 1. *H. hexandrus*.  
 Panicle open, the branches slender, spreading, 10 cm. or more long, naked below.

- Ligule short, about 1 mm. long..... 2. *H. grandiflorus*.  
 Ligule conspicuous, as much as 1 cm. long ..... 3. *H. ligularis*.

1. *Homalocenchrus hexandrus* (Swartz) Kuntze, Rev. Gen. Pl. 2: 777. 1891.

*Leersia hexandra* Swartz, Prodr. Veg. Ind. Occ. 21. 1788.

Type locality, "Jamaica."

RANGE: Southern United States, Mexico, and West Indies to South America.

HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, in pond, *Hitchcock* 7570; gravel of dry creek bed, *Hitchcock* 7612; *Palmer* 195 in 1896.

JALISCO: Guadalajara, *Palmer* 244 in 1886. Orozco, border of large pond, *Hitchcock* 7383.

GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6929.

MICHOACÁN: Lake Pátzcuaro, shallows, *Pringle* 3330.

MÉXICO: Tlalnepantla, in shallow water, *Pringle* 11226.

FEDERAL DISTRICT: Azcapotzalco, water of ditch, *Hitchcock* 5922. Churubusco, *Orcutt* 4279.

PUEBLA: Puebla, *Nicolas* in 1908 and 1910.

VERACRUZ: Córdoba, in water along railway, *Hitchcock* 6432.

MOBELOS: Cuernavaca, ditch, *Hitchcock* 6847.

OAXACA: Oaxaca, water of ditch, *Hitchcock* 6174.

TABASCO: Ataata, *Rovirosa* 648.

2. *Homalocenchrus grandiflorus* (Doell).

*Oryza monandra* var. *grandiflora* Doell in Mart. Fl. Bras. 2<sup>2</sup>: 9. 1871.

Type locality, "ad Caldas in prov. Minarum," Brazil, the type specimen collected by Regnall (no. III. 1402).

RANGE: Veracruz to South America.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Mirador, *Liebmann* 256. Córdoba, shady bank, *Hitchcock* 6480.

3. *Homalocenchrus ligularis* (Trin.) Kuntze, Rev. Gen. Pl. 2: 777. 1891.

*Leersia ligularis* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 168. 1840.

Type locality, "Mexico, prope Jalapam, in sylvis montis Macultepec," the type specimen collected by Schiede.

RANGE: Veracruz.

HERBARIUM SPECIMENS:

VERACRUZ: Jalapa, rich soil along railway through timber, *Hitchcock* 6619. Orizaba, open rocky hill, *Hitchcock* 6378; in woods near top of rocky hill, *Hitchcock* 6382.

57. *PHALARIS* L. Sp. Pl. 54. 1753.

KEY TO THE SPECIES.

- Glumes narrowly winged; panicle oblong..... 1. *P. caroliniana*.  
 Glumes broadly winged; panicle ovate or ovate-oblong.  
 Sterile lemma solitary; fertile lemma 3 mm. long..... 2. *P. minor*.  
 Sterile lemmas in pairs; fertile lemma 5 to 6 mm. long..... 3. *P. canariensis*.

1. *Phalaris caroliniana* Walt. Fl. Carol. 74. 1788.

Type locality, presumably South Carolina.

RANGE: Southern United States to northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Magdalena, *Rose, Standley & Rose* 15078.

CHIHUAHUA: Chihuahua, *Palmer* 32 in 1908.

2. *Phalaris minor* Retz. Obs. Bot. 3: 8. 1783.

Type locality, East Indies, particular locality not given.

RANGE: Temperate and warmer regions of the Old World, adventive from northern United States to Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

MÉXICO: Tlalnepantla, wet meadow, *Rose, Painter & Rose* 8384. Federal District, Tacubaya, *Bourgeau* 221.

3. *Phalaris canariensis* L. Sp. Pl. 54. 1753.

CANARY GRASS.

Type locality, "Canariis."

RANGE: Warmer parts of the Old World, introduced in the Western Hemisphere.

HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Rosario, *Rose* in 1897.

NUEVO LEÓN: Monterey, fields, *Dodge* in 1891.

FEDERAL DISTRICT: San Angel, *Orcutt* 3695.

### 58. SAVASTANA Schrank, Baier. Fl. 1: 100, 337. 1789.

1. *Savastana mexicana* (Rupr.) Beal, Grasses N. Amer. 2: 187. 1896.

*Ataxia mexicana* Rupr.; Fourn. Mex. Pl. 2: 71. 1886.

Type locality, "Cerro San Felipe," Oaxaca, the type specimen collected by Galeotti (no. 5756).

RANGE: Known only from the type locality.

HERBARIUM SPECIMENS:

OAXACA: Sierra de San Felipe, dry ridges under pines, *Pringle* 4700; *Smith* 940; *Conzatti & González* 420. Summit of Zempoaltepec, *Nelson* 624.

### 59. ARISTIDA L. Sp. Pl. 82. 1753.

#### KEY TO THE SPECIES.

Lateral awns short or none.

Plants annual; awn not twisted, flexuous; branchlets sparsely long-pilose . . . . . 1. *A. jorullensis*.

Plants perennial.

    Awns twisted at neck . . . . . 2. *A. schiedeana*.

    Awns not twisted.

        Awns recurved . . . . . 3. *A. purpusiana*.

        Awns straight or flexuous . . . . . 4. *A. scabra*.

Lateral awns at least half as long as the central one.

    Neck of fruit jointed at base, long and slender, twisted.

        Plants perennial; glumes unequal, awnless . . . . . 6. *A. californica*.

        Plants annual; glumes equal, awn-pointed . . . . . 5. *A. tuberculosa*.

    Neck of fruit not jointed.

        Plants annual, mostly low and spreading; panicle narrow and rather dense . . . . . 7. *A. bromoides*.

        Plants perennial.

            Culms and sheaths lanate-pubescent . . . . . 8. *A. lanuginosa*.

            Culms glabrous.

                Neck of awns twisted.

                    Branches of panicle long, naked below.

                        Panicle branches stiffly divergent; blades involute, mostly less than 10 cm. long; culms 20 to 40 cm. high . . . . . 9. *A. palmeri*.

                        Panicle branches more or less flexuous; blades elongated, flat below, involute at tip; culms often as much as 1 meter high . . . . . 10. *A. longiramea*.

Branches of panicle short, erect, some flower-bearing branchlets near the base.

Blades flat . . . . . 11. *A. spadicea*.

Blades involute . . . . . 12. *A. arizonica*.

Neck of awns not twisted.

Panicle open, the branches divaricately spreading or reflexed, naked below . . . 13. *A. divaricata*.

Panicle contracted, the main branches not stiffly spreading or divaricate.

First glume slightly longer than the second . . . . . 14. *A. liebmanni*.

First glume shorter than the second.

Panicle branches capillary, flexuous.

Panicle narrow, only the main branches flexuous; leaves mostly basal . . . . . 15. *A. berlandieri*.

Panicle rather diffuse, all the branches flexuous; leaves scattered . . . . . 16. *A. micrantha*.

Panicle branches short, stiff, ascending.

First glume slightly shorter than the second; panicle virgate; blades elongated, more or less scattered . . . . . 17. *A. wrightii*.

First glume about half as long as the second; panicle few-flowered, not virgate; leaves mostly basal.

Awns 4 to 6 cm. long . . . . . 18. *A. fendleriana*.

Awns about 10 cm. long . . . . . 19. *A. longiseta*.

**1. *Aristida jorullensis* Kunth, Rév. Gram. 1: 62. 1829.**

Type locality, "in planitie calidissima Mexicana, Playas de Jorulla."

RANGE: Pacific slope of Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

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

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

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

COLIMA: Manzanillo, *Palmer* 1084 in 1890. Tecomán, along railway, *Hitchcock* 7048. Alzada, gravelly soil, *Hitchcock* 7075. Colima, *Orcutt* 4569.

GUERRERO: Acapulco, *Palmer* 36 in 1894.

**2. *Aristida schiedeana* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 120. 1840.**

*Aristida orcuttiana* Vasey, Bull. Torrey Club 13: 27. 1886.

Type locality, "Mexico, prope Jalapam," the type specimen collected by Schiede (no. 909).

RANGE: Southwestern United States to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Chuparosa, *Brandegge* in 1897. Sierra de San Francisco, *Brandegge* in 1899. Hansen's ranch, *Orcutt* 507.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7671. Miñaca, rocky hill, *Hitchcock* 7763. Santa Eulalia Mountains, *Pringle* 386; *Wilkinson* 4, 343. Sierra Madre, *Nelson* 6496a.
- DURANGO: Durango, rocky hill, *Hitchcock* 7588.
- ZACATECAS: Plateado; *Rose* 2793.
- JALISCO: Río Blanco, *Palmer* 769 and 769a in 1886.
- HIDALGO: Pachuca, rocky hill, *Hitchcock* 6752.
- MICHOACÁN: Uruápan, prairie, *Hitchcock* 6975.
- MÉXICO: Popo Park, edge of woods, *Hitchcock* 5971. Federal District, *Orcutt* 3732.
- PUEBLA: Esperanza, rocky hill, *Hitchcock* 6480. Cerro de Chicamole, *Purpus* 4218. San Marcos, railway embankment, *Hitchcock* 6526, 6539. Chalchicomula, rocky hill, *Hitchcock* 6273, 6299. Without locality, *Purpus* 4221.
- MORELOS: Alarcón, *Orcutt* 3863.
- OAXACA: Sierra de San Felipe, *Conzatti & González* 439. Near Reyes, *Nelson* 1807.

3. *Aristida purpusiana* sp. nov.

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; 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 lower about 6 mm., the upper 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; lateral awns scarcely 1 mm. long; terminal awn about 8 mm. long, recurved by a semicircular bend.

Type in the U. S. National Herbarium, no. 470407, collected at San José del Cabo, Lower California, Mexico, in 1901, by C. A. Purpus (no. 394).

The only other specimen observed was collected at the same place in 1890 by T. S. Brandege.

4. *Aristida scabra* (H. B. K.) Kunth, Rév. Gram. 1: 62. 1829.

*Streptachne scabra* H. B. K. Nov. Gen. & Sp. 1: 124. pl. 40. 1816.

Type locality, "in frigidis montanis regni Mexicani juxta Toluca et Islahuaca."

RANGE: Southern United States, Mexico and West Indies to Panama.

## HERBARIUM SPECIMENS FROM MEXICO:

- LOWER CALIFORNIA: Benorama (Cape Region), *Brandegee* in 1899. San José del Cabo, *Brandegee* in 1890 and 1899. San Francisquito Mountains, *Brandegee* in 1890.
- SONORA: Alamos, *Palmer* 702 in 1890. Hermosillo, dry soil, *Hitchcock* 3537; meadow near river, *Hitchcock* 3596; rocky cliff, *Hitchcock* 3603. Guaymas, *Palmer* 55 and 268 in 1887; rocky lava hill, *Hitchcock* 3545; dry hills, *Rose, Standley & Russell* 12607.
- CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* in 1885. Southwestern Chihuahua, *Palmer* 115 and 161 in 1885. Rocky hills near Chihuahua, *Pringle* 387, *Hitchcock* 7789.
- SINALOA: Culiacán, *Rose, Standley & Russell* 14986. Fuerte, dry hills, *Rose, Standley & Russell* 13511. Lodiago, common in mountains, *Palmer* 1653 in 1891.
- DURANGO: Santiago Papasquiario, *Palmer* 472 in 1896.
- SAN LUIS POTOSÍ: Las Palmas, limestone hills, *Pringle* 3776.
- JALISCO: San Nicolás, sterile clay hill, *Hitchcock* 7209; Bolaños, *Rose* 3694.
- GUANAJUATO: Irapuato, dry shrubby hill, *Hitchcock* 7428.



## HERBARIUM SPECIMENS FROM MEXICO—Continued.

COLIMA: Manzanillo, *Palmer* 1091 in 1890; *Orcutt* 4463, rocky cliff, *Hitchcock* 7038. Alzada, *Orcutt* 4633.

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

VERACRUZ: Camarón, *Rose & Rose* 11453.

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

GUERRERO: Balsas, rocky hill, *Hitchcock* 6785; in gravel along railway, *Hitchcock* 6798.

OAXACA: Oaxaca, hills, *Pringle* 4857; rocky hill, *Hitchcock* 6137, 6142, 6151, 6161; side of sterile rocky hill among cactus, *Hitchcock* 6100. Tomellín, on rocks along track, *Hitchcock* 6219; rocky hill, *Hitchcock* 6203.

YUCATÁN: Izamal, *Gaumer* 1024.

5. *Aristida tuberculosa* Nutt. Gen. Pl. 1: 57. 1818.

Type locality, "in the sandy pine forests of Georgia, a few miles from Augusta."

RANGE: Throughout eastern United States, and in Puebla, Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

PUEBLA: Puebla, dry hills, *Nicolas* in 1908.

6. *Aristida californica* Thurb. in S. Wats. Bot. Calif. 2: 289. 1880.

Type locality, California, the original specimens cited being "Colorado Desert (*Schott*); Fort Mohave, *Cooper*."

RANGE: Southern California and Arizona and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Los Angeles Bay, *Palmer* 501 in 1887. Socorro, *Orcutt* 1443, 1444. San José del Cabo, *Brandege* in 1889, in 1890, in 1893; *Purpus* 311, Lagoon Head, *Palmer* 654 in 1889. Santo Domingo, *Orcutt* in 1899. Calmallí, plains, *Purpus* 63; *Orcutt* in 1899. La Paz, *Palmer* 129 in 1890.

SONORA: Guaymas, *Palmer* 501 in 1887. MacDougal Pass, Pinacate Mountains. *MacDougal* 32.

7. *Aristida bromoides* H.B.K. Nov. Gen. & Sp. 1: 122. 1816.

Type locality, "in montanis regni Quitensis juxta Tambo de Guamote et Llanos de Tiocaxes."

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Calmallí, plains, *Purpus* 231; *Orcutt* in 1899. Carmen Island, *Palmer* 858 in 1890. Santa Gertrudis, *Orcutt* in 1899. Indian Wells, gravelly mesas, *Orcutt* 2033. Volcán de las Tres Vírgenes, *Orcutt* in 1899. San José del Cabo, *Brandege* in 1890. San Julio, *Brandege* in 1889. Sierra de San Francisquito, *Brandege* in 1899. La Paz, *Palmer* 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 Rosalía, *Palmer* 270 in 1890. Signal Mountain, *Schoenfeldt* 2951.

SONORA: Guadalupe Canyon, *Merton* 2033. Yaqui River, *Palmer* 2 in 1869. Alamos, along an arroyo, *Rose, Standley & Russell* 12699. Guaymas, *Palmer* 273 in 1890, 66, 503, and 504 in 1887; rocky soil, *Hitchcock* 3555; *Maltby* 197. Hermosillo, dry soil, *Hitchcock* 3540; meadow near river, *Hitchcock* 3589. Llano, along railway, *Hitchcock* 3529. Quitovaquito, *MacDougal* in 1907.

CHIHUAHUA: Chihuahua, rocky hills, *Pringle* 390; *Hitchcock* 7796. Miñaca, rocky hill by dry run, *Hitchcock* 7755. Sierra en Media, *Nelson* 6466. Between Casas Grandes and Sabinal, *Nelson* 6369.

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

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- DURANGO:** Durango, common on hillsides and plains, especially among ant hills, *Palmer* 535 in 1896; among mesquite bushes, *Palmer* 767 in 1896; along road, *Hitchcock* 7581; dry ground, *Hitchcock* 7602. Tlahualilo, *Pittier* 469. Torreón, *Holway* 16½; rocky hill, *Hitchcock* 7544.
- HIDALGO:** Dublán, *Pringle* 9597. Pachuca, rocky hill, *Hitchcock* 6727. Telles, *Orcutt* 4130.
- FEDERAL DISTRICT:** Pedregal, lava rock, *Hitchcock* 5937; dry soil, *Pringle* 6227; *Schaffner* 164; *Rose & Painter* in 1903.
- PUEBLA:** Tehuacán, along railway, *Hitchcock* 6048½; edge of field in dry ditch, *Hitchcock* 6075.
- MORELOS:** Cuernavaca, along stone wall, *Hitchcock* 6865.
- OAXACA:** Oaxaca, side of sterile rocky hill, among cactus, *Hitchcock* 6100½; rocky hill, *Hitchcock* 6138; edge of field, *Hitchcock* 6165. Cuicatlán, *Nelson* 1654. Tomellín, *Rose, Painter & Rose* 10086; rocky bank, *Hitchcock* 6194. Las Sedas, *Smith* 918, 931.
- COAHUILA:** Saltillo, *Palmer* 333 in 1904; sandy field, river bottom, *Hitchcock* 5632; cultivated lands, *Palmer* 388 in 1898. Parras, *Palmer* 1352 in 1880.
- NUEVO LEÓN:** Monterey, edge of field, *Hitchcock* 5526½.
- ZACATECAS:** Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7498, 7511. Plateado, *Rose* 2703.
- AGUASCALIENTES:** Aguascalientes, weed, edge of field, *Hitchcock* 7447; sterile rocky hill, *Hitchcock* 7478.
- SAN LUIS POTOSÍ:** San Luis Potosí, *Schaffner* 165; edge of field, *Hitchcock* 5674, 5710.
- JALISCO:** Guadalajara, on roof of hotel, *Hitchcock* 7264; prairie, by cornfield near San Pedro, *Hitchcock* 7266; *Palmer* 474 in 1886. Río Blanco, *Palmer* 501, 501a in 1886. Zapotlán, railway right of way, *Hitchcock* 7116. San Nicolás, prairie, *Hitchcock* 7191. Chapala, *Rose* 3472, *Rose & Painter* 7624. Colotlán, *Rose* 2812.
- GUANAJUATO:** Irapuato, dry shrubby hill, *Hitchcock* 7429. Acámbaro, along railway, *Hitchcock* 6924, 6954.
- QUERÉTARO:** Querétaro, rocky hill, *Hitchcock* 5832.

**8. *Aristida lanuginosa* Scribn. sp. nov.**

Perennial; culms cespitose, about 1 meter high, 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; ligule a ciliate-lanate ring; 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 lower 6 to 7 mm. long, the upper about 1 mm. longer; lemma smooth below except the short-pilose callus, scabrous above, tapering into a scabrous, slightly twisted neck, the entire length, including the neck, about 11 mm.; awns subequal, somewhat spreading, the central one about 15 mm. long, the lateral about 12 mm. long.

Type in the U. S. National Herbarium, no. 691230, collected on "Hills near Guadalajara, Jalisco," Mexico, October 28, 1889, by C. G. Pringle (no. 2375). This species was distributed under this name but it had not been described.

RANGE: Pacific slope of Mexico.

## HERBARIUM SPECIMENS:

DURANGO: Durango, rocky hill, *Hitchcock* 7649.

## HERBARIUM SPECIMENS—Continued.

JALISCO: Guadalajara, hills, *Pringle* 2375; gravelly plains, *Pringle* 11734; dry open ground, along rim of Barranca de Oblatos, *Hitchcock* 7324.

MICHOACÁN: Morelia, *Arsène* in 1909.

9. *Aristida palmeri* Vasey, Bull. Torrey Club 10: 42. 1883.

Type locality, "Southern Arizona," the type specimen collected by Palmer in 1869.

RANGE: Southwestern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Catalina Mountains, *Orcutt* 1, 2.

CHIHUAHUA: Miñaca, mesa, *Hitchcock* 7754. Chihuahua, hills and plains, *Pringle* 388.

ZACATECAS: Hacienda de Cedros, foothills, *Lloyd* 195.

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6492.

10. *Aristida longiramea* Presl, Rel. Haenk. 1: 224. 1830.

Type locality, "Mexico," the particular locality not given.

RANGE: Throughout Mexico.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Chihuahua, rocky hills, *Pringle* 387.

TEPIC: Tepic, small bunches on grassy plains and banks of arroyos, *Palmer* 1916 in 1892.

JALISCO: Guadalajara, *Palmer* in 1885; plains of Guadalajara, *Pringle* 1810; prairie near San Pedro, *Hitchcock* 7274, 7275. San Nicolás, prairie, *Hitchcock* 7227; sterile hill, *Hitchcock* 7233. Río Blanco, *Palmer* 768a, 476, 516, 517, 520 in 1886. Zapotlán, railway right of way, *Hitchcock* 7115.

MICHOACÁN: Morelia, *Arsène* in 1909.

FEDERAL DISTRICT: *Pringle* 6493, 6544, 6549.

PUEBLA: Tochimilco, *Nelson* in 1893. Puebla, *Nicolas* in 1908 and 1909.

MORELOS: Cuernavaca, *Holway* 3020.

OAXACA: Las Sedas, *Smith* 918.

11. *Aristida spadicea* H. B. K. Nov. Gen. & Sp. 1: 123. 1816.

Type locality, "juxta Guanaxuato et Mina de Belgrade," the first locality cited, the species also found on the banks of the Orinoco and in inundated borders of Guayaquil River.

RANGE: Plateau of Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 5 in 1885. Miñaca, rocky hill, *Hitchcock* 7752, 7764. Sánchez, gravel flat, bottom of ravine, *Hitchcock* 7709, 7717.

JALISCO: Jalisco, *Palmer* in 1886.

FEDERAL DISTRICT: Pedregal, lava, *Hitchcock* 5935, 5960.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6139.

12. *Aristida arizonica* Vasey, Bull. Torrey Club 13: 27. 1886.

Type locality, "Arizona."

RANGE: Southwestern United States and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Mountains, *Pringle* 389.

NUEVO LEÓN: Monterey, rocky hill among shrubs, *Hitchcock* 5520.

13. *Aristida divaricata* Humb. & Bonpl. in Willd. Enum. Pl. 99. 1809.

Type locality, "Mexico."

RANGE: Southwestern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Catalina Mountains, *Orcutt* 1, 2.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- CHIHUAHUA: Miñaca, mesa, *Hitchcock* 7754. Chihuahua, hills and plains, *Pringle* 388.
- ZACATECAS: Hacienda de Cedros, foothills, *Lloyd* 195.
- PUEBLA: Esperanza, rocky hill, *Hitchcock* 6492.
- SONORA: Along railway 10 miles south of Nogales, *Hitchcock* 3635.
- CHIHUAHUA: Near White Water, *Mearns* 355. Sánchez, along railway, *Hitchcock* 7730. Chihuahua, rocky hill, *Hitchcock* 7785. Miñaca, along run, *Hitchcock* 7736; dry run, *Hitchcock* 7760, 7761.
- DURANGO: Durango, in shade on lower slopes of hills, *Palmer* 873 in 1896; dry ground, *Hitchcock* 7577; rocky hill, Iron Mountain, *Hitchcock* 7642.
- ZACATECAS: Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7517, 7518.
- AGUASCALIENTES: Aguascalientes, weed, edge of field, *Hitchcock* 7446, 7448.
- SAN LUIS POTOSÍ: San Luis Potosí edge of field, *Hitchcock* 5687; *Schaffner* 175.
- JALISCO: Río Blanco, *Palmer* 284 and 768 in 1886. Zapotlán, railway right of way, *Hitchcock* 7112, 7119, 7145. Guadalajara, prairie, *Hitchcock* 7280, 7299, 7308.
- HIDALGO: Pachuca, rocky hill, *Hitchcock* 6717.
- MÉXICO: Toluca, rocky hill, *Hitchcock* 6894. Popo Park, open ground, *Hitchcock* 6028. Federal District, *Pringle* 6408, 9576; along railway, *Hitchcock* 5907; *Orcutt* 3676.
- PUEBLA: San Marcos, railway embankment, *Hitchcock* 6515, 6536. Chalchicomula, along dike in field, *Hitchcock* 6289; rocky hill, *Hitchcock* 6303. Esperanza, rocky hill, *Hitchcock* 6481.
- VERACRUZ: Jalapa, along railway, *Hitchcock* 6545.
- OAXACA: Oaxaca, rocky hill, *Hitchcock* 6155; along road, *Hitchcock* 6106.

14. *Aristida liebmanni* Fourn. Mex. Pl. 2: 78. 1886.

Type locality, "Mirador," the type specimen collected by Liebmann (no. 662).

RANGE: Known only from the type collection.

15. *Aristida berlandieri* (Trin. & Rupr.).

*Aristida purpurea*  $\beta$  *berlandieri* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 107. 1842.

Type locality, "Texas pr. Bejar," the type specimen collected by Berlandier (no. 1777).

RANGE: Southwestern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

- COAHUILA: Saltillo, rocky hill, *Hitchcock* 5618; low places, *Palmer* 265 in 1898; mountains, *Palmer* 1351 in 1880; among rocks on hillside, *Palmer* 392 in 1898.
- NUEVO LEÓN: Monterey, along railway, *Hitchcock* 5566.
- SAN LUIS POTOSÍ: Cárdenas, prairie, *Hitchcock* 5724. Minas de San Rafael, *Purpus* 5010.
- PUEBLA: Tehuacán, dry tufa bluffs, *Pringle* 8556; cactus hill, *Hitchcock* 6084.

16. *Aristida micrantha* (Vasey) Nash in Small, Fl. Southeast. U. S. 117. 1903.

*Aristida purpurea* var. *micrantha* Vasey, Contr. U. S. Nat. Herb. 3: 47. 1892.

Type locality, "Western Texas."

RANGE: Southwestern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

- COAHUILA: Saltillo, rocky hill, *Hitchcock* 5616. Mountains west of Saltillo, *Palmer* 1351 in 1880.
- NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5526, 5567.
- TAMAULIPAS: Victoria, *Palmer* 429 in 1907.
- SAN LUIS POTOSÍ: Micos, rocky bluffs, *Pringle* 3790.
- YUCATÁN: Mérida, *Schott* 601.

17. *Aristida wrightii* Nash in Small, Fl. Southeast. U. S. 116. 1903.

Type locality, "Dallas, Texas," the type specimen collected by Reverchon (no. 1061).

RANGE: Southwestern United States to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6487. Tehuacán, limestone hills, *Pringle* 8592.

18. *Aristida fendleriana* Steud. Syn. Pl. Glum. 1: 420. 1854.

Type locality, New Mexico, the type specimen collected by Fendler (no. 973).

RANGE: Southwestern United States to central Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Topo, *Orcutt* 1146.

COAHUILA: Díaz, dry mesas, *Pringle* 9037.

19. *Aristida longiseta* Steud. Syn. Pl. Glum. 1: 420. 1854.

Type locality, New Mexico, the type specimen collected by Fendler (no. 978).

RANGE: Southwestern United States and northern Mexico.

HERBARIUM SPECIMEN FROM MEXICO:

CHIHUAHUA: Plains near Chihuahua, *Pringle* 473.

60. STIPA L. Sp. Pl. 78. 1753.

KEY TO THE SPECIES.

- Awn strongly plumose, bent once..... 1. *S. speciosa*.
- Awn not plumose, often scabrous or pubescent.
  - Lemma or base of awn long-pilose.
    - Fruit 3 mm. long, pilose at summit..... 15. *S. ichu*.
    - Fruit 7 mm. long, pilose all over.
      - Awn with 1 bend; plant about 0.5 meter high.... 2. *S. parishii*.
      - Awn with 2 bends; plant about 1 meter high..... 3. *S. coronata*.
  - Lemma more or less pubescent, but not long-pilose.
    - Fruit 3 mm. long; awn very slender, flexuous..... 16. *S. tenuisissima*.
    - Fruit more than 3 mm. long.
      - Glumes about 3 cm. long, subequal; lemma about 1.5 cm. long..... 4. *S. melanosperma*.
    - Glumes shorter.
      - Panicle open, the branches long and spreading.
        - Fruit short-pilose below, glabrous and punctulate-roughened above, with a constricted neck ciliate at summit.
          - Fruit 1 cm. long..... 5. *S. leucotricha*.
          - Fruit 5 mm. long..... 6. *S. trochlearis*.
        - Fruit short-pilose all over.
          - Mature fruit dark-colored, turgid, 8 mm. long, the hairs brown.... 8. *S. pringlei*.
          - Mature fruit light-colored, slender, 5 to 6 mm. long, the hairs white. 7. *S. eminens*.
      - Panicle narrow, the branches ascending or appressed.
        - Mature fruit dark-colored, turgid, the hairs brown.
          - Fruit 4 mm. long..... 9. *S. mucronata*.
          - Fruit 6 mm. long..... 10. *S. virescens*.

Mature fruit light-colored, slender, the hairs white.

Ligule about 5 mm. long, membranaceous..... 12. *S. editorum*.

Ligule short.

Ligule a dense ring of hairs..... 11. *S. clandestina*.

Ligule membranaceous or sometimes hairy at margins.

Fruit 5 mm. long; culms glabrous..... 14. *S. multinodis*.

Fruit 7 mm. long; culms puberulent below the nodes..... 13. *S. vaseyi*.

1. *Stipa speciosa* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5<sup>1</sup>: 45. 1842.

Type locality, "Chile," the type specimen collected by Cuming.

RANGE: California to Colorado and southward in arid regions of the Pacific slope to Chile.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Los Angeles Bay, *Palmer* 505 in 1887. Japa, *Orcutt* 1140.

2. *Stipa parishii* Vasey, Bot. Gaz. 7: 33. 1882.

Type locality, "San Bernardino Mountains," California, the type specimen collected by S. M. Parish.

RANGE: Western Nevada, southern and Lower California.

HERBARIUM SPECIMEN FROM MEXICO:

LOWER CALIFORNIA: Sierras Cantillas, *Orcutt* 1151.

3. *Stipa coronata* Thurb. in S. Wats. Bot. Calif. 2: 287. 1880.

Type locality, southwestern California, two specimens being cited: "Hills near Julian City, San Diego County (*Bolander*); near San Bernardino, *Parry & Lemmon*, n. 422 (1876)."

RANGE: Coast Ranges, California and Lower California.

HERBARIUM SPECIMEN FROM MEXICO:

LOWER CALIFORNIA: Nachognero Valley, *Schoenfeldt* 3441.

4. *Stipa melanosperma* Presl, Rel. Haenk. 1: 226. 1830.

Type locality, unknown to Presl.

RANGE: Except the type only known from the following.

HERBARIUM SPECIMEN:

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6488.

5. *Stipa leucotricha* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5<sup>1</sup>: 54. 1842.

Type locality, "Texas," the type specimen collected by Hooker.

RANGE: Southwestern United States to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Rio Grande Valley near Díaz, *Pringle* 8292.

ZACATECAS: Zacatecas, in gulches of dry sterile hill, *Hitchcock* 7495, 7522.

SAN LUIS POTOSÍ: Cárdenas, prairie, *Hitchcock* 5714.

MÉXICO: Santa Fé, *Bourgeau* 672. Barranca of Río Aqueducto, *Rose & Painter* 8636. Federal District, bank along ditch, *Hitchcock* 5918.

6. *Stipa trochlearis* Nees & Meyen, Nov. Act. Acad. Caes. Leop. Carol. 19: Suppl. 1: 151. 1843.

Type locality, Peru, two localities cited: "Ad Arequipam urbem Peruviae in campis siccis pedum 12000 altitud., et ad lacum Titicacam."

RANGE: Highlands of Mexico to western South America.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Parral, *Schumann* 1726.

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5545.

ZACATECAS: Zacatecas, rocky soil, *Purpus* in 1904; in gulch in dry sterile hills, *Hitchcock* 7503.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6744; sandy river bed, *Hitchcock* 6762, 6763.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6892. Federal District, open grassy ground, *Hitchcock* 5931; *Pringle* 6583.

PUEBLA: Esperanza, dry open ground, *Hitchcock* 6463.

7. *Stipa eminens* Cav. Icon. Pl. 5: 42. pl. 467. f. 1. 1799.

*Stipa flexuosa* Vasey, Bull. Torrey Club 15: 49. 1888.

Type locality, "prope oppidum mexicanum Chalma."

RANGE: Highlands of Mexico.

The species described in Flora of California<sup>1</sup> under the name *S. eminens* differs in having a very short ligule and somewhat longer awns, and may be a distinct species. This form is found also in Lower California on Cedros Island (*Palmer* 661 in 1889).

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Guadalupe Ranch, *Orcutt* in 1886.

SONORA: Fronteras, *Hartman* 20.

CHIHUAHUA: Santa Eulalia Mountains, *Pringle* 384, *Wilkinson* in 1885.

DURANGO: Durango, rocky hill, Iron Mountain, *Hitchcock* 7624; in the mountains, *Palmer* 523 in 1896.

ZACATECAS: Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7524; hills, *Pringle* 2043. Hacienda de Cedros, foothills, *Lloyd* 187, 212.

SAN LUIS POTOSÍ: San Luis Potosí, in clump of bushes, *Hitchcock* 5671; *Parry & Palmer* 929 in 1878.

JALISCO: Zacoalco, *Bourgeau* 669.

QUERÉTARO: San Juan del Río, *Rose, Painter & Rose* 9581.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6700, 6742. Sierra de la Mesa, *Rose, Painter & Rose* 9099. Tula, limestone hills, *Rose, Painter & Rose* 8362.

MÉXICO: Río Hondo, hillsides, *Pringle* 6228. Federal District, *Pringle* 9564. Near Chapultepec Castle, *Hitchcock* 7837.

PUEBLA: Esperanza, barren hills, *Pittier* 443; rocky hill, *Hitchcock* 6486. Tehuacán, dry limestone hills, *Pringle* 6766; dry cactus soil among agaves, *Hitchcock* 6079. Chalchicomula, rocky hill, among shrubs, *Hitchcock* 6274.

8. *Stipa pringlei* (Beal) Scribn. in Vasey, Contr. U. S. Nat. Herb. 3: 54. 1892.

*Oryzopsis pringlei* Beal, Bot. Gaz. 15: 112. 1890.

Type locality, "Chihuahua, Mexico," the type specimen collected by *Pringle* in 1887 (no. 1410).

RANGE: Mountains of Arizona and Chihuahua.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sierra Madre, dry ledges, *Pringle* 1410. Sánchez, rocky pine woods, *Hitchcock* 7677, 7681.

9. *Stipa mucronata* H. B. K. Nov. Gen. & Sp. 1: 125. 1816.

Type locality, "in montanis regni Mexicani, prope Actopan et vicum Magdalenae."

RANGE: Known only from the State of Mexico.

## HERBARIUM SPECIMENS:

MÉXICO: Nevado de Toluca, *Rose & Painter* 6434. Sierra de las Cruces, mountain meadows, *Pringle* 4299, 11756. Popo Park, open pine woods, *Hitchcock* 6014. Popocatepetl, *Rose & Hay* 6035; open ground along trail, *Hitchcock* 5989.

<sup>1</sup> *Hitchcock* in *Jepson, Fl. Calif.* 1: 105. 1912.

10. *Stipa virescens* H. B. K. Nov. Gen. & Sp. 1: 126. 1816.

Type locality, "in subfrigidis regni Mexicani, prope St. Rosa et Cuesta de Belgrado," a second locality "La Buffa, juxta Guanaxuato," also cited.

RANGE: Highlands of central and southern Mexico.

## HERBARIUM SPECIMENS:

ZACATECAS: Plateado, *Rose* 2750.

JALISCO: Zapotlán, hills, *Hitchcock* 7169. Volcano de Colima, *Jones* 479. Nevado de Colima, in timber, road from Zapotlán, *Hitchcock* 7151.

HIDALGO: Between Pachuca and Real del Monte, in oak woods, *Rose, Painter & Rose* 8700.

MICHOACÁN: Morelia, Cerro Azul, *Arsène* 2699.

MÉXICO: Popo Park, woods, *Hitchcock* 5965, 5973, 6019. Federal District, pine woods, *Pringle* 6588, 9574; lava field, *Hitchcock* 5947; *Orcutt* 3731.

PUEBLA: Mount Orizaba, open woods, *Hitchcock* 6266; *Rose & Hay* 5671. Chiantla, *Liebmann* 649.

VERACRUZ: Cabrestros, *Liebmann* 650.

MORELOS: Sierra de Ajusco, *Pringle* 6236.

OAXACA: Sierra de San Felipe, *Nelson* 1107; *Smith* 926; *Pringle* 4759. Oaxaca, *Nelson* 1373. Cumbre de Estepec, *Liebmann* 648.

11. *Stipa clandestina* Hack. Repert. Nov. Sp. Fedde 8: 516. 1910.

Type locality, "Mexico, Prope Michoacan," the type collected by Brother Arsène (no. 3441); a second specimen "Coahuila leg. E. Palmer, no. 3 (Apr. 1898)" also cited.

RANGE: Known only from the type locality.

## HERBARIUM SPECIMENS:

COAHUILA: Saltillo, dry ground, *Hitchcock* 5579; rich bottom lands, *Palmer* 3 in 1898; *Nil* in 1909; *Nicolas* in 1909.

12. *Stipa editorum* Fourn. Mex. Pl. 2: 75. 1886.

Type locality, "In valle edita inter La Noria del Viego et La Miquiguana," the type specimen collected by Karwinsky (no. 1009c).

RANGE: Highlands of southern Mexico.

## HERBARIUM SPECIMENS:

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6716.

PUEBLA: Esperanza, dry open ground, *Hitchcock* 6469; rocky hill, *Hitchcock* 6494; along railway, *Hitchcock* 6500. San Marcos, railway embankment, *Hitchcock* 6520. Oriental, *Orcutt* 3947.

13. *Stipa vaseyi* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 11: 46. 1898.

*Stipa viridula* var. *robusta* Vasey, Contr. U. S. Nat. Herb. 1: 56. 1890.

Type locality, "Chenate Mountains (Presidio county)," Texas, the type specimen collected by Nealley (no. 714).

RANGE: Colorado to Texas and south to Lower California and Coahuila.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Todos Santos Island, *Anthony* 202. Northern Lower California, *Orcutt* in 1886. Guadalupe Ranch, *Orcutt* in 1886. San Telmo, *Orcutt* in 1886.

COAHUILA: Lerios, *Palmer* 1249 in 1880; Saltillo, *Palmer* 317 in 1902.

14. *Stipa multinodis* Scribn. in Beal, Grasses N. Amer. 2: 222. 1896.

Type locality, "Mexico," the type specimen collected by *Pringle* (no. 385) in Santa Eulalia Mountains.

RANGE: Highlands of northern Mexico.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Santa Eulalia Mountains, *Pringle* 385. Santa Eulalia Plains, *Wilkinson* 349.

COAHUILA: Saltillo, rocky hill, *Hitchcock* 5617.



**15. *Stipa ichu* (Ruiz & Pav.) Kunth, Rév. Gram. 1: 60. 1829.***Jarava ichu* Ruiz & Pav. Fl. Peruv. Chil. Prodr. 2. pl. 1. 1794.*Stipa liebmanni* Fourn. Mex. Pl. 2: 76. 1886. ("Cerro Leon pr. Perote," Veracruz, (Liebmann 667), a depauperate specimen differing from *S. ichu* in being about 15 cm. high and in having slender involute blades).

Type locality, mountains of Peru.

RANGE: Highlands of Mexico, south in the mountains to Patagonia.

## HERBARIUM SPECIMENS FROM MEXICO:

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 174; *Parry & Palmer* 967 in 1878.MÉXICO: Sierra de las Cruces, cool ledges, *Pringle* 4281. Ixtaccihuatl, *Purpus* 323; dry mountain slopes, *Purpus* 1610. Popocatepetl, open woods, *Purpus* 1609. Montezuma, *Bourgeau* 1156. Cima, *Orcutt* 3788.PUEBLA: Esperanza, along railway, *Hitchcock* 6498, 6502; dry open ground, *Hitchcock* 6467; barren hills, *Pittier* 423. Chalchicomula, ravine, *Hitchcock* 6275; hills, *Pringle* 9566. San Marcos, railway embankment, *Hitchcock* 6521. Manzanilla, *Nicolas* in 1909.VERACRUZ: Cerro León, *Liebmann* 667.OAXACA: Chinantla, *Liebmann* 669. Sierra de Clavellinas, open slopes, *Pringle* 4998.**16. *Stipa tenuisissima* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 2<sup>1</sup>: 36. 1836.**

Type locality, Chile, the type specimen collected at Mendoza by Gillies, and sent to Trinius by Hooker in 1835.

RANGE: Southwestern United States to Chile.

## HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Saltillo, *Nil* in 1909; *Nicolas* in 1909; *Palmer* 341½ and 455 in 1904. Carneros Pass, *Pringle* 3274.PUEBLA: San Marcos, railway embankment, *Hitchcock* 6518, 6519, 6540. Esperanza, dry open ground, *Hitchcock* 6464; along railway, *Hitchcock* 6499.**61. ORYZOPSIS Michx. Fl. Bor. Amer. 1: 51. pl. 9. 1803.**

## KEY TO THE SPECIES.

Glumes pubescent; fruit globular-fusiform, densely clothed with a soft white brush-like pubescence . . . . . 1. *O. hymenoides*.

Glumes glabrous.

Fruit dark, brown-pubescent, acute at both ends . . . . . 2. *O. fimbriata*.Fruit pale, white-pubescent, the apex blunt, the base sub-acute . . . . . 3. *O. florulenta*.**1. *Oryzopsis hymenoides* (Roem. & Schult.) Ricker; Piper, Contr. U. S. Nat. Herb. 11: 109. 1906.***Stipa hymenoides* Roem. & Schult. Syst. Veg. 2: 339. 1817.*Eriocoma cuspidata* Nutt. Gen. Pl. 1: 40. 1818.

Type locality, "On the banks of the Missouri," the type specimen collected by Bradbury.

RANGE: Manitoba to Washington, south to northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cantillas Mountains, *Orcutt* 1147.CHIHUAHUA: Sand hills near Paso del Norte, *Pringle* 1053.**2. *Oryzopsis fimbriata* (H. B. K.) Hemsl. Biol. Centr. Amer. Bot. 3: 538. 1885.***Stipa fimbriata* H. B. K. Nov. Gen. & Sp. 1: 126. 1816.

Type locality, "in alta planitie Mexicana inter Burras et Guanaxuato," a second locality, "Mina de Villalpando," also cited.

RANGE: Mountain regions of Mexico.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandegee* in 1899.

CHIHUAHUA: Miñaca, base of rocky butte, *Hitchcock* 7741.

DURANGO: Otinapa, *Palmer* 339 in 1906.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6749, 6751. Woodlands near Trinidad

Iron Works, *Pringle* 13249; Sierra de Pachuca, *Rose, Painter & Rose* 8744.

MÉXICO: Ixtaccihuatl, *Purpus* 1637.

TLAXCALA: Contadero, *Pringle* 8595.

PUEBLA: San Luis Tultitlanapa, *Purpus* 3589. Esperanza, rocky hill, *Hitchcock* 6532.

OAXACA: Oaxaca, *Nelson* 1373a.

3. *Oryzopsis florulenta* Pilg. Bot. Jahrb. Engler. 27: 26. 1899.

Type locality, "Columbia: \* \* \* in monte Alto de Pesares supra Popayan," the type specimen collected by Lehmann (no. 6980).

RANGE: Mountains, southern Mexico to Colombia.

## HERBARIUM SPECIMENS FROM MEXICO:

TLAXCALA: Contadero Station, hills, *Pringle* 8596.

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6493; *Seaton* 319.

62. *PIPTOCHAETIUM* Presl, Rel. Haenk. 1: 222. pl. 37. f. 1—7. 1830.1. *Piptochaetium brevicalyx* (Fourn.) Ricker.

*Stipa brevicalyx* Fourn. Mex. Pl. 2: 150. 1886.

Type locality, "Circa San Luis de Potosi," the type specimen collected by Parry and Palmer (no. 959).

RANGE: Highlands of central and southern Mexico.

## HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 959.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6733. Real del Monte, in oak woods, *Rose, Painter & Rose* 8744.

63. *MUHLENBERGIA* Schreb. in Gmel. Syst. Nat. 2: 87, 171. 1791.

## KEY TO THE SPECIES.

Plants annual.

Awn of lemma short, not longer than the body of the lemma (sometimes slightly longer in *M. ligulata*).

Glumes ciliate; panicle open, the branches spreading..... 1. *M. texana*.

Glumes not ciliate.

Second glume strongly 3-toothed, the teeth about equal..... 8. *M. pusilla*.

Second glume not distinctly 3-toothed.

Lemma entire; panicle green..... 3. *M. ligulata*.

Lemma bifid, awned from between the short teeth; panicle tawny.

Panicle open..... 2. *M. flavida*.

Panicle narrow, the branches short and appressed..... 2a. *M. flavida strictior*.

Awn of lemma more than twice as long as the body of the lemma.

Glumes or some of them awned, the awn as long as the body of the glume or longer.

One glume of some of the upper spikelets of each branch long-awned..... 4. *M. diversiglumis*.

- One glume and often both of all spikelets awned.  
 Panicle open, the primary branches spreading; lemma ciliate..... 5. *M. ciliata*.
- Panicle narrow, the branches appressed.  
 Glumes narrow, firm, the first usually bifid..... 14. *M. schaffneri*.
- Glumes broad at base, membranous, entire..... 6. *M. tenella*.
- Glumes not awned, often acute or acuminate.  
 Second glume broad, 3-toothed; awn flexuous... 7. *M. peruviana*.
- Second glume entire; awn straight.  
 Lemma 2-lobed; glumes villous..... 15. *M. biloba*.
- Lemma entire; glumes not villous.  
 Second glume 2 to 3 mm. long.  
 Leaves clustered at the base of the nearly simple culms, the sheaths inflated..... 9. *M. pulcherrima*.
- Leaves not clustered nor with inflated sheaths; culms freely branching..... 10. *M. quitensis*.
- Second glume not over 1 mm. long.  
 Glumes acute or mucronate; body of lemma 1.5 mm. long..... 11. *M. nebulosa*.
- Glumes obtuse; body of lemma 2 to 3 mm. long.  
 Pedicels capillary, flexuous or recurved..... 12. *M. implicata*.
- Pedicels short, relatively stout, often reflexed but not curved or flexuous..... 13. *M. microsperma*.
- Plants perennial.  
 Plants producing creeping rhizomes; blades short; stems usually low, often decumbent; awn usually short.  
 Callus hairs conspicuous; glumes awned, nearly as long as the short-awned or long-awned lemma; blades flat..... 17. *M. lemmoni*.
- Callus hairs inconspicuous.  
 Main culms tall, woody, conspicuously larger than the numerous slender branches..... 21. *M. dumosa*.
- Main culms slender.  
 Glumes very short, the second 0.5 mm. or less long, the first nearly obsolete; culms long and straggling..... 16. *M. schreberi*.
- Glumes longer, subequal.  
 Panicle narrow or reduced, the main branches short, appressed.  
 Ligule 2 to 3 mm. long; blades flat, thin; spikelets scarcely 2 mm. long..... 20. *M. repens*.
- Ligule short; blades more or less involute, firm; spikelets about 3 mm. long..... 18. *M. squarrosa*.
- Panicle open, at least the main branches spreading or ascending, slender.

- Spikelets 3 mm. long; spikelets clustered toward the ends of the stiffly ascending branches; blades flat, about 2 mm. wide . . . 22. *M. plumbea*.
- Spikelets about 1.5 mm. long, not clustered; blades filiform, about 0.5 mm. wide, often involute . . . . . 19. *M. breviseta*.
- Plants not producing creeping rhizomes.
- Glumes less than 1 mm. long.
- Panicle spreading . . . . . 23. *M. seatonii*.
- Panicle narrow.
- Ligule very short; blades flat or becoming involute . . . . . 24. *M. spiciformis*.
- Ligule 2 to 3 mm. long; blades closely involute . . . . . 25. *M. parviglumis*.
- Glumes more than 1 mm. long.
- Culms lax, clambering, decumbent and rooting at base; blades flat, short, as much as 8 mm. wide . . . . . 26. *M. setarioides*.
- Culms not lax, erect at base, but sometimes becoming decumbent.
- Plants widely spreading, much branched, wiry; panicles diffuse . . . . . 27. *M. porteri*.
- Plants not widely much branched.
- Culms ascending, more or less decumbent below, rather slender; blades short.
- Awn of lemma long and slender; spikelets short-pedicceled on the main panicle branches . . . . . 28. *M. brevifolia*.
- Awn of lemma shorter than its body; spikelets slender-pedicceled in an open panicle . . . . . 29. *M. arizonica*.
- Culms erect or nearly so.
- Second glume 3-toothed.
- Teeth awned; lemma hirsute . . . . . 30. *M. gracilis*.
- Teeth unawned; lemma slightly pubescent . . . . . 31. *M. quadridentata*.
- Second glume entire or sometimes erose or 2-toothed.
- Awn of lemma not longer than the body.
- Panicle close, spike-like; glumes awned . . . . . 33. *M. wrightii*.
- Panicle narrow or open, not spike-like.
- Blades mostly less than 10 cm. long; panicle open, the slender branches ascending . . . . . 32. *M. arenicola*.
- Blades more than 10 cm. long; panicle narrow, the branches appressed.
- Glumes 3 to 4 mm. long; panicle lead-colored; branches rather stout . . . . . 34. *M. firma*.
- Glumes 1 to 2 mm. long; branches capillary.
- Panicle branches naked below; panicle purple . . . . . 35. *M. laxiflora*.
- Panicle branches with short spikelet-bearing branchlets at base . . . . . 56. *M. acuminata*.
- Awn of lemma longer than the body.
- Awns yellow, flexuous; plants 20 to 30 cm. high.
- Glumes subequal . . . . . 36. *M. scabra*.
- Glumes unequal, the first shorter . . . . . 37. *M. flaviseta*.

Awns not yellow nor strongly flexuous.

Blades short, mostly not over 10 cm. long;  
plants comparatively low.

Lemma 2-lobed, the lobes 0.5 mm. long;  
panicle rather open..... 38. *M. argentea*.

Lemma entire or minutely toothed.

Panicle open, the short branches  
spreading; glumes abruptly awned 39. *M. alamosae*.

Panicle narrow, the branches ap-  
pressed.

Lemma 4 to 5 mm. long; glumes less  
than half as long, broad, thin;  
blades involute, mostly basal... 40. *M. setifolia*.

Lemma 2 to 3 mm. long; glumes  
more than half as long; blades  
scattered.

Lemma conspicuously hairy;  
glumes as long as lemma,  
awned..... 41. *M. polycaulis*.

Lemma slightly hairy or glabrous;  
glumes shorter, acute or  
awned.

Ligule 2 mm. long; lemma hairy  
at base, 2 mm. long; glumes  
acute..... 43. *M. monticola*.

Ligule inconspicuous, 1 mm.  
long; lemma glabrous, 3 mm.  
long; glumes often awned.. 42. *M. pauciflora*.

Blades elongated; plants usually tall and  
stout.

Panicle large, diffuse; branches and  
pedicels capillary.

Panicle about 50 cm. long; spikelets  
about 3 mm. long; plants often 2  
meters high..... 44. *M. elata*.

Panicle mostly less than 30 cm. long;  
spikelets about 4 mm. long;  
plants not so tall..... 45. *M. affinis*.

Panicle not diffuse.

Glumes shorter than the lemma.

Glumes obtuse, erose or obscurely  
toothed; lemma villous..... 54. *M. enervis*.

Glumes more or less acute.

Blades flat, strongly nerved above;  
ligule 1 to 2 mm. long..... 55. *M. palmeri*.

Blades involute.

Blades smooth; panicle green.. 56. *M. acuminata*.

Blades scabrous, at least on the  
attenuated point.

Lemma 3 mm. long, scarcely  
nerved; panicle green or  
tawny..... 57. *M. elongata*.

Lemma 5 mm. long, strongly  
nerved; panicle purple.. 58. *M. berlandieri*.

Glumes or at least one of them as long  
as the body of the lemma.

Glumes villous..... 46. *M. speciosa*.

Glumes not villous.

Spikelets about 2 mm. long.

Ligule less than 5 mm. long;  
throat villous; blades 4 to  
5 mm. wide..... 49. *M. grandis*.

Ligule conspicuous, 1 cm. long  
or more; throat not villous;  
blades 1 to 2 mm. wide.... 47. *M. distichophylla*.

Spikelets more than 2 mm. long.

Glumes unequal, the first half as  
long as the second; lemma  
villous..... 50. *M. virescens*.

Glumes about equal.

Blades flat; glumes obtuse or  
acutish..... 48. *M. vaseyana*.

Blades involute, or very nar-  
row.

Blades smooth on the lower  
surface..... 51. *M. articulata*.

Blades very scabrous.

Basal sheaths not strap-  
shaped..... 52. *M. longiglumis*.

Basal sheaths strap-  
shaped..... 53. *M. straminea*.

1. *Muhlenbergia texana* Buckl. Proc. Acad. Phila. 1862: 91. 1863.

*Sporobolus annuus* Vasey, Bull. Torrey Club 14: 9. 1887.

*Muhlenbergia buckleyana* Scribn. Contr. U. S. Nat. Herb. 1: 56. 1890.

Type locality, "Northern Texas."

RANGE: Texas and Arizona to Durango and Lower California.

HERBARIUM SPECIMENS FROM MEXICO:

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

CHIHUAHUA: Chihuahua, wet ledges, rocky hills, *Pringle* 399; on gravel bars of  
streams, rocky hills, *Pringle* 400. Miñaca, in bed of rocky run, *Hitchcock*  
7768. Sánchez, open ground in pine woods, *Hitchcock* 7664½. Noragachie,  
*Palmer* 3d in 1885.

DURANGO: Sandías Station, barranca, *Pringle* 13629. Dos Cajetes, among thickets,  
*Palmer* 797 in 1896.

2. *Muhlenbergia flavida* Vasey, Contr. U. S. Nat. Herb. 1: 282. 1893.

Type locality, "Rio Blanco," the type specimen collected by *Palmer* (no. 645).

RANGE: Highlands from northern to central Mexico.

HERBARIUM SPECIMENS:

CHIHUAHUA: Sierra Madre, wet places, *Pringle* 3034. Guayanopa Canyon, *Jones*  
7316.

JALISCO: Río Blanco, *Palmer* 645 in 1886. Guadalajara, ravines, *Pringle* 11749.

HIDALGO: Canales Station, bogs, *Pringle* 8951.

2a. *Muhlenbergia flavida strictior* Scribn.; *Beal*, Grasses N. Amer. 2: 263. 1896.

*Muhlenbergia strictior* Scribn.; *Beal*, Grasses N. Amer. 2: 263. 1896.

Type locality, "Mexico," the type specimen collected in the Sierra Madre by  
*Pringle* (no. 1418).

RANGE: Highlands of northern Mexico.

HERBARIUM SPECIMENS:

CHIHUAHUA: Sánchez, rocky dry bed of stream, *Hitchcock* 7673. Miñaca, along bed of rocky run, *Hitchcock* 7765. Sierra Madre, wet ledges by streams, *Pringle* 1418; *Jones* 7315.

DURANGO: Sandías Station, barranca, *Pringle* 13630.

3. *Muhlenbergia ligulata* (Fourn.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 19. 1901.

*Chaboissaea ligulata* Fourn. Mex. Pl. 2: 112. 1886.

Type locality, "San Luis de Potosi," the type specimen collected by Virlet.

RANGE: Central Mexico.

HERBARIUM SPECIMENS:

DURANGO: Durango, moist soil, in large prostrate masses, *Palmer* 731 in 1896.

Sienga, moist soil, *Palmer* 948 in 1896.

4. *Muhlenbergia diversiglumis* Trin. Mém. Acad. St. Pétersb. VI. 4<sup>1</sup>: 298. 1841.

Type locality, "Mexico, Porto Pedro," the type specimen collected by Karwinsky.

RANGE: Highlands of southern Mexico to Costa Rica.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, moist ledges of barranca, *Pringle* 1739, 2661, 11235. Zapotlán, rocky hill, *Hitchcock* 7254.

MICHOACÁN: Curú Station, rock fields, *Pringle* 13246.

MORELOS: Sierra de Tepostlán, thin soil, *Pringle* 8364.

5. *Muhlenbergia ciliata* (H. B. K.) Kunth, Rév. Gram. 1: 63. 1829.<sup>1</sup>

*Podosaemum ciliatum* H. B. K. Nov. Gen. & Sp. 1: 128. 1816.

Type locality, "in radicibus, montis ignivomi Mexicani, Jorullo."

RANGE: Highlands throughout Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* 18a. Sierra de San Francisquito, *Brandege* 16.

CHIHUAHUA: Sierra Madre, dry shaded ledges, Arroyo Aucho, *Pringle* 1435.

DURANGO: Durango, under overhanging rock at hilltop, *Palmer* 719 in 1896.

JALISCO: Guadalajara, moist ravines, *Pringle* 11745; narrow shady ditch near San Pedro, *Hitchcock* 7295. Zapotlán, on brick wall, *Hitchcock* 7256. San Nicolás, sterile clay hill, *Hitchcock* 7203. Chapala, *Rose* 3479. Bolaños, *Rose* in 1897.

MICHOACÁN: Uruapán, open stony place, *Hitchcock* 6966½. Curú Station, rock fields, *Pringle* 13245. Morelia, *Arsène* in 1909.

MÉXICO: San Nicolás, *Bourgeau* 1034. Federal District, lava fields, *Pringle* 9584; *Orcutt* 4247.

VERACRUZ: Zacuapan, wet soil, *Purpus* 2899. Orizaba, *Botteri* 707; *Mohr* in 1857; *Ross* 1174.

MORELOS: Cuernavaca, large tufts, side of rocky cliff, *Hitchcock* 6860; barranca, *Pringle* 11229; *Rose & Painter* 6931.

OAXACA: Cuicatlán, valley, *Nelson* 1869. Oaxaca, *Rose* 3688.

6. *Muhlenbergia tenella* (H. B. K.) Trin. Gram. Unifl. 192. 1824.

*Podosaemum tenellum* H. B. K. Nov. Gen. & Sp. 1: 128. 1816.

Type locality, "in scopulosis frigidis andium Mexicanorum, inter Rio Frio et Baranca Honda \* \* \* (Prov. Xalapensi)."

RANGE: Highlands, Chihuahua to Costa Rica.

<sup>1</sup> This and several other combinations under *Muhlenbergia* are commonly credited to Trin. Gram. Unifl. 193 and 194, 1824, but Trinius there merely lists a number of species, some doubtfully, as belonging to *Muhlenbergia* without formally transferring them to that genus.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Batopilas, *Palmer* in 1885.

SINALOA: Lodiago, in moist shady place in rocky canyon, *Palmer* 1667 in 1891.  
Copradía, *Brandege* in 1904.

JALISCO: Guadalajara, moist ledges of barranca, *Pringle* 1745, 1775; moist banks,  
*Pringle* 11748; *Palmer* 404 and 481 in 1886. Zapotlán, rocky hill, *Hitchcock*  
7257.

COLIMA: Colima, *Palmer* 1271 in 1891; *Orcutt* 4571.

MICHOACÁN: Baqueta, *Langlassé* 494.

VERACRUZ: San Francisco, *Smith* 1506. Córdoba, *Fink* in 1893; *Bourgeau* 1665.

MORELOS: Yautepec, calcareous banks, *Pringle* 11232.

7. *Muhlenbergia peruviana* (Beauv.) Steud. Nom. Bot. ed. 2. 1: 41. 1840.

*Clomena peruviana* Beauv. Ess. Agrost. 28. 1812.

*Muhlenbergia clomena* Kunth, Rév. Gram. 1: 64. 1829.

Type locality, Peru, the specimen sent to Beauvois by Thibaut.

RANGE: Highlands, northern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sierra Madre, porphyry ledges, *Pringle* 1411. Mapula Mountains,  
thin soil of summits, *Pringle* 824. Sánchez, open ground in pine woods,  
*Hitchcock* 7663; along railway, *Hitchcock* 7722.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 932 in 1878; *Schaffner* 180,  
181.

JALISCO: Nevado de Colima, open ground, *Hitchcock* 7156.

MÉXICO: Flor de María, prairies, *Pringle* 3316. Nevado de Toluca, *Rose &*  
*Painter* 7925. Salto de Agua, *Purpus* 1620. Federal District, lava fields,  
*Pringle* 9065. Cuantepec, *Bourgeau* 1155.

8. *Muhlenbergia pusilla* Steud. Syn. Pl. Glum. 1: 177. 1854.

Type locality, "Toluca," the type specimen collected by Berlandier (no. 1141).

RANGE: High mountains in the State of Mexico.

## HERBARIUM SPECIMENS:

MÉXICO: Nevado de Toluca, *Rose & Painter* 6435. Ixtaccihuatl, rocks above  
timber line, *Purpus* 1621, 3780.

This species may possibly be a depauperate form of *M. peruviana*.

9. *Muhlenbergia pulcherrima* Scribn.; Beal, Grasses N. Amer. 2: 240. 1896.

Type locality, "Mexico," the type specimen collected in the Sierra Madre by  
*Pringle* (no. 1416).

RANGE: Mountains of northern and central Mexico.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Sierra Madre, dry ledges of porphyry, *Pringle* 1416.

MORELOS: Tres Marías Mountains, *Pringle* 11743.

10. *Muhlenbergia quitensis* (H. B. K.).

*Calamagrostis quitensis* H. B. K. Nov. Gen. & Sp. 1: 133. 1816.

*Muhlenbergia calamagrostidea* Kunth, Rév. Gram. 1: 63. 1829.

Type locality, "regni Mexicani prope Mescala, Sochipala et Valle Zopilote," no  
reference to Quito being made, the specific name evidently given inadvertently,  
hence Kunth's change of the specific name to "*calamagrostidea*."

RANGE: Highlands of Mexico.

## HERBARIUM SPECIMENS:

SONORA: Cochuto, *Hartman* 60, 77.

CHIHUAHUA: Santa Eulalia, *Palmer* 133 in 1898; plains, *Wilkinson* in 1885; hills,  
*Wilkinson* 344. Chihuahua, under shrubs, hills and plains, *Pringle* 397;  
rocky hills, *Pringle* 428; along dry run, *Hitchcock* 7779.



## HERBARIUM SPECIMENS—Continued.

- DURANGO: Durango, crevices of rocks on hillsides, *Palmer* 881 in 1896; in bunches in crevices near top of hill, *Palmer* 882 in 1896; mountains, *Palmer* 528 in 1896; crevices of rocks on hillside, *Palmer* 725 in 1896; dry ground, *Hitchcock* 7572.
- COAHUILA: Saltillo, sandy ground near river, *Hitchcock* 5624; *Palmer* 393 in 1898. Sierra de Parras, *Purpus* 5007.
- ZACATECAS: Hacienda de Cedros, plains, *Lloyd* 204 in 1908. Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7509; along dry river bed, *Hitchcock* 7533. Plateado, *Rose* 2786.
- AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7459, *Rose & Painter* 7730.
- SAN LUIS POTOSÍ: Cárdenas, railway cut, *Hitchcock* 5726. San Luis Potosí, *Parry & Palmer* 930 in 1878. Sierra de Guascama, *Purpus* 5429.
- JALISCO: Guadalajara, *Palmer* 457 and 482 in 1886; on roof of hotel, *Hitchcock* 7260.
- QUERÉTARO: Querétaro, rocky hill among cacti, *Hitchcock* 5848; *Rose & Rose* 11188. Between San Juan del Río and Cadereyta, *Rose, Painter & Rose* 9680.
- HIDALGO: Ixmiquilpan, *Rose, Painter & Rose* 8992. El Salto, railroad banks, *Pringle* 11744. Pachuca, rocky slopes, *Purpus* 1627; *Orcutt* 3915.
- MICHOACÁN: Morelia, *Arsène* in 1909.
- MÉXICO: Valley of Mexico, *Bourgeau* 218. Federal District, *Pringle* 9563; on top of stone wall, *Hitchcock* 5871; *Ross* 53; *Rose, Painter & Rose* 8494. Without locality, *Schumann* 1745.
- PUEBLA: Tehuacán, old field, *Hitchcock* 6038; among cacti, *Hitchcock* 6078. San Luis Tultitlanapa, *Purpus* 3590.
- OAXACA: Oaxaca, cleft in rocky cliff, *Hitchcock* 6159.

11. *Muhlenbergia nebulosa* Scribn.; Beal, *Grasses N. Amer.* 2: 247. 1896.

Type locality, "Mexico, wet places, hills near Guadalajara," the type specimen collected by *Pringle* (no. 2366).

RANGE: Pacific slope of Mexico.

## HERBARIUM SPECIMENS.

TEPIC: Tepic, moist spot in canyon, *Palmer* 1933 in 1892.

JALISCO: Guadalajara, wet places, hills, *Pringle* 2366. Río Blanco, wet soil, *Pringle* 11753.

COLIMA: Alzada, *Orcutt* 4629.

12. *Muhlenbergia implicata* (H. B. K.) Kunth, *Rév. Gram.* 1: 63. 1829.

*Podosaemum implicatum* H. B. K. *Nov. Gen. & Sp.* 1: 127. 1816.

Type locality, "in humidis, uliginosis Andium Mexicanorum prope lacum Cuiseo et Puerto de Andaracuas."

RANGE: Northern Mexico in the mountains to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Potrero Mountains, rocky banks of streams, *Pringle* 818.

DURANGO: Durango, rocky hill, Iron Mountain, *Hitchcock* 7639; mountain side, *Palmer* 769 in 1896; rich moist shaded ground among agaves, *Palmer* 718 in 1896; shady side of arroyo, *Palmer* 830 in 1896.

JALISCO: Zapotlán, hills, *Hitchcock* 7179, 7251. Guadalajara, prairie near San Pedro, *Hitchcock* 7289.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Toluca, *Holway* 3138. Salto de Agua, *Purpus* 1622. Federal District, lava fields, *Pringle* 9057; *Orcutt* 4307; *Rose & Painter* 6820; *Bourgeau* 1557.

PUEBLA: Cholula, *Deam* in 1899. Puebla, *Nicolas* in 1910.

VERACRUZ: Consoquitla, *Liebmann* 640. Orizaba, *Botteri* 679; *Müller* 2102.

OAXACA: Monte Albán, thin soil of limestone ledges, *Pringle* 4950.

**13. *Muhlenbergia microsperma* (DC.) Kunth, Rév. Gram. 1: 64. 1829.***Trichochloa microsperma* DC. Cat. Hort. Monsp. 151. 1813.

Type locality, "Mexico."

RANGE: Southwestern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Island of San Pedro Mártir, *Palmer* 416 in 1887. San Telmo, *Orcutt* 1435. Cedros Island, *Palmer* 663 in 1889. San Quentín Bay, *Palmer* 687 in 1889. Santa Agueda, *Palmer* 217 in 1890. Cape St. Lucas, *Xantus* 116. San José del Cabo, *Purpus* 524. Comondú, *Brandege* in 1889. Sierra de San Francisquito, *Brandege* in 1899. La Chuparosa, *Brandege* in 1899. La Paz, *Palmer* 729 in 1890. Misión, *Orcutt* in 1899. Calmallí, *Orcutt* in 1899. Guadalupe Island, *Palmer* 656 and 670 in 1889. Gulf of California, *Palmer* 416 and 510 in 1887.

SONORA: Guaymas, *Palmer* 272 and 510 in 1887. Magdalena, *Rose, Standley & Russell* 15092. Hermosillo, rocky hillside among cacti, *Chase* 5504; *Rose, Standley & Russell* 12506. Alamos, *Palmer* 691 in 1890.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 158 in 1885.

DURANGO: Tlahualilo, barren hills, *Pittier* 432.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5700.

GUANAJUATO: Irapuato, dry shrubby hill, *Hitchcock* 7426.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6701; *Orcutt* 3915 in part.

PUEBLA: San Marcos, railway embankment, *Hitchcock* 6513. Esperanza, rocky hill, *Hitchcock* 6470. Chalchicomula, dry ground, *Hitchcock* 6304; *Nelson* 251. Mount Orizaba, *Seaton* 246.

OAXACA: Monte Albán, *Smith* 938. Cuicatlán, *Nelson* 1703a. Ocotlán, *Liebmann* 639.

**14. *Muhlenbergia schaffneri* Fourn. Mex. Pl. 2: 85. 1886.**

Type locality, "Prope Tacubaya," Federal District, the type specimen collected by Schaffner.

RANGE: New Mexico and Arizona south in the mountains to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Mountains, ledges, *Pringle* 404; *Pringle* in 1888. Sánchez, open ground in pine woods, *Hitchcock* 7664.

DURANGO: Durango, rocky hill, Iron Mountain, *Hitchcock* 7644, 7645. Sandías Station, barranca, *Pringle* 13634.

ZACATECAS: Río Hondo, ledges, *Pringle* 3894.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7468.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 178.

HIDALGO: El Salto, sandy soil, *Pringle* 11231.

FEDERAL DISTRICT: *Orcutt* 4311.

**15. *Muhlenbergia biloba* nom. nov.**

*Bealia mexicana* Scribn. in Hack. True Grasses 103, 104. f. 45a. 1890, not *Muhlenbergia mexicana* (L.) Trin. 1824.

Type locality, "Thin soil of dry porphyry mountains. Mexico (Chihuahua)," as given in Beal's Grasses of North America,<sup>1</sup> where the species is more fully described, the type specimen collected by Pringle (no. 819).

RANGE: Pacific slope of northern Mexico.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Santa Margarita Island, *Brandege* in 1889.

CHIHUAHUA: Chihuahua, dry porphyry mountains, *Pringle* 819.

DURANGO: Barranca below Sandías Station, *Pringle* 10147.

<sup>1</sup>2: 268. 1896.

**16. *Muhlenbergia schreberi* Gmel. Syst. Nat. 2: 171. 1791.***Muhlenbergia diffusa* Willd. Sp. Pl. 1: 320. 1805.

Type locality not given.

RANGE: Northern United States to southeastern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Jalapa, bank of railway cut through jungle, *Hitchcock* 6648; along railway near Coatepec, *Hitchcock* 6663. Orizaba, *Botteri*.**17. *Muhlenbergia lemmoni* Scribn. in Coulter, Contr. U. S. Nat. Herb. 1: 56. 1890.**

Type locality, "Arizona," Huachuca Mountains, according to data on the type specimen collected by Lemmon (no. 2918).

RANGE: Southwestern United States and south in the highlands to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, cleft of boulder in rocky ravine, *Hitchcock* 7685. Chihuahua, cool wet ledges, rocky hills, *Pringle* 394, 395.DURANGO: Durango, rocky hill, Iron Mountain, *Hitchcock* 7635, 7635½. Sandías Station, barranca, *Pringle* 13632.SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 144, 189. Villar, limestone ledges, *Pringle* 4539. Bagre, *Purpus* 5426.GUANAJUATO: Acámbaro, under cliffs, *Pringle* 13247.FEDERAL DISTRICT: Wet ledges of ravines, *Pringle* 8263.**18. *Muhlenbergia squarrosa* (Trin.) Rydb. Bull. Torrey Club 36: 531. 1909.***Vilfa squarrosa* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 100. 1840.

Type locality, "America septentr[ionalis] in Ins. Menzies," the specimen sent to Trinius by Hooker.

RANGE: Montana to Washington and south in the mountains to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* in 1899.SONORA: San Pedro River, Mexican boundary line, *Mearns* 1128.CHIHUAHUA: Sánchez, bottom of rocky ravine, *Hitchcock* 7710. Chihuahua, by streams, *Pringle* 418.DURANGO: Durango, along dike of pond, *Hitchcock* 7653; in stiff, alkaline soil, *Palmer* 738 and 739 in 1896.COAHUILA: Jaral, *Schumann* 1750. Saltillo, open dry ground, *Hitchcock* 5613; in close tangled mat, dry ground near ditch, *Hitchcock* 5652; dry field, *Ross* 1493.ZACATECAS: Zacatecas, gulch, dry sterile hill, *Hitchcock* 7497.SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5688, 5701; *Schaffner* 163.HIDALGO: Pachuca, rocky hill, *Hitchcock* 6736; sandy river bed, *Hitchcock* 6756.MÉXICO: Toluca, along roadside bank, the runners hanging down the bank, *Hitchcock* 6919. Federal District, open ground along railway, *Hitchcock* 5928.PUEBLA: Chalchicomula, dry ground along track, *Hitchcock* 6268. San Marcos, along railway embankment, *Hitchcock* 6507. Esperanza, along railway, *Hitchcock* 6501.**19. *Muhlenbergia breviseta* Griseb.; Fourn. Mex. Pl. 2: 83. 1886.**Type locality, "Orizaba," the following specimens from this place cited: Müller 1453, 2003, 2093, *Schaffner* 111 in herb. Franqueville, 157 in "pl. ed. Hohen."

RANGE: Highlands of southern Mexico.

HERBARIUM SPECIMENS:

VERACRUZ: Orizaba, *Müller* 1453, *Botteri*.JALISCO: Zapotlán, pine woods, *Hitchcock* 7249.MICHOACÁN: Pátzcuaro, dry cool soil, hills, *Pringle* 3944. Uruápan, dry fields, *Pringle* 13900; sandy fields, *Pringle* 10370.

**20. *Muhlenbergia repens* (Presl) Hitchc. in Jepson, Fl. Calif. 1: 111. 1912.***Sporobolus repens* Presl, Rel. Haenk. 1: 241. 1830.

Type locality, "Mexico."

RANGE: Texas to California and south to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 17 in 1885. Sánchez, along railway, *Hitchcock* 7723.MÉXICO: Flor de María, shallow ponds of prairies, *Pringle* 3317.PUEBLA: Puebla, *Nicolas* in 1910.VERACRUZ: Orizaba, *Bourgeau* 3285.**21. *Muhlenbergia dumosa* Scribn. in Vasey, Contr. U. S. Nat. Herb. 3: 71. 1892.**Type locality, "Arizona," the type specimen collected "by streams of the Santa Catalina Mts. June 3, 1882," by *Pringle*.

RANGE: Arizona and southward along the Pacific slope to Jalisco.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Sierra de los Alamos, *Palmer* 406 in 1890; *Rose, Standley & Russell* 12802. Teraverachi, *Hartman* 264.DURANGO: San Ramón, *Palmer* 51 in 1906.JALISCO: Sierra de San Esteban near Guadalajara, cool wet ledges, *Pringle* 2355, 11230.**22. *Muhlenbergia plumbea* (Trin.).***Vilfa plumbea* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 98. 1840.*Sporobolus plumbeus* Hemsl. Biol. Centr. Amer. Bot. 3: 546. 1885.Type locality, "Mexico, Min. del monte," the type specimen received from *Schlechtendal*.

RANGE: Highlands of southern Mexico.

## HERBARIUM SPECIMENS:

MÉXICO: Toluca, along ditch, *Hitchcock* 6911. Federal District, alkaline meadows, *Pringle* 6617, 9581; open pasture land, *Hitchcock* 5899.PUEBLA: San Marcos, railway embankment, *Hitchcock* 6525. Esperanza, rocky hill, *Hitchcock* 6533. Puebla, *Nicolas* in 1910. Chalchicomula, along railway, *Hitchcock* 6308.**23. *Muhlenbergia seatonii* Scribn. in Seaton, Proc. Amer. Acad. 28: 122. 1893.**Type locality, "Hills near Esperanza," the type specimen collected by *Seaton* (no. 320).

RANGE: Known only from the type collection.

**24. *Muhlenbergia spiciformis* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 4<sup>1</sup>: 288. 1841.**Type locality, "Mexico," the type specimen collected by *Karwinsky*.

RANGE: Highlands of central and southern Mexico.

## HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: Tamasopo Canyon, limestone ledges, *Pringle* 3992.MICHOACÁN: Maravatío, *Arsène* in 1908.VERACRUZ: Orizaba, *Bourgeau* 3327, *Müller* 2100. Alta Luz, *Purpus* 5070.OAXACA: Oaxaca, limestone cliffs, *Pringle* 6025.**25. *Muhlenbergia parviglumis* Vasey, Contr. U. S. Nat. Herb. 3: 71. 1892.**Type locality, "Texas," the type specimen collected by *Nealley*.

RANGE: Texas to San Luis Potosí.

## HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Saltillo, very dry hillsides, *Palmer* 417 in 1898.SAN LUIS POTOSÍ: Minas de San Rafael, *Purpus* 5011.

**26. *Muhlenbergia setarioides* Fourn. Mex. Pl. 2: 84. 1886.**

Type locality, "Orizaba" and "Sierra de Cristobal pr. Eugenio" cited, with several collections from the first named.

RANGE: Veracruz to Guatemala.

HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Under spray of waterfall in the barranca of Texolo, near Jalapa, *Pringle* 8096. Orizaba, *Bourgeau* 3362, *Botteri* 698, *Mohr* 8.

**27. *Muhlenbergia porteri* Scribn.; Beal, Grasses N. Amer. 2: 259. 1896.**

*Muhlenbergia texana* Thurb. in Port. & Coult. Syn. Fl. Colo. 145. 1874, not Buckl. 1863.

Type locality, "Texas."

RANGE: Southwestern United States and along the Pacific slope to central Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Imeris to Santa Ana, *Griffiths* 6853.

CHIHUAHUA: Chihuahua, hills and plains, *Pringle* 478. Juárez, dry mesas, *Pringle* 11233. Between Casas Grandes and Sabinal, *Nelson* 6349.

DURANGO: Torreón, rocky hill, *Hitchcock* 7548.

**28. *Muhlenbergia brevifolia* Scribn.; Beal, Grasses N. Amer. 2: 254. 1896.**

Type locality, "Mexico (Jalisco)," the type specimen collected by *Pringle* (no. 4736).

RANGE: Known only from the type locality.

HERBARIUM SPECIMENS:

JALISCO: Guadalajara, wet ledges, *Pringle* 4736, 5867, 9562.

**29. *Muhlenbergia arizonica* Scribn. Bull. Torrey Club 15: 8. pl. 76. f. a. 1888.**

Type locality, "Mesas near the Mexican boundary," Arizona, the type specimen collected by *Pringle* in 1884.

RANGE: Arizona along the Pacific slope to central Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Altar to Sasabe, *Griffiths* 6917.

CHIHUAHUA: Chihuahua, thin, dry soil, rocky hills, *Pringle* 402; dry bed of river, *Hitchcock* 7784.

SINALOA: Copradía, *Brandege* in 1904. Lodiago, on river bottoms often inundated, *Palmer* 1663 in 1891.

DURANGO: Durango, hillsides and plains, *Palmer* 536 and 713 in 1896; rocky hill, *Hitchcock* 7590.

**30. *Muhlenbergia gracilis* (H. B. K.) Kunth, Rév. Gram. 1: 64. 1829.**

*Podosaemum gracile* H. B. K. Nov. Gen. & Sp. 1: 131. 1816.

Type locality, "in aridis exustis montis Mexicani, Volcan de Jorulle."

RANGE: Wyoming to California and southward in the mountains to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Mountains, high summits, *Pringle* 392, 393. Sierra Madre near Colonia García, pine woods, *Townsend & Barber* 332. Southwestern Chihuahua, *Palmer* 10a in 1885. Miñaca, rocky hill, *Hitchcock* 7769. Sánchez, rocky pine woods, *Hitchcock* 7668.

JALISCO: Guadalajara, *Palmer* in 1886.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Cima, *Rose & Painter* 7211. Federal District, Serrania de Ajusco, *Pringle* 11750.

OAXACA: Sierra de San Felipe, *Smith* 927, 928. High ridge west of San Miguel Huantla, *Nelson* 1910.

**31. *Muhlenbergia quadridentata* (H. B. K.) Kunth, Rév. Gram. 1: 64. 1829.***Podosaemum quadridentatum* H. B. K. Nov. Gen. & Sp. 1:130. 1816.

Type locality, "in siccis apricis regni Mexicani prope Toluca, Puente de Tepare et Playas de Jorullo."

RANGE: High mountains of southern Mexico.

## HERBARIUM SPECIMENS:

JALISCO: Nevado de Colima, steep hillside, *Hitchcock* 7159, 7161.MÉXICO: Popocatepetl, steep hillside in open woods, *Hitchcock* 5981; *Rose & Hay* 6261.**32. *Muhlenbergia arenicola* Buckl. Proc. Acad. Phila. 1862: 91. 1863.**

Type locality, "Arid places in Western Texas."

RANGE: Texas to Arizona and Chihuahua.

## HERBARIUM SPECIMEN FROM MEXICO:

CHIHUAHUA: Chihuahua, plains, *Pringle* 479.**33. *Muhlenbergia wrightii* Vasey in Coulter, Man. Rocky Mount. 409. 1885.**

Type locality, New Mexico, the type specimen collected by Wright.

RANGE: Colorado and southward in the mountains to southern Chihuahua.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, along railway, *Hitchcock* 7693½. Base of Sierra Madre, wet places, pine plains, *Pringle* 1419; meadow, *Townsend & Barber* 331.**34. *Muhlenbergia firma* Beal, Grasses N. Amer. 2: 243. 1896.**Type locality, "Mexico (Oaxaca)," the type specimen collected by *Pringle* (no. 4914).

RANGE: Highlands of southern Mexico.

## HERBARIUM SPECIMENS:

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6750, 6753.MÉXICO: Federal District, lava beds, *Pringle* 6675, 13631.PUEBLA: Esperanza, rocky hill, *Hitchcock* 6479, 6531. Chalchicomula, large bunches, rocky hill, *Hitchcock* 6276, 6297, 6298. San Marcos, railway embankment, *Hitchcock* 6529.OAXACA: Sierra de San Felipe, *Smith* 230; summit ledges, *Pringle* 4914.**35. *Muhlenbergia laxiflora* Scribn. Zoe 4: 389. 1894.**Type locality, "La Chuparosa," Lower California, the type specimen collected by *Brandege* in 1893 (no. 74).

RANGE: Pacific slope of Mexico.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Sierra Madre, cool slopes, *Pringle* 1412. Mount Mohinora, *Nelson* 4902, 4903. Sánchez, rocky pine woods, *Hitchcock* 9221.DURANGO: Southern Durango, *Rose* 2356.OAXACA: Sierra de San Felipe, *Conzatti & González* 438.**36. *Muhlenbergia scabra* S. Wats. Proc. Amer. Acad. 18: 174. 1883.**Type locality, "San Luis Potosí," the type specimen collected by *Schaffner* (no. 1067).

RANGE: Known only from the type locality.

## HERBARIUM SPECIMEN:

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 179 in 1877.**37. *Muhlenbergia flaviseta* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 8: 11. pl. 7. 1897.**Type locality, "Mexico," the type specimen collected on sloping sides of an arroyo, in the region of pines and oaks, 8,500 feet alt., Dos Cajetes, Durango, in 1896 by *Palmer* (no. 834).

RANGE: Known only from the type collection.

**38. Muhlenbergia argentea** Vasey, Bull. Torrey Club 13: 232. 1886.

Type locality, "S. W. Chihuahua," the type specimen collected in 1885 by Palmer (no. 160).

RANGE: Known only from the type collection.

**39. Muhlenbergia alamosae** Vasey, Bot. Gaz. 16: 146. 1891.

Type locality, "Alamosa in Sonora," the type specimen collected in 1890 by Palmer (no. 407).

RANGE: Highlands from northwestern to central Mexico.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandegee* 79 in 1892.

SONORA: Sierra de los Alamos, *Palmer* 407 in 1890; moist ravine, *Rose, Standley & Russell* 13109.

CHIHUAHUA: Sánchez, on large boulder, *Hitchcock* 7701.

DURANGO: San Ramón, *Palmer* 67 in 1906.

MORELOS: Sierra de Tepoxtlán, mossy cliffs, *Pringle* 6994.

**40. Muhlenbergia setifolia** Vasey, Bot. Gaz. 7: 92. 1882.

Type locality, "Guadalupe Mountains of Western Texas," the type collected by Havard.

RANGE: Texas and the highlands of northern Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

COAHUILA: Saltillo, dry slopes, *Palmer* 415 in 1898.

**41. Muhlenbergia polycaulis** Scribn. Bull. Torrey Club 38: 327. 1911.

Type locality, "Dry shaded ledges, Sierra Madre Mts., State of Chihuahua," the type specimen collected by Pringle (no. 1414).

RANGE: Arizona and south in the highlands to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, cool wet ledges, rocky hills, *Pringle* 394. Sierra Madre, dry shaded ledges, *Pringle* 1414.

DURANGO: Durango, in crevices of rocks, *Palmer* 529 and 724 in 1896. Barranca below Sandías Station, *Pringle* 13633.

GUANAJUATO: Acámbaro, under cliffs, *Pringle* 13248.

**42. Muhlenbergia pauciflora** Buckl. Proc. Acad. Phila. 1862: 91. 1863.

Type locality, "Hillsides, Western Texas."

RANGE: Texas to Arizona and Chihuahua.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Cañon de San Diego, *Hartman* 793; mountain near San Diego, *Hartman* 754.

**43. Muhlenbergia monticola** Buckl. Proc. Acad. Phila. 1862: 91. 1863.

Type locality, "Northwestern Texas."

RANGE: Texas to Arizona and southward in the mountains to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: San José Mountains, *Mearns* 998. Guadalupe Canyon, *Merton* 2036.

CHIHUAHUA: Santa Eulalia Mountains, *Wilkinson* in 1885; dry limestone ledges, *Pringle* 396; Chihuahua, cleft of rock on side of gorge, *Hitchcock* 7787.

COAHUILA: Saltillo, rocky hill, *Hitchcock* 5619.

HIDALGO: Tula, limestone hills, *Rose, Painter & Rose* 8363.

**44. Muhlenbergia elata** Vasey, Contr. U. S. Nat. Herb. 1: 282. 1893.

Type locality, "Guadalajara," the type specimen collected in 1886 by Palmer (no. 770).

RANGE: Highlands of southern Mexico.

## HERBARIUM SPECIMENS:

JALISCO: San Nicolás, sterile clay hill, *Hitchcock* 7216. Guadalajara, *Palmer* 770 in 1886, *Palmer* in 1885; banks of ravines, *Pringle* 2351, 11747; prairie, *Hitchcock* 7306; dry open ground, side of Barranca de Oblatos, *Hitchcock* 7332, 7333. Río Blanco, *Palmer* 523 and 523a in 1886.

COLIMA: Alzada, *Orcutt* 4649.

MICHOACÁN: Morelia, *Arsène* 2465.

VERACRUZ: Mirador, *Liebmann* 675. Consoquitla, *Liebmann* 674.

MORELOS: Cuernavaca, rocky prairie, *Hitchcock* 6878.

45. *Muhlenbergia affinis* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 4<sup>1</sup>: 301. 1841.

Type locality, "Toluco," the type specimen collected by Berlandier.

RANGE: Texas to Arizona and south in the highlands to Oaxaca.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 13 in 1885. Sánchez, rocky pine woods, near dry bed of stream, *Hitchcock* 7674. Miñaca, mesa, *Hitchcock* 7747. Santa Eulalia Mountains, *Pringle* 401.

DURANGO: Durango, rough, stony hills and arroyos, *Palmer* 859 and 860 in 1896, dry ground, *Hitchcock* 7595, 7608.

COAHUILA: San Lorenzo Canyon, *Palmer* 400 in 1904.

ZACATECAS: Zacatecas, gulch in dry sterile hills, *Hitchcock* 7504, 7508, 7514.

AGUASCALIENTES: Aguascalientes, sterile, rocky hill, *Hitchcock* 7475.

JALISCO: Orozco, railway bank by pond, *Hitchcock* 7371. San Nicolás, sterile hill, *Hitchcock* 7235. Guadalajara, prairie, *Hitchcock* 7301; *Palmer* 522 in 1886. Between Mezquitic and Monte Escobedo, *Rose* 2614. Bolaños, *Rose* 2984.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6728.

MICHOACÁN: Uruápan, prairie, *Hitchcock* 6972, 6981. Morelia, *Arsène* 2595.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6887. Federal District, near Chapultepec Castle, *Hitchcock* 7838; lava rock, *Hitchcock* 5940; *Pringle* 9557; *Bourgeau* 753; *Orcutt* 4305.

PUEBLA: San Marcos, large bunches, sandy soil, *Hitchcock* 6541. Esperanza, rocky hill, *Hitchcock* 6471. San Luis Tultitlanapa, *Purpus* 2900.

VERACRUZ: Orizaba, *Botteri* 679.

OAXACA: Las Sedas, *Smith* 952. Oaxaca, large bunches, rocky hill, *Hitchcock* 6149. Mountain ridge, west side of valley of Cuicatlán, *Nelson* 1905. Near Reyes, *Nelson* 1806.

46. *Muhlenbergia speciosa* Vasey, Bull. Torrey Club 13: 231. 1886.

Type locality, southwestern Chihuahua, the type specimen collected in 1885 by *Palmer* (no. 30).

RANGE: Highlands from Chihuahua to Puebla.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 30 in 1885.

SINALOA: Culiacán, *Brandegge* in 1904.

TEPIC: Tepic, growing in compact bunches, along banks of arroyos, *Palmer* 1919 in 1892.

PUEBLA: Zapotitlán, dry hills, *Ross* 1308.

47. *Muhlenbergia distichophylla* (Presl) Kunth, Enum. Pl. 1: 202. 1833.

*Podosaemum distichophyllum* Presl, Rel. Haenk. 1: 231. 1830.

Type locality, "Mexico."

RANGE: New Mexico and south on the Pacific slope of Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Batopilas, *Palmer* in 1885.

JALISCO: Guadalajara, rocky hills, *Pringle* 2350.

MICHOACÁN: Sierra Madre, *Langlassé* 607. Cerro Mamegal, *Langlassé* 674.



**48. *Muhlenbergia vaseyana* Scribn. Rep. Mo. Bot. Gard. 10: 52. 1899.**

Type locality, "Rocky cañon, Arizona," the type specimen collected by Rothrock, Wheeler Exped. (no. 282).

RANGE: Texas to Arizona and south in the highlands to Oaxaca.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: El Toste, *Brandege* in 1893. San Francisquito Mountains, *Brandege* in 1890 and 1899. Sierra de la Laguna, *Brandege* in 1899.

SONORA: San José Mountains, *Mearns* 962. Sierra de los Alamos, *Palmer* 409 in 1890.

CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7669; rocky hill, *Hitchcock* 7714. Santa Eulalia Hills, *Wilkinson* in 1885. Miñaca, rocky hill, *Hitchcock* 7742.

DURANGO: Durango, Iron Mountain, *Palmer* 542 in 1896; rocky hill, *Hitchcock* 7621. Otinapa, *Palmer* 553 in 1906.

COAHUILA: Jaral, *Schumann* 1753 in 1885.

MICHOACÁN: Morelia, *Arsène* 2674.

MÉXICO: Ixtaccihuatl, rocks, barrancas, *Purpus* 1611. Salto de Agua, rocky hillsides, *Purpus* 1629. Federal District, Pedregal, *Rose, Painter & Rose* 8255, 9456.

PUEBLA: Cerro de Soluche, *Purpus* 4081.

OAXACA: Oaxaca, *Smith* 916. Reyes, *Nelson* 1780. Sierra de San Felipe, *Smith* 927; summit ledges, *Pringle* 5577. Dolores, *Liebmann* 737.

**49. *Muhlenbergia grandis* Vasey, Contr. U. S. Nat. Herb. 1: 283. 1893.**

Type locality, "Rio Blanco," the type specimen collected in 1886 by Palmer (no. 515).

RANGE: KNOWN only from Jalisco.

## HERBARIUM SPECIMENS:

JALISCO: Guadalajara, cool slopes of barranca, *Pringle* 1760, 2362. Río Blanco, *Palmer* 515, 515a, and 682 in 1886; slopes of barranca, *Pringle* 11751.

**50. *Muhlenbergia virescens* (H. B. K.) Kunth, Rév. Gram. 1: 64. 1829.**

*Podosaemum virescens* H. B. K. Nov. Gen. & Sp. 1: 132. 1816.

Type locality, "locis asperis, excelsis regni Mexicani prope Santa Rosa de la Sierra et Puerto de Varietos."

RANGE: New Mexico and Arizona to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

ZACATECAS: Sierra Madre, *Rose* 3527.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 920 and 928 in 1878.

**51. *Muhlenbergia articulata* Scribn. Proc. Acad. Phila. 1891: 298. f. 1. 1892.**

Type locality, "Calcareous banks, Cardenas, State of San Luis Potosí," the type specimen collected by Pringle (no. 3477).

RANGE: KNOWN only from type locality.

## HERBARIUM SPECIMEN:

SAN LUIS POTOSÍ: Cárdenas, dry calcareous hills, *Pringle* 3913.

**52. *Muhlenbergia longiglumis* Vasey, Contr. U. S. Nat. Herb. 1: 283. 1893.**

Type locality, "Guadalajara," the type specimen collected by Palmer (no. 766).

RANGE: Pacific slope of southwestern Mexico.

## HERBARIUM SPECIMENS:

JALISCO: Guadalajara, rocky hills, *Pringle* 11752; hillsides under pines, *Pringle* 2365; *Palmer* 766 in 1886.

MICHOACÁN: Morelia, *Arsène* in 1909.

**53. Muhlenbergia straminea** sp. nov.

Tufted stramineous perennial, the base more or less rhizomatous; culms erect, flattened, smooth below, scabrous above, 50 to 80 cm. high; sheaths scabrous, the lower with age becoming papery, flat and ribbon-like; ligule membranaceous, 3 to 12 mm. long; blades scabrous, 2 mm. wide, flat or usually involute, about as long as the culms, tapering into a long, slender, flexuous point; panicles narrow, tawny, 10 to 20 cm. long, the branches appressed, rather densely flowered, the lower 4 to 7 cm. long, the stout branchlets and short pedicels scabrous; glumes nearly equal, scabrous, tawny, rather papery, narrow, acuminate, 4 to 5 mm. long, the first 1-nerved, the second 3-nerved; lemma scarcely so long as the glumes, 3-nerved, villous with white hairs below, scabrous above, tapering into a slender flexuous awn 5 to 15 mm. long, the callus broad and short; palea a little shorter than the lemma, villous below and scabrous above.

Type in the U. S. National Herbarium, no. 691888, collected in the western Sierra Madre at Tecorichu, Chihuahua, in pine and oak woods, 2,200 meters altitude, April 10, 1906, by R. Endlich (no. 1210).

This species is distinguished by the stramineous appearance of the glumes and foliage and by the flat, ribbon-like lower sheaths, which withdraw from the culms and become spirally twisted or curled like shavings. The long, papery glumes indicate an affinity with *Triniochloa*, but it is distinguished from that genus by the terminal awn of the lemma. It appears to be most nearly allied to *M. longiglumis*.

The only additional specimens examined were collected in the same region at Tierra Colorada by Endlich (no. 1226, 1210a). One of these specimens (no. 1210a) has deformed spikelets. The specimens in the United States National Herbarium are small portions of those in the herbarium of the Berlin Botanical Garden and were received through the courtesy of Dr. I. Urban.

**54. Muhlenbergia enervis** (Scribn.).

*Muhlenbergia gracilis* var. *enervis* Scribn.; Beal, Grasses N. Amer. 2: 242. 1896.

Type locality, "Mexico," the type specimen collected on dry ledges, Sierra Madre, Chihuahua, by Pringle (no. 1413).

RANGE: Known only from the type collection.

**55. Muhlenbergia palmeri** Vasey, Bull. Torrey Club 3: 231. 1886.

Type locality, "S. W. Chihuahua," the type specimen collected in 1885 by Palmer (no. 16).

RANGE: Known only from mountains of Chihuahua.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 16 in 1885. Wet places, pine plains, base of Sierra Madre, *Pringle* 1417.

**56. Muhlenbergia acuminata** Vasey, Bot. Gaz. 11: 337. 1886.

Type locality, "New Mexico," the type specimen collected by Wright (no. 1993).

RANGE: Mountains of New Mexico and south in the highlands to San Luis Potosí.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, cool slopes, rocky hills, *Pringle* 403.

COAHUILA: San Lorenzo Canyon, *Palmer* 399 in 1904. Saltillo, rich moist soil, *Palmer* 379 in 1898; dry hills, *Palmer* 416 in 1898. Chojo Grande, *Palmer* 341 in 1904.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 969 in 1878.

**57. Muhlenbergia elongata** Scribn. in Beal, Grasses N. Amer. 2: 251. 1896.

Type locality, "Mexico," the type specimen collected on "Ledges, rocky hills near Chihuahua" by Pringle (no. 398).

RANGE: Highlands of Chihuahua.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Ledges, rocky hills near Chihuahua, *Pringle* 398. Southwestern Chihuahua, *Palmer* 159 in 1885.

58. *Muhlenbergia berlandieri* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 4<sup>1</sup>: 299. 1841.

Type locality, "Mexico, in montibus," the type specimen collected by Berlandier.

RANGE: Texas and New Mexico and south in the highlands to Oaxaca.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Cananea, *Ricketts* 16.

DURANGO: Durango, abundant in a meadow, *Palmer* 729 in 1896.

SAN LUIS POTOSÍ: En route to Tampico, *Palmer* 954 in 1879.

JALISCO: Road between Mezquitic and Monte Escobedo, *Rose* 2614.

HIDALGO: Pachuca, rocky slopes, *Purpus* 1626; rocky hill, *Hitchcock* 6708½.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6886. Federal District, *Pringle* 7376, 9591.

PUEBLA: Chalchicomula, rocky hill, *Hitchcock* 6300, 6301. San Marcos, railway embankment, *Hitchcock* 6524; large clump, sandy soil, *Hitchcock* 6542. Esperanza, rocky hill, *Hitchcock* 6473. Cerros near San Luis, on rocks, *Purpus* 2900. Hills about Contadero Station, *Pringle* 9590.

OAXACA: Sierra de San Felipe, *Conzatti & Gonzáles* 438a.

64. *TRINIOCHLOA* gen. nov.<sup>1</sup>

Spikelets 1-flowered, the rachilla not produced beyond the floret; glumes membranaceous, thin, and papery; lemma narrow, rounded on the back, firmer than the glumes, bearing a stout, geniculate, dorsal awn attached above the middle, 2-toothed at the apex, the teeth slender, the callus densely bearded. Cespitose perennials with narrow, rather few-flowered panicles and spikelets as much as 1 cm. long excluding the awns.—Mountainous regions, Sonora, Mexico, to Ecuador.

Type species, *Podosaemum stipoides* H. B. K.

## KEY TO THE SPECIES.

- Glumes much shorter than the lemma. . . . . 1. *T. stipoides*.  
 Glumes about as long as the lemma.  
 Blades very narrow, less than 1 mm. wide; glumes unequal, the second about 1 cm. long; ligule as much as 1 cm. long. . . . . 2. *T. micrantha*.  
 Blades 3 to 4 mm. wide; glumes nearly equal, the second 1.5 cm. long; ligule short. . . . . 3. *T. laxa*.

1. *Triniochloa stipoides* (H. B. K.).

*Podosaemum stipoides* H. B. K. Nov. Gen. & Sp. 1: 131. 1816.

*Muhlenbergia stipoides* Kunth, Rév. Gram. 1: 64. 1829.

*Avena stipoides* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 4. 1900.

Type locality, "in planitie temperata amoena Llano de Cachapamba, juxta Chillo \* \* \* (Regno Quitensi)."

RANGE: High mountains, southern Mexico to Ecuador.

## HERBARIUM SPECIMENS FROM MEXICO:

MÉXICO: Ixtaccihuatl, hillsides, *Purpus* 1628; moist open woods, *Purpus* 1630.

PUEBLA: Mount Orizaba, *Liebmann* 647.

MORELOS: Tres Marias Mountains, *Pringle* 11754.

OAXACA: Sierra de San Felipe, *Pringle* 4905, *Smith* 923.

<sup>1</sup> This genus is dedicated to Karl Bernhard Trinius (1778–1844), the eminent agrostologist, whose herbarium is at the Academy of Sciences of St. Petersburg. *Trinia* Hoffm. is a genus of Umbelliferae, and *Triniusia* Steud., based on *Bromus danthoniae*, is not a valid genus. It is but fitting that the name of Trinius should be borne by a genus of the family to the knowledge of which he contributed so largely.

**2. *Triniochloa micrantha* (Scribn.).**

*Avena micrantha* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 19: 3. f. 1. 1900.

Type locality, "State of Morelos," the type specimen collected at Sierra de Tepoxtlán by Pringle (no. 8018).

RANGE: Known only from the type locality.

**HERBARIUM SPECIMENS:**

MORELOS: Sierra de Tepoxtlán, mossy cliffs, *Pringle* 8018, 9172, 11214.

**3. *Triniochloa laxa* sp. nov.**

Culms densely cespitose, lax, decumbent and rhizomatous at base, the old culms and leaves persistent; sheaths glabrous; ligule 1 to 3 mm. long; blades flat, scabrous, 15 to 30 cm. long, 3 to 4 mm. wide, long-acuminate, smooth and green beneath, scabrous and glaucous above; panicles narrow, few-flowered, scarcely exceeding the upper leaves, the branches few, short and appressed, bearing 1 to 3 spikelets; spikelets excluding the awn about 15 mm. long; glumes narrow, gradually narrowed to the acute apex, purple at base along the midrib, scarious, glabrous, the first 1-nerved, 12 mm. long, the second 3-nerved, 15 mm. long; lemma mottled with purple, rounded on the back, about 14 mm. long, 5-nerved, the three central nerves passing into the dorsal awn, the other two extending into the 2 short teeth of the apex; callus densely bearded with white hairs 3 to 5 mm. long; awn attached about the middle of the lemma and below the short teeth, about 15 mm. long, stout, bent about the middle, loosely twisted below; palea similar to the lemma, nearly as long.

Type in the U. S. National Herbarium, no. 691223, collected on rocky side of ravine, 2,400 meters altitude, Sánchez, Chihuahua, Mexico, October 12; 1910, by A. S. Hitchcock (no. 7687).

RANGE: Known only from the type collection.

**65. LYCURUS H. B. K. Nov. Gen. & Sp. 1: 141. pl. 45. 1816.****KEY TO THE SPECIES.**

- First glume bearing a single awn about as long as the body of the lemma, and often a second shorter awn..... 2. *L. phalaroides*.  
 First glume bearing 2 slender nearly equal teeth, exceeding the body of the lemma.  
 Culms smooth..... 1. *L. phleoides*.  
 Culms scabrous; blades firm, glaucous..... 1a. *L. phleoides glaucifolius*.

**1. *Lycurus phleoides* H. B. K. Nov. Gen. & Sp. 1: 142. pl. 45. 1816.**

Type locality, "in temperatis Mexici, inter Guanaxuato et Temascatio et in radicibus aridissimi montis La Buffa."

RANGE: Rocky Mountain region of the United States and south in the mountains to southern Mexico.

**HERBARIUM SPECIMENS FROM MEXICO:**

LOWER CALIFORNIA: Cape region, mountains, *Brandege* in 1899. Sierra de la Laguna, *Brandege* in 1893.

SONORA: Los Pinitos, *Hartman* 230.

CHIHUAHUA: Sánchez, rocky ravine, *Hitchcock* 7684; along railway, *Hitchcock* 7698. Chihuahua, rocky hill, *Hitchcock* 7793. Southwestern Chihuahua, *Palmer* 2 in 1885. Miñaca, rocky hill, *Hitchcock* 7740. Between Casas Grandes and Sabinal, *Nelson* 6356.

DURANGO: Durango, dry ground, *Hitchcock* 7605; rocky hill, Iron Mountain, *Hitchcock* 7637; hillsides, *Palmer* 526 in 1896.

COAHUILA: Chojo Grande, *Palmer* 339 in 1904. Jaral, *Schumann* 1725.

ZACATECAS: Zacatecas, in gulches of dry sterile hill, *Hitchcock* 7496. Plateado, *Rose* 2794.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7463.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5676; *Schaffner* 150; *Parry & Palmer* 939 in 1878.

JALISCO: Guadalajara, *Palmer* 459 in 1886.

QUERÉTARO: Between San Juan del Río and Cadereyta, *Rose, Painter & Rose* 9695.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6702. El Salto, limestone hills, *Pringle* 9571. Mount Ixmiquilpan, *Purpus* 5065.

MÉXICO: Popo Park, open ground, *Hitchcock* 6017. Zapán, *Bourgeau* 442. Federal District, open ground, *Hitchcock* 5933, 5903; *Orcutt* 3677, 4308.

PUEBLA: Chalchicomula, *Rose & Hay* 5801; rocky hill, *Hitchcock* 6283. Tehuacán, *Rose & Hay*, 5821; dry limestone ledges, *Pringle* 6689. Esperanza, barren hills, *Pittier* 420; rocky hill, *Hitchcock* 6478. San Marcos, railway embankment, *Hitchcock* 6535, 6514.

1a. *Lycurus phleoides glaucifolius* Beal, *Grasses N. Amer.* 2: 271. 1896.

Type locality, "Mexico," the type specimen collected in Chihuahua by *Pringle* (no. 426).

RANGE: Highlands of northern Mexico.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Hills near Chihuahua, *Pringle* 426.

DURANGO: Edge of water hole, *Palmer* 831 in 1896.

2. *Lycurus phalaroides* H. B. K. *Nov. Gen. & Sp.* 1: 142. 1816.

*Muhlenbergia lycuroides* Vasey; Beal, *Grasses N. Amer.* 2: 239. 1896.

*Lycurus brevifolius* Scribn.; Beal, *Grasses N. Amer.* 2: 271. 1896.

Type locality, "in montanis regni Mechoacanensis juxta Valladolid, Alberca de Palangeo et Patzcuaro," Mexico.

RANGE: Northern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* in 1893.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 2 in 1885.

DURANGO: Tepehuanes, *Palmer* 260 in 1906.

ZACATECAS: Hacienda de Cedros, foothills, *Lloyd* 179.

JALISCO: Guadalajara, plains, *Pringle* 2470; prairie near San Pedro, *Hitchcock* 7307; *Palmer* 489 in 1886. Zapotlán, rocky hill, *Hitchcock* 7248, 7259.

HIDALGO: Sierra de Pachuca, *Rose, Painter & Rose* 8800.

MICHOACÁN: Morelia, *Arsène* in 1909. Uruápan, prairie, *Hitchcock* 6967. Jacuaro, along railway, *Hitchcock* 7006.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6893. Federal District, dry soil, *Pringle* 6576.

PUEBLA: Mount Orizaba, rocky slopes, *Seaton* 249.

VERACRUZ: Orizaba, *Botteri* 680.

CHIAPAS: San Cristóbal, *Nelson* 3228.

66. *PEREILEMA* Presl, *Rel. Haenk.* 1: 233. *pl. 57. f. a.* 1830.

## KEY TO THE SPECIES.

- Bristles scabrous; clusters oblong or linear, approximate; long awns numerous and often flexuous..... 1. *P. crinitum*.  
 Bristles plumose; inflorescence of several globose clusters, distant at base; long awns few..... 2. *P. ciliatum*.

1. *Pereilema crinitum* Presl, *Rel. Haenk.* 1: 233. *pl. 57. f. a.* 1830.

Type locality, "Panama."

RANGE: Northwestern Mexico to South America.

HERBARIUM SPECIMENS FROM MEXICO:

- LOWER CALIFORNIA: San Francisquito Mountains, *Brandege* in 1890.  
 TEPIC: Tepic, shady banks of arroyo, *Palmer* 1932 in 1892.  
 JALISCO: Guadalajara, ledges of barranca, *Pringle* 1744; *Palmer* 499 in 1886; side of gulch near San Pedro, *Hitchcock* 7303; side of Barranca de Oblatos, *Hitchcock* 7340. Chapala, *Rose* 3464.  
 MICHOACÁN: Sierra Madre, *Langlassé* 603.  
 VERACRUZ: Escamela, *Bourgeau* 3272. Orizaba, *Müller* 2069; mossy ledges, *Pringle* 6155; *Botteri* 696, 1272. Zacuapan, rocky slopes, *Purpus* 2153.  
 MORELOS: Cuernavaca, ledges, *Pringle* 11245.  
 OAXACA: Reyes, *Nelson* 1822. Parián Cañon, dry ledges, *Pringle* 6016.

2. *Pereilema ciliatum* Fourn. Mex. Pl. 2: 93. 1886.

Type locality, Veracruz, "Orizaba" and "Cordova" collections cited.

RANGE: Mountains of southern Mexico.

HERBARIUM SPECIMENS:

- JALISCO: Tequila, dry shaded ledges, barranca, *Pringle* 4606.  
 VERACRUZ: Orizaba, *Botteri* 708, 711.  
 MORELOS: Cuernavaca, *Pringle* 11243, 11763.

67. *PHLEUM* L. Sp. Pl. 59. 1753.

TIMOTHY.

1. *Phleum alpinum* L. Sp. Pl. 59. 1753.

Type locality, "in Alpibus," Europe.

RANGE: Cooler regions and mountains of the northern hemisphere and extending in the high mountains to South America.

HERBARIUM SPECIMENS FROM MEXICO:

- MÉXICO: Nevado de Toluca, *Nelson* 22 in 1893.  
 PUEBLA: Peak of Orizaba (Citlaltepétl), near timber line, *Purpus* 2886; *Liebmann* 685.

68. *SPOROBOLUS* R. Br. Prodr. Fl. Nov. Holl. 169. 1810.

KEY TO THE SPECIES.

Plants annual.

- Glumes unequal, the second as long as the spikelet, the first half as long..... 5. *S. macrospermus*.  
 Glumes subequal.  
 Glumes about as long as the spikelet, 2 mm. long, smooth; spikelets often nodding on the capillary pedicels..... 1. *S. shepherdii*.  
 Glumes shorter than the spikelet, 1 mm. long or less.  
 Pedicels short, uniformly rather thick, the spikelets appressed along the main branches of the panicle; glumes smooth, very short, obtuse.. 3. *S. ramulosus*.  
 Pedicels capillary.  
 Pedicels thickened below the spikelet, all longer than the spikelets; panicle more than half the entire height of the plant; glumes often pilose..... 2. *S. confusus*.  
 Pedicels not conspicuously thickened, the ultimate lateral ones shorter than the spikelets; panicle less than half the height of the plant..... 4. *S. minutiflorus*.

## Plants perennial.

## Plants producing creeping rhizomes.

Inflorescence spike-like; blades firm, pungently involute-pointed..... 21. *S. virginicus*.

Inflorescence a diffuse capillary panicle; blades flat, rather lax.

Ligule 1 to 2 mm. long, auricled..... 6. *S. auriculatus*.

Ligule minute, not auricled..... 7. *S. asperifolius*.

## Plants tufted, not producing creeping rhizomes.

Panicle large and open, the branches ascending, the lower 10 to 15 cm. long.

Blades scabrous, elongated, the tip involute-attenuate; plants 1 to 2 meters high, in large tussocks..... 8. *S. wrightii*.

Blades smooth, glaucous, less than 10 cm. long; plants less than 1 meter high..... 9. *S. palmeri*.

Panicle narrower or more delicate.

Panicle long and narrow, the branches appressed.

Second glume shorter than the spikelet, little longer than the first; panicle densely flowered; spikelets about 2 mm. long... 17. *S. indicus*.

Second glume about as long as the spikelet.

Panicle narrow but not strict and spike-like; blades, at least the lower, ciliate; sheaths glabrous or sparsely pilose at the throat..... 19. *S. purpurascens*.

Panicle elongated, strict and spike-like; blades not ciliate or only slightly so at base; sheaths strongly pilose at throat..... 10. *S. strictus*.

Panicle pyramidal or oblong, the main branches spreading or ascending (only of the exerted portion in *S. cryptandrus*).

Panicle even at maturity inclosed at base in the uppermost sheath; leaves strongly bearded at the throat.

Branches of panicle flexuous, slender..... 12. *S. flexuosus*.

Branches of panicle not flexuous..... 11. *S. cryptandrus*.

Panicle exerted at maturity.

Branches of panicle elongated, naked below; blades flat, lax, as much as 1 cm. wide; sheaths ciliate, densely short-pilose on the collar..... 13. *S. buckleyi*.

Branches of panicle not conspicuously elongated.

Spikelets all on slender pedicels; glumes unequal, both shorter than the spikelet..... 14. *S. trichodes*.

Spikelets short-pedicel, more or less secund along the main branches.

Lowermost panicle branches several in a whorl.

Spikelets 1.5 mm. long..... 16. *S. argutus*.

Spikelets 3 mm. long..... 20. *S. erectus*.

Lowermost branches in 1's or 2's.

Panicle long and narrow;  
branches spreading in  
anthesis, spikelet-bear-  
ing nearly to base;  
blades slender, elong-  
ated, attenuate-pointed 18. *S. jacquemontii*.

Panicle pyramidal, the  
branches naked below;  
blades short, flat,  
mostly basal; spikelets  
1 mm. long..... 15. *S. atrovirens*.

**1. *Sporobolus shepherdii* Vasey, Bull. Torrey Club 14: 8. 1887.**

Type locality, "S. W. Chihuahua," the type specimen collected in 1885 by Palmer, probably at Batopilas.

RANGE: Highlands of northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7679. Sierra Madre, *Pringle* 1424; near Colonia García, *Townsend & Barber* 330. Southwestern Chihuahua, *Palmer* 9 in 1885.

DURANGO: Sandías Station, barranca, *Pringle* 13635.

**2. *Sporobolus confusus* (Fourn.) Vasey, Bull. Torrey Club 15: 293. 1888.**

*Vilfa confusa* Fourn. Mex. Pl. 2: 101. 1886.

Type locality, not definitely given, Jorullo being the first place mentioned ("In devexis arenosis montis ignivomi Jorullo, Bonpl.," [that being the type collection of *Vilfa ramulosa* H. B. K.]); collections from Orizaba, Nevado de Toluca, Jalacingo, and United States also cited.

RANGE: Montana to Washington and south in the mountains to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* in 1899.

SONORA: Alamos, *Palmer* 696 in 1890.

CHIHUAHUA: Santa Eulalia Mountains, gravelly washes, *Wilkinson* in 1885. Chihuahua, dry bed of river, *Hitchcock* 7783; hills and plains, *Pringle* 482. Southwestern Chihuahua, *Palmer* 4, 4a, 76, and 85 in 1885. Sánchez, open ground in pine woods, *Hitchcock* 7662. Miñaca, sandy bed of dry run, *Hitchcock* 7767.

AGUASCALIENTES: Aguascalientes, gravel in dry run, *Hitchcock* 7472.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 927 in 1878.

JALISCO: Guadalajara, prairie near San Pedro, *Hitchcock* 7276; dry ditch, road to Barranca de Oblatos, *Hitchcock* 7309.

MICHOACÁN: Punguato near Morelia, *Arsène* in 1909.

MÉXICO: Salto de Agua, dry meadows, *Purpus* 1635. Valley of Mexico, *Schaffner* 192; *Rose & Painter* 7128.

PUEBLA: Puebla, *Nicolas* in 1908.

**3. *Sporobolus ramulosus* (H. B. K.) Kunth, Rév. Gram. 1: 68. 1829.**

*Vilfa ramulosa* H. B. K. Nov. Gen. & Sp. 1: 137. 1816.

*Sporobolus racemosus* Vasey, Bull. Torrey Club 14: 9. 1887.

Type locality, "in devexis arenosis montis ignivomi Mexicani, Jorullo."

RANGE: Colorado, Arizona, and southward in the highlands to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* in 1899.



## HERBARIUM SPECIMENS FROM MEXICO—Continued.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 4b in 1885. Sánchez, open ground in pine woods, *Hitchcock* 7661. Sierra Madre, cool, gravelly slopes, *Pringle* 1425.

JALISCO: Nevado de Colima, in open ground, *Hitchcock* 7155. Volcán de Colima, *Ross* 511.

MÉXICO: Nevado de Toluca, *Rose & Painter* 6433, 7926. Cima, *Rose & Painter* 8062. Popocatepetl, *Rose & Hay* 6014. Federal District, *Bourgeau* 1028, 1308.

MORELOS: Tres Marías, railroad banks, *Pringle* 10412.

4. *Sporobolus minutiflorus* (Trin.) Link, Hort. Berol. 1: 88. 1827.

*Vilfa minutiflora* Trin. Gram. Unifl. 158. 1824.

Type locality unknown, the species described from a garden specimen.

RANGE: Southern Mexico to South America.

HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Consoquitla, *Liebmann* 707.

5. *Sporobolus macrospermus* Scribn.; Beal, Grasses N. Amer. 2: 302. 1896.

Type locality, "Mexico (Jalisco)," the type specimen collected by *Pringle* (no. 2447).

RANGE: Southern Mexico and Guatemala.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Zapotlán, hills, *Hitchcock* 7178; rocky hill, *Hitchcock* 7253. Guadalajara, prairie near San Pedro, *Hitchcock* 7305; hills, *Pringle* 2048; rocky hills, *Pringle* 2447. San Nicolás, sterile clay hill, *Hitchcock* 7204. Etzatlán, dry banks, *Pringle* 11755.

MICHOACÁN: Uruápan, open stony place, *Hitchcock* 6963.

OAXACA: Las Sedas, *Smith* 921; granitic soil, hills, *Pringle* 4943.

CHIAPAS: Roadside between Tuxtla and San Cristóbal, *Nelson* 3120.

6. *Sporobolus auriculatus* Vasey, Contr. U. S. Nat. Herb. 3: 64. 1892.

Type locality, Pena, Texas, the type specimen collected by *Nealley*.

RANGE: Texas to Arizona and Sonora.

HERBARIUM SPECIMEN FROM MEXICO:

SONORA: Sierra del Nacori, *Lumholtz* 326.

7. *Sporobolus asperifolius* Nees & Meyen, Nov. Act. Acad. Caes. Leop. Carol. 19: Suppl. 1: 141. 1843.

Type locality, "In republica Chilensi, ad Copiapo (circa Nantoco) et Rio Maipu flumina," the type specimen collected by *Meyen*.

RANGE: North Dakota to British Columbia and south in the mountains to South America.

HERBARIUM SPECIMEN FROM MEXICO:

SAN LUIS POTOSÍ: San Luis Potosí, *Griffiths* 6517.

8. *Sporobolus wrightii* Munro; Scribn. Bull. Torrey Club 9: 103. 1882.

Type locality, "Camp No. 12 on the Little Colorado," Arizona.

RANGE: Alkaline soil, southwestern United States to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* in 1890. Playa María, *Anthony* in 1896. San Requis, *Brandege* in 1889. Tía Juana, *Jones* 3746. Topo, *Orcutt* in 1884. Carysito, *Orcutt* in 1884.

SONORA: Along railway, 10 miles south of Nogales, *Hitchcock* 3632.

CHIHUAHUA: Chihuahua, water courses, *Wilkinson* in 1885. Casas Grandes, *Nelson* 6344. Between Colonia García and Pratt's ranch, *Nelson* 6243.

SINALOA: Topolobampo, alkali bottoms, *Palmer* 239 in 1897. Between Rosario and Acaponeta, *Rose* 1867.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

DURANGO: Torreón, near ditch, *Hitchcock* 7551, 7727. Durango, under mesquite trees, alkali land, *Palmer* 742 in 1896.

COAHUILA: Jaral, *Schumann* 1735. Saltillo, dry ground in large, dense tussocks 3 feet in diameter, *Hitchcock* 5581; adobe soil in irrigated field, *Hitchcock* 5595; old plowed land in dry mesas, *Hitchcock* 5644; sandy ground, river bottom, *Hitchcock* 5636; low clay alkaline soil, *Palmer* 1 in 1898.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7535.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7458; along ditch, *Hitchcock* 7493.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5680.

HIDALGO: Valley near Tula, *Pringle* 8616.

FEDERAL DISTRICT: *Rose & Hough* 4887.

9. *Sporobolus palmeri* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 11: 48. pl. 5. 1898.

Type locality, "alkali bottoms near the city of Durango, Mexico," the type specimen collected in 1896 by Palmer (no. 180).

RANGE: Known only from the type collection.

10. *Sporobolus strictus* (Scribn.) Merr. U. S. Dept. Agr. Div. Agrost. Circ. 32: 6. 1901.

*Sporobolus cryptandrus strictus* Scribn. Bull. Torrey Club 9: 103. 1882.

Type locality, "Banks of the Rillita, near Camp Lowell," the type specimen collected by Pringle.

RANGE: Kansas to Nevada and south to northern Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

SONORA: Between Imeris and Santa Ana, *Griffiths* 6962.

11. *Sporobolus cryptandrus* (Torr.) A. Gray, Man. 576. 1848.

*Agrostis cryptandra* Torr. Ann. Lyc. N. Y. 2: 151. 1826.

*Vilfa cryptandra* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 69. 1840.

Type locality, "On the Canadian river" [Texas or Oklahoma], the type specimen collected by James.

RANGE: Northern United States to northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Guaymas, *Palmer* 65 in 1887. Las Ranchas, *Rose, Standley & Russell* 15036. Hermosillo, meadow near river, *Hitchcock* 3595; dry bed of Sonora River, *Chase* 5507. Along railway 10 miles south of Nogales, *Hitchcock* 3630. 3639. Nogales to Cocospora Ranch, *Griffiths* 6797.

CHIHUAHUA: Valley near Chihuahua, *Pringle* 419.

COAHUILA: Saltillo, sandy field, river bottom, *Hitchcock* 5625.

NUEVO LEÓN: Monterey, sandy soil by river, *Hitchcock* 5551.

12. *Sporobolus flexuosus* (Thurb.) Rydb. Bull. Torrey Club 32: 601. 1905.

*Vilfa cryptandra flexuosa* Thurb.; Vasey in Wheeler, Rep. U. S. Surv. 100th Merid. 6: 282. 1878.

Type locality, "Nevada and Arizona" cited.

RANGE: Southwestern United States and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sand hills near Paso del Norte [Juárez], *Pringle* 815. Colonia Díaz, *Nelson* 6458.

13. *Sporobolus buckleyi* Vasey, Bull. Torrey Club 10: 128. 1883.

Type locality, "Texas," the type specimen collected by Buckley.

RANGE: Texas and eastern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Valley of Monterey, *Pringle* 2520. Monterey, edge of thicket along Río San Juan, *Hitchcock* 5558.

TAMAULIPAS: Tampico, *Palmer* 154 in 1910.

14. *Sporobolus trichodes* nom. nov.

*Sporobolus capillaris* Vasey, Contr. U. S. Nat. Herb. 1: 283. 1893, not Miq. 1851.

Type locality, "Río Blanco," the type specimen collected in 1886 by Palmer (no. 512).

RANGE: Highlands of Mexico from Chihuahua to Michoacán.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Guerrero plains, *Pringle* 1426.

JALISCO: Guadalajara, on rocks, side of Barranca de Oblatos, *Hitchcock* 7336; dry ledges, barranca, *Pringle* 3853. Río Blanco, *Palmer* 512 in 1886. Between Mezquitic and Monte Escobedo, *Rose* 2613.

MICHOACÁN: Oeste del Zapote, near Morelia, *Arsène* in 1909.

MORELOS: Cuernavaca, hillside pasture, *Hitchcock* 6819.

15. *Sporobolus atrovirens* (H. B. K.) Kunth, Rév. Gram. 1: 68. 1829.

*Vilfa atrovirens* H. B. K. Nov. Gen. & Sp. 1: 138. 1816.

Type locality, "in valle Mexicana prope El Peñon del Marques."

RANGE: Highlands of Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: El Taste, *Brandege* in 1893 and 1902.

DURANGO: Durango, in gardens, fields, and mesquite thickets, *Palmer* 874 in 1896.

TAMAULIPAS: Victoria, *Palmer* 468 in 1907.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 937 in 1878, *Schaffner* 141.

Las Canoás, dry rocky hills, *Pringle* 3130. Cárdenas, rocky hill, *Hitchcock* 5771.

QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5830, 5858.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6729. El Salto, hills, *Pringle* 11247.

MÉXICO: Toluca, open rocky place, *Hitchcock* 6909. Federal District, *Bourgeau* 535, *Rose & Hay* 5470, 5971, *Pringle* 8727, 9609; open flat places among lava rocks, *Hitchcock* 5956.

PUEBLA: San Luis Tultitlanapa, *Purpus* 3587; Tehuacán, *Rose & Hay* 5923, cactus hill, *Hitchcock* 6080.

VERACRUZ: Orizaba, *Müller* 2092.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6145.

YUCATÁN: Izamal, open lands, *Gaumer* 313.

16. *Sporobolus argutus* (Nees) Kunth, Enum. Pl. 1: 215. 1833.

*Vilfa arguta* Nees, Agrost. Bras. 395. 1829.

Type locality, "locis campestribus provinciae Piauhianae et ad flumen S. Francisci prov. Minarum," Brazil, the type specimen collected by Martius. This species appears to be the same as the one described by Fournier<sup>1</sup> under *Vilfa grisebachiana*. He cites two specimens from Orizaba that I have not seen. However, I consider the type of Fournier's species to be Wright's no. 3427a, which he cites, since he gives as a synonym, "*Sporobolus purpurascens* Griseb. part."

RANGE: Southwestern United States and the West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* in 1899, *Purpus* 323. Santa Agueda, *Palmer* 224 in 1890. Carmen Island, *Palmer* 856 in 1890.

<sup>1</sup> Mex. Pl. 2: 98. 1886.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- SONORA: Yaqui River, *Palmer* 1 in 1869. Imeris to Santa Ana, *Griffiths* 6856. Guaymas, *Palmer* 160, 165, 188, and 696 in 1887, *Rose, Standley & Russell* 12583; gravel near bay, *Hitchcock* 3554; open gravelly place in yard, *Hitchcock* 3564. Batamotal, *Orcutt* in 1899. Agiabampo, *Palmer* 814 in 1890.
- CHIHUAHUA: Chihuahua, sandy plains, *Pringle* 816.
- SINALOA: Topolobampo, in open bottom lands, *Palmer* 236 in 1897; *Rose, Standley & Russell* 13289; Mazatlán, hillside near salt water, *Rose, Standley, & Russell* 13715; *Purpus* 359.
- DURANGO: Durango, along road, *Hitchcock* 7583; rich moist soil, *Palmer* 384 and 737 in 1896.
- COAHUILA: Jaral, *Schumann* 1764. Saltillo, along irrigation ditch, *Hitchcock* 5580.
- NUEVO LEÓN: Monterey, along street, *Hitchcock* 5519.
- TAMAULIPAS: Victoria, *Palmer* 385 in 1907. Tampico, *Palmer* 144 in 1910; along street, *Hitchcock* 5789; along railway, *Hitchcock* 5783.
- SAN LUIS POTOSÍ: Cárdenas, along railway track, *Hitchcock* 5721. Guascama, *Purpus* 5420.
- JALISCO: Guadalajara, *Palmer* 294 in 1886. Orozco, common on railway bank, *Hitchcock* 7381.
- QUERÉTARO: Querétaro, open dry ground, along road, *Hitchcock* 5855.
- HIDALGO: Pachuca, along railway, *Hitchcock* 6758.
- FEDERAL DISTRICT: Pasture, *Bourgeau* 449, wet meadows; *Pringle* 9553, along trolley, *Hitchcock* 5876, *Orcutt* 4106.
- TLAXCALA: Santa Ana, *Nicolas* in 1908.
- PUEBLA: Tehuacán, old field, *Hitchcock* 6032; hard ground, along road, *Hitchcock* 6067; calcareous plains, *Pringle* 6750.
- VERACRUZ: Veracruz, along harbor front, *Hitchcock* 6576.
- GUERRERO: Acapulco, *Palmer* 74 in 1894.
- OAXACA: Tomellín, along railway, *Hitchcock* 6236. Sierra de San Felipe, *Smith* 51.
- YUCATÁN: Progreso, *Millspaugh* 1713.

17. *Sporobolus indicus* (L.) R. Br. Prodr. Fl. Nov. Holl. 1: 170. 1810.

*Agrostis indica* L. Sp. Pl. 63. 1753.

Type locality given as "India."

RANGE: Warmer parts of the Old World, introduced and become common from the southern United States and West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

- CHIHUAHUA: Southwestern Chihuahua, *Palmer* 29 in 1885.
- DURANGO: Tepihuanes, *Palmer* 261 in 1906. Durango, moist, black, loamy soil, *Palmer* 193 in 1896; along ditch, *Hitchcock* 7659.
- TEPIC: Tepic, common on hillsides, near irrigating ditches, *Palmer* 1923 in 1892. Santa Teresa, *Rose* 2142.
- ZACATECAS: Plateado, *Rose* 2708.
- SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 968 in 1878; alfalfa field, *Hitchcock* 5666; irrigation ditch, *Hitchcock* 5678; edge of field, *Hitchcock* 5709. Cárdenas, along railway, *Hitchcock* 5772. Alvarez, *Palmer* 169 in 1904.
- JALISCO: Guadalajara, prairie near San Pedro, *Hitchcock* 7288. San Nicolás, cornfield, *Hitchcock* 7226. Zapotlán, railway right of way, *Hitchcock* 7130. Río Blanco, *Palmer* 205 in 1886.
- GUANAJUATO: Irapuato, moist ground along railway, *Hitchcock* 7433; moist sandy-clay plain, *Hitchcock* 7403. Acámbaro, along railway, *Hitchcock* 6942.
- QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5814.
- HIDALGO: Pachuca, rocky hill, *Hitchcock* 6740. Ixmiquilpan, river bank, *Rose, Painter & Rose* 9062.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- MICHOACÁN: Uruápan, along road, *Hitchcock* 6969. Morelia, *Arsène* in 1909.
- MÉXICO: Popo Park, open woods, *Hitchcock* 6015. Toluca, rocky hill, *Hitchcock* 6890, 6901. Amecameca, fields, *Purpus* 1645. Tlalnepantla, wet meadow, *Rose, Painter & Rose* 8385. Federal District, alkali flat, *Hitchcock* 5880; pasture, *Hitchcock* 5895; banks of ditches, *Bourgeau* 1029; *Schumann* 1754.
- PUEBLA: Atlixco, *Nelson* in 1893. Tehuacán, edge of field, *Hitchcock* 6085. San Marcos, erect clumps, sandy soil, *Hitchcock* 6543. Puebla, *Nicolas* in 1909.
- VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6319, 6340, 6345; *Nelson* 42. Córdoba, weed along track, *Hitchcock* 6401. Jalapa, along railway, *Hitchcock* 6597; along stream, *Hitchcock* 6655; *Smith* 1753, 1816.
- MORELOS: Cuernavaca, pasture, *Hitchcock* 6827.
- OAXACA: Cuicatlán, *Nelson* 1650. Along ditch between Tule and Oaxaca, *Hitchcock* 6171. Valley of Oaxaca, *Conzatti & González* 340. Reyes, *Nelson* 1709. Oaxaca, along road, *Hitchcock* 6162.
- CHIAPAS: Ocuilapa, table-lands, *Nelson* 3034. Roadside between Tuxtla and San Cristóbal, *Nelson* 3115.

18. *Sporobolus jacquemontii* Kunth, *Rév. Gram.* 2: 427. *pl.* 127. 1831.

Type locality, "in insula St. Domingo," the type specimen collected by Jacquemont.

RANGE: West Indies, Mexico, and Central America.

## HERBARIUM SPECIMENS FROM MEXICO:

- VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6552.
- MICHOACÁN: Morelia, *Arsène* in 1908.

19. *Sporobolus purpurascens* (Swartz) *Hamilt. Prodr. Pl. Ind. Occ.* 5. 1825.

*Agrostis purpurascens* Swartz, *Prodr. Veg. Ind. Occ.* 25. 1788.

Type locality, "Jamaica."

RANGE: Gulf region of the United States and Mexico, and in the West Indies.

## HERBARIUM SPECIMENS FROM MEXICO:

- VERACRUZ: Córdoba, grassy bank, *Hitchcock* 6443. Orizaba, *Botteri* 693. Mirador, *Liebmann* 691 in 1841. Dos Puentes, *Liebmann* 692. Jalapa, *Smith* 1569.

20. *Sporobolus erectus* sp. nov.

Perennial, glabrous throughout, culms cespitose, erect, 60 to 70 cm. high, subcompressed; sheaths somewhat keeled; ligule a ciliate-erose ring 0.5 mm. long, sometimes a few long hairs at the sides; blades flat or becoming involute, somewhat soft and thick, sparsely papillose-hispid with long hairs on the margins, the main culm blades as much as 4 mm. wide and 15 cm. long, the uppermost narrow and involute, 2 to 4 cm. long, those of the innovations slender and involute; panicle narrow, dark brown, 10 to 15 cm. long, 3 to 4 cm. wide, the branches in verticils, slender, ascending, naked below, the lower 2 to 3 cm. long; spikelets glabrous, short-pedicel and appressed along the upper half of the branches, 3 mm. long, the pedicels mostly less than 1 mm. long; glumes unequal, acute, the first 1.5 mm. long, the second as long as the spikelet; lemma and palea equal, the latter at maturity split down the middle by the enlarged caryopsis, each part acute, about 1 mm. wide; grain elliptic, abruptly pointed at each end, 2 mm. long, 1 mm. wide.

Type in the U. S. National Herbarium, no. 691231, collected in a clay cut, 1,400 meters altitude, at Jalapa, Mexico, September 2, 1910, by A. S. Hitchcock (no. 6616).

RANGE: Known only from the type collection.

21. *Sporobolus virginicus* (L.) Kunth, *Rév. Gram.* 1: 67. 1829.

*Agrostis virginica* L. *Sp. Pl.* 63. 1753.

*Sporobolus pungens* (Schreb.) Kunth, *Rév. Gram.* 1: 68. 1829.

Type locality given as "Virginia."

RANGE: Sea coasts from Virginia to Costa Rica and the West Indies; also in Lower California.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Margarita Island, *Brandegee* in 1889.

SONORA: Guaymas, *Palmer* 338 in 1887.

TAMAULIPAS: Tampico, brackish marsh, *Hitchcock* 5781.

VERACRUZ: Veracruz, sandy beach, *Hitchcock* 6567; sand dunes, *Pringle* 8469.

69. BLEPHARONEURON Nash, Bull. Torrey Club 25: 88. 1898.

1. *Blepharoneuron tricholepis* (Torr.) Nash, Bull. Torrey Club 25: 88. 1898.

*Vilfa tricholepis* Torr. U. S. Rep. Expl. Miss. Pacif. 4: 155. 1857.

*Sporobolus tricholepis* Torr.; Coulter, Man. Rocky Mount. 411. 1885.

Type locality, "Sandia mountains, New Mexico."

RANGE: Texas to Colorado and Utah, and south in the mountains to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: San José Mountains, *Mearns* 997.

CHIHUAHUA: Sierra Madre near Colonia García, hillside meadow, *Townsend & Barber* 333. Mapula Mountains, thin soil of summits, *Pringle* 822. Southwestern Chihuahua, *Palmer* 6 in 1885. Sánchez, rocky pine woods, *Hitchcock* 7670.

DURANGO: Dos Cajetes, side of arroyo, *Palmer* 833 in 1896.

MÉXICO: Cima, *Orcutt* 3796. Ixtaccihuatl, rocks, subalpine region, *Purpus* 1634. Federal District, *Pringle* 6485.

70. EPICAMPES Presl, Rel. Haenk. 1: 235. pl. 39. 1830.

KEY TO THE SPECIES.

Inflorescence strict, dense, and spike-like.

Glumes awned; lemma awnless or sometimes awned..... 1. *E. leptoura*.

Glumes awnless.

Glumes exceeding the lemma, 6 to 8 mm. long, acuminate; panicle mostly dark-colored; ligule elongated..... 2. *E. macroura*.

Glumes shorter than the lemma, 2 to 3 mm. long, obtuse; panicle pale; ligule short..... 3. *E. rigens*.

Inflorescence often narrow, but not spike-like.

Panicle open, the branches slender, spreading, naked below; spikelets about 2 mm. long..... 9. *E. bourgaci*.

Panicle narrow, the branches ascending or appressed.

Lemmas villous; glumes usually villous; sheaths usually softly pubescent..... 4. *E. lanata*.

Lemmas not villous; sheaths and glumes smooth or scabrous.

Sheaths not compressed-keeled; ligule long, indurated. 5. *E. ligulata*.

Sheaths compressed-keeled; ligule if long, lax and membranaceous.

Spikelets 2 mm. long, often short-awned; ligule short..... 8. *E. stricta*.

Spikelets about 3 mm. long.

Lemma pubescent on lower half..... 6. *E. pubescens*.

Lemma smooth or pubescent on callus only... 7. *E. robusta*.

Two species of which there is insufficient material are not included in the above key: *E. anomala* Scribn., based on *Pringle's* no. 1423 from the State of Chihuahua (which appears to be an abnormal form of *E. ligulata*) and *E. macrotis* Piper, based on *Rose's* no. 3528 from the State of Zacatecas.

1. *Epicampes leptoura* Piper, Proc. Biol. Soc. Washington 18: 143. 1905.

Type locality, "Sierra Madre near Colonia Garcia, Chihuahua, Mexico," the type specimen collected by Townsend & Barber (no. 341).

RANGE: Mountains of Chihuahua.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 0 and 1 in 1885. Sierra Madre near Colonia Garcia, *Townsend & Barber* 341. Miñaca, dry run, *Hitchcock* 7748, 7749; rocky hill, *Hitchcock* 7750. Sánchez, rocky bed of stream, *Hitchcock* 7686.

2. *Epicampes macroura* (H. B. K.) Benth. Journ. Linn. Soc. Bot. 19: 87. 1881.

*Crypsis macroura* H. B. K. Nov. Gen. & Sp. 1: 140. 1816.

Type locality, "in apricis montanis regni Mexicani juxta montem Tolucae."

RANGE: Mountain regions from Chihuahua to Guatemala.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Canyon de San Diego, *Hartman* 803.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 919 and 940 in 1878.

JALISCO: Sayula, *Ox Fiber Brush Co.*, in 1909.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Nevado de Toluca, cool slopes under pines, *Pringle* 4211; *Rose & Painter* 7883. Ixtaccihuatl, rocky places above timber line, *Purpus* 317. Popocatepetl, open mountain side, *Hitchcock* 6002; woods, *Hitchcock* 6010. Salazar, *Rose & Painter* 7051. Cima, *Rose & Painter* 7209. Federal District, *Pringle* 6676; lava fields, *Pringle* 11739, 13628. Ealava, *Holway* 6.

PUEBLA: Mount Orizaba, *Seaton* 161, rocky slopes above timber-line; *Purpus* 3017, *Liebmann* 682; common on the middle stretches of mountain, *Hitchcock* 6259. San Marcos, railway embankment, *Hitchcock* 6528. "San Andres, San Miguel," *Liebmann* 684.

3. *Epicampes rigens* Benth. Journ. Linn. Soc. Bot. 19: 88. 1881.

Type locality, California.

RANGE: New Mexico to central California and south on the Pacific slope to Durango.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de San Francisquito, *Brandegge* 22 and 15 in 1899. Canyon Cantillas, *Orcutt* 1143.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 21 in 1885. Chihuahua, by streams, *Pringle* 417; along aqueduct, *Hitchcock* 7770; along dry run, *Hitchcock* 7773.

DURANGO: Durango, prairie along creek, *Hitchcock* 7615.

4. *Epicampes lanata* (H. B. K.) Presl; Kunth, Enum. Pl. 1: 209. 1833.

*Agrostis lanata* H. B. K. Nov. Gen. & Sp. 1: 136. 1829.

Type locality, "in scopulosis regni Mexicani, juxta Villalpando, Santa Rosa et Cerro del Cubilete."

RANGE: Highlands, Chihuahua to Oaxaca.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Chihuahua, cool slopes, rocky hills, *Pringle* 391.

DURANGO: Durango, rocky hill, *Hitchcock* 7587, 7652.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 933 in 1878, *Schaffner* 190.

PUEBLO: Esperanza, rocky hill, *Hitchcock* 6485.

OAXACA: Las Sedas, *Pringle* 5575.

5. *Epicampes ligulata* Scribn.; Vasey, Contr. U. S. Nat. Herb. 3: 58. 1892.

Type locality, "Texas," the type specimen collected at Bandero's Pass by Reverchon (no. 1610).

RANGE: Texas to Arizona and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: San José Mountains, *Mearns* 996, 1649.

CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7667. Sierra Madre, cool slopes, *Pringle* 1427.

6. *Epicampes pubescens* (H. B. K.) Presl; Kunth, Enum. Pl. 1: 209. 1833.

*Agrostis pubescens* H. B. K. Nov. Gen. & Sp. 1: 136. 1829.

Type locality, "in scopulosis regni Mexicani, juxta Villalpando, Santa Rosa et Cerro del Cubilete."

RANGE: Highlands from Coahuila to Oaxaca.

## HERBARIUM SPECIMENS:

COAHUILA: San Lorenzo Canyon, *Palmer* 401 in 1904.

OAXACA: Sierra de San Felipe, summit ledges, *Pringle* 5576.

7. *Epicampes robusta* Fourn. Mex. Pl. 2: 89. 1886.

Type locality, southern Mexico, three localities being cited as follows: "Supra Tacubaya. (BOURG. n. 683); Santa Fe \* \* \*. (BOURG. n. 1153); Cuernavaca (HAHN n. 420)."

RANGE: Highlands from northwestern Mexico to Oaxaca.

## HERBARIUM SPECIMENS:

SONORA: Alamos, *Palmer* 414 in 1891.

CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7669½. Casas Grandes, *Townsend & Barber* 357.

DURANGO: Otinapa, *Palmer* 344 in 1906.

JALISCO: Río Blanco, *Palmer* 518 in 1886. Zapotlán, hills, *Hitchcock* 7173. Guadalajara, open dry ground, side of Barranca de Oblatos, *Hitchcock* 7335. Balaños, *Rose* 2997. Sierra Madre west of Balaños, *Rose* 3003.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6708.

MICHOACÁN: Morelia, *Arsène* in 1909. Lomas de la Huerta, *Arsène* in 1909.

MÉXICO: Santa Fé, *Rose & Painter* 8009, 8010. Salto de Agua, rocky hillside, *Purpus* 1623, 1624. Without locality, *Schumann* 1754. Federal District, lava rock, *Hitchcock* 5939; *Bourgeau* 683, 1153; lava fields, *Pringle* 9077; near Chapultepec Castle, *Hitchcock* 7839; *Orcutt* 4317.

PUEBLA: Acatzinco, *Nicolas* in 1909.

OAXACA: Reyes, *Nelson* 1778. Oaxaca, rocky hill, *Hitchcock* 6141.

8. *Epicampes stricta* Presl, Rel. Haenk. 1: 235. pl. 39. 1830.

Type locality, "Mexico."

RANGE: Highlands of central and southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, slopes of canyons, *Pringle* 2321, 11746. Zapotlán, hills, *Hitchcock* 7172.

PUEBLA: Cholula, *Nicolas* in 1909.

VERACRUZ: Orizaba, *Müller* 2130, *Botteri* 647.

OAXACA: Sierra de San Felipe, *Conzatti* 2534.

9. *Epicampes bourgaei* Fourn. Mex. Pl. 2: 88. 1886.

Type locality, "Escamela pr. Orizaba," the type specimen collected by *Bourgeau* (no. 2973).

RANGE: Highlands of central and southern Mexico.

## HERBARIUM SPECIMENS:

JALISCO: Zapotlán, hills, *Hitchcock* 7180, 7247. Guadalajara, cliffs of barrancas, *Pringle* 3335, 11738. Balaños, *Rose* 3002.

VERACRUZ: Orizaba, *Botteri* 729, open rocky hill, *Hitchcock* 6348. Mirador, *Liebmann* 676, 678.

OAXACA: Reyes, *Nelson* 1779. Oaxaca, rocky hill, *Hitchcock* 6154.



71. **POLYPOGON** Desf. Fl. Atlant. 1: 66. 1798.

## KEY TO THE SPECIES.

- Plants annual; inflorescence a compact spike-like panicle;  
glumes 2-lobed at apex..... 1. *P. monspeliensis*.
- Plants perennial; glumes tapering into the awn, not lobed.  
Panicles spike-like, culms spreading or decumbent; glumes  
about 2 mm. long..... 2. *P. littoralis*.
- Panicles narrow but loose, more or less interrupted at base,  
usually 20 to 30 cm. long; glumes about 3 mm. long... 3. *P. elongatus*.

1. **Polypogon monspeliensis** (L.) Desf. Fl. Atlant. 1: 67. 1798.

*Alopecurus monspeliensis* L. Sp. Pl. 61. 1753.

Type locality, Montpellier, France.

RANGE: Pacific slope from Alaska to Mexico; occasional on the Atlantic coast; introduced from Europe.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Tecate River, near Monument no. 245, *Schoenfeldt* 3730.

Nachognero Valley, *Mearns* 3370. Northern Lower California, *Orcutt* in 1886.

CHIHUAHUA: Banks of Río Galleana, in the pueblo, *Hartman* 661.

2. **Polypogon littoralis** (With.) Smith, Comp. Fl. Brit. 13. 1800.

*Agrostis littoralis* With. Bot. Arr. Veg. Brit. ed. 3. 2: 129. 1796.

Type locality, "Wells, on the Norfolk coast," England.

RANGE: Vancouver Island to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

PUEBLA: Tehuacán, by streams, *Pringle* 6772; along ditch, *Hitchcock* 6039.

Puebla, *Nicolas* in 1909.

3. **Polypogon elongatus** H. B. K. Nov. Gen. & Sp. 1: 134. 1816.

Type locality, "in temperatis regni Quitensis prope Chillo."

RANGE: Northern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, shaded edge of water ditch, *Palmer* 162 in 1896. Nombre de Dios, edge of a water canal, *Palmer* 111 in 1896. San Ramón, *Palmer* 76 in 1906.

COAHUILA: Saltillo, along ditches, *Palmer* 2 in 1898, *Hitchcock* 5651.

SAN LUIS POTOSÍ: San Luis Potosí, irrigation ditch in or near the water, *Hitchcock* 5684.

GUANAJUATO: Irapuato, along ditch, *Hitchcock* 7435.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5816.

FEDERAL DISTRICT: Wet meadows, *Pringle* 8508; along ditch, *Hitchcock* 5886, 5927. Valley of Mexico, *Bourgeau* 216.

PUEBLA: Chinantla, *Liebmann* 617.

VERACRUZ: Orizaba, *Mohr* in 1857.

MORELOS: Cuernavaca, ditch, *Hitchcock* 6848.

OAXACA: Along ditch between Tule and Oaxaca, *Hitchcock* 6179.

72. **CINNA** L. Sp. Pl. 5. 1753.1. **Cinna poaeformis** (H. B. K.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 21. 1901.

*Deyeuxia poaeformis* H. B. K. Nov. Gen. & Sp. 1: 146. 1816.

Type locality, "in regno Mexicano, in radicibus montis ignivomi Jorullo."

RANGE: Highlands, southern Mexico to Costa Rica.

## HERBARIUM SPECIMENS FROM MEXICO:

HIDALGO: Sierra de Pachuca, *Pringle* 9554.

MÉXICO: Popocatepetl, open woods, *Hitchcock* 5980; *Rose & Hay* 6025, 6036.

Sierra de las Cruces, cool moist soil, *Pringle* 4184, 11737. *Cima, Orcutt* 3790.

Federal District, *Bourgeau* 912.

PUEBLA: Pico de Orizaba, *Liebmann* 723.

OAXACA: Sierra de San Felipe, *Smith* 936.

## 73. AGROSTIS L. Sp. Pl. 61. 1753.

## KEY TO THE SPECIES.

Palea evident, 2-nerved.

Panicle narrow, contracted, the branches short, ascending, spikelet-bearing from near the base.. 1. *A. stolonifera*.

Panicle open, the branches spreading, naked at base.. 2. *A. rosei*.

Palea wanting or a small nerveless scale.

Panicle narrow, rather compact, the branches ascending, spikelet-bearing from near the base.

Glumes awned; lemma bearing a geniculate, exerted awn..... 4. *A. microphylla*.

Glumes often acuminate but not awned.

Lemma awned..... 5. *A. toluensis*.

Lemma awnless..... 6. *A. exarata*.

Panicle open or somewhat contracted, the branches, at least the principal ones, naked on the lower part.

Lemma bearing an exerted awn; glumes 4 mm. long, lower branches of panicle 4 or 5 in a whorl, slender, spreading, naked below... 9. *A. setifolia*.

Lemma awnless.

Palea one-fourth to half as long as lemma; culms tall and slender; blades flat; panicle open but narrow, the branches ascending, naked at base, with occasional short branches intermixed.... 3. *A. schiedeana*.

Palea minute or wanting.

Culms decumbent at base, numerous, leafy; panicle open, the slender branches branching about the middle..... 8. *A. perennans*.

Culms erect.

Blades long, lax, flat; ligule as much as 5 mm. long; culms tall and slender; panicle open, oblong, the naked portion of the lower branches as much as 4 cm. long..... 10. *A. schaffneri*.

Blades short, erect; ligule 1 to 3 mm. long; panicle very diffuse, the branches capillary.

Plants tufted, without rhizomes, usually not over 30 cm. high; blades at base of plant often numerous and

fine; naked portion of lower branches of panicle long and capillary, spikelet-bearing toward the extremities..... 7. *A. hiemalis*.

Plants tall and slender, bearing short rhizomes; branches of panicle shorter..... 7a. *A. hiemalis subrepens*.

1. *Agrostis stolonifera* L. Sp. Pl. 62. 1753.

*Agrostis verticillata* Vill. Prosp. Pl. Dauph. 16. 1779.

Type locality given as "in Europa."

RANGE: Southwestern United States to South America, and warmer parts of the Old World.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Maleje, Gulf of California, *Palmer* 41 in 1887. Santa Agueda, *Palmer* 221 in 1890. Nachognero Valley, *Schoenfeldt* 3478. Cedros Island, *Palmer* 666 in 1889.

CHIHUAHUA: Chihuahua, *Palmer* 29 and 160 in 1908.

DURANGO: Durango, beside pond, *Hitchcock* 7571; along water courses, sometimes in shallow water, *Palmer* 179 in 1896. Nombre de Dios, along ditches and streams, *Palmer* 95 in 1896.

COAHUILA: Saltillo, *Palmer* 527 in 1905; wet places along ditches, *Palmer* 806 in 1898; by wet irrigation ditch, *Hitchcock* 5598.

NUEVO LEÓN: Monterey, along irrigation ditch, *Hitchcock* 5577.

ZACATECAS: Zacatecas, moist spot along dry river bed, *Hitchcock* 7529.

SAN LUIS POTOSÍ: Cárdenas, irrigation ditch, *Hitchcock* 5741.

JALISCO: Guadalajara, *Palmer* 230 in 1886.

GUANAJUATO: León, *Hartweg*. 247.

QUERÉTARO: Querétaro, along irrigation ditch, *Hitchcock* 5824.

HIDALGO: Ixmiquilpan, river bank, *Rose, Painter & Rose* 9063. Pachuca, sandy river bed, *Hitchcock* 6767.

MICHOACÁN: Morelia, *Arsène* 3316.

MÉXICO: Valley of Mexico, *Pringle* 9596. Toluca, along ditch, *Hitchcock* 6915. Federal District, along ditch, *Hitchcock* 5881; *Bourgeau* 224.

PUEBLA: Mount Orizaba, *Seaton* 192. Tehuacán, along ditch, *Hitchcock* 6040. Chalchicomula, *Nelson* 248. Puebla, *Nicolas* in 1909.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6335.

OAXACA: San Pedro Nolasco, *Galeotti* 5855, 5884, 5885. Valley of Oaxaca, *Nelson* 1305. Along ditch between Tule and Oaxaca, *Hitchcock* 6180.

2. *Agrostis rosei* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 21. f. 5. 1901.

Type locality, "Sierra Madre Mountains, State of Zacatecas," the type specimen collected by *Rose* (no. 2373).

RANGE: Known only from the type collection.

3. *Agrostis schiedeana* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 4<sup>1</sup>: 327. 1841. Type locality, "Mexico."

RANGE: British Columbia to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, low wet places in alkaline bottoms, *Palmer* 190 in 1896.

MÉXICO: Sierra de las Cruces, wet banks, *Pringle* 4485. Federal District, pasture, *Hitchcock* 5298; along irrigation ditch in or near the water, *Hitchcock* 5900, 5915, 5920, 5927½; swamps, *Pringle* 11209.

4. *Agrostis microphylla* Steud. Syn. Pl. Glum. 1: 164. 1854.

Type locality, western North America (probably Oregon), the type specimen collected by Douglas.

RANGE: British Columbia to Lower California.

HERBARIUM SPECIMEN FROM MEXICO:

LOWER CALIFORNIA: Guadalupe Ranch, *Orcutt* in 1886.

5. *Agrostis tolucensis* H. B. K. Nov. Gen. & Sp. 1: 135. 1816.

Type locality, "in apricis aridis regni Mexicani, prope urbem Toluca et Islahuaca."

RANGE: Southern Mexico.

HERBARIUM SPECIMENS:

JALISCO: Nevado de Colima, open ground among shrubs, *Hitchcock* 7157.

MICHOACÁN: Sierra de San Andrés, *Ross* 383.

MÉXICO: Nevado de Toluca, *Pringle* 5202, *Rose & Painter* 8016. Cima, *Orcutt* 3789. Sierra de las Cruces, cool wooded slopes, *Pringle* 4219. Ixtaccihuatl, rocky soil, *Purpus* 224; near glaciers, *Purpus* 1616, 3770; subalpine region, *Purpus* 1643. Popocatepetl, *Rose & Hay* 6296, 6300; wet places along trail, *Hitchcock* 5983; steep bank, *Hitchcock* 5991; in ditch along trail, *Hitchcock* 6006.

PUEBLA: Mount Orizaba, rocky slopes, subalpine region, *Purpus* 3014; *Liebmann* 701, *Ross* 1263.

6. *Agrostis exarata* Trin. Gram. Unifl. 207. 1824.

*Agrostis bourgaei* Fourn. Mex. Pl. 1: 95. 1886.

Type locality, "Unalashka," the type specimen collected by Eschscholz.

RANGE: Alaska to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sierra Madre, by springs, *Pringle* 1421.

DURANGO: San Ramón, *Palmer* 535 in 1906.

MÉXICO: Tultenango, *Rose & Hay* 5421.

7. *Agrostis hiemalis* (Walt.) B. S. P. Prel. Cat. N. Y. 68. 1888.

*Cornucopiae hiemalis* Walt. Fl. Carol. 73. 1788.

Type locality, presumably South Carolina.

RANGE: Alaska to Labrador and south to Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, along dry bed of stream, *Hitchcock* 7680. Madera, *Palmer* 263 in 1908.

DURANGO: San Ramón, *Palmer* 82 in 1906. Tobar, *Palmer* 243 in 1906.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 923 in 1878; *Schaffner* 140.

7a. *Agrostis hiemalis subrepens* Hitchc. U. S. Dept. Agr. Bur. Pl. Ind. Bull. 68: 44. 1905.

Type locality, "pine plains, base of Sierra Madre Mountains, State of Chihuahua," the type specimen collected by *Pringle* (no. 1420).

RANGE: New Mexico to Nevada, south to Venezuela.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, along railway near Continental Divide, *Hitchcock* 7721. Base of Sierra Madre, wet places, pine plains, *Pringle* 1420; Colonia García, *Townsend & Barber* 276, *Nelson* 6195.

8. *Agrostis perennans* (Walt.) Tuckerm. Amer. Journ. Sci. 45: 44. 1843.

*Cornucopiae perennans* Walt. Fl. Carol. 74. 1788.

RANGE: Northeastern United States to Veracruz.

## HERBARIUM SPECIMENS FROM MEXICO:

PUEBLA: Tezuitlán, *Orcutt* 3953.

VERACRUZ: Orizaba, in old field, hilltop, *Hitchcock* 6388; *Botteri* 687. Mirador, *Liebmann* 714. Jalapa, railway cut through jungle, *Hitchcock* 6640; clay cut along railway, *Hitchcock* 6615.

9. *Agrostis setifolia* Fourn. Mex. Pl. 2: 97. 1886.

Type locality, "In monte Orizabensi," the type specimen collected by *Liebmann* (no. 712).

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

PUEBLA: Mount Orizaba, sandy soil, subalpine region, *Purpus* 3013.

OAXACA: Sierra de San Felipe, *Pringle* 4895, *Smith* 922.

10. *Agrostis schaffneri* Fourn. Mex. Pl. 2: 94. 1886.

Type locality, "Tacubaya," Federal District, the type specimen collected by *Schaffner*.

RANGE: Southern Mexico.

## HERBARIUM SPECIMENS:

MÉXICO: Popocatepetl, open place, *Hitchcock* 5990; bank of deep cut, *Hitchcock* 5978. Amecameca, dry hills, *Purpus* 1646. Tres Mariás, *Orcutt* 4441.

PUEBLA: Mount Orizaba, open woods, *Hitchcock* 6262.

## 74. CALAMAGROSTIS Adans. Fam. Pl. 2: 31, 530. 1763.

## KEY TO THE SPECIES.

- Blades flat; panicle rather compact; rhizomes present, the culms not densely tufted..... 1. *C. pringlei*.  
 Blades involute; culms densely tufted.  
 Lemma villous all over..... 2. *C. schiedeana*.  
 Lemma not villous or only at base; awn present or absent;  
 pedicel one-third to three-fourths as long as lemma..... 3. *C. toluensis*.

1. *Calamagrostis pringlei* (Scribn.) Beal, Grasses N. Amer. 2: 345. 1896.

*Deyeuxia pringlei* Scribn.; Beal, Grasses N. Amer. 2: 345. 1896, as synonym.

Type locality, "Mexico," the type specimen collected in the Sierra Madre, Chihuahua, 2,700 meters altitude, by *Pringle* (no. 1422).

RANGE: Known only from the type collection.

2. *Calamagrostis schiedeana* (Rupr.) Steud.; Fourn. Mex. Pl. 2: 105. 1886.

*Deyeuxia schiedeana* Rupr.; Fourn. Mex. Pl. 2: 105. 1886.

Type locality, "prope fines nivis aeternae in monte Orizabensi," the type specimen collected by *Schiede* (no. 917).

RANGE: Known only from the region of Mount Orizaba.

## HERBARIUM SPECIMENS:

PUEBLA: Mount Orizaba, sandy plains, *Seaton* 227; subalpine in sandy soil, *Purpus* 3016; rocky slopes, alpine region, *Purpus* 3019; *Liebmann* 721; *Pringle* 9593; bald hills, common, *Hitchcock* 6253; *Rose & Hay* 5775; *Ross* 1261, 1274.

3. *Calamagrostis toluensis* (H. B. K.) Trin. in Steud. Nom. Bot. ed. 2. 1: 251. 1840.

*Deyeuxia toluensis* H.B.K. Nov. Gen. & Sp. 1: 143. 1816.

Type locality, "in alta planitie Mexicana juxta Toluca."

RANGE: Mountains of southern Mexico and Guatemala.

## HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Nevado de Colima, hillside, *Hitchcock* 7160; large bunches in partially open ground, hillside, *Hitchcock* 7162, 7163, 7164; above timber line, *Hitchcock* 7168. Volcano of Colima, *Jones* 478.

MÉXICO: Popocatepetl, *Hitchcock* 5982½; open hillsides about snow line, *Hitchcock* 6000; *Rose & Hay* 5981, 6298, 6298a; *Purpus* 3769; *Ross* 1418. Ixtacihuatl, above timber line, *Purpus* 3769. Nevado de Toluca, *Pringle* 4243, *Ross* 504.

PUEBLA: Mount Orizaba, open woods, *Hitchcock* 6265; *Liebmann* 722.

OAXACA: Sierra de San Felipe, under pines of summit ridges, *Pringle* 4726.

This species includes several rather diverse forms which I have been unable to separate satisfactorily. The size of the spikelets and the length of the awn and of the pedicel are variable.

75. *DESCHAMPSIA* Beauv. Ess. Agrost. 91. pl. 8. f. 3. 1812.

## KEY TO THE SPECIES.

Plants annual.....:..... 1. *D. danthonioides*.

Plants perennial.

Panicle spike-like; awn geniculate, twisted below..... 2. *D. pringlei*.

Panicle open; awn straight, not twisted.

Lemma 2 mm. long; branches of panicle remote, slender, appressed..... 3. *D. elongata*.

Lemma 3 to 4 mm. long; branches of panicle short, the lower spreading.

Glumes 5 mm. long; basal blades fine and lax, acute but not pungent..... 4. *D. liebmanni*.

Glumes 7 mm. long; basal blades spongy, pungent-pointed, rather stiff..... 5. *D. straminea*.

1. *Deschampsia danthonioides* (Trin.) Munro; Benth. Pl. Hartw. 342. 1857.

*Aira danthonioides* Trin. Mém. Acad. St. Pétersb. VI. Math. Phys. Nat. 1: 57. January, 1830.

*Deschampsia calycina* Presl, Rel. Haenk. 1: 251. 1830.

Type locality, western North America.

RANGE: Alaska to Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Palm Valley, *Orcutt* 1272. Tía Juana, mesas, *Orcutt* in 1885. Guadalupe Ranch, *Orcutt* in 1886.

2. *Deschampsia pringlei* Scribn. Proc. Acad. Phila. 1891: 300. pl. 13. f. 1, 1a. 1892.

Type locality, "wet places, pine plains, at the base of the Sierra Madre in the State of Chihuahua," the type specimen collected by *Pringle* (no. 1429).

RANGE: Highlands from Chihuahua to Puebla.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Miñaca, dry run, *Hitchcock* 7762. Base of Sierra Madre, wet places, pine plains, *Pringle* 1429.

DURANGO: Durango, along creek, *Hitchcock* 7617.

SAN LUIS POTOSÍ: San Luis Potosí, irrigation ditch, *Hitchcock* 5685.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6730, 6737.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6889.

PUEBLA: Chalchicomula, rocky hill, *Hitchcock* 6279. San Marcos, railway embankment, *Hitchcock* 6522. Esperanza, rocky hill, *Hitchcock* 6476.

3. *Deschampsia elongata* (Hook.) Munro; Benth. Pl. Hartw. 342. 1857.

*Aira elongata* Hook. Fl. Bor. Amer. 2: 243. pl. 288. 1840.

Type locality, "Sandy islands of the River Columbia," the type specimen collected by Douglas.

RANGE: Alaska to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

MÉXICO: Sierra de las Cruces, wet banks, *Pringle* 4743. Federal District, *Pringle* 13244.

4. *Deschampsia liebmanniana* (Fourn.).

*Deyeuxia liebmanniana* Fourn. Mex. Pl. 2: 106. 1886.

Type locality, not definitely given, three collections cited as follows: "In monte Orizabensi \* \* \* (LIEBM. n. 610 \* \* \* ); in summo Cofre de Perote, \* \* \* (HAHN); prope Tlapacoya (HAHN)."

RANGE: Southern Mexico.

HERBARIUM SPECIMEN:

MÉXICO: Nevado de Toluca, by brooks, *Pringle* 4242.

5. *Deschampsia straminea* sp. nov.

Culms cespitose, sometimes decumbent or rhizomatous at base, glabrous, 20 to 35 cm. high; leaves mostly basal, stramineous, shining, glabrous except the margins of the blades; sheaths loose and papery; ligule about 1 cm. long, thin; blades involute, somewhat spongy in texture, pungent-pointed, 5 to 10 cm. long or the uppermost shorter; panicle purple, ovoid in outline, 7 to 12 cm. long, open, the lower branches in twos or threes, 2 to 5 cm. long, slender, flexuous, spreading, smooth; spikelets somewhat crowded toward the ends of the branches, 2-flowered, the rachilla produced as a hairy bristle; glumes equal, about 7 mm. long, acute, narrowed below, broadest about the middle, glabrous, slightly scabrous on the keels above, more or less 3-nerved, purple, yellowish toward the apex; lemma thin, glabrous, 4 mm. long, 5-nerved, 4-toothed at the thin or erose apex, the awn attached just above the base, straight, slightly exceeding the lemma; callus and rachilla joint long-pilose, the hairs 2 mm. long, the prolongation of the rachilla about half the length of the lemma.

This species is allied to *D. caespitosa*, but the spikelets are larger and the plants touter in proportion to their height.

Type in the U. S. National Herbarium, no. 691237, collected on rocks, alpine region sof Ixtacchiuatl, Mexico, October, 1905, by C. A. Purpus (no. 1619).

The only other collection seen is from "Rocky slopes, alpine region, Mt. Orizaba," *Purpus* 3018.

76. **TRISETUM** Pers. Syn. Pl. 1: 97. 1805.

KEY TO THE SPECIES.

- Plants annual; panicle narrow, interrupted..... 3. *T. californicum*.
- Plants perennial.
  - Panicle spike-like, often interrupted at base.
    - Lemma and awn glabrous or nearly so..... 1. *T. spicatum*.
    - Lemma villous; awn somewhat plumose..... 2. *T. rosei*.
  - Panicle open or, if narrow, not spike-like.
    - Second glume broad, abruptly acute.
      - Blades mostly basal, involute, capillary, flexuous.. 8. *T. filifolium*.
      - Blades scattered, flat.
        - Plant tall and stout, 1 to 2 meters high; panicle large, 15 to 30 cm. long..... 10. *T. virletii*.
        - Plant low and slender, mostly less than 0.5 meter high; panicle narrow, mostly less than 10 cm. long..... 9. *T. fournieranum*.

Second glume narrow, similar to the first, gradually narrowed to the acute apex.

Rachilla copiously pilose, the hairs 2 mm. long; blades flat.

Sheaths glabrous or scabrous..... 4. *T. deyeuxioides*.

Sheaths velvety-pubescent..... 5. *T. evolutum*.

Rachilla sparsely pilose, the hairs less than 1 mm. long.

Apex of lemma with 4 slender teeth, ligule short; panicle open..... 7. *T. viride*.

Apex of lemma erose; ligule of upper leaf about 4 mm long; panicle rather narrow..... 6. *T. palmeri*.

**1. *Trisetum spicatum* (L.) Richt. Pl. Eur. 1: 59. 1890.**

*Aira spicata* L. Sp. Pl. 64. 1753.

Type locality, "in Lapponiæ alpibus."

RANGE: Arctic regions of the northern hemisphere, southward in the higher mountains to the southern hemisphere.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Nevado de Colima, summit, *Hitchcock* 7165; just above timber line, *Hitchcock* 7166.

HIDALGO: Sierra de Pachuca, *Pringle* 9603.

MÉXICO: Nevado de Toluca, *Nelson* 17; in the crater, *Pringle* 4303. Popocatepetl, woods, *Hitchcock* 5995, 6009; *Ross* 1418a; *Rose & Hay* 6299; Ixtaccihuatl, above timber line, *Purpus* 1617, 1643.

PUEBLA: Mount Orizaba, *Seaton* 191; between timber and snow lines, *Hitchcock* 6258; *Rose & Hay* 5734; *Liebmann* 604; alpine region, *Ross* 12700. Vaquería del Jacal, *Liebmann* 605. Chinantla, *Liebmann* 606.

**2. *Trisetum rosei* Scribn. & Merr. Contr. U. S. Nat. Herb. 8: 289. 1905.**

Type locality, "Mount Popocatepetl, at an altitude of 3,600 meters," the type specimen collected by *Rose & Hay* (no. 6016).

RANGE: High mountains of southern Mexico.

HERBARIUM SPECIMENS:

HIDALGO: Trinidad Iron Works, pine forests, *Pringle* 10032. Between Pachuca and Real del Monte, *Rose, Painter & Rose* 8686.

MÉXICO: Popocatepetl, alpine region, *Ross* 1422; snow line, *Purpus* 5067, *Rose & Hay* 5979, 6016; black sand barrens, *Hitchcock* 5987.

PUEBLA: Mount Orizaba, bald hill, *Hitchcock* 6252; open ground, *Hitchcock* 6261; *Rose & Hay* 6348.

**3. *Trisetum californicum* Vasey, U. S. Dept. Agr. Div. Bot. Bull. 12<sup>1</sup>: pl. 46. 1892.**

Type locality, "Lower California near the boundary," the above cited plate being drawn from the two specimens mentioned below.

RANGE: Known only from Lower California.

HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Northern Lower California, *Orcutt* 1431. San Ramón, *Orcutt* 1437.

**4. *Trisetum deyeuxioides* (H. B. K.) Kunth, Rév. Gram. 1: 102. 1829.**

*Avena deyeuxioides* H. B. K. Nov. Gen. & Sp. 1: 147. 1816.

Type locality, "in uliginosis temperatis ad ripam Lacus Tezcucensis" [Lake Texcoco, State of Mexico].

RANGE: Highlands, northern Mexico to Colombia.



## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 14 in 1885. Mapula Mountains, wet banks of streams, *Pringle* 821. Canyons of the Sierra Madre, springy banks, *Pringle* 1432. Sánchez, rocky pine woods near bed of stream, *Hitchcock* 7676.

JALISCO: Guadalajara, *Palmer* 210 in 1886. San Pedro, along ditch, *Hitchcock* 7296; prairie, *Hitchcock* 7302.

MICHOACÁN: Uruápan, along road, *Hitchcock* 6964. Morelia, *Arsène* 2921.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6902; along ditch, *Hitchcock* 6920. Popo Park, moist soil, *Hitchcock* 5966. Federal District, edge of field near ditch, *Hitchcock* 5914; wet meadows, *Pringle* 8512.

PUEBLA: Chinantla, *Liebmann* 733, 735; Chalchicomula, rocky hill, *Hitchcock* 6285. Cholula, *Nicolas* in 1911.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6331.

OAXACA: West slope of Zempoaltepec, *Nelson* 554.

5. *Trisetum evolutum* (Fourn.).

*Deyeuxia evoluta* Fourn. Bull. Soc. Bot. France 24: 181. 1877.

Type locality not given in the original publication, Mirador and Orizaba cited in Mexicanas Plantas.

RANGE: Highlands of central and southern Mexico.

## HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: Las Canoás, clay bank, *Hitchcock* 5755.

MICHOACÁN: Pátzcuaro, dry hills, *Pringle* 3950.

MÉXICO: Salto de Agua, dry places, *Purpus* 1632.

• VERACRUZ: Jalapa, along ditch, *Hitchcock* 6596. Orizaba, open rocky hill, *Hitchcock* 6351. Mirador, *Liebmann* 730.

GUERRERO: Between Ayusinapa and Petatlán, *Nelson* 2123.

6. *Trisetum palmeri* sp. nov.

Culms cespitose, slender, glabrous, 60 to 100 cm. high; sheaths glabrous or somewhat scabrous; ligule 3 to 4 mm. long; blades elongated, nearly or quite equaling the panicle, 1 to 3 mm. wide, soon involute, scabrous; panicle loose, narrow, 10 to 20 cm. long, the branches several in rather distant whorls, ascending, the shorter ones spikelet-bearing nearly to the base, the longer 5 cm. long, naked below; spikelets, excluding the awns, 5 to 6 mm. long, 2-flowered, the rachilla prolonged as a plumose bristle; glumes about 4 mm. long, narrow, tapering to an acute apex, green along the midnerve, the margins scarious, glabrous except the scabrous keel, the first 1-nerved, the second 3-nerved; lemmas about 4 mm. long, rounded on the back, 5-nerved, scabrous, scarious-tipped, the apex erose, obtuse, 2-lobed, the awn of each lemma geniculate, 5 to 6 mm. long, exserted, attached about the middle; palea slightly exceeding the lemma; callus and rachilla joints pilose with short hairs, the prolongation of the rachilla about one-third as long as the upper floret.

As the genera *Trisetum* and *Deschampsia* are usually distinguished, this species would be referred to the latter, as it has 2-flowered spikelets with obtusely 2-lobed lemmas rounded on the back; but the narrow lemmas exceeding the glumes appear to ally it more closely to certain species of *Trisetum*.

Type in the U. S. National Herbarium, no. 571365, collected at Otinapa, Durango, July 25 to August 5, 1906, by *Palmer* (no. 342).

RANGE: Known only from Durango.

## HERBARIUM SPECIMENS:

DURANGO: San Ramón, *Palmer* 128 in 1906. Otinapa, *Palmer* 342 and 350 in 1906.

7. *Trisetum viride* (H. B. K.) Kunth, Rév. Gram. 1: 101. 1829.

*Avena viridis* H. B. K. Nov. Gen. & Sp. 1: 147. 1816.

Type locality, "in alta planitie Mexicana, inter Salamanca et Queretaro."

RANGE: Highlands of southern Mexico.

HERBARIUM SPECIMEN:

OAXACA: Sierra de San Felipe, cool pine woods, *Pringle* 4919.

8. *Trisetum filifolium* Scribn.; Beal, Grasses N. Amer. 2: 375. 1896.

Type locality, "Mexico (Chihuahua)," the type specimen collected in the Sierra Madre by Pringle (no. 1431).

RANGE: Known only from the mountains of Chihuahua.

HERBARIUM SPECIMENS:

CHIHUAHUA: Sánchez, rocky woods, *Hitchcock* 7682. Sierra Madre, cool slopes, *Pringle* 1430, 1431.

9. *Trisetum fournieranum* nom. nov.

*Trisetum gracile* Fourn. Mex. Pl. 2: 108. 1886, not Boiss. 1845.

Type locality, Mexico, "La Hoya," and "San Luis de Potosí," being cited.

RANGE: Highlands of central and southern Mexico.

HERBARIUM SPECIMENS:

HIDALGO: Pachuca, *Rose* 3587.

MÉXICO: Sierra de las Cruces, open fir woods, *Pringle* 6149. Popocatepetl, woods, *Hitchcock* 5996; mossy bank, *Hitchcock* 6003, 6005. Popo Park, mossy bank in woods, *Hitchcock* 5974.

10. *Trisetum virletii* Fourn. Mex. Pl. 2: 108. 1886.

Type locality, "San Luis de Potosí," the type specimen collected by Virlet (no. 1384).

RANGE: Highlands of central and southern Mexico.

HERBARIUM SPECIMENS:

MICHOACÁN: Pátzcuaro, cool slopes of mountains, *Pringle* 3979. Morelia, *Arsène* in 1909.

MÉXICO: Ixtaccihuatl, open woods, *Purpus* 1612; *Purpus* in 1903. Sierra de las Cruces, *Pringle* 7571.

VERACRUZ: Cumbre de Istepec, *Liebmann* 597.

MORELOS: Tres Marías Mountains, *Pringle* 11758.

#### 77. SPHENOPHOLIS Scribn. Rhodora 8: 142. 1906.

1. *Sphenopholis obtusata* (Michx.) Scribn. Rhodora 8: 142. 1906.

*Aira obtusata* Michx. Fl. Bor. Amer. 1: 62. 1803.

Type locality, "in aridis, a Carolina ad Floridam."

RANGE: Northeastern United States to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Alamos, *Palmer* 577 in 1890.

CHIHUAHUA: Sánchez, rocky ravine, *Hitchcock* 7712.

DURANGO: Durango, edge of a garden, *Palmer* 255 in 1896.

COAHUILA: Río Grande Valley near Díaz, *Pringle* 8285.

NUEVO LEÓN: Monterey, along wet irrigation ditch, *Hitchcock* 5571.

FEDERAL DISTRICT: Pasture, *Hitchcock* 5893.

PUEBLA: Puebla, *Nicolas* in 1910.

OAXACA: Along ditch between Tule and Oaxaca, *Hitchcock* 6166.

#### 78. KOELERIA Pers. Syn. Pl. 1: 97. 1805.

1. *Koeleria cristata* (L.) Pers. Syn. Pl. 1: 97. 1805.

*Aira cristata* L. Sp. Pl. 63. 1753.

Type locality, Europe, "in Angliae, Galliae, Helvetiae siccioribus."

RANGE: Cooler parts of the northern hemisphere.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Colonia García, *Nelson* 6198.

DURANGO: Otinapa, *Palmer* 343 in 1906. Guanaceví, *Nelson* 4735 (this specimen appears to be *K. cristata longifolia* Vasey).

FEDERAL DISTRICT: Above Santa Fé, *Pringle* 9608.

WITHOUT LOCALITY: *Liebmann* 609.

79. AVENA L. Sp. Pl. 79. 1753

KEY TO THE SPECIES.

- Lemmas glabrous or nearly so..... 2. *A. sativa*.
- Lemmas pubescent with long brown hairs.
  - Teeth of lemmas acute, not awned..... 1. *A. fatua*.
  - Teeth of lemmas awned; pedicels subcapillary..... 3. *A. barbata*.

1. *Avena fatua* L. Sp. Pl. 80. 1753. WILD OAT.

Type locality, "in Europæ agris inter segetes."

RANGE: Weed throughout North America, especially on the Pacific slope, introduced from Europe.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, along railway, *Hitchcock* 7699.

COAHUILA: Saltillo, waste places and cultivated fields, *Palmer* 8 in 1898.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5694.

QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5859.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6891.

PUEBLA: Tehuacán, *Hitchcock* 6053.

OAXACA: Las Sedas, *Conzatti & González* 263.

2. *Avena sativa* L. Sp. Pl. 79. 1753. OAT.

Type locality unknown, the species named from cultivated plants.

RANGE: Commonly cultivated and occasionally escaped.

HERBARIUM SPECIMEN FROM MEXICO:

FEDERAL DISTRICT: Volunteer along trolley, *Hitchcock* 5887.

3. *Avena barbata* Brot. Pl. Lusit. 1: 108. 1804.

Type locality, Portugal.

RANGE: Pacific coast of United States and Lower California.

HERBARIUM SPECIMEN FROM MEXICO:

LOWER CALIFORNIA: Guadalupe Island, *Palmer* 668 in 1889.

80. TRISTACHYA Nees, Agrost. Bras. 458. 1829.

KEY TO THE SPECIES.

Panicle branches shorter than the spikelets, rarely slightly longer, appressed, the spikelets 3 cm. long; terminal portion of awn 3 to 6 cm. long, flexuous..... 1. *T. avenacea*.

Panicle branches, at least the lowermost, much longer than the spikelets, these, excluding the awns, not over 2 cm. long; terminal portion of the awn 0.5 to 1.5 cm. long, straight.

Plants robust, 1.5 meters or more high; blades 5 to 10 mm. wide; panicle branches capillary, elongated and lax.... 3. *T. laxa*.

Plants slender, about 1 meter high; blades 3 to 4 mm. wide; panicle branches slender but not capillary, ascending.. 2. *T. angustifolia*.

1. *Tristachya avenacea* (Presl) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 23. 1901.

*Monopogon avenaceus* Presl, Rel. Haenk. 1: 325. pl. 44. 1830.

Type locality, "Mexico."

RANGE: Pacific slope of southern Mexico.

HERBARIUM SPECIMENS:

- JALISCO: Guadalajara, dry granitic hills, *Pringle* 4479; hillside, *Pringle* 11759.  
Río Blanco, *Palmer* 304 in 1886.  
OAXACA: Villa Alta, *Liebmann* 671.

2. *Tristachya angustifolia* sp. nov.

Perennial; culms loosely cespitose, thickened at base, slender, glabrous, about 1 meter high; sheaths glabrous; ligule a dense ring of short hairs; blades narrow, glabrous beneath, scabrous above and on the margins, flat, the tip involute and indurated, the lower elongated, 3 to 4 mm. wide, the upper reduced to involute points; panicle long-exserted, 10 to 15 cm. long, consisting of a few slender branches, the lower as much as 6 cm. long, these simple or bearing 1 or 2 ascending branchlets; axis and branches glabrous, scabrous toward the apex; spikelets, excluding the awns, about 2 cm. long, tawny rather than purple, as in *T. laxa*, the pedicels longer than the spikelets; glumes glabrous or scabrous on the nerves above; fertile lemma about 8 mm. long, strongly appressed-villous on the callus, less so toward the apex and more or less glabrate in the middle region, ending in two short-acuminate teeth about 1 mm. long; awn flat, stout, once geniculate, the lower portion loosely but firmly twisted, brown, scabrous-pubescent, nearly 2 cm. long, the upper portion straight, purplish, 12 to 15 mm. long.

Type in the U. S. National Herbarium, no. 301143, collected near Santa Teresa, top of Sierra Madre, Tepic, Mexico, August 13, 1897, by Dr. J. N. Rose (no. 2229).

This species differs from *T. laxa* in the lower and more slender stems, narrow blades, smaller panicle with shorter and ascending branches, the distribution of the pubescence on the lemma, and the short-acuminate teeth. In *T. laxa* the lemma is long-villous all over, the hairs on the callus being shorter, and the teeth of the lemma longer and awn-pointed.

RANGE: Known only from the type collection.

3. *Tristachya laxa* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 24. f. 7. 1901.

Type locality, "State of Durango," the type specimen collected in the southernmost tip of the State, by Rose (no. 2334).

RANGE: Known only from the type collection.

81. *DANTHONIA* DC. Fl. Franç. 3: 32. 1805.

1. *Danthonia mexicana* Scribn. Proc. Acad. Phila. 1891: 301. pl. 13. f. 7, 7b. 1892.

Type locality, "dry limestone ledges, Carneros Pass," Coahuila, the type specimen collected by Pringle (no. 3279).

RANGE: Highlands of central and southern Mexico.

HERBARIUM SPECIMENS:

- COAHUILA: Carneros Pass, limestone ledges, *Pringle* 3279.  
PUEBLA: Tehuacán, limestone hills, *Pringle* 9551, 6767.

82. *MICROCHLOA* R. Br. Prodr. Fl. Nov. Holl. 208. 1810.

1. *Microchloa indica* (L. f.) Kuntze, Rev. Gen. Pl. 3<sup>2</sup>: 356. 1898.

*Nardus indicus* L. f. Suppl. Pl. 105. 1781.

Type locality, "Tanquebaria," India.

RANGE: Warmer parts of both hemispheres.

HERBARIUM SPECIMENS FROM MEXICO:

- LOWER CALIFORNIA: Sierra de San Francisquito, *Brandege* in 1899. El Taste, *Brandege* in 1893. La Chuparosa, *Brandege* in 1893.  
CHIHUAHUA: Chihuahua, dry gravelly soil, hills and plains, *Pringle* 425.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

DURANGO: Durango, slopes of hills, *Palmer* 532 in 1896; rocky hill, Iron Mountain, *Hitchcock* 7633.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7471.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 136, *Parry & Palmer* 970 in 1878.

JALISCO: Guadalajara, *Palmer* 616 in 1886; prairie, near San Pedro, *Hitchcock* 7304. San Nicolás, sterile clay hill, *Hitchcock* 7206. Zapotlán, rocky hill, *Hitchcock* 7258.

QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5857.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6723. Telles, *Orcutt* 4135.

MICHOACÁN: Uruápan, open stony place, *Hitchcock* 6966.

MÉXICO: Popo Park, open place in pine woods, *Hitchcock* 5963; open ground, *Hitchcock* 6021. Toluca, open rocky place, *Hitchcock* 6908. Federal District, open grassy pasture, *Hitchcock* 5890; along railway, *Hitchcock* 5908; lava fields, *Pringle* 9570; *Harshberger* 204; *Bourgeau* 446; *Orcutt* 3592.

PUEBLA: Tehuacán, flat place on cactus hill, *Hitchcock* 6081. Santa Bárbara, *Nicolas* in 1910.

VERACRUZ: Consoquitla, *Liebmann* 553. Mirador, *Liebmann* 552.

MORELOS: Cuernavaca, rocky barren, *Hitchcock* 6843.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6114.

## 83. CAPRIOLA Adans. Fam. Pl. 2: 31, 532. 1763.

1. *Capriola dactylon* (L.) Kuntze, Rev. Gen. Pl. 2: 764. 1891. BERMUDA GRASS.

*Panicum dactylon* L. Sp. Pl. 58. 1753.

*Cynodon dactylon* Pers. Syn. Pl. 1: 85. 1805.

Type locality, "in Europa australi."

RANGE: Warmer parts of both hemispheres.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Alamos, arroyo, *Rose, Standley & Russell*, 13011. Hermosillo, by ditch in meadow, *Hitchcock* 3581; *Rose, Standley & Russell* 12405; rocky border of Sonora River, *Chase* 5501.

SINALOA: Culiacán, *Rose, Standley & Russell* 14971. Mazatlán, thickets, *Rose, Standley & Russell* 14076. Fuerte, sandy soil along river, *Rose, Standley & Russell* 13444. Topolobampo, *Rose, Standley & Russell* 13281.

DURANGO: Torreón, along ditch, *Hitchcock* 7553.

COAHUILA: Saltillo, cultivated grounds, *Palmer* 254 in 1898. Parras, *Purpus* 5087.

TAMAULIPAS: Tampico, *Palmer* 152 in 1910. La Barra, 8 kilometers east of Tampico, *Palmer* 290 in 1910.

JALISCO: Guadalajara, open mesa, road to Barranca de Oblatos, *Hitchcock* 7312.

GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6943. Irapuato, along railway, *Hitchcock* 7434.

MICHOACÁN: Morelia, *Arsène* in 1909.

FEDERAL DISTRICT: Along track, *Hitchcock* 5926.

PUEBLA: Fort de Guadalupe, *Nicolas* in 1909.

VERACRUZ: Tlacotalpán, *Nelson* 520.

OAXACA: Tomellín, along railway, *Hitchcock* 6237.

## 84. SPARTINA Schreb. in Gmel. Syst. Nat. 1: 123. 1791.

1. *Spartina spartinae* (Trin.) Merr. U. S. Dept. Agr. Bur. Pl. Ind. Bull. 9: 11. 1902.

*Vilfa spartinae* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 82. 1840.

*Spartina junciformis* Engelm. & Gray, Bost. Journ. Nat. Hist. 5: 238. 1845.

Type locality, "Texas," the type specimen communicated by Hooker.

RANGE: In the region of the Gulf from Florida to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, brackish marsh, *Hitchcock* 5782.SAN LUIS POTOSÍ: Hacienda de Angostura, alkaline meadows, *Pringle* 3760.**85. CAMPULOSUS** Desv. *Nouv. Bull. Soc. Philom. Paris* 2: 189. 1810.

## KEY TO THE SPECIES.

- Spike 1..... 1. *C. planifolius*.  
 Spikes 2 or 3..... 2. *C. plumosus*.

1. *Campulosus planifolius* Presl, *Rel. Haenk.* 1: 287. 1830.

Type locality, "Mexico."

RANGE: KNOWN only from the type collection and the following.

## HERBARIUM SPECIMEN:

OAXACA: Niltepec to Zanatepec, *Nelson* 2841.2. *Campulosus plumosus* sp. nov.

Perennial; culm cespitose, erect, scabrous or minutely pubescent, especially below the nodes and the inflorescence, about 70 or 80 cm. high; sheaths scabrous or the lower smooth, those of the culm much shorter than the internodes; ligule 1 mm. or less long; blades firm, strongly nerved, soon involute, 10 to 25 cm. long, 1 to 2 mm. wide, scabrous, gradually narrowed into an involute setaceous point; inflorescence long-exserted, consisting of 2 or 3 digitate, flexuous spikes, 4 to 10 cm. long, the rachis about 1 mm. wide, velvety-pubescent, naked at the very base; spikelets closely imbricated, those at the base and tip reduced; glumes unequal, the first 2 mm. long, 1-nerved, scarious, lanceolate, acute, glabrous, glandular along the lower part of the keel, the second glume 5 mm. long, 3-nerved, brown-mottled, gradually narrowed to an acute scarious apex, the nerves bearing a row of bead-like yellow glands along the lower half or two-thirds, the midnerve bristly-pubescent below the awn, the awn attached about the middle, stiffly perpendicular, 2 to 3 mm. long, turgid at base; first lemma hyaline 2.5 mm. long, containing no flower or palea, 3-nerved, densely long-ciliate on the lateral nerves nearly to the apex, the hairs 1 mm. long, the awn attached about the middle, erect, slender, 4 mm. long, the callus pilose; second lemma hyaline, 3 mm. long, ciliate like the first, but the hairs longer, the apex 2-toothed, the awn from between the teeth and about 1 mm. below the apex, erect, slender, about 1 cm. long, the callus pilose, the palea delicate, narrow, less than half as long as the lemma; third lemma fertile, 3 mm. long, broad, hyaline, 3-nerved, the lateral pair of nerves marginal and densely long-ciliate on the upper half (the hairs 2 mm. long), short-ciliate on the lower half, the awn from the obscurely toothed apex, 3 mm. long, erect, the palea about as long as the lemma, slightly 2-toothed, the keels scabrous; fourth lemma on a stipe about 1 mm. long, sterile, 2 mm. long, glabrous and awnless, containing a narrow palea about as long as the lemma; fifth floret reduced to a rudiment raised on a slender stipe, the whole not exceeding the fourth floret.

Type in the U. S. National Herbarium, no. 555998, collected at Cerro Colorado, vicinity of Culiacán, Sinaloa, Mexico, November 5, 1904, by T. S. Brandegec.

Known only from the type collection.

**86. CHLORIS** Swartz, *Prodr. Veg. Ind. Occ.* 25. 1788.

## KEY TO THE SPECIES.

## Lemma awnless (EUSTACHYS).

Floret dark brown, second glume short-awned from a broad

2-lobed apex..... 1. *C. petraea*.

Floret green or purplish; second glume oblong, awnless,

acute..... 2. *C. submutica*.

**Lemma awned.**

Rudimentary floret inconspicuous, narrow, not broadened at apex.

Blades elongated, acuminate; spikes numerous, 10 to 15 cm. long, scattered toward the summit of the culm; plant bearing cleistogamous underground spikelets..... 10. *C. clandestina*.

Blades mostly less than 10 cm. long; spikes several, more or less approximate, mostly not over 5 cm. long; no underground spikelets.

Awn of lemma about 3 mm. long; rudiment about half as long as lemma..... 9. *C. tenuispica*.

Awn of lemma 8 to 10 mm. long; rudiment very narrow, 0.5 mm. long, inclosed by the in-rolled lemma..... 8. *C. radiata*.

Rudimentary floret evident, truncate, broadened at summit.

Awn shorter than the lemma; rudiment triangular-truncate.

Lemma long-pilose on the keel and marginal nerves except at the base..... 4. *C. ciliata*.

Lemma slightly ciliate, but not pilose; rudiment hood-shaped..... 3. *C. cucullata*.

Awn more than twice as long as the lemma.

Rudiment triangular-truncate, 2-awned..... 5. *C. paraguayensis*.

Rudiment cuneate, twice as long as broad, 1-awned.

Lemma conspicuously pilose on the margin above, the hairs 2 mm. long..... 6. *C. elegans*.

Lemma short-ciliate on the margins above, the hairs less than 1 mm. long..... 7. *C. virgata*.

**1. Chloris petraea Swartz, Prodr. Veg. Ind. Occ. 25. 1788.**

Type locality, "Jamaica."

RANGE: Southern United States and West Indies to Costa Rica.

**HERBARIUM SPECIMENS FROM MEXICO:**

TAMAULIPAS: La Barra, *Palmer* 285 in 1910. Tampico, among brush in low land, *Hitchcock* 5798.

**2. Chloris submutica H. B. K. Nov. Gen. & Sp. 1: 167. pl. 50. 1816.**

Type locality, "in temperatis convallis Mexicanæ propter littora Tezcucensis" [Lake Texcoco].

RANGE: Highlands of Mexico.

**HERBARIUM SPECIMENS:**

CHIHUAHUA: Valley near Chihuahua, *Pringle* 424. Miñaca, along railway, *Hitchcock* 7731.

DURANGO: Durango, in stiff, black, waxy loam, *Palmer* 181 in 1896; dry ground, *Hitchcock* 7594. Otinapa, *Palmer* 341 in 1906. Tepehuanes, *Palmer* 362 in 1906.

COAHUILA: Saltillo, near ditches in cornfields, *Palmer* 390 in 1898; *Hitchcock* 5588.

TEPIC: Sierra Madre near Santa Teresa, *Rose* 2143.

ZACATECAS: Zacatecas, gulch in dry sterile hills, *Hitchcock* 7502.

AGUASCALIENTES: Aguascalientes, edge of field, *Hitchcock* 7453.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5686; *Schaffner* 130.

JALISCO: Guadalajara, *Palmer* 242 in 1886; open mesa, road to Barranca de Oblatos, *Hitchcock* 7313; fields, *Pringle* 11221. Zapotlán, railway right of way, *Hitchcock* 7129. Orozco, alkaline soil, near large pond, *Hitchcock* 7380.

## HERBARIUM SPECIMENS—Continued.

GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6934. Irapuato, moist, sandy-clay plain, *Hitchcock* 7411.

QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5818.

HIDALGO: Ixmiquilpan, river banks, *Rose, Painter & Rose* 9058. Pachuca, along road, *Hitchcock* 6748.

MÉXICO: Valley of Mexico, *Pringle* 9569, *Schumann* 1711. Tlalnepantla, *Rose, Painter & Rose* 8386. Toluca, rocky hill, *Hitchcock* 6906. Federal District, *Bourgeau* 494, *Holway* 13; along trolley, *Hitchcock* 5878; *Orcutt* 3690.

PUEBLA: Esperanza, along railway, *Hitchcock* 6468; roadsides, *Purpus* 2896. San Marcos, along railway embankment, *Hitchcock* 6505. Tehuacán, along railway, *Hitchcock* 6056. Chalchicomula, along railway, *Hitchcock* 6305. Along the Atoyac, *Nicolas* in 1910.

3. *Chloris cucullata* Bisch. Ann. Sci. Nat. III. Bot. 19: 357. 1853.

Type locality, "Mexico boreali \* \* \* Tamaulipas prope Matimoros."

RANGE: Southwestern United States and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5524; along ditch, *Hitchcock* 5578.

TAMAULIPAS: Victoria, *Palmer* 398 in 1907.

4. *Chloris ciliata* Swartz, Prodr. Veg. Ind. Occ. 25. 1788.

Type locality, "Jamaica."

RANGE: Texas to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5530, 5550.

TAMAULIPAS: Victoria, *Palmer* 550 in 1907. Tampico, along street, *Hitchcock* 5790.

SAN LUIS POTOSÍ: Cárdenas, along railway, *Hitchcock* 5734.

OAXACA: Tomellín, along railway track, *Hitchcock* 6220.

5. *Chloris paraguayensis* Steud. Syn. Pl. Glum. 1: 204. 1854.

Type locality, "Paraguay."

RANGE: Northern Mexico and the West Indies to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, *Palmer* 148 in 1910; common weed along railway, *Hitchcock* 5784.

6. *Chloris elegans* H. B. K. Nov. Gen. & Sp. 1: 166. pl. 49. 1816.

Type locality, "inter Mexico et Queretaro."

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* 39 in 1899, *Purpus* 315. Near Los Angeles Bay, *Palmer* 506 in 1887.

SONORA: Llano, along track, *Hitchcock* 3525. Hermosillo, along ditch, *Hitchcock* 3538; meadow near river, *Hitchcock* 3592; rocky cliff, *Hitchcock* 3605; sandy bed of river, *Hitchcock* 3619. Imeris to Santa Ana via Magdalena, *Griffiths* 6835. Loquka Ranch to Altar, *Griffiths* 6900. Nogales, along railway, *Hitchcock* 3636.

CHIHUAHUA: Valley near Chihuahua, *Pringle* 474. Southwestern Chihuahua, *Palmer* 118 in 1885. Santa Eulalia Plains, *Wilkinson* in 1885. Sánchez, along railway, *Hitchcock* 7688. Between Casas Grandes and Sabinal, *Nelson* 6354.

SINALOA: Topolobampo, open bottom land, among cactus, *Palmer* 245 in 1897.

DURANGO: Durango, along road, *Hitchcock* 7582; in shade, moist bottoms and along ditches, *Palmer* 176 in 1896; abundant on hillsides and plains, *Palmer* 765 in 1896. Tlahualilo, barren hills, *Pittier* 477. Torreón, weed in field, *Hitchcock* 7564; rocky hill, *Hitchcock* 7545.



## HERBARIUM SPECIMENS FROM MEXICO—Continued.

- COAHUILA: Jaral, *Schumann* 1716. Saltillo, along irrigation ditch, *Hitchcock* 5586.  
 TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14248.  
 ZACATECAS: Zacatecas, gulch in dry sterile hills, *Hitchcock* 7506.  
 AGUASCALIENTES: Aguascalientes, edge of field, *Hitchcock* 7452.  
 SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 131; *Parry & Palmer* 961 in 1878; irrigation ditch, *Hitchcock* 5691. Cárdenas, *Holway* 3146.  
 JALISCO: Río Blanco, *Palmer* 199 in 1886. Zapotlán, railway right of way, *Hitchcock* 7123. San Nicolás, prairie, *Hitchcock* 7187. Guadalajara, on roof of hotel, *Hitchcock* 7261. Colotlán, *Rose* 3604.  
 GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6932. Irapuato, moist sandy-clay plain, *Hitchcock* 7395.  
 QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5844.  
 COLIMA: Colima, *Palmer* 140 in 1897. Alzada, open hills, *Hitchcock* 7054.  
 MICHOACÁN: Morelia, east of Zapote, *Arsène* in 1909.  
 FEDERAL DISTRICT: Bourgeau 911, *Orcutt* 3693.  
 PUEBLA: Tlacuiloltepec, *Purpus* 4078. Tehuacán, limestone hills near El Riego, *Rose, Painter & Rose* 9906; *Seler* 6; bottom-land field, *Hitchcock* 6073.  
 MORELOS: Cuernavaca, weed in pasture, *Hitchcock* 6835. Santa Fé, *Orcutt* 4438, 4374.  
 GUERRERO: Canyon de la Mano Negra, near Iguala, *Rose, Painter & Rose* 9385. Balsas, along railway, *Hitchcock* 6801.  
 OAXACA: Oaxaca, *Conzatti* 321; along hedge, *Hitchcock* 6107. Tomellín, along ditch, *Hitchcock* 6246; *Rose, Painter & Rose* 10081.  
 YUCATÁN: Sacalum, *Schott* 632.

7. *Chloris virgata* Swartz, Fl. Ind. Occ. 1: 203. 1797.

Type locality, "Antigua."

RANGE: Northern Mexico and West Indies to Costa Rica.

## HERBARIUM SPECIMENS FROM MEXICO:

- DURANGO: Torreón, along ditch, *Hitchcock* 7549. Durango, along ditch, *Hitchcock* 7657.  
 COAHUILA: Saltillo, along wet ditch, *Hitchcock* 5620.  
 NUEVO LEÓN: Monterey, along irrigation ditch, *Hitchcock* 5574.  
 AGUASCALIENTES: Aguascalientes, edge of field, *Hitchcock* 7454.  
 SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 133; field, *Hitchcock* 5656, 5698; *Griffiths* 6533; Park Alameda, *Hitchcock* 5703. Cárdenas, irrigation ditch, *Hitchcock* 5749. Guascama, *Purpus* 5431.  
 JALISCO: Zapotlán, railway right of way, *Hitchcock* 7138. Guadalajara, prairie near San Pedro, *Hitchcock* 7282. San Nicolás, prairie, *Hitchcock* 7193.  
 GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6927. Irapuato, moist sandy-clay plain, *Hitchcock* 7412.  
 QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5804.  
 MICHOACÁN: Uruápan, along road, *Hitchcock* 6965.  
 FEDERAL DISTRICT: *Seaton* 2.  
 PUEBLA: Atlixco, *Nelson* in 1893. Tehuacán, old field, *Hitchcock* 6033; *Liebmann* 239. Rancho Tosados, *Nicolas* in 1909.  
 VERACRUZ: Jalapa, along railway near Coatepec, *Hitchcock* 6662. Orizaba, roadside ditch, *Hitchcock* 6336.  
 MORELOS: Cuernavaca, pasture, *Hitchcock* 6855; along track, *Hitchcock* 6875.  
 GUERRERO: Santa Fé, along railway, *Hitchcock* 6688.  
 OAXACA: Oaxaca, along road, *Hitchcock* 6110; open ground along railway, *Hitchcock* 6129; along ditch between Tule and Oaxaca, *Hitchcock* 6170.

**8. Chloris radiata** (L.) Swartz, Prodr. Veg. Ind. Occ. 26. 1788.*Agrostis radiata* L. Syst. Nat. ed. 10. 873. 1759.

Type locality, Jamaica.

RANGE: West Indies and southern Mexico to Panama.

HERBARIUM SPECIMENS FROM MEXICO:

COLIMA: Colima, *Palmer* 1253 in 1891.VERACRUZ: Sanborn, *Orcutt* 3242.**9. Chloris tenuispica** Nash, Bull. Torrey Club **25**: 436. 1898.

Type locality, "Texas," the type specimen collected by Nealley.

RANGE: Texas and northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Monterey, along irrigation ditch, *Hitchcock* 5568.TAMAULIPAS: Tampico, along street, *Hitchcock* 5788.**10. Chloris clandestina** Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. **24**: 25. 1901.*Gymnopogon longifolius* Fourn. Mex. Pl. **2**: 144. 1886.*Chloris longifolia* Vasey, Contr. U. S. Nat. Herb. **1**: 284. 1893, not Steud. 1854.

Type locality, "Vera Cruz," the type specimen collected by Gouin (no. 52).

RANGE: Sonora to Oaxaca.

HERBARIUM SPECIMENS:

SONORA: Hermosillo, in meadow along river, *Hitchcock* 3572.SINALOA: Culiacán, in good soil on wooded plains, *Palmer* 1763 in 1891. Topolobampo, bottom lands, *Palmer* 238 in 1897. Imala, *Palmer* 1763 in 1891.NUEVO LEÓN: Monterey, edge of field, *Hitchcock* 5559.SAN LUIS POTOSÍ: Las Canoás, along railway, *Hitchcock* 5766.JALISCO: Guadalajara, side of Barranca de Oblatos, *Hitchcock* 7355.GUANAJUATO: Irapuato, dry shrubby hill, *Hitchcock* 7431.MORELOS: Yautepec, *Pringle* in 1902.OAXACA: Tomellín, along ditch, *Hitchcock* 6226.**87. TRICHLORIS** Fourn. in Benth. Journ. Linn. Soc. Bot. **19**: 102. 1881.

Kuntze,<sup>1</sup> regarding *Trichloris* as untenable because of *Trichlora* Baker 1877, publishes for this genus the name *Chloropsis* Hack. (mentioned as a synonym and without description by Hackel<sup>2</sup>). Both of the former names appear, however, to be valid, since they are differently derived.

## KEY TO THE SPECIES.

Spikelets 2-flowered, both lemmas with 3 long awns..... 1. *T. mendocina*.  
Spikelets 3 to 5 flowered, the lateral awns of the lemmas more or less reduced, sometimes wanting..... 2. *T. pluriflora*.

**1. Trichloris mendocina** (Phil.) Kurtz, Mem. Fac. Cienc. Exact. Univ. Córdoba **1897**: 37. 1897.*Chloris* ? *mendocina* Phil. Anal. Univ. Chile **36**: 208. 1870.

Type locality, "Mendoza."

RANGE: Southwestern United States to Chile.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Valley near Chihuahua, *Pringle* 475.DURANGO: Torreón, along dry ditch, mostly among shrubs and cactus, *Hitchcock* 7724.<sup>1</sup> Rev. Gen. Pl. **2**: 771. 1891.<sup>2</sup> In Engl. & Prantl, Pflanzenfam. **2**<sup>2</sup>: 59. 1887.

2. *Trichloris pluriflora* Fourn. Mex. Pl. 2: 142. 1886.

Type locality, "Texas, inter Laredo et Bejar," the only locality cited.

RANGE: Texas and New Mexico to Argentina.

HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Sabinas, *Nelson* 6827.

OAXACA: Tomellín, rocky soil near river, *Hitchcock* 6202. Río de Santa Lucía, boundary of Oaxaca and Puebla, rocks, arroyos, *Purpus* 2895.

88. *BOUTELOUA* Lag. Var. Cienc. 2<sup>4</sup>: 134. 1805.

GRAMA GRASS.

KEY TO THE SPECIES.

Plants annual.

Spike 1..... 2. *B. procumbens*.

Spikes 2 or more.

Spikelets pectinately arranged.

    Awns scarcely exceeding the spikelets..... 3. *B. barbata*.

    Awns exceeding the spikelets 1 mm. or more..... 4. *B. arenosa*.

Spikelets not pectinately arranged.

    Leaves tuberculate-pubescent; spikes subtriangular  
    in outline..... 5. *B. alamosana*.

    Leaves not tuberculate-pubescent; spikes nearly  
    linear..... 1. *B. aristidoides*.

Plants perennial.

Spike normally 1, conspicuously scorpioid.

    Plants stoloniferous..... 7. *B. stolonifera*.

    Plants not stoloniferous..... 8. *B. scorpioides*.

Spikes normally 2 or more.

    Plants stoloniferous; culms white-lanate..... 6. *B. eriopoda*.

    Plants sometimes decumbent but not stoloniferous;  
    culms not lanate.

    Spikelets pectinately arranged.

        Spikes normally 2.

            Glumes tuberculate; rachis prolonged  
            beyond the spikelets as a naked  
            point.

            Internodes hirsute-villous..... 10. *B. hirticulmis*.

            Internodes glabrous..... 9. *B. hirsuta*.

        Glumes not tuberculate; rachis not pro-  
        longed.

        Culms erect, simple, annual..... 12. *B. gracilis*.

        Culms geniculate, branching, partially  
        perennial..... 13. *B. ramosa*.

    Spikes normally 4 or more.

        Second glume long-pilose; spikes flexuous. 11. *B. parryi*.

        Second glume glabrous or scabrous only.

        Culms decumbent, rooting at the lower  
        nodes..... 14. *B. sonorae*.

        Culms erect or ascending.

            Awns twice as long as the body of  
            the lemma, much exceed-  
            ing the spikelet..... 17. *B. trifida*.

- Awns much shorter than the body  
of the lemma, but slightly  
exceeding the spikelet.
- Base of plant strong, woody,  
rhizomatous; fertile  
floret glabrous at base.. 16. *B. karvinskii*.
- Base of plant not woody nor  
rhizomatous; fertile  
floret pilose at base.... 15. *B. roihrockii*.
- Spikelets not pectinately arranged.
- Spikes many, usually 30 or more.
- Awns longer than the body of the spikelet;  
plants usually straggling.
- Spikes with a single spikelet; fertile  
lemma entire..... 21. *B. juncea*.
- Spikes normally with 5 or more spike-  
lets; fertile lemma 3-toothed... 22. *B. disticha*.
- Awns much shorter than the body of the  
spikelet.
- Sheaths densely hairy; lower spikes  
compound..... 20. *B. pringlei*.
- Sheaths glabrous.
- Second glume about as long as the  
fertile floret..... 19. *B. curtispindula*.
- Second glume about half as long  
as the fertile floret..... 18. *B. acuminata*.
- Spikes rarely as many as 20, usually fewer  
than 15.
- Glumes densely pubescent.
- Spikes 4 to 6, rhomboid in outline;  
sterile floret 1, deeply trifid, the  
middle awn flattened..... 24. *B. chondrosioides*.
- Spikes 10 to 20, triangular in outline;  
sterile florets 2, awned, the  
awns similar..... 25. *B. eludens*.
- Glumes glabrous or minutely pubescent on  
the nerves only.
- Spikelets few, crowded, the first floret  
fertile..... 23. *B. texana*.
- Spikelets numerous, not crowded, the  
first floret mostly staminate, the  
second fertile.
- Plants smooth, grayish; culms  
geniculate..... 28. *B. repens*.
- Plants more or less prominently  
papillose-pubescent.
- Base of plants hard, rhizo-  
matous; culms simple;  
spikes 2 to 3 cm. long.. 27. *B. radicata*.
- Base of plants not rhizo-  
matous; culms branch-  
ing; spikes usually  
about 15 mm., some-  
times 20 mm. long.... 26. *B. filiformis*.

1. *Bouteloua aristidoides* (H. B. K.) Griseb. Fl. Brit. W. Ind. 537. 1864.*Dinebra aristidoides* H. B. K. Nov. Gen. & Sp. 1: 171. 1816.

Type locality, "in asperis frigidis convallis Tolucensis \* \* \* (Regno Mexicano)."

RANGE: Southwestern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Calmallí, on dry plain, *Orcutt* in 1899. Carmen Island, *Palmer* 859 in 1890. San José del Cabo, *Brandege* 4 and 16 in 1890. Los Angeles Bay, *Palmer* 507 in 1887.SONORA: Alamos, *Palmer* 697 in 1890. Yaqui River, *Palmer* 7 in 1869. Guaymas, rocky lava hill, *Hitchcock* 3549; *Palmer* 162 in 1887. Nogales, along railway, *Hitchcock* 3638. Hermosillo, along railway, *Hitchcock* 3533; meadow near river, *Hitchcock* 3594. Llano, along railway, *Hitchcock* 3519, 3527.CHIHUAHUA: Chihuahua, dry bed of river, *Hitchcock* 7803; hills and plains, *Pringle* 477. Santa Eulalia Plains, *Wilkinson* in 1885. Southwestern Chihuahua, *Palmer* 51 in 1885. Casas Grandes, *Nelson* 6329.SINALOA: Topolobampo, *Palmer* 237 in 1897. Culiacán, *Brandege* in 1904; stony hillsides, *Palmer* 1547 in 1891. Lodiago, river bottoms, often overflowed during rainy season, *Palmer* 1650 in 1891.COAHUILA: Monclova, *Palmer* 1353 in 1880. Soledad, low mountains with few oaks, 25 miles southwest from Monclova, *Palmer* 1354 in 1880.DURANGO: Tlahualilo, barren hills, *Pittier* 474. Durango, rocky hill, Iron Mountain, *Hitchcock* 7627, *Griffiths* 9862; hillsides, *Palmer* 714a and 717 in 1896. Torreón, base of rocky hill, *Hitchcock* 7550.ZACATECAS: San Juan Capistrano, on the road to Huejuquilla, *Rose* 2490.AGUASCALIENTES: Aguascalientes, edge of field, *Hitchcock* 7444.SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 941 in 1878, *Schaffner* 155.JALISCO: Tequila, dry bluffs, *Pringle* 4592.QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5828.COLIMA: Manzanillo, along street, *Hitchcock* 7037; Armería, sandy soil, *Hitchcock* 7021.OAXACA: Tomellín, along railway, *Hitchcock* 6240.2. *Bouteloua procumbens* (Durand) Griffiths, Contr. U. S. Nat. Herb. 14: 364. 1912.*Chloris procumbens* Durand, Chlor. Sp. 16. 1808.

Type locality unknown.

RANGE: Colorado and Utah to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 3 in 1885. Guerrero, plains, *Pringle* 1434. Sánchez, along railway, *Hitchcock* 7697.DURANGO: Durango, rocky hill, Iron Mountain, *Hitchcock* 7626; abundant on mesquite plains, *Palmer* 712 in 1896.COAHUILA: Saltillo, moist places on mesas, *Palmer* 397 and 398 in 1898. Chojo Grande, 27 miles southeast of Saltillo, *Palmer* 332 in 1904.● ZACATECAS: Zacatecas, dry sterile hill, *Hitchcock* 7519; *Griffiths* 8139.AGUASCALIENTES: Aguascalientes, weed, edge of field, *Hitchcock* 7445.SAN LUIS POTOSÍ: San Luis Potosí, irrigation ditch, *Hitchcock* 5692; edge of field, *Hitchcock* 5707; *Schaffner* 156. Alvarez, *Palmer* 176 in 1902.JALISCO: Guadalajara, *Palmer* 480 in 1886.QUERÉTARO: Querétaro, rocky field, *Hitchcock* 5845; agave field, *Hitchcock* 5862.HIDALGO: Pachuca, rocky hill, *Hitchcock* 6710, 6711; sandy river bed, *Hitchcock* 6764; *Orcutt* 3903. Telles, *Orcutt* 4153. Zontecomate Station, dry mesas, *Pringle* 13242.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6896. Federal District, *Orcutt* 3608; Valley of Mexico, *Rose & Hay* 5972; open ground, *Hitchcock* 5905, 5943; *Pringle* 6450, 11218.

PUEBLA: San Marcos, along railway embankment, *Hitchcock* 6506. Chalchicomula, along dike in field, *Hitchcock* 6288; along railway, *Hitchcock* 6307.

3. *Bouteloua barbata* Lag. Var. Cienc. 2<sup>4</sup>: 141. 1805.

Type locality, Mexico.

RANGE: Utah to California and south in the highlands to Oaxaca.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Paz, *Palmer* 126 in 1890. Los Angeles Bay, Gulf of California, *Palmer* 508 in 1887. Cape St. Lucas, *Xantus* 117. Carmen Island, *Palmer* 854 and 857 in 1890. Arroyo Salado (Cape Region), *Purpus* 410. San José del Cabo, *Brandege* 11 and 31 in 1890, *Brandege* in 1902.

SONORA: Guaymas, *Palmer* 508 in 1887. Papago Tanks, *MacDougal* in 1907. Northwestern Sonora, hills, *Pringle* in 1884. Imuris to Altar, *Griffiths* 6861. Altar, *Griffiths* 6890, 6905.

CHIHUAHUA: Chihuahua, mesa, *Hitchcock* 7782; hills and plains, *Pringle* 490. Presidio del Norte, *Parry* in 1852.

DURANGO: Torreón, rocky hill, *Hitchcock* 7538. Durango, open gravelly place, base of hill, *Hitchcock* 7620; *Griffiths* 9861; hillsides, *Palmer* 714 in 1896. Tlahualilo, barren hills, *Pittier* 470.

COAHUILA: Jimulco, plains, *Pringle* 11216; valley of Jimulco, *Pringle* 13626. Saltillo, low places in mesas, *Palmer* 400 and 401 in 1898, 1356 in 1880.

AGUASCALIENTES: Aguascalientes, rocky sterile hill, *Hitchcock* 7469.

SAN LUIS POTOSÍ: San Luis Potosí, dry ditch, *Hitchcock* 5660; *Parry & Palmer* 946 in 1878; *Schaffner* 181, 183, 185.

QUERÉTARO: Querétaro, alfalfa field, *Hitchcock* 5809.

HIDALGO: Dublán, *Griffiths* 8116.

FEDERAL DISTRICT: *Bourgeau* 667.

PUEBLA: Tehuacán, open dry ground, *Hitchcock* 6077.

OAXACA: San Antonio Valley, *Smith* 957. Oaxaca, along track near Ignacio Mejía, *Hitchcock* 6116. Tomellín, rocky hill, *Hitchcock* 6235; *Rose, Painter & Rose* 10078.

4. *Bouteloua arenosa* Vasey, U. S. Dept. Agr. Div. Bot. Bull. 12<sup>1</sup>: pl. 34. 1890.

Type locality, "Guaymas on the Gulf of California."

RANGE: Southwestern United States and northwestern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Without locality, *Orcutt* in 1889.

SONORA: Guaymas, *Palmer* 189 in 1887. Hermosillo, dry soil, *Hitchcock* 3534.

5. *Bouteloua alamosana* Vasey, Contr. U. S. Nat. Herb. 1: 115. 1891.

Type locality, "Alamos."

RANGE: Sonora and the Pacific slope of Central America.

## HERBARIUM SPECIMEN FROM MEXICO:

SONORA: Alamos, *Palmer* 698 in 1890.

6. *Bouteloua eriopoda* (Torr.) Torr. U. S. Rep. Expl. Miss. Pacif. 4: 155. 1856.

*Chondrosium eriopodum* Torr. in Emory, Mil. Recon. 154. 1848.

Type locality, "New Mexico."

RANGE: Texas to Arizona and Chihuahua.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, rocky hill, *Hitchcock* 7794; dry gravelly soil, hills and plains, *Pringle* 411. Santa Eulalia Plains, *Wilkinson* 348.

**7. *Bouteloua stolonifera*** Scribn. Proc. Acad. Phila. 1891: 302. 1892.

Type locality, "Plains, State of Zacatecas, between San Luis Potosí and Aguascalientes," the type specimen collected by Pringle (no. 3174).

RANGE: Highlands of central Mexico.

## HERBARIUM SPECIMENS:

ZACATECAS: La Honda Station, plains, *Pringle* 3174. Cedros, making turf in plains, *Lloyd* 104.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 172. Alonzo, *Griffiths* 8054.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6734.

MÉXICO: Metepec, dry mesas, *Pringle* 13241.

**8. *Bouteloua scorpioides*** Lag. Gen. & Sp. Nov. 5. 1816.

Type locality, "N. Hisp." [Mexico].

RANGE: Highlands from Chihuahua to Orizaba.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Encinillas, *Griffiths* 8527.

ZACATECAS: Cedros, making turf in low places of plain, *Lloyd* 105.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 168.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6721.

MÉXICO: Campero, *Griffiths* 8460, 8461, 8462. Federal District, *Orcutt* 4107, *Pringle* 8820.

PUEBLA: Esperanza, barren hills, *Pittier* 422; rocky hill, *Hitchcock* 6477. Chalchicomula, *Hitchcock* 6272.

**9. *Bouteloua hirsuta*** Lag. Var. Cienc. 2<sup>4</sup>: 141. 1805.

Type locality, Mexico.

RANGE: From Illinois and South Dakota to the Rocky Mountains and southward to southern Mexico; also in Florida.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cape Region Mountains, *Brandege* in 1899. Sierra de la Laguna, *Brandege* in 1890.

SONORA: Near Cocospora Ranch, *Griffiths* 6792.

CHIHUAHUA: Chihuahua, hills and plains, *Pringle* 409; rocky hill, *Hitchcock* 7795.

Santa Eulalia Mountains, *Wilkinson* 347. Between Colonia García and Pratt's ranch below Pacheco, *Nelson* 6246.

DURANGO: Durango, dry ground, *Hitchcock* 7604; stony hillsides, *Palmer* 870 in 1896.

COAHUILA: Saltillo, in low places on mesas, *Palmer* 405 in 1898, 1357 in 1880.

TEPIC: Between Concepción and Acaponeta, *Rose* 1904. Near Acaponeta, *Rose* 3293.

ZACATECAS: Zacatecas, gulch in dry sterile hills, *Hitchcock* 7501.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 186, *Parry & Palmer* 943 in 1878. Las Canóas, prairie, *Hitchcock* 5753.

JALISCO: Road between Huejuquilla and Mezquitic, *Rose* 2588. Zapotlán, railway right of way, *Hitchcock* 7113.

HIDALGO: Sierra de Pachuca, *Rose, Painter & Rose* 8752. Tula, hills, *Pringle* 11215.

FEDERAL DISTRICT: *Schaffner* in 1875; *Rose, Painter & Rose* 9497.

MORELOS: Cuernavaca, *Rose & Rose* 11055.

OAXACA: San Pablo Huitzo, *Conzatti* 2013.

**10. *Bouteloua hirticulmis*** Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 30: 4. 1901.

Type locality, "Sierra de San Francisquito Mountains, Lower California."

RANGE: Pacific slope, Lower California to Chiapas.

## HERBARIUM SPECIMENS:

LOWER CALIFORNIA: San Francisquito Mountains, *Brandegee* 30 in 1890, *Brandegee* in 1899. El Taste, *Brandegee* in 1902.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7464; *Griffiths* 9849.

JALISCO: Río Blanco, *Palmer* 201 in 1886. Guadalajara, prairie near San Pedro, *Hitchcock* 7273. San Nicolás, sterile clay hill, *Hitchcock* 7214. El Llego, *Griffiths* in 1909.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6135. Valley of Oaxaca, *Nelson* 1259.

CHIAPAS: Roadside between Tuxtla and San Cristóbal, *Nelson* 3121.

11. *Bouteloua parryi* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 381. 1912.

*Chondrosium parryi* Fourn. Mex. Pl. 2: 150. 1886.

Type locality, "Circa San Luis de Potosí."

RANGE: Southwestern United States to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Mountains, *Wilkinson* in 1885. Chihuahua, sandy alluvium of streams, rocky hills, *Pringle* 413.

DURANGO: Durango, cornfield, *Hitchcock* 7610.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 943½, *Schaffner* 187.

12. *Bouteloua gracilis* (H. B. K.) Lag.; Steud. Nom. Bot. ed. 2. 1: 219. 1840.

*Chondrosium gracile* H. B. K. Nov. Gen. & Sp. 1: 176. pl. 58. 1816.

Type locality, "La Buffa de Guanajuato Mexicanorum."

RANGE: Manitoba to Montana and California and southward to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: San José Mountains, *Mearns* 1658.

CHIHUAHUA: Miñaca, mesa, *Hitchcock* 7746. Chihuahua, mesa, *Hitchcock* 7799; hills and plains, *Pringle* 407. Sánchez, flat, gravelly bottom of ravine, *Hitchcock* 7716. Casas Grandes, *Nelson* 6330. Southwestern Chihuahua, *Palmer* 24 in 1885. Near Colonia García in the Sierra Madre, *Townsend & Barber* 257. Santa Eulalia Plains, *Wilkinson* in 1885.

DURANGO: Durango, dry ground, *Hitchcock* 7574; hillsides and plains, *Palmer* 545 in 1896.

COAHUILA: Saltillo, low places on mesas, *Palmer* 399 and 403 in 1898; on hillsides among rocks in small tufts, *Palmer* 406 in 1898. Jaral, *Schumann* 1723.

ZACATECAS: Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7499. Pico de Teira, *Lloyd* 242.

AGUASCALIENTES: Aguascalientes, *Rose & Painter* 7729; sterile rocky hill, *Hitchcock* 7460.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 944 in 1878; edge of field, *Hitchcock* 5675. San Rafael, *Schaffner* 157.

GUANAJUATO: Guanajuato, *Dugès* in 1897.

QUERÉTARO: San Juan del Río, stony hillside, *Rose, Painter & Rose* 9569.

HIDALGO: Between Pachuca and Real del Monte, *Rose & Painter* 6710. Dublán, *Griffiths* 9809. Pachuca, rocky hill, *Hitchcock* 6704, 6722.

MÉXICO: Toluca, prairie, *Hitchcock* 6917. Federal District, *Bourgeau* 448; along railway, *Hitchcock* 5906; *Orcutt* 3641.

PUEBLA: San Marcos, railway embankment, *Hitchcock* 6510. Esperanza, dry open ground, *Hitchcock* 6465; rocky hill, *Hitchcock* 6483. Chalchicomula, rocky hill, *Hitchcock* 6271. Hacienda Noria, *Nicolas* in 1908.

13. *Bouteloua ramosa* Scribn.; Vasey, U. S. Dept. Agr. Div. Bot. Bull. 12<sup>1</sup>: pl. 44. 1890.

Type locality, southwestern Texas.

RANGE: Texas to central Mexico.



## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Mountains, *Wilkinson* 346 in 1885; dry calcareous banks, *Pringle* 414.

COAHUILA: Saltillo, among rocks on hillsides, *Palmer* 404 in 1898. Monclova, *Palmer* 1358 in 1880.

ZACATECAS: Mountains back of Apizalaya, Hacienda de Cedros, *Lloyd* 254.

14. *Bouteloua sonora* Griffiths, Contr. U. S. Nat. Herb. 14: 389. f. 43. 1912.

Type locality, "Yaqui River," Sonora, the type collected by Palmer in 1869.

RANGE: Northwestern Mexico.

## HERBARIUM SPECIMENS:

SONORA: Yaqui River, *Palmer* in 1869. Alamos, *Palmer* 751 in 1890. Guaymas, stony flat between hill and bay, *Chase* 5509; *Hitchcock* 3552.

SINALOA: Mountains at headwaters of Mazatlán River, *Wright* 1322. Imala, *Palmer* 1761 in 1891.

15. *Bouteloua rothrockii* Vasey, Contr. U. S. Nat. Herb. 1: 268. 1893.

Type locality, "Cottonwood, Arizona."

RANGE: Utah to Sinaloa.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Near Cocospora Ranch, *Griffiths* 6796. Hermosillo, meadow, *Hitchcock* 3583; dry soil, *Hitchcock* 3536. Llano, along railway, *Hitchcock* 3523. Agiabampo, *Palmer* 791 in 1890. Guaymas, *Palmer* 166 and 204 in 1887.

SINALOA: Culiacán, *Brandege* 11 in 1904; in large patches in the ravines, *Palmer* 1543 in 1891. Topolobampo, in open bottom lands, *Palmer* 244 and 235 in 1897.

16. *Bouteloua karwinskii* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 394. 1912.

*Chondrosium karwinskii* Fourn. Mex. Pl. 2: 137. 1886.

Type locality, "Cañon de las Minas et Victoria."

RANGE: Central Mexico.

## HERBARIUM SPECIMENS:

ZACATECAS: Hacienda de Cedros, *Lloyd* 183. Zacatecas, low grassy land, *Lloyd* 170.

17. *Bouteloua trifida* Thurb. in S. Wats. Proc. Amer. Acad. 18: 177. 1883.

*Bouteloua trinii* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 387. 1912. (The author takes 1881 as the date of publication of Fournier's work. See footnote, page 181).

Type locality, "Monclova, Coahuila."

RANGE: Southwestern United States to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* in 1885. Chihuahua, dry gravelly soil, hills and plains, *Pringle* 412.

COAHUILA: Saltillo, hillsides, *Palmer* 402 in 1898, 522 in 1905; dry mesa *Hitchcock* 5639, 5648; mountains, *Palmer* 1355 in 1880.

NUEVO LEÓN: Monterey, agave field, *Hitchcock* 5531; along railway, *Hitchcock* 5532; dry hills and mesas, *Pringle* 1974, 11735.

\* TAMAUlipas: Victoria, *Palmer* 370 and 552 in 1907.

SAN LUIS POTOSÍ: Minas de San Rafael, *Purpus* 5008. San Luis Potosí, *Parry & Palmer* 945 in 1878.

18. *Bouteloua acuminata* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 406. 1912.

*Atheropogon acuminatus* Fourn. Mex. Pl. 2: 139. 1886.

Type locality, "Mirador" and "Potrero de Consoquitla" cited.

RANGE: Central Mexico.

## HERBARIUM SPECIMEN:

SINALOA: Lodiego, in large bunches on mountain sides, *Palmer* 1655 in 1891.

19. *Bouteloua curtispindula* (Michx.) Torr. in Emory, Mil. Recon. 154. 1848.*Chloris curtispindula* Michx. Fl. Bor. Amer. 1: 59. 1803.

Type locality, "in aridis regionis Illinoensis ad Wabast."

RANGE: Northern United States to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Carmen Island, *Palmer* 861 in 1890. Topo Mountains, *Orcutt* 671. San José del Cabo, *Brandege* in 1890 and in 1902.SONORA: San José Mountains, *Mearns* 1039. Guadalupe Canyon, *Merton* 2047.Hermosillo, rocky cliff, *Hitchcock* 3609. Nogales, along railway, *Hitchcock* 3633.CHIHUAHUA: Between Colonia García and Pratt's ranch below Pacheco, *Nelson* 6247. Chihuahua, *Palmer* 114 in 1908; rocky hill, *Hitchcock* 7797; hills and plains, *Pringle* 408. Southwestern Chihuahua, *Palmer* 206 in 1885. Santa Eulalia Plains, *Wilkinson* in 1885. Miñaca, rocky run, *Hitchcock* 7739.DURANGO: Durango, dry ground, *Hitchcock* 7606; by ditch, *Palmer* 194 in 1896. Torreón, rocky hill, *Hitchcock* 7539.COAHUILA: Chojo Grande, 27 miles southeast of Saltillo, *Palmer* 371 in 1904. Saltillo, large bunches about an old brick yard, *Palmer* 407 in 1898; sandy field, river bottom, *Hitchcock* 5614. Jaral, *Schumann* 1721.NUEVO LEÓN: Monterey, rocks among shrubs, *Hitchcock* 5518.ZACATECAS: Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7520. Hacienda de Cedros, foothills, *Lloyd* 201, 213. Pico de Teira, *Lloyd* 239. Concepción del Oro, *Palmer* 264 in 1904.AGUASCALIENTES: Aguascalientes, sterile, rocky hill, *Hitchcock* 7457.SAN LUIS POTOSÍ: Cárdenas, prairie near ditch, *Hitchcock* 5738. San Luis Potosí, edge of field, *Hitchcock* 5673; *Schaffner* 188.JALISCO: San Nicolás, sterile clay hill, *Hitchcock* 7213. Bolaños, *Rose* 2929. Río Blanco, *Palmer* 503 in 1886. Guadalajara, dry open ground, along rim of Barranca de Oblatos, *Hitchcock* 7328, 7345.GUANAJUATO: Irapuato, dry, shrubby hill, *Hitchcock* 7425.QUERÉTARO: Querétaro, agave field, *Hitchcock* 5860. San Juan del Río, stony hillside, *Rose, Painter & Rose* 9551.HIDALGO: Ixmiquilpan, limestone hillside, *Rose, Painter & Rose* 8977, 9027. Tula, along railroad, *Rose, Painter & Rose* 8359. Pachuca, rocky hill, *Hitchcock* 6706.MICHOACÁN: El Ocote, Cerro Pedregosa, *Langlassé* 537. Morelia, *Arsène* 2993.FEDERAL DISTRICT; *Orcutt* 3666; lava rock, *Hitchcock* 5953, 5957; *Holway* 10; *Bourgeau* 491; agave field; *Hitchcock* 5904.PUEBLA: Mount Orizaba, *Seaton* 113. Tehuacán, limestone hills; El Riego, *Rose, Painter & Rose* 9989; cactus hill, *Hitchcock* 6083, 6087; *Liebmann* 580. San Luis Tultitlanapa, *Purpus* 3595. Esperanza, barren hills, *Pittier* 444; *Hitchcock* 6474. San Marcos, railway embankment, *Hitchcock* 6538. Hills road to Mexico City, *Nicolas* in 1909.VERACRUZ: Orizaba, *Botteri* 699; open rocky hill, *Hitchcock* 6357.MORELOS: Cuernavaca, rocky place, *Hitchcock* 6862.GUERRERO: Balsas, rocky hill, *Hitchcock* 6772; along railway cut, *Hitchcock* 6807.OAXACA: Monte Albán near Oaxaca City, *Smith* 958. Oaxaca, rocky hill, *Hitchcock* 6148. Tomellín, rocky hill, *Hitchcock* 6200. Cuicatlán, *Nelson* 1700.20. *Bouteloua pringlei* Scribn. U. S. Dept. Agr. Div. Agrost. Circ. 30: 4. 1901.

Type locality, "Mountains of Iguala, Mexico."

RANGE: Highlands, southern Mexico.

## HERBARIUM SPECIMENS:

MORELOS: Hills near Yautepec, *Pringle* 11217.GUERRERO: Iguala, limestone ledges of mountains, *Pringle* 8374.

**21. *Bouteloua juncea* (Desv.).**

*Triathera juncea* Desv.; Beauv. Ess. Agrost. 40. pl. 9. f. 4. 1812.

*Triaena racemosa* H. B. K. Nov. Gen. & Sp. 1: 179. pl. 61. 1816, not *Bouteloua racemosa* Lag. 1805.

*Eutriana triaena* Trin. Gram. Unifl. 239. 1824.

*Bouteloua triaena* Scribn. Proc. Acad. Phila. 1891: 307. 1892.

*Triaena juncea* Griffiths, Contr. U. S. Nat. Herb. 14: 354. 1912.

Type locality unknown.

RANGE: Central and southern Mexico.

HERBARIUM SPECIMENS:

COAHUILA: Saltillo, *Griffiths* 8408.

HIDALGO: Dublán, *Griffiths* 8117, 8122. El Salto, calcareous soil, *Pringle* 9573.

PUEBLA: Tehuacán, hills east of city, *Rose, Painter & Rose* 10117; *Hitchcock* 6074; *Ross* 1302a. Chalchicomula, rocky hill, *Hitchcock* 6302.

MORELOS: Jojutla, limestone hills, *Pringle* 8708.

OAXACA: Valley of Oaxaca, *Nelson* 1542. Dominguillo, *Nelson* 1842. Las Sedas, dry calcareous hills, *Pringle* 4782; *Conzatti & González* 265. Oaxaca, rocky hill, *Hitchcock* 6146.

YUCATÁN: Nohcacab, *Schott* 740.

**22. *Bouteloua disticha* (H. B. K.) Benth. Journ. Linn. Soc. Bot. 19: 105. 1881.**

*Polyodon distichum* H. B. K. Nov. Gen. & Sp. 1: 175. pl. 55. 1816.

Type locality, "In montosis, alsis Regni Quitensis."

RANGE: Yucatan to South America, also in Cuba.

HERBARIUM SPECIMEN FROM MEXICO:

YUCATÁN: Nohcacab, *Schott* 741.

**23. *Bouteloua texana* S. Wats. Proc. Amer. Acad. 18: 196. 1883.**

Type locality, "Western Texas."

RANGE: Texas and adjacent Mexico.

HERBARIUM SPECIMEN FROM MEXICO:

COAHUILA: Díaz, calcareous mesas, *Pringle* 9018.

**24. *Bouteloua chondrosioides* (H. B. K.) Benth. in S. Wats. Proc. Amer. Acad. 18: 179. 1883.**

*Dinebra chondrosioides* H. B. K. Nov. Gen. & Sp. 1: 173. pl. 53. 1816.

Type locality, "Prope urbem Valladolid de Mechoacan."

RANGE: Texas to Arizona and south to Oaxaca.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Near Cocospora Ranch, *Griffiths* 6790.

CHIHUAHUA: Chihuahua, rocky hills, *Pringle* 410. Santa Eulalia Plains, *Wilkinson* in 1885.

DURANGO: Durango, dry ground, *Hitchcock* 7601; common on hillsides and plains, *Palmer* 546 in 1896; *Griffiths* 9863.

ZACATECAS: Plateado, *Rose* 2782.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7467, 7476.

JALISCO: Huejuquilla, *Rose* 2532.

MICHOACÁN: San Antonio, *Griffiths* in 1909. Loma del Zapote near Morelia, *Arsène* in 1909. Morelia, *Arsène* in 1909.

PUEBLA: Zapotlán near Tehuacán, *Ross* 1304.

OAXACA: Oaxaca, *Conzatti* 156; rocky hill, *Hitchcock* 6103, 6150; *Griffiths* 9742.

**25. *Bouteloua eludens* Griffiths, Contr. U. S. Nat. Herb. 14: 401. pl. 78, 79, 80A. 1912.**

Type locality, "Southern exposures upon the northern slope of the Santa Rita Mountains, Arizona," the type specimen collected by Griffiths (no. 7269).

RANGE: Arizona and Sonora.

HERBARIUM SPECIMEN FROM MEXICO:

SONORA: Near Cocospora Ranch, south of Nogales, *Griffiths* 6789.

26. *Bouteloua filiformis* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 413. 1912.  
*Atheropogon filiformis* Fourn. Mex. Pl. 2: 140. 1886.

Type locality, "Hacienda de la Naranja," Mexico.

RANGE: Texas to Arizona and south to Colombia.

HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, dry ground, *Hitchcock* 7603.

NEUVO LEÓN: Monterey, rocky hill, Obispado, *Hitchcock* 5569; valley of Monterey, *Pringle* 2547.

TAMAULIPAS: Victoria, *Palmer* 482 in 1907.

AGUASCALIENTES: Aguascalientes, sterile rocky hill, *Hitchcock* 7462.

SAN LUIS POTOSÍ: San Luis Potosí, *Hitchcock* 5679. Cárdenas, railway cut, *Hitchcock* 5718. Minas de San Rafael, *Purpus* 5437.

JALISCO: Guadalajara, prairie near San Pedro, *Hitchcock* 7277. La Junta, along track, *Hitchcock* 7002. Zapotlán, railway right of way, *Hitchcock* 7118. San Nicolás, prairie, *Hitchcock* 7194; sterile clay hill, *Hitchcock* 7201.

GUANAJUATO: Irapuato, dry, shrubby hill, *Hitchcock* 7422, 7423.

QUERÉTARO: Querétaro, *Rose & Rose* 11140; rocky hill, *Hitchcock* 5827. Between San Juan del Río and Cadereyta, *Rose, Painter & Rose* 9678.

HIDALGO: Ixmiquilpan, limestone hillside, *Rose, Painter & Rose* 8960.

COLIMA: Colima, *Orcutt* 4568, *Palmer* 1254 in 1891. Alzada, gravelly prairie, *Hitchcock* 7084.

MICHOACÁN: Punguato near Morelia, *Arsène* 2850.

FEDERAL DISTRICT: Valley of Mexico, *Rose & Painter* 6538, 6821, 8018, *Rose, Painter & Rose* 8271. Near Chapultepec, *Hitchcock* 7841; lava rock, *Hitchcock* 5954.

PUEBLA: Atlixco, *Nelson* in 1893. Tehuacán, *Rose & Hay* 5820; flat place on cactus hill, *Hitchcock* 6082, 6088.

VERACRUZ: Coatzacoalcos, *Orcutt* 3255. Veracruz, sandy prairie, *Hitchcock* 6555. Orizaba, *Botteri* 1070. Consoquitla, *Liebmann* 585.

MORELOS: Cuernavaca, hillside pasture, *Hitchcock* 6820.

GUERRERO: Apipilulco, prairie, *Hitchcock* 6698. Acapulco, *Palmer* 113 in 1894.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6101, 6150½. Valley of Oaxaca, *Liebmann* 575.

27. *Bouteloua radicata* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 411. 1912.  
*Atheropogon radicosus* Fourn. Mex. Pl. 2: 140. 1886.

Type locality, "In pascuis pr. Mejico."

RANGE: New Mexico to California and south to Oaxaca.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cape Region, *Brandege* 2 in 1899, 57 in 1893.

CHIHUAHUA: Between Colonia García and Pratt's ranch below Pacheco, *Nelson* 6258. Sierra Madre, *Nelson* 6305; near Colonia García, *Townsend & Barber* 226. Southwestern Chihuahua, *Palmer*, 115a in 1885. Guerrero, ledges of river canyon, *Pringle* 1436.

DURANGO: Durango, common on hillsides and plains. *Palmer* 547 in 1896.

COAHUILA: Monclova, Caracol Mountains, *Palmer* 1354 in 1882.

JALISCO: On road between Monte Escobedo and Colotlán, *Rose* 2672. Guadalajara, prairie near San Pedro, *Hitchcock* 7270. Río Blanco, *Palmer* 188 and 301 in 1886.

HIDALGO: Dublán, *Griffiths* 8124.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

MICHOACÁN: Morelia, *Arsène* 2850.

FEDERAL DISTRICT: *Orcutt* 3675; hills, *Pringle* 8567; *Bourgeau* 450.

MORELOS: Cuernavaca, *Orcutt* 3885, *Rose*, *Painter & Rose* 10189.

GUERRERO: San Marcos, *Nelson* 2265. Balsas, rocky hill, *Hitchcock* 6780, 6788.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6136; Valley of Oaxaca, *Nelson* 1258, 1443.

28. *Bouteloua repens* (H. B. K.) Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 26. 1891.

*Dinebra repens* H. B. K. Nov. Gen. & Sp. 1: 172. pl. 52. 1816.

Type locality, "ad littora Oceani Pacifici prope Acapulco."

RANGE: Pacific coast of southern Mexico.

## HERBARIUM SPECIMENS:

COLIMA: Manzanillo, *Hitchcock* 7040, *Orcutt* 4459.

OAXACA: Salina Cruz, *Ross* 976.

89. *CATHESTECUM* Presl, Rel. Haenk. 1: 294. pl. 42. 1830.

## KEY TO THE SPECIES.

- Plants annual..... 1. *C. prostratum*.  
 Plants perennial.  
 Plants caespitose; sterile lemmas 5 to 7-awned..... 4. *C. multifidum*.  
 Plants stoloniferous; sterile lemmas 3-awned (awns sometimes shorter than the lobes).  
 Sterile lemma cleft nearly to the base; sheaths glabrous. 3. *C. stoloniferum*.  
 Sterile lemma cleft less than halfway; sheaths more or less pubescent..... 2. *C. erectum*.

1. *Cathestecum prostratum* Presl, Rel. Haenk. 1: 295. pl. 42. 1830.

Type locality, "Mexico."

RANGE: Morelos, the only locality on record.

## HERBARIUM SPECIMEN:

MORELOS: Jojutla, limestone hills, *Pringle* 8707.

2. *Cathestecum erectum* Vasey & Hack. Bull. Torrey Club 11: 37. pl. 45. 1884.

Type locality, "Presidio, western Texas."

RANGE: Southwestern Texas and Sonora, south in the highlands to Oaxaca.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Plains near Altar, *Pringle* in 1884. Alamos, *Palmer* 705 in 1890. Hermosillo, dry soil, *Hitchcock* 3535; meadow near river, *Hitchcock* 3597. Guaymas, rocky lava hill, *Hitchcock* 3546, 3551; *Palmer* 161 and 345 in 1887. Yaqui River, *Palmer* 17 and 18 in 1869. Llano, along railway, *Hitchcock* 3528. Imuris to Santa Ana, *Griffiths* 6834.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 66 in 1885.

SINALOA: Culiacán, *Brandege* 1 and 2 in 1904. Imala, hillsides and arroyos, *Palmer* 1459 and 1460 in 1891.

JALISCO: Tequila, thin gravelly soil, *Pringle* 4559. Guadalajara, overhanging a bank, *Hitchcock* 7300, *Palmer* 270 in 1886. San Pedro, prairie, *Hitchcock* 7278. San Nicolás, sterile clay hill, *Hitchcock* 7200, 7202. Valencia, prairie, *Hitchcock* 7003. Road between Huejuquilla and Mezquitic, *Rose* 2582.

GUANAJUATO: Irapuato, rocky hill, *Hitchcock* 7436.

COLIMA: Colima, *Palmer* 12 in 1897, 1261 in 1891. Armería, prairie near railway, *Hitchcock* 7024.

PUEBLA: Tehuacán, *Rose & Hay* 5924. Santa Lucía, *Purpus* 3596.

GUERRERO: Apipilulco, prairie, *Hitchcock* 6697. Balsas, *Hitchcock* 6776; along railway, *Hitchcock* 6799, 6800.

OAXACA: Monte Albán, *Smith* 950. Oaxaca, rocky hill, *Hitchcock* 6120.

3. *Cathestecum stoloniferum* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 362. 1912.

*Atheropogon stolonifer* Fourn. Mex. Pl. 2: 140. 1886.

Type locality, "La Parada, Sierra de Oajaca."

RANGE: Southern Mexico.

HERBARIUM SPECIMENS:

PUEBLA: Tehuacán, dry soil, *Hitchcock* 6072.

GUERRERO: Río Balsas, *Orcutt* 4166.

OAXACA: Tomellín, rocky hill, *Hitchcock* 6238; *Griffiths* 9764. San Antonio Valley, *Smith* 958.

4. *Cathestecum multifidum* Griffiths, Contr. U. S. Nat. Herb. 14: 360. f. 24. 1912.

Type locality, "Iguala, Mexico."

RANGE: Highlands of southern Mexico.

HERBARIUM SPECIMENS:

GUERRERO: Iguala, *Griffiths* in 1909.

OAXACA: Oaxaca, rocky hill, *Hitchcock* 6164.

90. **PENTARRHAPHIS** II. B. K. Nov. Gen. & Sp. 1: 177. pl. 60. 1816.

KEY TO THE SPECIES.

- Spike consisting of 1 perfect spikelet and a rudimentary second one..... 1. *P. scabra*.  
Spike consisting of 2 perfect spikelets..... 2. *P. polymorpha*.

1. *Pentarrhaphis scabra* II. B. K. Nov. Gen. & Sp. 1: 178. pl. 60. 1816.

Type locality, "in planitie montana Mexicana prope Tula et Queretaro."

RANGE: Southern Mexico to Colombia.

HERBARIUM SPECIMEN FROM MEXICO:

CHIAPAS: Valley of Jiquipilas, *Nelson* 2940.

2. *Pentarrhaphis polymorpha* (Fourn.) Griffiths, Contr. U. S. Nat. Herb. 14: 357. 1912.

*Atheropogon polymorphus* Fourn. Mex. Pl. 2: 141. 1886.

Type locality, "San Luis de Potosi."

RANGE: Mexican plateau.

HERBARIUM SPECIMENS:

SINALOA: On road between Acaponeta and Rosario, *Rose* in 1897. Between Rosario and Colomas, *Rose* 1621.

DURANGO: Durango, *Palmer* 382 in 1896.

JALISCO: Tequila, *Rose & Hough* 4775. Guadalajara, hills, *Pringle* 5398; plains, *Pringle* 2559, 11242. Río Blanco, *Palmer* 200 in 1886.

MICHOACÁN: Morelia, *Arsène* in 1909.

MORELOS: Jojutla, limestone hills, *Pringle* 8707.

91. **TRIOGON** Roem. & Schult. Syst. Veg. 2: 34, 600. 1817.

1. *Triogon spicatus* (Nees) Ekman, Arkiv Bot. 11<sup>4</sup>: 36. 1912.

*Bromus spicatus* Nees, Agrost. Bras. 471. 1829.

*Leptochloa spicata* Scribn. Proc. Acad. Phila. 1891: 304. 1892.

Type locality, "in campis campo mimoso dictis, provinciae Piauhiauae."

RANGE: Texas to Argentina.

HERBARIUM SPECIMENS FROM MEXICO:

DURANGO: Durango, clefts of boulder, Iron Mountain, *Hitchcock* 7632.

SAN LUIS POTOSÍ: San Luis Potosí, gravelly mesas, *Pringle* 3267.

92. **ELEUSINE** Gaertn. Fruct. & Sem. 1: 7. pl. 1. 1788.

1. *Eleusine indica* (L.) Gaertn. Fruct. & Sem. 1: 8. 1788.

*Cynosurus indicus* L. Sp. Pl. 72. 1753.

Type locality, "in Indiis."

**RANGE:** Warmer regions of both hemispheres.

**HERBARIUM SPECIMENS FROM MEXICO:**

- LOWER CALIFORNIA: San José del Cabo, *Brandege* 6 in 1890.  
 SONORA: Alamos, in orchard, *Rose, Standley & Russell* 13021. Guaymas, *Palmer* 35 and 45 in 1887.  
 CHIHUAHUA: Southwestern Chihuahua, *Palmer* 40 in 1885.  
 SINALOA: Fuerte, sandy soil, *Rose, Standley & Russell* 13580. Culiacán, moist field, *Rose, Standley & Russell* 14957. Mazatlán, waste ground, *Rose, Standley & Russell* 14139. Headwaters of Mazatlán river, *Wright* 1328.  
 DURANGO: Durango, along street, *Hitchcock* 7646.  
 TAMAULIPAS: Victoria, *Palmer* 464 in 1907.  
 TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14247. María Madre Island, *Nelson* 4305.  
 SAN LUIS POTOSÍ: Las Canoás, along railway, *Hitchcock* 5757.  
 JALISCO: Guadalajara, *Palmer* 255 and 478 in 1886; along ditch, road to Barranca de Oblatos, *Hitchcock* 7322. San Nicolás, weed in field, *Hitchcock* 7231.  
 COLIMA: Colima, in garden, *Palmer* 21 in 1897, 1263 in 1891. Paso del Río, *Emrick* 5. Jala, along railway, *Hitchcock* 7013. Alzada, along railway, *Hitchcock* 7071.  
 MICHOACÁN: Morelia, *Arsène* in 1909.  
 FEDERAL DISTRICT: *Bourgeau* 1030; by ditch, *Hitchcock* 5948.  
 PUEBLA: Tehuacán, weed in field, *Hitchcock* 6065; banks of Atoyac, *Nicolas* in 1909. Mount Orizaba, *Seaton* 50.  
 VERACRUZ: Córdoba, *Fink* 4; weed, *Hitchcock* 6404. Coatzacoalcos, *Smith* 1050. Orizaba, *Botteri* 713; *Bourgeau* 2634; weed in street, *Hitchcock* 6310. Veracruz, weed, *Hitchcock* 6570. Antigua, *Liebmann* 230.  
 GUERRERO: Acapulco, *Palmer* 120 in 1894. Balsas, weed in field, *Hitchcock* 6789.  
 OAXACA: North of Tuxtepec, *Nelson* 365. Tomellín, along ditch, *Hitchcock* 6234. Oaxaca, along street, *Hitchcock* 6163.  
 TABASCO: San Juan Bautista, *Roviro* 14.  
 YUCATÁN: Mérida, *Schott* 738.

**93. DACTYLOCTENIUM** Willd. Enum. Pl. 1029. 1809.

**1. Dactyloctenium aegyptium** (L.) Richt. Pl. Eur. 1: 68. 1891.

*Cynosurus aegyptius* L. Sp. Pl. 72. 1753.

Type locality given as "Africa, Asia, America."

**RANGE:** Tropical and subtropical regions of both hemispheres.

**HERBARIUM SPECIMENS FROM MEXICO:**

- LOWER CALIFORNIA: Cape St. Lucas, *Xantus* 118. San José del Cabo, *Purpus* in 1901; *Brandege* 13 and 13½ in 1890.  
 SONORA: Guaymas, *Palmer* 328 in 1887; weed in park, *Hitchcock* 3568. Hermosillo, along ditch, *Hitchcock* 3532, 3579. Alamos, arroyo, *Rose, Standley & Russell* 12936. Yaqui River, *Palmer* 9 in 1869.  
 CHIHUAHUA: Southwestern Chihuahua, *Palmer* 73 in 1885.  
 SINALOA: Mazatlán, Observatory Hill, *Rose, Standley & Russell* 13679. Topolobampo, *Rose, Standley & Russell* 13268. Between Rosario and Acaponeta, *Rose* 1877.  
 DURANGO: Durango, rich, moist soil in cornfield, *Palmer* 735 in 1896; along road, *Hitchcock* 7579. Torreón, weed in field, *Hitchcock* 7555.  
 COAHUILA: Jaral, *Schumann* 1761.  
 TAMAULIPAS: La Barra, *Palmer* 258 and 590 in 1910.  
 TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14263. María Madre Island, *Nelson* 4256, 4295, *Maltby* 152. María Magdalena Island, *Nelson* 4317.  
 JALISCO: Guadalajara, *Palmer* 435 in 1886; prairie near San Pedro, *Hitchcock* 7291.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

COLIMA: Colima, in damp grassy bottoms and shady ravines, *Palmer* 10, 11, 167, and 168 in 1897; common along railway, *Hitchcock* 7018, 7051½.

MICHOACÁN: Prairie of Tibor, *Langlassé* 301.

VERACRUZ: Veracruz, *Müller* 2166; sandy prairie, *Hitchcock* 6564. Zacuapan, sulphur spring, *Purpus* 4431. Paso de Doña Juana, *Liebmann* 238. Coat-zacoalcos, *Smith* 1055.

MORELOS: Cuernavaca, weed in pasture, *Hitchcock* 6822.

GUERRERO: Balsas, along railway, *Hitchcock* 6797. Acapulco, *Palmer* 121 in 1894.

OAXACA: Cuicatlán, *Nelson* 1651a. Oaxaca, weed, *Hitchcock* 6117. Tomellín along ditch, *Hitchcock* 6233.

TABASCO: González River, *Rovirosa* 711.

YUCATÁN: Mérida, *Schott* 734.

94. *LEPTOCHLOA* Beauv. Ess. Agrost. 71. 1812.

## KEY TO THE SPECIES.

## Plants perennial.

Lemmas broad, notched at apex, the lateral nerves glabrous.. 5. *L. dubia*.

Lemmas acute or awned, the lateral nerves pubescent.

Lemmas awnless or very short-awned; plant smooth and glaucous..... 2. *L. virgata*.

Lemmas awned, the awn as long as or longer than the body; sheaths and blades sparsely pilose, not glaucous... 3. *L. domingensis*.

## Plants annual.

Sheaths papillose-pilose; first floret not longer than the second glume; spikelets minute..... 1. *L. filiformis*.

Sheaths smooth or scabrous, not pilose.

Lemmas awned.

Panicle large, more than 10 cm. long, the longer branches usually as much as 10 cm. long; second glume 3 mm. long; lemmas not viscid.. 8. *L. fascicularis*.

Panicle smaller, oval, usually less than 10 cm. long, the larger branches usually less than 5 cm. long; second glume 1.5 mm. long; lemmas viscid on the back..... 4. *L. viscida*.

Lemmas awnless or mucronate only.

Sheaths scabrous; florets closely imbricated, the lateral nerves of the lemmas not close to the margin..... 6. *L. floribunda*.

Sheaths smooth; florets loosely imbricated (not overlapping more than half their length), the lateral nerves marginal.

Spikelets about 4-flowered; lemmas acutish, the apex almost entire..... 7. *L. aquatica*.

Spikelets 6 to 8-flowered; lemmas erose or slightly 2-toothed at the broad apex, apiculate between the teeth..... 9. *L. imbricata*.

1. *Leptochloa filiformis* (Lam.) Beauv. Ess. Agrost. 71, 166. 1812.

*Festuca filiformis* Lam. Tabl. Encycl. 1: 191. 1791.

*Leptochloa mucronata* Kunth, Rév. Gram. 1: 91. 1833.

Type locality, "Amer[ica] Merid[ionalis]."

RANGE: Virginia to the Pacific Coast and south to the West Indies and South America.

## HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Yaqui River, *Palmer* 8 in 1869. Alamos, *Palmer* 693 and 749 in 1890.

Llano, along railway, *Hitchcock* 3530. Hermosillo, meadow, *Hitchcock* 3585,



## HERBARIUM SPECIMENS FROM MEXICO—Continued.

3591; rocky cliff, *Hitchcock* 3606; along railway and ditch, *Hitchcock* 3543. Guaymas, moist clay, rocky hill, *Hitchcock* 3550; rocky lava hill, *Hitchcock* 3559; open gravelly place, *Hitchcock* 3565; weed in park, *Hitchcock* 3569; *Palmer* 50 and 694 in 1887. Imeris to Santa Ana, *Griffiths* 6836, 6854. Loquka Ranch to Altar, *Griffiths* 6893, 6908. Papago Tanks, Pinacate Mountains, *MacDougal* 49.

CHIHUAHUA: Paso del Norte, *Pringle* 1161. Southwestern Chihuahua, *Palmer* 117 in 1885.

SINALOA: Headwaters of Mazatlán River, *Wright* 1316. Culiacán, in shade of bushes along river banks, *Palmer* 1551 and 1546 in 1891; *Brandege* in 1904. Rosario, *Rose* 1542. Topolobampo, *Palmer* 248 in 1897.

COAHUILA: Monclova, *Palmer* 1364 in 1880.

NUEVO LEÓN: Monterey, cornfield, *Hitchcock* 5554.

TAMAULIPAS: Victoria, *Palmer* 472 in 1907.

TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14249.

SAN LUIS POTOSÍ: Rascón, *Purpus* 5428.

JALISCO: Guadalajara, weed along trail down Barranca de Oblatos, *Hitchcock* 7356.

COLIMA: Colima, shady garden, *Palmer* 22 in 1897. Manzanillo, open place on wooded hill, *Hitchcock* 7039; *Orcutt* 4478. Jala, along railway, *Hitchcock* 7014.

PUEBLA: Hacienda Noria, *Nicolas* in 1910.

MORELOS: Santa Fé, *Orcutt* 4371.

GUERRERO: Balsas, gravel along railway, *Hitchcock* 6777; Río Balsas, *Orcutt* 4193.

Canyon de la Mano Negra, near Iguala, *Rose, Painter & Rose* 9389. Las Amates, near railway, *Hitchcock* 6694.

OAXACA: Tomellín, rocky hill, *Hitchcock* 6207; weed in cornfield, *Hitchcock* 6244.

YUCATÁN: Mérida, *Schott* 590, 739.

2. *Leptochloa virgata* (L.) Beauv. Ess. Agrost. 166. 1812.

*Cynosurus virgatus* L. Syst. Nat. ed. 10. 876. 1759.

Type locality, Jamaica.

RANGE: West Indies and Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, *Palmer* 146 in 1910.

VERACRUZ: Córdoba, *Fink* in 1893. Sanborn, *Orcutt* 3240. Jicaltepec, *Liebmann* 252. Colipa, *Liebmann* 251.

OAXACA: San Gerónimo, *Nelson* 2768. Pluma, *Nelson* 2483.

3. *Leptochloa domingensis* (Jacq.) Trin. Fund. Agrost. 133. 1820.

*Cynosurus domingensis* Jacq. Misc. 2: 363. 1781.

Type locality not given, presumably Santo Domingo.

RANGE: Gulf Coast of the United States to eastern Mexico and the West Indies.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Victoria, *Palmer* 394 in 1907.

TABASCO: San Juan Bautista, *Rovirosa* 691.

4. *Leptochloa viscida* (Scribn.) Beal, Grasses N. Amer. 2: 434. 1896.

*Diplachne viscida* Scribn. Bull. Torrey Club 10: 30. 1883.

Type locality, "Santa Cruz Valley, near Tucson, Arizona."

RANGE: New Mexico and Arizona to Sinaloa.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San Jorge, *Brandege* 5 in 1889.

SONORA: Alamos, *Palmer* 748 and 748½ in 1890. Guaymas, *Palmer* 692 in 1887.

Imeris to Santa Ana, *Griffiths* 6859. Guarorchi, along railway ditch, *Hitchcock* 3531. Hermosillo, sandy bed of run, *Hitchcock* 3612.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

CHIHUAHUA: Chihuahua, depression in mesa, *Hitchcock* 7781; wet places, plain, *Pringle* 814.

SINALOA: Culiacán, *Palmer* 1789 in 1891.

5. *Leptochloa dubia* (H. B. K.) Nces, *Syll. Pl. Ratisb.* 1: 4. 1824.

*Chloris dubia* H. B. K. *Nov. Gen. & Sp.* 1: 169. 1816.

Type locality, "in apricis subhumidis prope rupem porphyriticam el Peñon, in convalle Mexicana."

RANGE: Southern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Margarita Island, *Brandegee* 6 in 1889.

SONORA: Sonoyta, *Mearns* 2715. Guaymas, *Palmer* 270 and 273 in 1887. Nogales to Cocospora Ranch, *Griffiths* 6804.

CHIHUAHUA: Chihuahua, hills and plains, *Pringle* 422; along dry run, *Hitchcock* 7776.

SINALOA: Mazatlán, about salt marsh, *Rose, Standley & Russell* 14108.

DURANGO: Durango, along road, *Hitchcock* 7584; garden, *Palmer* 530 in 1896.

Santiago Papasquiario, damp places, shady ravines, *Palmer* 468 in 1896.

COAHUILA: Jaral, *Schumann* 1720. Saltillo, fields, sandy river bottom, *Hitchcock* 5631; ditches and rich soil, *Palmer* 381 and 382 in 1898.

NUEVO LEÓN: Monterey, rocks, *Hitchcock*, 5517.

ZACATECAS: Concepción del Oro, *Palmer* 268 in 1904. Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7523. Hacienda de Cedros, hills, *Lloyd* 231. Pico de Tevia, *Lloyd* 240.

AGUASCALIENTES: Aguascalientes, sterile, rocky hill, *Hitchcock* 7474; low ground along railway, *Hitchcock* 7483.

SAN LUIS POTOSÍ: Cárdenas, irrigation ditch, *Hitchcock* 5739. San Luis Potosí, alfalfa field, *Hitchcock* 5670; along dry ditch, *Hitchcock* 5653. Guascama, *Purpus* 5434.

JALISCO: Zapotlán, railway right of way, *Hitchcock* 7131.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7392.

QUERÉTARO: Querétaro, *Rose & Rose*, 11189, open, rocky hill, *Hitchcock* 5832½.

San Juan del Río, stony hillside, *Rose, Painter & Rose*, 9587.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6715; *Orcutt* 3917. Tula, *Holway* 3230.

MÉXICO: Toluca, along ditch, *Hitchcock* 6912. Federal District, edge of field, *Hitchcock* 5892; bank along ditch, *Hitchcock* 5917; *Bourgeau* 533; *Orcutt* 3691.

PUEBLA: Tehuacán, *Rose & Hay* 5819; old field, *Hitchcock* 6034; along railway, *Hitchcock* 6048; calcareous soil, *Pringle* 9552. San Luis Tultitlanapa, *Purpus* 3591; banks of Atoyac, *Nicolas* in 1909.

MORELOS: Cuernavaca, along road, *Hitchcock* 6851.

OAXACA: Between Tule and Oaxaca, edge of field, *Hitchcock* 6172; along ditch, *Hitchcock* 6186.

WITHOUT LOCALITY: *Schaffner* 671.

6. *Leptochloa floribunda* Doell in *Mart. Fl. Bras.* 2<sup>3</sup>: 89. *pl.* 26. 1883.

Type locality, "ad ripas fluminis Amazonum inter Manaos et Santarem."

RANGE: Southern United States to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

SINALOA: Culiacán, *Brandegee* 12 and 13 in 1904.

TEPIC: Foothills between Acaponeta and Pedro Paulo, *Rose* 1930.

TABASCO: Río del Carrizal, *Kovirova* 629.

7. *Leptochloa aquatica* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 26. 1901.

Type locality, "shallow water near Cuernavaca, State of Morelos," the type specimen collected by *Pringle* (no. 6664).

RANGE: Pacific slope of southern Mexico.

HERBARIUM SPECIMENS:

JALISCO: Valencia, along railway, *Hitchcock* 7004. Guadalajara, in water of ditch, road to Barranca de Oblatos, *Hitchcock* 7317.

MORELOS: Cuernavaca, shallow water, *Pringle* 6664; along ditch, in damp soil, bases creeping in water, *Hitchcock* 6859.

GUERRERO: Vista, along track, *Hitchcock* 6696.

8. *Leptochloa fascicularis* (Lam.) Gray, Man. 588. 1848.

*Festuca fascicularis* Lam. Tabl. Encycl. 1: 189. 1791.

Type locality, "Amer[ica] Merid[ionalis]."

RANGE: Northern United States to southern Mexico and in the West Indies.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Guaymas, *Palmer* 691 in 1887.

CHIHUAHUA: Chihuahua, in shallow water, *Pringle* 813.

DURANGO: Torreón, along ditch, *Hitchcock* 7729. Durango, in ditch, *Hitchcock* 7567; along water courses, *Palmer* 254 in 1896.

AGUASCALIENTES: Aguascalientes, edge of pond, *Hitchcock* 7494.

SAN LUIS POTOSÍ: San Luis Potosí, irrigation ditch, *Hitchcock* 5682; *Schaffner* 152.

JALISCO: Orozco, near large pond, *Hitchcock* 7377.

GUANAJUATO: Irapuato, moist, sandy-clay plain, *Hitchcock* 7389.

QUERÉTARO: Querétaro, in water of irrigation ditch, *Hitchcock* 5836.

MORELOS: Valley near Jojutla, *Pringle* 9595.

9. *Leptochloa imbricata* Thurb. in S. Wats. Bot. Calif. 2: 293. 1880.

Type locality, southern California, collections from "Larkins Station, San Diego County" and "Fort Yuma" cited.

RANGE: Texas to California and south to Argentina.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Calexico, along draw, *Chase* 5518. Maleje, Gulf of California, *Palmer* 47 in 1887. San José del Cabo, *Purpus* 312. Santa Agueda, *Palmer* 216 in 1890.

SONORA: Yaqui River, *Palmer* 5 in 1869. Sonoyta River, *Mearns* 2741. Guaymas, *Palmer* 47 in 1887. Hermosillo, by ditch in meadow, *Hitchcock* 3577.

SINALOA: Headwaters of Mazatlán River, *Wright* 1317a.

JALISCO: Guadalajara, *Palmer* 331 in 1886.

GUANAJUATO: Irapuato, low ground, *Hitchcock* 7432.

OAXACA: North of Tuxtepec, *Nelson* 367.

95. *GOUNIA* Fourn. Mex. Pl. 2: 103. 1886.

KEY TO THE SPECIES.

- Spikelets awnless; perfect floret 1..... 1. *G. brandegei*.  
 Spikelets awned; perfect florets 2 to several.  
 Awns longer than the lemmas; sheaths smooth or nearly so;  
 lemmas pubescent at base, not long-pilose..... 4. *G. virgata*.  
 Awns shorter than the lemmas; sheaths scabrous; lemmas long-  
 pilose on the nerves and marginal space except at summit.  
 Spikelets (excluding the awns) 12 to 15 mm. long, the florets  
 rather distant; panicle branches ascending..... 2. *G. mexicana*.  
 Spikelets (excluding the awns) 6 to 10 mm. long, the florets  
 approximate; panicle branches divaricate..... 3. *G. latifolia*.

1. *Gouinia brandegei* (Vasey) Hitchc. U. S. Dept. Agr. Bur. Pl. Ind. Bull. 33: 21. 1903.

*Diplachne brandegei* Vasey, Proc. Calif. Acad. II. 2: 213. 1889.

Type locality, Lower California, the type collected on Magdalena Island by Brandege in 1889 (no. 11).

RANGE: Known only from Lower California.

HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Magdalena Island, *Brandegee* 7 and 11 in 1889. Carmen Island, *Palmer* 862 in 1890. San José del Cabo, *Brandegee* 38 in 1890. Purísima, *Brandegee* in 1889.

2. *Gouinia mexicana* (Scribn.) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 10. 1897.

*Leptochloa mexicana* Scribn. Proc. Acad. Phila. 1891: 302. 1892.

Type locality, "About dry ledges, Tamasopo Cañon," San Luis Potosí, the type specimen collected by Pringle (no. 3252).

RANGE: Known only from the type collection.

3. *Gouinia latifolia* (Griseb.) Vasey, Contr. U. S. Nat. Herb. 1: 365. 1895.

*Tricuspis latifolia* Griseb. Abh. Ges. Wiss. Göttingen 19: 211. 1874.

Type locality, "Cordoba \* \* \* in convallibus montibus pr. Ascochinga," Argentina.

RANGE: Yucatan to Argentina.

HERBARIUM SPECIMEN FROM MEXICO:

YUCATÁN: Nohcacab, *Schott* 703.

4. *Gouinia virgata* (Presl) Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 4: 10. 1897.

*Bromus virgatus* Presl, Rel. Haenk. 1: 263. 1830.

Type locality given as "in montanis Peruviae, in Mexico," the Peruvian reference probably erroneous, the species not being known from South America.

RANGE: Southern Mexico.

HERBARIUM SPECIMENS:

COLIMA: Alzada, shady ravine, *Hitchcock* 7086. Manzanillo, *Palmer* 1087 in 1890.

GUERRERO: Acapulco, *Palmer* 77 in 1894. Tlalixtaquilla, *Nelson* 2255.

OAXACA: San Agustín, *Liebmann* 505.

96. **BULBILIS** Raf. Amer. Month. Mag. 4: 190. 1819.

1. *Bulbilis dactyloides* (Nutt.) Raf.; Kuntze, Rev. Gen. Pl. 2: 763. 1891.

BUFFALO GRASS.

*Sesleria dactyloides* Nutt. Gen. Pl. 65. 1818.

Type locality, "open grassy plains of the Missouri."

RANGE: Saskatchewan to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Saltillo, along irrigation ditch, *Hitchcock* 5596; slope of mesas, *Palmer* 7 in 1898.

ZACATECAS: Zacatecas, gulch in dry, sterile hills, *Hitchcock* 7513. Hacienda de Cedros, sinks and flats, *Lloyd* 211. Concepción del Oro, *Palmer* 267 in 1904.

AGUASCALIENTES: Aguascalientes, *Hartweg* 250; sterile rocky hill, *Hitchcock* 7482.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 922 and 953 in 1878, *Schaffner* 127, 184; dry ground, *Hitchcock* 5663. Cárdenas, prairie, *Hitchcock* 5742. Alvarez, *Palmer* 167 in 1904.

GUANAJUATO: Irapuato, moist, sandy-clay plain, *Hitchcock* 7390.

QUERÉTARO: Querétaro, open, dry ground, common on hills, *Hitchcock* 5823.

HIDALGO: Telles, *Orcutt* 4148. Between Pachuca and Real del Monte, *Rose, Painter & Rose* 8684, *Rose & Painter* 6714; on mountain side, *Rose, Painter & Rose* 8733. Pachuca, rocky hill, *Hitchcock* 6718; along railway, *Hitchcock* 6754.

FEDERAL DISTRICT: *Bourgeau* 440; along road near San Angel, *Hitchcock* 5952.

**97. OPIZIA** Presl, Rel. Haenk. 1: 293. *pl. 41. f. 1.* 1830.**1. Opizia stolonifera** Presl, Rel. Haenk. 1: 293. *pl. 41. f. 1.* 1830.

Type locality, "Acapulco."

RANGE: Southern Mexico and Cuba.

HERBARIUM SPECIMENS FROM MEXICO:

JALISCO: Guadalajara, *Palmer* 615 in 1886. Tequila, thin, gravelly soil, *Pringle* 4566.COLIMA: Coquimatlán, along railway, *Hitchcock* 7052.PUEBLA: Atlixco, *Nelson* in 1893.MORELOS: Yautepec, roadside, *Pringle* 11237. Cuernavaca, open ground, *Hitchcock* 6817; roadside, where trodden, *Hitchcock* 6842.GUERRERO: Acapulco, *Palmer* 42 in 1894. Balsas, along railway, *Hitchcock* 6783, 6804. Apipilulco, prairie, *Hitchcock* 6771.OAXACA: Oaxaca, base of hill, *Hitchcock* 6097. Tomellín, *Rose, Painter & Rose*, 10051, 10052; open ground along track, *Hitchcock* 6239.**98. PRINGLEOCHLOA** Scribn. Bot. Gaz. 21: 137. *pl. 13.* 1896.**1. Pringleochloa stolonifera** Scribn. Bot. Gaz. 21: 138. *pl. 13.* 1896.Type locality, "calcareous plains around Tehuacán in eastern Puebla," the type specimen collected by *Pringle* (no. 6280).

RANGE: Known only from the type locality.

HERBARIUM SPECIMENS:

PUEBLA: Tehuacán, dry plains, *Pringle* 6280; calcareous soil, *Pringle* 9560; *Rose & Rose* 11440; old field, *Hitchcock* 6036; open sterile soil among cactus, *Hitchcock* 6071.**99. PAPPOPHORUM** Schreb. Gen. Pl. 2: 787. 1791.

## KEY TO THE SPECIES.

- Nodes bearded; culms decumbent, spreading; panicle spike-like,  
lead-colored..... 1. *P. wrightii*.
- Nodes glabrous; culm erect, panicle tawny.  
Body of lemma 1 to 2 mm. long, the longer awns as much as  
1 cm. long; panicle rather loose, 30 to 50 cm. long..... 3. *P. laguroideum*.  
Body of lemma 3 to 4 mm. long, the longer awn about 5 mm.  
long..... 2. *P. vaginatum*.

**1. Pappophorum wrightii** S. Wats. Proc. Amer. Acad. 18: 178. 1883.

Type locality, "Llano Estacado, in deep ravines," Texas.

RANGE: Southwestern United States to Bolivia.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Los Angeles Bay, Gulf of California, *Palmer* 511 in 1887.  
Calmallí, common on rocky slope, *Orcutt* in 1899.SONORA: Guaymas, *Palmer* 511 in 1887. Hermosillo, rocky cliff, *Hitchcock* 3608.CHIHUAHUA: Chihuahua, mesa, *Hitchcock* 7801; rocky hills, *Pringle* 483.DURANGO: Durango, rocky hill, Iron Mountain, *Hitchcock* 7638; *Palmer* 721 in  
1896. Torreón, rocky hill, *Hitchcock* 7542.COAHUILA: Saltillo, among rocks on hillsides, *Palmer* 395 in 1898. Parras, *Palmer*  
1361 in 1880.SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 947 in 1878.QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5847.HIDALGO: Tula, dry calcareous bluffs, *Pringle* 11238.PUEBLA: Tehuacán, sterile soil, among cactus, *Hitchcock* 6070.OAXACA: Monte Albán, thin soil of limestone ledges, *Pringle* 4846. Oaxaca,  
rocky hill, *Hitchcock* 6144.

**2. Pappophorum vaginatum** Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 1. 1866.*Pappophorum apertum* Munro; Scribn. Bull. Torrey Club 9: 148. 1882.

Type locality, "Western Texas."

RANGE: Southwestern United States and northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Guaymas, *Palmer* 350 in 1887.DURANGO: Tlahualilo, barren hills, *Pittier* 479.COAHUILA: Saltillo, garden, *Palmer* 256 in 1898; in cemeteries, *Palmer* 377 in 1898; dry ground, river bottom, *Hitchcock* 5635; dry ground in irrigation ditch, *Hitchcock* 5611. Parras, *Palmer* 1360 in 1880. Monclova, *Palmer* 1362 in 1880.NUEVO LEÓN: Monterey, dry calcareous banks, *Pringle* 1973.**3. Pappophorum laguroideum** Schrad. in Schult. Mant. 2: 342. 1824.

Type locality, "In India occidentali."

RANGE: West Indies and southern Mexico to South America.

HERBARIUM SPECIMENS FROM MEXICO:

OAXACA: Quiotepec ad Río Grande, *Liebmann* 670. Tomellín Canyon, *Pringle* 4814; Tomellín, rocky bank near river, *Hitchcock* 6197.**100. COTTEA** Kunth, Rév. Gram. 1: 84. 1829.**1. Cottea pappophoroides** Kunth, Rév. Gram. 1: 84. 1829.

Type locality, "Peruvia."

RANGE: Southwestern United States to South America.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Guaymas, *Palmer* 339 in 1887.CHIHUAHUA: Chihuahua, rocky hills, *Pringle* 420. Southwestern Chihuahua, *Palmer* 162 in 1885.DURANGO: Torreón, rocky hill, *Hitchcock* 7543.SAN LUIS POTOSÍ: Sierra de Guascama, *Purpus* 5419.JALISCO: Bolaños, *Rose* 2914.OAXACA: Tomellín, rocky cliff, *Hitchcock* 6201.**101. SCLEROPOGON** Phil. Anal. Univ. Chile 36: 205. 1870.**1. Scleropogon brevifolius** Phil. Anal. Univ. Chile 36: 206. 1870.

Type locality, "Mendoza."

RANGE: Southwestern United States to Argentina and Chile.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Plains, *Pringle* 484. Santa Eulalia Plains, *Wilkinson* in 1885. Colonia Díaz, *Nelson* 6440. Candelaria, *Stearns* 254.COAHUILA: Parras, *Purpus* 5005. Saltillo, *Palmer* 280 in 1898. Chojo Grande, *Palmer* 340 in 1904.ZACATECAS: Hacienda de Cedros, *Lloyd* 169.SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 925 and 949 in 1878; *Schaffner* 135, 162.HIDALGO: Telles, *Orcutt* 4143.PUEBLA: San Marcos, railway embankment, *Hitchcock* 6508. Chalchicomula, dry ground along railway, forming close sod, *Hitchcock* 6270.**102. MONANTHOCLOË** Engelm. Trans. Acad. St. Louis 1: 436. 1859.**1. Monanthochloë littoralis** Engelm. Trans. Acad. St. Louis. 1: 436. 1859.

Type locality, Texas.

RANGE: Coasts of tropical and subtropical seas of the Western Hemisphere.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Paz, *Brandege* 3 in 1890. Magdalena Bay, *Brandege* in 1893. Without locality, *Palmer* in 1890.

SONORA: Guaymas, stony beach, about edge of high tide, *Chase* 5508; along the beach, *Rose, Standley & Russell* 12581.

SINALOA: Altata, *Rose* 1370.

TAMAULIPAS: Tampico, brackish mud flat, *Hitchcock* 5779.

103. **MUNROA** Torr. U. S. Rep. Expl. Miss. Pacif. 4: 158. 1856.1. **Munroa squarrosa** (Nutt.) Torr. U. S. Rep. Expl. Miss. Pacif. 4: 158. 1856.

*Crypsis squarrosa* Nutt. Gen. Pl. 49. 1818.

Type locality, "On arid plains near the 'Grand Detour' of the Missouri."

RANGE: Dakotas and Montana to Utah, south to northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Colonia Díaz, *Nelson* 6457. Ciudad Juárez, sandy soil, *Pringle* 11236.

104. **ORCUTTIA** Vasey, Bull. Torrey Club 13: 219. pl. 60. 1886.1. **Orcuttia californica** Vasey, Bull. Torrey Club 13: 219. pl. 60. 1886.

Type locality, "near San Quentin Bay, Lower California," the type specimen collected by *Orcutt* (no. 1439).

RANGE: Known only from the type collection.

105. **GYNERIUM** Humb. & Bonpl. Pl. Aequin. 2: 112. pl. 115. 1809.1. **Gynerium sagittatum** Beauv. Ess. Agrost. 138. pl. 24. f. 6. 1812.

Type locality not given, but Peru implied.

RANGE: West Indies and southern Mexico to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Pital, *Liebmann* 679.

OAXACA: Trapiche de la Concepción, *Liebmann* 680.

106. **ARUNDO** L. Sp. Pl. 81. 1753.1. **Arundo donax** L. Sp. Pl. 81. 1753.

GIANT REED.

Type locality, "in Hispania, Galloprovincia."

RANGE: Warmer parts of the Old World, cultivated in America and escaped from Texas to California and southward.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* 3 in 1899, 5 in 1890. Colorado River below mouth of Hardy River, *Mearns* 2839.

SONORA: Hermosillo, along dike, *Chase* 5505; irrigated field, *Rose, Standley & Russell* 12499. Bovispe, *Hartman* 178.

CHIHUAHUA: Chuichupa in the Sierra Madre, *Townsend & Barber* 399. Southwestern Chihuahua, *Palmer* 51a in 1885.

COAHUILA: Monclova, *Palmer* 1345 in 1880.

NUEVO LEÓN: Monterey, forming thickets along river, *Hitchcock* 5557.

TAMAULIPAS: Tampico, *Palmer* 143 in 1910.

TEPIC: María Cleofas Island, *Nelson* 4332.

GUANAJUATO: Guanajuato, *Dugès* 1134.

VERACRUZ: Veracruz, sand hill, *Hitchcock* 6563.

YUCATÁN: Common on the coast in "aguadas and cenotes," *Gummer* 1141.

107. **PHRAGMITES** Trin. Fund. Agrost. 134. 1820.

1. **Phragmites phragmites** (L.) Karst. Deutsch. Fl. 378. 1883. REED.  
*Arundo phragmites* L. Sp. Pl. 81. 1753.

Type locality, "in Europæ lacubus fluviis."

RANGE: Throughout the temperate regions of the world.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Santa Agueda, *Palmer* 211 in 1890. Wild Island, *McGee* in 1896.

COLIMA: Manzanillo, *Palmer* 1092 in 1890.

TABASCO: San Juan Bautista, *Roviroza* 651.

108. **TRIDENS** Roem. & Schult. Syst. Veg. 2: 34, 599. 1817.

## KEY TO THE SPECIES.

- Panicle included in fascicles of leaves; low plants with stolons... 7. *T. pulchellus*.  
 Panicle exserted; plants not stoloniferous (except nos. 5 and 6).  
 Panicle open, the branches spreading, the spikelets scattered.  
 Lemmas 2 mm. long; panicles 3 cm. or more long; spikelets not over 5 mm. long..... 3. *T. eragrostoides*.  
 Lemmas 4 mm. long; panicle rarely over 12 cm. long; spikelets about 8 mm. long..... 4. *T. texanus*.  
 Panicle contracted or sometimes spike-like; spikelets crowded.  
 Panicle long and narrow; lemmas awnless.  
 Lemmas glabrous; spikelets 5 to 6 mm. long; blades flat..... 1. *T. albescens*.  
 Lemmas pilose; spikelets about 8 mm. long; blades involute..... 2. *T. muticus*.  
 Panicle short, oval; lemmas awned, very pilose.  
 Lemmas acuminate, the awn from a slightly notched apex..... 6. *T. pilosus*.  
 Lemmas truncate, the awn from between two rounded lobes..... 5. *T. avenaceus*.

1. **Tridens albescens** (Munro) Woot. & Standl., N. Mex. Agric. Sta. Bull. 81: 129. 1912.

*Tricuspis albescens* Munro; Gray, Proc. Acad. Phila. 1862: 335. 1863, nomen nudum.

*Triodia albescens* Vasey, U. S. Dept. Agr. Div. Bot. Bull. 12<sup>2</sup>: pl. 33. 1891.

Type locality, Texas.

RANGE: Kansas and Louisiana to Arizona and Coahuila.

HERBARIUM SPECIMEN FROM MEXICO:

COAHUILA: Río Grande Valley near Díaz, *Pringle* 9023.

2. **Tridens muticus** (Torr.) Nash in Small, Fl. Southeast. U. S. 142. 1903.

*Tricuspis mutica* Torr. U. S. Rep. Expl. Miss. Pacif. 4: 156. 1856.

Type locality, "Laguna Colorado, New Mexico."

RANGE: Southwestern United States and northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Nogales to Cocospora Ranch, *Griffiths* 6831. Loquka Ranch to Altar, *Griffiths* 6907.

CHIHUAHUA: Santa Eulalia Mountains, dry calcareous soil, *Pringle* 405.

DURANGO: Tlahualilo, barren hills, *Pittier* 468.

3. **Tridens eragrostoides** (Vasey & Scribn.) Nash in Small, Fl. Southeast. U. S. 142. 1903.

*Triodia eragrostoides* Vasey & Scribn. Contr. U. S. Nat. Herb. 1: 58. 1890.



Type locality, "Texas," the type specimen collected by Nealley in 1892 at San Diego.

RANGE: Florida to Texas and south to Nuevo León.

HERBARIUM SPECIMEN FROM MEXICO:

NUEVO LEÓN: Monterey, hills, *Pringle* 1972.

4. *Tridens texanus* (Thurb.) Nash in Small, Fl. Southeast. U. S. 142. 1903.

*Triodia texana* S. Wats. Proc. Amer. Acad. 18: 180. 1883.

*Tricuspis texana* Thurb.; S. Wats. loc. cit. as synonym of *Triodia texana*.

Type locality, "Western Texas."

RANGE: Texas to San Luis Potosí.

HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Rio Grande Valley near Díaz, *Pringle* 9019. Monclova, *Palmer* 1371 in 1880.

NUEVO LEÓN: Monterey, hills, *Pringle* 1970; edge of field, *Hitchcock* 5525.

TAMAULIPAS: Victoria, *Palmer* 372 in 1907.

SAN LUIS POTOSÍ: Guascama *Purpus* 5422. Bagre, *Purpus* 5435.

5. *Tridens avenaceus* (H. B. K.).

*Triodia avenacea* H. B. K. Nov. Gen. & Sp. 1: 156. pl. 48. 1816.

Type locality, "In convalle Mexicana inter montem Chapultepec et Penol de los Banos."

RANGE: Texas to Arizona and south to South America.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* 350. Santa Eulalia Mountains, *Pringle* 406.

COAHUILA: Jaral, *Schumann* 1740. Saltillo, in tufts on rocky hillsides, *Palmer* 262, 414, and 813 in 1898; *Palmer* 735 in 1905. Parras, *Ross* 1526.

ZACATECAS: Concepción del Oro, *Palmer* 265 and 280 in 1904. Hacienda de Cedros, foot slopes and hills, *Lloyd* 180, 232. Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7512.

AGUASCALIENTES: Aguascalientes, sterile, rocky hill, *Hitchcock* 7466.

SAN LUIS POTOSÍ: Cárdenas, dry limestone hills, *Pringle* 3930. San Luis Potosí, *Griffiths* 6514; *Schaffner* 159, 160. Las Canoas, rocky hill, *Hitchcock* 5767. En route from San Luis Potosí to San Antonio, Texas, *Parry & Palmer* 950 in 1878. Bagre, *Purpus* 5427.

QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5853.

HIDALGO: Ixmiquilpan, limestone hillside, *Rose, Painter & Rose* 8886, 8959. Pachuca, rocky hill, *Hitchcock* 6707.

FEDERAL DISTRICT: Hills, *Pringle* 9586; *Schaffner* 158.

PUEBLA: Mount Orizaba, barren slopes, *Seaton* 248. San Luis Tultitlanapa, *Purpus* 3594. Esperanza, barren hills, *Pittier* 419; rocky hill, *Hitchcock* 6475.

6. *Tridens pilosus* (Buckl.).

*Uralespis pilosa* Buckl. Proc. Acad. Phila. 1862: 95. 1863.

*Triodia acuminata* (Munro) Vasey, U. S. Dept. Agr. Div. Bot. Bull. 12<sup>2</sup>: pl. 52. 1891.

Type locality, "Middle Texas."

RANGE: Kansas to Nevada and south to San Luis Potosí.

HERBARIUM SPECIMENS FROM MEXICO:

COAHUILA: Díaz, calcareous soil, *Pringle* 8306.

NUEVO LEÓN: Monterey, by irrigation ditch, *Hitchcock* 5536; *Canby* 271.

SAN LUIS POTOSÍ: En route from San Luis Potosí to San Antonio, Texas, *Parry* 948 in 1878.

7. *Tridens pulchellus* (H. B. K.) Hitchc. in Jepsen, Fl. Calif. 1: 141. 1912.

*Triodia pulchella* H. B. K. Nov. Gen. & Sp. 1: 155. pl. 47. 1816.

Type locality, "In subfrigidis, siccis, apricis regni Mexicani inter Guanaxuati, Mina de Belgrado et Cubilete."

RANGE: Texas to Utah and south to southern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra Cantillas, *Orcutt* in 1884. Lagoon Head, *Palmer* 652 in 1889. Los Angeles Bay, Gulf of California, *Palmer* 500 in 1887. Calmallí, *Orcutt* in 1899. Granite hills west of Lake Maquata, Colorado Desert, *Orcutt* 2029.

SONORA: Agua Dulce, *MacDougal* in 1907. Guaymas, *Palmer* 500 in 1887. Paso de Luis, *Mearns* 2707.

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* in 1885. Near Lake Santa Maria, *Nelson* 6414. Chihuahua, along dry run, *Hitchcock* 7777; hills and plains, *Pringle* 496.

DURANGO: Torreón, rocky hill, *Hitchcock* 7547. Tlahualilo, barren hills, *Pittier* 480. Cerro de San Ignacio, *Purpus* 4616. Durango, on the south side of Iron Mountain, *Palmer* 740 in 1896.

COAHUILA: Saltillo, dry mesa, *Hitchcock* 5646; dense low tufts on dry, rocky hills, *Palmer* 257 and 413 in 1898. Parras, *Ross* 1530; *Palmer* 1359 in 1880.

ZACATECAS: Cedros, foot slopes and hills, *Lloyd* 89. Zacatecas, along dry river bed, *Hitchcock* 7536. Concepción del Oro, *Palmer* 263 in 1904.

AGUASCALIENTES: Aguascalientes, *Safford* 1365.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 161; *Parry & Palmer* 951 in 1878.

QUERÉTARO: Querétaro, rocky hill, *Hitchcock* 5854. Higuerillas, *Rose, Painter & Rose* 9790. San Pablo, *Rose, Painter & Rose* 9819. Loma del Ciervo, *Attamirano* 1611.

FEDERAL DISTRICT: *Ross* 122.

HIDALGO: El Salto, *Rose & Painter* 7076, hills, *Pringle* 11248.

109. **ERAGROSTIS** Host, Icon. Gram. Austr. 4: 14. pl. 14. f. 11. 1809.

KEY TO THE SPECIES.

Plants perennial.

Panicle narrow, contracted or spike-like.

Panicle a long slender spike, as much as 30 cm. long. 11. *E. spicata*.

Panicle contracted, more or less interrupted, not spike-like.

Lemmas 1.5 to 2 mm. long; sheaths not hairy at the throat. . . . . 12. *E. diversiflora*.

Lemmas 3 mm. long; sheaths hairy at the throat. 13. *E. secundiflora*.

Panicle open, diffuse.

Spikelets nearly sessile, appressed along the main spreading branches of the panicle. . . . . 14. *E. sessilispica*.

Spikelets on long pedicels.

Sheaths appressed-pilose; panicle purple, more than half the height of the plant. . . . . 15. *E. pectinacea*.

Sheaths glabrous.

Spikelets less than 10-flowered.

Panicle pilose in the lower axils; blades flat or involute toward tip only. . . . 19. *E. lugens*.

Panicle glabrous in the axils or with a few scattered hairs only.

Lower lemma 2 mm. long; blades flat or involute toward tip; panicle narrow, the branches ascending. . . . . 17. *E. palmeri*.

- Lower lemma 3 mm. long; blades involute; panicle open, the branches spreading..... 18. *E. erosa*.
- Spikelets more than 10-flowered.
- Culms tall, 1.5 to 2 meters high; blades 5 to 10 mm. wide..... 16. *E. gigantea*.
- Culms less than 0.5 meter high; blades narrow.
- Spikelets linear, 1.5 mm. wide; pedicels stiffly spreading, mostly longer than the spikelets..... 20. *E. elliottii*.
- Spikelets lanceolate, short-pedicelled, lead-colored..... 21. *E. plumbea*.
- Plants annual.
- Palea conspicuously ciliate.
- Panicle contracted, more or less spike-like..... 2. *E. ciliaris*.
- Panicle open..... 3. *E. plumosa*.
- Palea not conspicuously ciliate.
- Spikelets dioecious or polygamous; plants stoloniferous..... 1. *E. hypnoides*.
- Spikelets perfect.
- Spikelets 3 mm. wide, usually about 1 cm. long; panicle more or less contracted; keel of lemma glandular-scabrous..... 8. *E. megastachya*.
- Spikelets not over 2 mm. wide.
- Panicle contracted, the branches spikelet-bearing from the base; spikelets sessile.
- Spikelets small, usually not over 3 mm. long; culms erect; panicles tawny, 10 to 20 cm. long, narrow, interrupted below..... 10. *E. glomerata*.
- Spikelets linear, many-flowered, as much as 15 mm. long; culms low and spreading; panicle mostly tinged with red, oblong, 2 to 5 cm. long, sometimes longer and somewhat compound..... 9. *E. amoena*.
- Panicle open.
- Foliage hirsute; plants delicate, 10 to 20 cm. high..... 4. *E. scribneriana*.
- Foliage glabrous.
- Panicle pilose in the lower axils; spikelets 1 mm. wide; lemma 1.5 mm. long..... 5. *E. pilosa*.
- Panicle glabrous in the axils; spikelets 2 to 2.5 mm. wide; lemma 2 mm. long.
- Panicle large and drooping, as much as 25 cm. long; spikelets 2 mm. wide..... 6. *E. mexicana*.

Panicle short and erect, the branches rather divaricately spreading, usually less than 10 cm. long; spikelets 2.5 mm. wide... 7. *E. limbata*.

1. *Eragrostis hypnoides* (Lam.) B. S. P. Prel. Cat. N. Y. 69. 1888.

*Poa hypnoides* Lam. Tabl. Encycl. 1: 185. 1791.

Type locality, "America merid."

RANGE: Throughout the United States and southward to the West Indies and South America.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San Gregorio, *Brandege* 21 in 1889. Comondú, *Brandege* 23 in 1899.

SAN LUIS POTOSÍ: En route from San Luis Potosí to Tampico, *Palmer* 1154 in 1880. Las Canóas, sandy bottom of dried pools in a barranca, *Pringle* 3699.

VERACRUZ: Papantla, *Liebmann* 537. Tlacotalpan, *Nelson* 511. Orizaba, *Bourgeau* 2638; *Botteri* 665. Panuco, *Palmer* 347 in 1910. Pital, *Liebmann* 534. Veracruz, *Müller* 2168.

GUERRERO: Acapulco, *Palmer* 596 in 1895.

OAXACA: Jamiltepec, *Nelson* 2364.

TABASCO: Laguna de la Polvora, *Rovirosa* 188.

2. *Eragrostis ciliaris* (L.) Link, Hort. Berol. 1: 192. 1827.

*Poa ciliaris* L. Syst. Nat. ed. 10. 875. 1759.

Type locality, Jamaica.

RANGE: Tropics and subtropics of both hemispheres.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* 4 in 1899, 8 in 1890. Miraflores, *Purpus* 291.

SONORA: Alamos, *Palmer* 688 in 1890; along arroyo, *Rose, Standley & Russell* 12701.

CHIHUAHUA: Without locality, *Palmer* in 1886.

SINALOA: Villa Unión, open field, *Rose, Standley & Russell* 13920. Culiacán, moist field, *Rose, Standley & Russell* 14866. Fuerte, sandy soil along river, *Rose, Standley & Russell* 13493. Rosario, along river, *Rose, Standley & Russell* 14599. Mazatlán, thickets, *Rose, Standley & Russell* 14056. Mountains at headwaters of Mazatlán River, *Wright* 1319. Lodiago, river bottom, often overflowed during rainy season, *Palmer* 1649 in 1891.

TAMAULIPAS: Tampico, *Palmer* 147 in 1910; along street, *Hitchcock* 5791. Victoria, *Palmer* 481 in 1907.

TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14244; *Rose* 3135.

SAN LUIS POTOSÍ: Rascón, *Purpus* 5424. En route San Luis Potosí to Tampico, *Palmer* 1152 in 1878.

JALISCO: Guadalajara, fields in the barranca, *Pringle* 1851.

COLIMA: Manzanillo, *Palmer* 1085 in 1890. Caleras, along railway, *Hitchcock* 7015. Alzada, weed in town, *Hitchcock* 7105. Colima, *Orcutt* 4586.

PUEBLA: Road to Mexico City, *Nicolas* in 1908.

VERACRUZ: Jalapa, along railway, *Hitchcock* 6635. Sanborn, *Orcutt* 3239. Veracruz, *Orcutt* 2895; along railway, *Hitchcock* 6560; *Müller* 2171. Colipa, *Liebmann* 546.

MORÉLOS: Yautepec, fields, *Pringle* 11223.

GUERRERO: Balsas, along railway, *Hitchcock* 6803. Acapulco, *Palmer* 39 in 1894.

OAXACA: Tomellín, along ditch, *Hitchcock* 6230. Cuicatlán, *Nelson* 1650a.

TABASCO: San Juan Bautista, *Rovirosa* 645.

YUCATÁN: Mérida, *Schott* 20, 619.

**3. *Eragrostis plumosa* (Retz.) Link, Hort. Berol. 1: 192. 1827.**

*Poa plumosa* Retz. Obs. Bot. 4: 20. 1786.

Type locality, "Tranquebaria," East Indies.

RANGE: Tropics and subtropics of both hemispheres.

**HERBARIUM SPECIMENS FROM MEXICO:**

LOWER CALIFORNIA: San José del Cabo, *Brandege* 1 and 19 in 1890, and in 1902.

COLIMA: Colima, *Palmer* 1266 in 1891; waste and cultivated ground, *Palmer* 15 in 1897. Manzanillo, *Palmer* 1266 in 1890. Coquimatlán, along railway, *Hitchcock* 7053. Alzada, between railway ties, *Hitchcock* 7108.

PUEBLA: Puebla, prairies, *Nicolas* in 1910.

GUERRERO: Acapulco, *Palmer* 40 in 1894. San Marco, *Nelson* 2270.

TABASCO: San Juan Bautista, *Roviro* 690.

YUCATÁN: Mérida, *Schott* 59. Without locality, *Gaumer* 851.

**4. *Eragrostis scribneriana* nom. nov.**

*Eragrostis pusilla* Scribn.; Beal, Grasses N. Amer. 2: 481. November 11, 1896, not Hack. September, 1896.

Type locality, "Mexico (Jalisco)," the type specimen collected by Pringle (no. 2327).

RANGE: Known only from the type locality.

**HERBARIUM SPECIMENS:**

JALISCO: Guadalajara, dry rocky hills, *Pringle* 2327; gravelly soil, *Pringle* 11741.

**5. *Eragrostis pilosa* (L.) Beauv. Ess. Agrost. 71. 1812.**

*Poa pilosa* L. Sp. Pl. 68. 1753.

Type locality, "India."

RANGE: Temperate and warmer regions of both hemispheres.

**HERBARIUM SPECIMENS FROM MEXICO:**

LOWER CALIFORNIA: Santa Agueda, *Palmer* 218 in 1890. Maleje, Gulf of California, *Palmer* 42 in 1887. Binveama (Cape Region), *Brandege* 7 in 1899. El Taste, *Brandege* 50 in 1893. Sierra de la Laguna, *Brandege* 82 in 1893. San José del Cabo, *Purpus* in 1901. Santa Rosalía, *Palmer* 145 in 1889.

SONORA: Guaymas, *Palmer* 49 and 167 in 1887; in the public square, *Rose* 1281. Nogales to Cocospora Ranch, *Griffiths* 6793. Hermosillo, meadow by ditch, *Hitchcock* 3576; near river, *Hitchcock* 3593; along ditch, *Hitchcock* 3613. Valley of Río de Sonora, *Rose, Standley & Russell* 12491. Llano, along railway, *Hitchcock* 3521. Nogales, along railway, *Hitchcock* 3634. Alamos, *Rose, Standley & Russell* 13030, *Palmer* 689 in 1890. San Pedro River, *Mearns* 1148. Yaqui River, *Palmer* 6 in 1869.

CHIHUAHUA: Batopilas, on the roof of Governor Shepherd's house, *Palmer* in 1885. Southwestern Chihuahua, *Palmer* 8 and 50F in 1885. Candelaria, *Stearns* 261. Between Casas Grandes and Sabinal, *Nelson* 6353.

SINALOA: Lodiago, river bottom, *Palmer* 1651 in 1891. Rosario, *Rose* 1544, 1545, 1847; along the river, *Rose, Standley & Russell* 14584. Headwaters of Mazatlán River, *Wright* 1320. San Blas, gravel beds along river, *Rose, Standley & Russell* 13393. Topolobampo, *Palmer* 240 in 1897.

DURANGO: Durango, *Palmer* in 1896; cultivated ground, *Palmer* 177, 183, and 726 in 1896; plains and arroyos, *Palmer* 764 in 1896; among mesquite bushes, *Palmer* 768 in 1896; along road, *Hitchcock* 7586. Torreón, weed in field, *Hitchcock* 7554. Tepehuanes, *Palmer* 266 in 1906. Tlahualilo, barren hills, *Pittier* 476.

COAHUILA: Saltillo, *Palmer* 398 in 1904; in waste places, *Palmer* 811 and 812 in 1898; wet place, *Hitchcock* 5621, 5630.

TAMAULIPAS: Victoria, *Palmer* 474 and 555 in 1907.

TEPIC: Tepic, *Palmer* 1928 in 1892. Between Aguacate and Dolores, *Rose* 2016.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7532.

SAN LUIS POTOSÍ: Alvarez, *Palmer* 174 and 174½ in 1902. Cárdenas, irrigated field, *Hitchcock* 5725. San Luis Potosí, *Schaffner* 143; dry ditch, *Hitchcock* 5658.

JALISCO: Guadalajara, fields, *Pringle* 2430; wet meadows, *Pringle* 4492; prairie near San Pedro, *Hitchcock* 7298; *Holway* 1. San Nicolás, sterile hill, *Hitchcock* 7234; prairie, *Hitchcock* 7189.

GUANAJUATO: Acámbaro, *Rose* 3595.

HIDALGO: Huejutla, *Seler* 627.

COLIMA: Colima, *Palmer* 1262, 1273, and 1274 in 1891; roadsides, *Palmer* 13 in 1897. Caleras, along railway, *Hitchcock* 7016. Manzanillo, *Palmer* 1088 in 1890. Alzada, along railway, *Hitchcock* 7062.

MICHOACÁN: Morelia, *Arsène* 3361.

FEDERAL DISTRICT: *Pringle* 9580; *Orcutt* 4111.

PUEBLA: Tehuacán, river bottom, *Hitchcock* 6086.

VERACRUZ: Córdoba, weed, *Hitchcock* 6403; Orizaba, *Botteri* 662, 1270; open rocky hill, *Hitchcock* 6362. Consoquitla, *Liebmann* 520. Jalapa, along railway, *Hitchcock* 6600. Veracruz, weed along street, *Hitchcock* 6572.

MORELOS: Cuernavaca, weed in pasture, *Hitchcock* 6825; *Orcutt* 3884; along road, *Hitchcock* 6866, 6867.

OAXACA: Tomellín, *Rose, Painter & Rose* 10283, 10062; rocky bank, *Hitchcock* 6196; along track, *Hitchcock* 6215. Oaxaca, along railway track, *Hitchcock* 6121; along hedge, *Hitchcock* 6113. Valley of Oaxaca, *Conzatti & González* 346.

**6. *Eragrostis mexicana* (Lag.) Link, Hort. Berol. 1: 190. 1827.**

*Poa mexicana* Lag. Gen. & Sp. Nov. 3. 1816.

Type locality, "in Imperio Mexicano."

RANGE: Southwestern United States to South America.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: San José del Cabo, *Brandege* 7 in 1890. Sierra de San Francisquito, *Brandege* 24 in 1899.

SONORA: Guaymas, *Palmer* 167 in 1887; open gravelly place in yard, *Hitchcock* 3566.

CHIHUAHUA: Sierra Madre, *Nelson* 6300. Chihuahua Valley, *Pringle* 416. Southwestern Chihuahua, *Palmer* 8 in 1885. Miñaca, along dry run, *Hitchcock* 7733. Sánchez, along railway, *Hitchcock* 7689.

SINALOA: Fuerte, sandy soil along the river, *Rose, Standley & Russell* 13464.

DURANGO: Durango, cultivated and waste ground, *Palmer* 534, 723, 869, and 950 in 1896. Tepehuanes, *Palmer* 264 in 1906. Torreón, along ditch, *Hitchcock* 7726.

COAHUILA: Saltillo, cemeteries, *Palmer* 376 and 409 in 1898; cultivated ground near cemeteries, *Palmer* 411 in 1898; *Palmer* 710 in 1905; irrigated field, *Hitchcock* 5629; weed in park, *Hitchcock* 5642. Parras, *Palmer* 1367 in 1880.

ZACATECAS: Zacatecas, gulch in dry sterile hills, *Hitchcock* 7500; along dry river bed, *Hitchcock* 7531.

AGUASCALIENTES: Aguascalientes, weed, edge of field, *Hitchcock* 7443, 7451.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 142; dry ditch, *Hitchcock* 5659; field, *Hitchcock* 5661, 5662; *Griffiths* 6515. Alvarez, *Palmer* 170 in 1904. En route from San Luis Potosí to Tampico, *Parry & Palmer* 936 in 1878.

JALISCO: Colotlán, *Rose* 3605. Zapotlán, railway right of way, *Hitchcock* 7132, 7137. Chapala, *Rose* 3453, 3453a.

GUANAJUATO: Acámbaro, along railway, *Hitchcock* 6930. Irapuato, moist sandy-clay plain, *Hitchcock* 7418.

QUERÉTARO: Querétaro, weed in field, *Hitchcock* 5803; rocky field, *Hitchcock* 5843.

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6713; along road, *Hitchcock* 6724; sandy river bed, *Hitchcock* 6759, 6760.

COLIMA: Colima, *Palmer* 1262 in 1891; garden, *Palmer* 20 in 1897. Alzada, along railway, *Hitchcock* 7060.

MICHOACÁN: Morelia, *Arsène* in 1909.

MÉXICO: Popo Park, open woods, *Hitchcock* 6023. Toluca, weed in field, *Hitchcock* 6903. Federal District, *Holway* 3093; open ground, *Hitchcock* 5942; weed in field, *Hitchcock* 5897, 5901; *Orcutt* 3532, 3696; *Bourgeau* 445.

PUEBLA: Chalchicomula, *Rose & Hay* 5796; open dry ground, *Hitchcock* 6281; common weed in field, *Hitchcock* 6295, 6296. Tehuacán, along railway, *Hitchcock* 6055. Esperanza, along railway, *Hitchcock* 6496, 6503. San Baltazar, *Nicolas* in 1911.

VERACRUZ: Orizaba, *Botteri* 663. Córdoba, weed along track, *Hitchcock* 6399, 6402.

MORELOS: Cuernavaca, weed along road, *Hitchcock* 6857.

GUERRERO: Canyon de la Mano Negra near Iguala, *Rose, Painter & Rose* 9382. Balsas, along railway, *Hitchcock* 6795.

OAXACA: San Agustín, *Liebmann* 482. Tomellín, weed in cornfield, *Hitchcock* 6213.

7. *Eragrostis limbata* Fourn. Mex. Pl. 2: 116. 1886.

Type locality, "in scopulosis regni Mexicani," the type specimen collected by Bonpland (no. 4573).

RANGE: Southern California to Costa Rica.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: El Taste, *Brandegge* in 1902.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* 50f in 1885. Miñaca, along railway, *Hitchcock* 7732. Sánchez, along stream in ravine, *Hitchcock* 7705.

SINALOA: Culiacán, moist field, *Rose, Standley & Russell* 14874.

DURANGO: Durango, weed in field, *Hitchcock* 7647. Iron Mountain, on one of the higher points, *Palmer* 531, 875, 876, and 950 in 1896; dry ground, *Hitchcock* 7609; rocky hill, *Hitchcock* 7640. San Ramón, *Palmer* 83 and 131 in 1906.

COAHUILA: Chojo Grande, *Palmer* 334 and 335 in 1904. Saltillo, weed in park, *Hitchcock* 5643; cemeteries, *Palmer* 410 in 1898; waste places around dwellings, *Palmer* 412 in 1898.

TEPIC: Acaponeta, moist ravine, *Rose, Standley & Russell* 14321. Tepic, shady spots along arroyos, *Palmer* 1928 in 1892.

SAN LUIS POTOSÍ: Cárdenas, irrigated field, *Hitchcock* 5715.

JALISCO: San Nicolás, sterile clay field, *Hitchcock* 7205; prairie, *Hitchcock* 7185. Guadalajara, on roof of hotel, *Hitchcock* 7263; prairie near San Pedro, *Hitchcock* 7285; side of Barranca de Oblatos, *Hitchcock* 7347; fields, *Pringle* 3839; *Palmer* 234 in 1886. Zapotlán, railway right of way, *Hitchcock* 7140. Bolaños, *Rose* 3699. Chapala, *Rose* 3497.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7419. Acámbaro, along railway, *Hitchcock* 6925.

HIDALGO: Pachuca, open ground, *Hitchcock* 6725. Telles, *Orcutt* 4149. Tequisquiác, *Rose & Painter* 8019.

MICHOACÁN: Uruápan, prairie, *Hitchcock* 6987.

MÉXICO: Popo Park, open ground, *Hitchcock* 6027, 6689. Toluca, weed in field, *Hitchcock* 6904. Federal District, *Rose & Painter* 6823, 9253; *Orcutt* 3594; lava beds, *Pringle* 6459; *Bourgeau* 437, 1305.

PUEBLA: Tehuacán, limestone hills, *Rose, Painter & Rose* 9907; alfalfa field, *Hitchcock* 6031; plains, *Pringle* 9604; cactus hill, *Hitchcock* 6089. Atlixco,

## HERBARIUM SPECIMENS FROM MEXICO—Continued.

*Nelson* in 1893. San Luis Tultitlanapa, *Purpus* 3599. Chalchicomula, open dry ground, *Hitchcock* 6282; common weed, waste and cultivated ground, *Hitchcock* 6293, 6294, 6309. Esperanza, along railway, *Hitchcock* 6466. Rancho Tosados, *Nicolas* in 1909. Oriental, *Orcutt* 3948.

VERACRUZ: Orizaba, weed in street, *Hitchcock* 6311; roadside ditch, *Hitchcock* 6329, 6333; *Hahn* 2635; *Botteri*; *Müller* 2121. Córdoba, *Orcutt* 3254. Omealca, *Orcutt* 3253. Jalapa, along railway, *Hitchcock* 6602.

OAXACA: Valley of Oaxaca, *Conzatti & González* 345. Escuela Normal, *Conzatti* 14. Oaxaca, along road, *Hitchcock* 6112; along railway, *Hitchcock* 6126. Cuicatlán, hills, *Nelson* 1705.

8. *Eragrostis megastachya* (Koel.) Link, Hort. Berol. 1: 187. 1827.

*Poa megastachya* Koel. Descr. Gram. 181. 1802.

Type locality given as "in Europa australi ad agrorum versuras."

RANGE: Throughout the United States and south to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Maleje, Gulf of California, *Palmer* 40 in 1887. San José del Cabo, *Brandege* 9 in 1890. Santa Agueda, *Palmer* 215 in 1890. Without locality, *Orcutt* in 1889.

SONORA: Guaymas, open gravelly place in yard, *Hitchcock* 3567; *Palmer* 40 and 40½ in 1887. Along railway 10 miles south of Nogales, Arizona, *Hitchcock* 3628. Llano, along railway at station, *Hitchcock* 3520. Hermosillo, in meadow along river, *Hitchcock* 3574; sandy bed of river, *Hitchcock* 3617. Loquka Ranch to Altar, *Griffiths* 6901. San Pedro River, *Mearns* 1147.

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* in 1885. Miñaca, along railway, *Hitchcock* 7738.

DURANGO: Tlahualilo, barren hills, *Pittier* 475. Durango, *Palmer* 720 in 1896; dry ground, *Hitchcock* 7597.

COAHUILA: Sabinas, *Nelson* 6823. Saltillo, cultivated ground, *Palmer* 389 in 1898; weed in field, *Hitchcock* 5633.

TAMAULIPAS: Victoria, *Palmer* 473 in 1907.

ZACATECAS: Zacatecas, along dry river bed, *Hitchcock* 7534.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 139; *Parry & Palmer* 934 in 1878; alfalfa field, *Hitchcock* 5696.

GUANAJUATO: Irapuato, moist sandy-clay plain, *Hitchcock* 7417.

QUERÉTARO: Querétaro, weed in park, *Hitchcock* 5840.

HIDALGO: Pachuca, along railway, *Hitchcock* 6770.

COLIMA: Jala, along railway, *Hitchcock* 7012.

PUEBLA: Tehuacán, limestone hills at El Riego, *Rose, Painter & Rose* 9908; bottom land field, *Hitchcock* 6069.

MORELOS: Yautepec, along railroad, *Rose, Painter & Rose* 8570.

GUERRERO: Canyon de la Mano Negra, near Iguala, *Rose, Painter & Rose* 9387. Balsas, along railway, *Hitchcock* 6794.

OAXACA: Cuicatlán, *Nelson* 1651. Tomellín, *Rose, Painter & Rose* 10080; along railway, *Hitchcock* 6232; rocky hill, *Hitchcock* 6243. Oaxaca, weed in field, *Hitchcock* 6123.

9. *Eragrostis amoena* Presl, Rel. Haenk. 1: 275. 1830.

Type locality, "Mexico."

RANGE: Western Mexico to Panama.

## HERBARIUM SPECIMENS FROM MEXICO:

TEPIC: Tepic, shady spots along arroyos, *Palmer* 1926 in 1892.

JALISCO: Guadalajara, sandy plains, *Pringle* 3334, 11742; dry open ground, rim of Barranca de Oblatos, *Hitchcock* 7323.

VERACRUZ: Coatzacoalcos, *Smith* 1051.

GUERRERO: Acapulco, *Palmer* 596 in 1895.



**10. *Eragrostis glomerata* (Walt.) Dewey, Contr. U. S. Nat. Herb. 2: 543. 1894.***Poa glomerata* Walt. Fl. Carol. 80. 1788.*Eragrostis pallida* Vasey, Contr. U. S. Nat. Herb. 1: 285. 1893.

Type locality, presumably South Carolina.

RANGE: Southern United States to South America.

## HERBARIUM SPECIMENS FROM MEXICO:

COLIMA: Colima, *Palmer* 1268 in 1891 (type of *E. pallida* Vasey).MORELOS: Cuernavaca, wet places, *Pringle* 6605.**11. *Eragrostis spicata* Vasey, Bot. Gaz. 16: 146. 1891.**

Type locality, "San José del Cabo, Lower California," the type specimen collected in 1890 by Brandegee (no. 10).

RANGE: Known only from the type collection.

**12. *Eragrostis diversiflora* Vasey, Contr. U. S. Nat. Herb. 1: 285. 1893.**

Type locality, "Manzanillo," Mexico, the type specimen collected by Palmer (no. 1335).

RANGE: Pacific slope of Mexico.

## HERBARIUM SPECIMENS:

SINALOA: Mountains at headwaters of Mazatlán River, *Wright* 1318. Mazatlán, dry field, *Rose, Standley & Russell* 14130.COLIMA: Manzanillo, *Palmer* 1335 and 1385 in 1891. Revillagigedo Islands, *Barkelew* 172.**13. *Eragrostis secundiflora* Presl, Rel. Haenk. 1: 276. 1830.**

Type locality, "Mexico."

RANGE: Middle and southern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: La Barra, *Palmer* 591 in 1910 in part. Tampico, sand dunes, *Hitchcock* 5794.VERACRUZ: Coatzacoalcos, *Orcutt* 3103. Veracruz, sand dunes, *Pringle* 8520; sandy prairie, *Hitchcock* 6559; *Orcutt* 3250.OAXACA: Pochutla, La Jalera, *Liebmann* 538.YUCATÁN: Sisal, sea shore, *Schott* 640.**14. *Eragrostis sessilispica* Buckl. Proc. Acad. Phila. 1862: 97. 1863.**

Type locality, "Near Austin, Texas."

RANGE: Southwestern United States and Chihuahua.

## HERBARIUM SPECIMEN FROM MEXICO:

CHIHUAHUA: Near Lake Santa María, *Nelson* 6413.**15. *Eragrostis pectinacea* (Michx.) Nees, Fl. Afr. Austr. 406. 1841.***Poa pectinacea* Michx. Fl. Bor. Amer. 1: 69. 1803.

Type locality, "in arvis Illinoensibus."

RANGE: Northeastern United States to San Luis Potosí.

## HERBARIUM SPECIMEN FROM MEXICO:

SAN LUIS POTOSÍ: Cárdenas, dry hills, *Pringle* 3284.**16. *Eragrostis gigantea* Trin. Mém. Acad. St. Pétersb. VI. Math. Phys. Nat. 1: 403. 1830.**

Type locality, "Doming[o]."

RANGE: West Indies and coast of Veracruz.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Veracruz, flat land back of beach among bull-thorn acacia, *Hitchcock* 6580.**17. *Eragrostis palmeri* S. Wats. Proc. Amer. Acad. 18: 182. 1883.**

Type locality, "Juraz, on the Sabinas River, Coahuila," the type specimen collected by Palmer (no. 1368).

RANGE: Known only from the type collection.

**18. *Eragrostis erosa* Scribn.; Beal, Grasses N. Amer. 2: 483. 1896.**

Type locality, "Mexico (Chihuahua)," the type specimen collected in the Santa Eulalia Mountains by Pringle, no. 415.

RANGE: Known only from Chihuahua.

## HERBARIUM SPECIMENS:

CHIHUAHUA: Santa Eulalia Plains, *Wilkinson* 341; Santa Eulalia Mountains, *Pringle* 415.

**19. *Eragrostis lugens* Nees, Agrost. Bras. 505. 1829.**

Type locality, "ad Monte Video et in confinibus regni Paraguayan," the type specimen collected by Sello.

RANGE: Southwestern United States to Argentina.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: El Taste, *Brandege* in 1902. Sierra de la Laguna, *Brandege* 28 in 1899. Sierra de San Francisquito, *Brandege* 10 and 20 in 1899.

CHIHUAHUA: Sierra en Media, *Nelson* 6467.

DURANGO: Durango, dry ground, *Hitchcock* 7598. Iron Mountain, higher points, *Palmer* 531 in 1896; among the rocks, *Palmer* 727 in 1896.

COAHUILA: Saltillo, cornfield, *Hitchcock* 5597; sandy field near river, *Hitchcock* 5627; rich soil, *Palmer* 408 in 1898.

ZACATECAS: Zacatecas, gulch in dry sterile hills, *Hitchcock* 7515.

SAN LUIS POTOSÍ: San Luis Potosí, edge of field, *Hitchcock* 5672; *Parry & Palmer* 938 in 1878; *Schaffner* 138. Cárdenas, railway cut, *Hitchcock* 5731. Alvarez, *Palmer* 172 in 1904.

JALISCO: Zapotlán, damp soil, railway right of way, *Hitchcock* 7111; pine woods, hillside, *Hitchcock* 7242. Guadalajara, *Palmer* 203 and 234 in 1886.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6714, 6743. Tula, valley, *Pringle* 6634.

MICHOACÁN: Uruápan, along road, *Hitchcock* 6960; prairie, *Hitchcock* 6968; weed along railway, *Hitchcock* 6991. Jacuaro, along railway, *Hitchcock* 6956.

MÉXICO: Río Hondo, *Holway* 5. Popó Park, open ground, *Hitchcock* 6020. Toluca, rocky hill, *Hitchcock* 6888. Hacienda de la Encarnación, *Rose, Painter & Rose* 8453. Federal District, field, *Hitchcock* 5912, 5924; open meadow, *Hitchcock* 5934; depression in lava rock, *Hitchcock* 5959; *Orcutt* 3694; *Bourgeau* 228, 673; *Pringle* 9602; *Rose & Hay* 5508.

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6491. San Marcos, railway embankment, *Hitchcock* 6523, 6534. Chinantla, *Liebmann* 527. Cerro Guadalupe, *Nicolas* in 1909. Cerro del Gavilán, *Purpus* 4220.

VERACRUZ: Orizaba, roadside ditch, *Hitchcock* 6337, 6338; open rocky hill, *Hitchcock* 6367; *Botteri* 682; *Bourgeau* 2643. Jalapa, clay cut, *Hitchcock* 6601, 6677. Mirador, *Liebmann* 526.

**20. *Eragrostis eliottii* S. Wats. Proc. Amer. Acad. 25: 140. 1890.**

Type locality, "Paris Island," presumably off the coast of South Carolina or Georgia.

RANGE: Southern United States, Gulf coast of Mexico and the West Indies.

## HERBARIUM SPECIMENS FROM MEXICO:

TAMAULIPAS: Tampico, sand dunes, *Hitchcock* 5799.

VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6553; wet sands, *Pringle* 5561; *Orcutt* 3251.

**21. *Eragrostis plumbea* Scribn.; Beal, Grasses N. Amer. 2: 484. 1896.**

Type locality, "Mexico (Guadalajara)."

RANGE: San Luis Potosí to Michoacán and Veracruz.

## HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: Cárdenas, railway cut, *Hitchcock* 5717; damp clay, along railway, *Hitchcock* 5777.

JALISCO: Guadalajara, near water in ditch, road to Barranca de Oblatos, *Hitchcock* 7321; wet soil, *Pringle* 2311, 11740; *Palmer* 240 in 1886.

COLIMA: Alzada, along railway, *Hitchcock* 7061.

MICHOACÁN: Morelia, *Arsène* in 1909.

PUEBLA: Tehuacán, along railway, *Hitchcock* 6058.

VERACRUZ: Veracruz, sandy prairie, *Hitchcock* 6557.

## 110. MELICA L. Sp. Pl. 66. 1753.

## KEY TO THE SPECIES.

Fertile florets 1 or 2 in each spikelet; spikelets 4 to 6 mm. long.

Primary branches of panicle ascending..... 1. *M. imperfecta*.

Primary branches of panicle more or less reflexed..... 1a. *M. imperfecta flexuosa*.

Fertile florets 3 or 4 in each spikelet.

Plants tall and rather stout, somewhat woody; second glume

10 to 12 mm. long..... 4. *M. frutescens*.

Plants herbaceous, slender; second glume 8 mm. long.

Panicle nearly simple, with 1 or 2 short appressed branches. 2. *M. porteri*.

Panicle compound, the branches spreading or reflexed... 3. *M. alba*.

1. *Melica imperfecta* Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 2<sup>1</sup>: 59. 1836.

Type locality, California.

RANGE: Pacific slope from San Francisco Bay through Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cedros Island, *Palmer* 660 and 662 in 1889. San Quentín Bay, *Palmer* 685 and 727 in 1889. Todos Santos Island, *Anthony* 203.

1a. *Melica imperfecta flexuosa* Boland. Proc. Calif. Acad. 4: 101. 1870.

Type locality, "on rocks on the road from Mariposa to Clark's," Yosemite National Park, California.

RANGE: Pacific slope, Yosemite region to Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: El Rancho Viejo, *Brandege* 14 in 1889. Nachognero Valley, *Schoenfeldt* 3438. San Antonio Valley, *Brandege* 120. Without locality, *Orcutt* in 1886.

2. *Melica porteri* Scribn. Proc. Acad. Phila. 1885: 44. pl. 1. f. 17, 18. 1886.

*Melica nutica parviflora* Porter in Port. & Coult. Syn. Fl. Colo. 149. 1874.

*Melica parviflora* Scribn. Mem. Torrey Club 5: 50. 1894.

Type locality, Colorado.

RANGE: Rocky Mountain region from Colorado to Chihuahua, occasional on bluffs in Missouri and Texas.

## HERBARIUM SPECIMEN FROM MEXICO:

CHIHUAHUA: Sierra Madre, *Pringle* 2045.

3. *Melica alba* sp. nov.

Perennial; culms cespitose, slender, erect, glabrous, 0.5 to 1 meter high; sheaths minutely roughened; ligule thin, white, membranaceous, soon lacerate, 5 to 10 mm. long; blades flat, minutely scabrous, 10 to 20 cm. long, 2 to 3 mm. wide, the lower shorter, or reduced to sheaths; panicle narrow, 10 to 15 cm. long, the branches rather

distant, ascending or appressed; pedicels slender, 3 to 5 mm. long, enlarged and pubescent toward the recurved tip; spikelets with one perfect floret, racemose, more or less secund along the main branches, shining white, 7 to 8 mm. long; first glume as long as the spikelet, oblong, obtuse, 5-nerved, the nerves anastomosing above, thin, the broad margin white and papery, infolding the base of the spikelet, flattened above, minutely scabrous; second glume similar to the first, somewhat narrower, 3-nerved; lemma about as long as the glumes, narrower, firm except the obtuse scarious summit, many-nerved, the nerves not extending into the summit, tuberculate-roughened, bearing a group of flat, lax, twisted hairs toward the middle of each margin; palea shorter than the lemma, not scarious, the keels minutely ciliate above; rudiment oblong-cuneate, truncate, 2 to 3 mm. long, the stipe about as long.

Type in the U. S. National Herbarium, no. 691233, collected in "Shaded places, Santa Eulalia Mountains, Chihuahua," Mexico, April 6, 1885, by C. G. Pringle (no. 430).

RANGE: Mountains of northern Mexico.

HERBARIUM SPECIMENS:

CHIHUAHUA: Santa Eulalia Mountains, shaded places, *Pringle* 430. Chihuahua, *Wilkinson* 342.

COAHUILA: Sierra Mojada Mountains, *Jones* 482. San Lorenzo Canyon, *Palmer* 551 in 1905.

4. *Melica frutescens* Scribn. Proc. Acad. Phila. 1885: 45. pl. 1. f. 15, 16. 1886.

Type locality, "Southern California," the type specimen collected in the vicinity of San Diego by Parry and Lemmon (no. 401).

RANGE: Coast Ranges, southern California and Lower California.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Carysito, *Orcutt* 513. El Rancho Viejo, *Brandegge* 15 in 1889. Near Tía Juana, *Jones* 3748.

111. **SENITES** Adans. Fam. Pl. 2: 39, 604. 1763.

KEY TO THE SPECIES.

Blades oblong-lanceolate, over 10 cm. long.

Spikelets nodding on capillary pedicels; petiole densely villous. . . . . 2. *S. capillaris*.

Spikelets erect on short pedicels; petiole glabrate or sparsely pubescent.

Panicle densely flowered, the branches ascending; blades mostly 5 to 6 cm. wide, lanceolate. . . . . 1. *S. latifolia*.

Panicle loosely flowered, the branches spreading; blades narrower, oblong-lanceolate. . . . . 1a. *S. latifolia pringlei*.

Blades ovate.

Blades about 10 cm. long, 7 to 8 cm. wide. . . . . 3. *S. smilacifolia*.

Blades 2 to 4 cm. long.

Spikelets awned. . . . . 4. *S. pringlei*.

Spikelets awnless. . . . . 5. *S. mexicana*.

1. *Senites latifolia* (Fourn.).

*Krombholzia latifolia* Fourn. Bull. Soc. Bot. Belg. 15: 463. 1876.

*Zeugites latifolia* Hemsl. Biol. Centr. Amer. Bot. 3: 577. 1885.

*Zeugites pittleri* Hack. Oesterr. Bot. Zeitschr. 52: 373. 1902.

Type locality, "Dolores," Oaxaca, the type specimen collected by Liebmann (no. 541).

**RANGE:** Pacific slope of southern Mexico.

**HERBARIUM SPECIMENS FROM MEXICO:**

**JALISCO:** Guadalajara, *Rose & Hay* 6277; cool slopes of barranca, *Pringle* 2046; under cliffs, barranca, *Pringle* 11249, 11765.

**OAXACA:** Dolores, *Liebmann* 541.

**1a. *Senites latifolia pringlei* (Hack.).**

*Zeugites pittieri* var. *pringlei* Hack. Oesterr. Bot. Zeitschr. 52: 373. 1902.

Type locality, "Mexico: ad Guadalajara," the type specimen collected by Pringle (no. 2322).

**RANGE:** Southwestern Mexico.

**HERBARIUM SPECIMENS:**

**JALISCO:** Cool moist places, bluffs of Río Grande de Santiago near Guadalajara, *Pringle* 2322. Guadalajara, shady place by trail down Barranca de Oblatos, *Hitchcock* 7362.

**GUERRERO:** Canyon de la Mano Negra, near Iguala, *Rose, Painter & Rose* 9384. Iguala, canyon, *Pringle* 10386.

**2. *Senites capillaris* sp. nov.**

Perennial; culms erect, robust, 1.5 to 2 meters high, glabrous, sparingly branching from the upper nodes; sheaths villous on the margins, otherwise nearly glabrous, the lower loose, bladeless or with but a small triangular tip; ligule membranaceous, scarcely 1 mm. long; petiole 2 to 3 mm. long, densely villous; blades scabrous on both surfaces, 15 to 20 cm. long, 4 to 6 cm. wide, lanceolate or elliptic-lanceolate, tapering into an acuminate point; panicles loosely flowered, the slender branches spreading, few-flowered, the capillary pedicels recurved at the apex; spikelets nodding, about 7 mm. long, with 1 fertile and 3 or 4 sterile florets; glumes 5-nerved, not reticulate, unequal, dissimilar, the first 3 mm. long, oblanceolate or cuneate, subcucullate, rounded and entire at the apex, pubescent, the second attached about 0.5 mm. above the first, 2 mm. long, oblong, strongly gibbous, truncate and somewhat erose at apex, less pubescent than the first; fertile lemma about 3 mm. long, broadly ovate, gibbous, abruptly acute, about 11-nerved, scaberulous toward the tip, awnless; sterile lemmas 3 to 4 mm. long, narrower and more loosely arranged than in *S. latifolia*.

Type in the U. S. National Herbarium, no. 691234, collected in "Rich soil, wooded hillside, 450 meters altitude," Alzada, Colima, Mexico, September 21, 1910, by A. S. Hitchcock (no. 7073).

Known only from the type collection.

**3. *Senites smilacifolia* (Scribn.).**

*Zeugites smilacifolia* Scribn. Bot. Gaz. 21: 134. 1896.

Type locality, "Faucibus, prope Cuernavaca, Morelos civitate," the type specimen collected by Pringle (no. 5961).

**RANGE:** Known only from the type locality.

**HERBARIUM SPECIMENS:**

**MORELOS:** Cuernavaca, wet barranca, *Pringle* 5961, 6604, 11251.

**4. *Senites pringlei* (Scribn.).**

*Zeugites pringlei* Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 11: 50. pl. 6. 1898.

Type locality, "wet mountain canyons near Cuernavaca, State of Morelos, Mexico," the type specimen collected by Pringle (no. 7774).

**RANGE:** Mountains of Morelos.

**HERBARIUM SPECIMENS:**

**MORELOS:** Sierra de Tepoxtlán, under limestone cliffs, *Pringle* 8361, 11250, 13896. Cuernavaca, *Pringle* 7774.

5. *Senites mexicana* (Kunth).*Despretzia mexicana* Kunth, Rév. Gram. 2: 485. pl. 157. 1831.*Zeugites mexicana* Trin.; Steud. Nom. Bot. ed. 2. 2: 798. 1841.

Type locality, Mexico, the type specimen collected by Schiede and Deppe, probably in Veracruz.

RANGE: Highlands of Central Mexico.

## HERBARIUM SPECIMENS :

SAN LUIS POTOSÍ: Las Canóas, rich woods, barranca, *Pringle* 3919.HIDALGO: Trinidad Iron Works, wet woodlands, *Pringle* 13252.VERACRUZ: Orizaba, *Botteri* in 1856. Zacuapan, *Purpus* 6222.112. *ORTHOCLADA* Beauv. Ess. Agrost. 69. pl. 14. f. 9. 1812.1. *Orthoclada rariflora* (Lam.) Beauv. Ess. Agrost. 69. 1812.*Panicum rariflorum* Lam. Encycl. 4: 746. 1798.

Type locality, "Cayenne."

RANGE: Southern Mexico and West Indies to Brazil.

## HERBARIUM SPECIMENS FROM MEXICO:

VERACRUZ: Sanborn, *Orcutt* 2932.OAXACA: Sierra San Pedro Nolasco, *Jurgensen* 953.TABASCO: San Sebastián, *Rovirosa* 420.113. *STREPTOGYNE* Beauv. Ess. Agrost. 80. pl. 16. f. 8. 1812.1. *Streptogyne crinita* Beauv. Ess. Agrost. 80. pl. 16. f. 8. 1812.

Type locality erroneously given as "Etats-Unis d'Amérique, Carolina;" other specimens from "Guyana" mentioned.

RANGE: Veracruz to Brazil.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Sanborn, *Orcutt* 2933.114. *UNIOLA* L. Sp. Pl. 71. 1753.

## KEY TO THE SPECIES.

Spikelets not strongly flattened; blades flat..... 1. *U. palmeri*.

Spikelets strongly flattened; blades involute.

Spikelets 5 mm. wide; panicle dense, erect..... 2. *U. pittieri*.Spikelets 1 cm. wide; panicle loose, nodding..... 3. *U. paniculata*.1. *Uniola palmeri* Vasey, Gard. & For. 2: 401. f. 124. 1889.

Type locality, "At the Horseshoe Bend of the Colorado River, thirty-five miles south of Lerdo by the river, and twelve to fifteen miles from its mouth," the type specimen collected by Palmer in 1889.

RANGE: Sands of northern Mexico.

## HERBARIUM SPECIMENS:

SONORA: Colorado River, below mouth of Hardy River, *Mearns* 2834. Thirty-five miles south of Lerdo, *Palmer* in 1889.DURANGO: Torreón, sandy flat along river, *Hitchcock* 7541.COAHUILA: Río Nazas, growing in sand, *Palmer* 507 in 1898.2. *Uniola pittieri* Hack. Oesterr. Bot. Zeitschr. 52: 309. 1902.

Type locality, "Costarica: in ora maritima Pacifica ad Baie de Salinas," the type specimen collected by Pittier.

RANGE: Pacific coast from Lower California to Costa Rica.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Without locality, *Dewey* in 1874.OAXACA: Puerto de Santa Cruz, *Liebmann* 539.

**3. *Uniola paniculata* L. Sp. Pl. 71. 1753.**

Type locality, "In Carolina."

RANGE: Atlantic coast, Virginia to South America.

HERBARIUM SPECIMEN FROM MEXICO:

TABASCO: Dos Bocas, *Rovirosa* 565.**115. *DISTICHLIS* Raf. Journ. de Phys. 89: 104. 1819.****1. *Distichlis spicata* (L.) Greene, Bull. Calif. Acad. 2: 415. 1887. SALT GRASS.***Uniola spicata* L. Sp. Pl. 71. 1753.

Type locality, "In Americae borealis maritimis."

RANGE: Salt marshes and alkaline soil throughout the United States and Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cape St. Lucas, *Xantus* 120. Tecate River, near Monument no. 245, *Schoenfeldt* 3721; *Mearns* 3782. Seven Wells, Salton River, *Schoenfeldt* 2875. Playa María, *Anthony* 139. Nachognero Valley, *Mearns* 3361. Mulegé, *Palmer* 43 in 1887. Topo, *Orcutt* 1161. Santa Agueda, *Palmer* 219 in 1890. San Gregorio, *Brandege* 19 in 1889. Magdalena Island, *Brandege* 20 in 1889. Santa Catalina Mountains, *Orcutt* in 1884.

SONORA: Sonoyta River at Agua Dulce, *Mearns* 2787. Santa Ana, along track, *Hitchcock* 3626. Hermosillo, along ditch, *Hitchcock* 3624. San José de Guaymas, *Palmer* 270 in 1897.

CHIHUAHUA: Near Lake Santa María, *Nelson* 6416. Mesquite Springs, *Mearns* 266.

SINALOA: Altata, *Rose* 1367.

DURANGO: Durango, in large patches in alkaline bottoms, *Palmer* 182, 385, and 388 in 1896; along ditch, *Hitchcock* 7654.

COAHUILA: Jaral, *Schumann* 1739.

JALISCO: Orozco, near large pond, *Hitchcock* 7384.

HIDALGO: Pachuca, sandy soil along railway, *Hitchcock* 6761.

MÉXICO: Toluca, along road, *Hitchcock* 6921. Tlalnepantla, along railroad bank, *Rose, Painter & Rose* 8393. Without locality, *Galeotti* 5746. Federal District, along trolley line, *Hitchcock* 5874, 5875; cornfield, *Hitchcock* 5885; alkaline meadows, *Pringle* 6640; wet meadows, *Pringle* 9559; *Bourgeau* 230; *Rose & Hay* 5974; *Orcutt* 4110.

PUEBLA: Pico de Orizaba, *Liebmann* 481. Cerro Guadalupe, *Nicolas* in 1909. Tehuacán, old field, *Hitchcock* 6037; along ditch, *Hitchcock* 6041; along railway, *Hitchcock* 6046.

**116. *BRIZA* L. Sp. Pl. 70. 1753.**

## KEY TO THE SPECIES.

Plants annual; panicle open..... 1. *B. minor*.  
Plants perennial; panicle compact..... 2. *B. rotundata*.

**1. *Briza minor* L. Sp. Pl. 70. 1753.**

Type locality given as "in Helvetia [et] Italia."

RANGE: Temperate regions of the Old World, sparingly introduced in North America.

HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Veracruz, *Purpus* 6204.**2. *Briza rotundata* (H. B. K.) Steud. Syn. Pl. Glum. 1: 284. 1854.***Bromus rotundatus* H. B. K. Nov. Gen. & Sp. 1: 152. 1816.

Type locality, "In alta planitie Regni Mexicani, inter Zelaya et Queretaro."

RANGE: Highlands of eastern slope of Mexico.

## HERBARIUM SPECIMENS:

NUEVO LEÓN: Monterey, Sierra Madre, *Canby* 272; *Pringle* 2051.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 145; *Parry & Palmer* 935 in 1878; by irrigation ditch, *Hitchcock* 5677.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6738.

MÉXICO: Flor de María, calcareous bluffs, *Pringle* 3243. Amecameca, banks, *Purpus* 1615. Popo Park, edge of woods, *Hitchcock* 5968. Barranca above Santa Fé, *Pringle* 13627. Federal District, hills, *Pringle* 9558; edge of field, *Hitchcock* 5913; barranca of Río Aqueducto, *Rose & Painter* 8635.

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6530. Cholula, *Nicolas* in 1910.

VERACRUZ: Consoquitla, *Liebmann* 477. Orizaba, *Bourgeau* 2790; open rocky hill, *Hitchcock* 6368. Jalapa, clay cut, *Hitchcock* 6599.

117. **ACHYRODES** Boehmer in Ludw. Def. Gen. Pl. 420. 1760.

1. *Achyrodes aureum* (L.) Kuntze, Rev. Gen. Pl. 2: 758. 1891. GOLDEN-TOP.

*Cynosurus aureus* L. Sp. Pl. 73. 1753.

*Lamarckia aurea* Moench, Meth. Pl. 201. 1794.

Type locality, southern Europe.

RANGE: Naturalized in southern California and Lower California.

HERBARIUM SPECIMEN FROM MEXICO:

LOWER CALIFORNIA: Ensenada, *Orcutt* 1428.

118. **POA** L. Sp. Pl. 67. 1753.

## BLUE GRASS.

## KEY TO THE SPECIES.

## Plants annual.

Panicle pyramidal, open; sheaths smooth..... 1. *P. annua*.

Panicle narrow, contracted; sheaths scabrous..... 2. *P. bigelovii*.

## Plants perennial.

Rhizomes present; lemmas cobwebby at base..... 3. *P. pratensis*.

## Rhizomes absent.

Plants dwarf, alpine, only a few centimeters in height; blades obtuse, short..... 4. *P. villaroeli*.

Plants not dwarf, more than 20 cm. high.

## Lemmas cobwebby at base.

Panicle narrow, almost spike-like..... 5. *P. conglomerata*.

Panicle loose, the branches slender and spreading.

Lemmas minutely scaberulous, not villous, except for the cobwebby hairs at base; panicle purple; spikelets 2 or 3-flowered..... 6. *P. orizabensis*.

Lemmas villous on the lower part of the keel and marginal nerves; panicle green; spikelets 6 to 8-flowered..... 7. *P. ruprechtii*.

## Lemmas not cobwebby at base.

Lemmas villous on the keel and marginal nerves..... 8. *P. fendleriana*.

## Lemmas not villous.

Sheaths glabrous; lemmas glabrous except on the keel above..... 9. *P. albescens*.



## Sheaths scabrous.

Panicle open, the lower branches spreading, naked below. . . . . 10. *P. strictiramea*.

Panicle narrow, the branches short, spikelet-bearing at base.

Lemmas smooth; spikelets 1 cm. long; blades firm, the uppermost reduced to a point. . . . . 11. *P. griffithsii*.

Lemmas scaberulous; spikelets 5 to 8 mm. long; blades lax, the uppermost evident, 2 cm. or more long. . . . . 12. *P. scabrella*.

1. *Poa annua* L. Sp. Pl. 68. 1753.

*Poa infirma* H. B. K. Nov. Gen. & Sp. 1: 158. 1816.

Type locality, "in Europa" [Sweden].

RANGE: Throughout the cold and temperate regions of the northern hemisphere.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, *Palmer* 28 in 1908.

DURANGO: San Ramón, *Palmer* 71 in 1906. Nombre de Dios, common along ditches in the town, *Palmer* 97 in 1896.

COAHUILA: Saltillo, *Palmer* 711 in 1905; wet irrigation ditch, *Hitchcock* 5601.

NUEVO LEÓN: Monterey, *Palmer* 1365 in 1880.

ZACATECAS: Plateado, *Rose* 2712. Zacatecas, along dry river bed, *Hitchcock* 7530.

SAN LUIS POTOSÍ: Alvarez, *Palmer* 173 in 1902. San Luis Potosí, park, *Hitchcock* 5706. Cárdenas, along irrigation ditch, *Hitchcock* 5745.

JALISCO: Nevado de Colima, open ground, *Hitchcock* 7154. Guadalajara, *Palmer* 483 in 1886.

QUERÉTARO: Querétaro, irrigation ditch, *Hitchcock* 5829.

HIDALGO: Pachuca, near small pond, *Hitchcock* 6747.

MÉXICO: Ixtaccihuatl, rocks above timber line, *Purpus* 1618. Popocatepetl, common in open places in woods up to near timber line, *Hitchcock* 5992; *Rose & Hay* 6246. Toluca, along ditch, *Hitchcock* 6913. El Oro, woods, *Pringle* 9589. Federal District, along ditch in shade, *Hitchcock* 5929; *Holway* 3218.

PUEBLA: Chalchicomula, along road, *Hitchcock* 6280; field, *Hitchcock* 6292. Tehuacán, along ditch, *Hitchcock* 6049.

VERACRUZ: Boca del Monte, *Nelson* 219. Jalapa, along street, *Hitchcock* 6625.

MORELOS: El Parque, *Orcutt* 3858.

OAXACA: Oaxaca, wet soil, *Pringle* 4671.

2. *Poa bigelovii* Vasey & Scribn. in Vasey, Descr. Cat. Grasses U. S. 81. 1885.

Type locality, "Banks of the Rillita," Arizona, the type specimen collected by Pringle.

RANGE: Southwestern United States and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: El Rancho Viejo, *Brandege* 24 in 1889.

CHIHUAHUA: Paso del Norte, *Vasey* in 1881.

COAHUILA: Saltillo, *Palmer* 532 in 1905.

NUEVO LEÓN: Sierra Madre above Monterey, *Pringle* 13748. Monterey, *Palmer* 1365 in 1880.

3. *Poa pratensis* L. Sp. Pl. 67. 1753.

KENTUCKY BLUE GRASS.

Type locality, Sweden.

RANGE: Throughout temperate and colder parts of North America and Eurasia.

## HERBARIUM SPECIMEN FROM MEXICO:

VERACRUZ: Perote, *Nelson* 19.

4. *Poa villaroeli* Phil. Anal. Univ. Chile 94: 169. 1896.

Type locality, "Editoribus locis Andium provinciae Santiago," the type specimen collected by Villarreal.

RANGE: High mountains from southern Mexico to Chile.

## HERBARIUM SPECIMEN FROM MEXICO:

MEXICO: Ixtaccihuatl, alpine region, *Purpus* 3772.

5. *Poa conglomerata* Rupr.; Peyr. *Linnaea* 30: 8. 1859.

Type locality, "Pic de Orizaba," the type specimen collected by Galeotti (no. 5776).

RANGE: High mountains of southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

MÉXICO: Popocatepetl, rather moist place in woods, along road, *Hitchcock* 5982; open place along trail, *Hitchcock* 5998; *Rose & Hay* 6026a. Ixtaccihuatl, rocky soil above timber line, *Purpus* 1638; rocky soil, subalpine region, *Purpus* 1644. Sierra de las Cruces, under dry cool cliffs, *Pringle* 4307.

PUEBLA: Mount Orizaba, *Seaton* 190; *Nelson* 287; *Pringle* 9594; wet sunny spots near timber line, *Purpus* 2887; sandy soil, timber line, *Purpus* 2888; *Rose & Hay* 5732; *Hitchcock* 6251.

6. *Poa orizabensis* sp. nov.

Perennial; culms cespitose, not producing rhizomes, 40 to 60 cm. high, spreading, 1-noded, glabrous; sheaths compressed, minutely scabrous; ligule of the innovations very short, of the culm leaves about 2 mm. long; blades firm, folded, nerved, scabrous above and on the margins, nearly smooth beneath, 2 to 4 mm. wide, 5 to 15 cm. long, the upper culm blade 1.5 to 2 cm. long; panicle open, about 10 cm. long, the slender branches in 1's or 2's, spreading or drooping, scabrous, naked below, spikelet-bearing along the upper half; spikelets short-pedicelled, purple, ovate, about 4 mm. long, 2 or 3-flowered; glumes nearly equal, 2.5 mm. long, smooth, scabrous on the keel above; lemmas oblong, cobwebby at base, somewhat villous on the keel below, 5-nerved or the lower obscurely 7-nerved, minutely scaberulous, especially on the nerves, scarious at the tip, the lower 3 mm. long.

Type in the U. S. National Herbarium, no. 691227 collected on "Bald hill, 3,940 meters altitude, Mt. Orizaba," Mexico, August 17, 1910, by A. S. Hitchcock (no. 6254).

RANGE: High mountains of southern Mexico.

## HERBARIUM SPECIMENS:

MÉXICO: Popocatepetl, open mountain side, *Hitchcock* 6004; at timber line, rare, *Hitchcock* 5988.

PUEBLA: Mount Orizaba, *Hitchcock* 6254.

7. *Poa ruprechtii* Peyr. *Linnaea* 30: 6. 1859.

Type locality, "Toluca, Cocustepec," the type specimen collected by Heller (no. 312).

RANGE: Mountains of Mexico.

## HERBARIUM SPECIMENS:

COAHUILA: Mountains east of Saltillo, *Palmer* 1366 in 1880.

NUEVO LEÓN: Sierra Madre above Monterey, calcareous ledges, *Pringle* 10212.

8. *Poa fendleriana* (Steud.) Vasey, U. S. Dept. Agr. Div. Bot. Bull. 13: pl. 74. 1893.

*Eragrostis fendleriana* Steud. Syn. Pl. Glum. 1: 278. 1854.

Type locality erroneously given as "Mexico," the type specimen collected in New Mexico by Fendler (no. 932).

RANGE: Wyoming to Washington and south into northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Hansen's ranch, *Orcutt* 1276, 1276a.

**9. *Poa albescens* sp. nov.**

Perennial, the whole plant whitish; culms erect, cespitose, 20 to 30 cm. high, slightly scabrous below the panicle; sheaths glabrous, longer than the internodes, the old basal ones persistent, numerous, papery; ligule very short, the uppermost about 1 mm., those of the innovations scarcely 0.5 mm. long; blades mostly basal and on the innovations, firm, folded, glabrous beneath, scabrous above and on the margin, sharp-pointed, the primary 10 to 20 cm. long, 2 mm. wide, those of the innovations shorter, the uppermost cauline blades a few millimeters long or reduced to a point; panicles narrow, oblong, rather dense, about 5 cm. long, the axis glabrous, the branches scabrous, ascending, flower-bearing nearly from base, the ultimate lateral pedicels very short (less than 1 mm. long); spikelets about 4-flowered, ovate or elliptical, flattened, about 6 mm. long, 3 mm. wide; glumes nearly equal, nearly as long as the spikelet, glabrous, acuminate, the first 1-nerved, the second 3-nerved; lemmas oblong, firm, acute, glabrous, slightly scabrous at tip of keel, obscurely 5-nerved.

Type in the U. S. National Herbarium, no. 454361, collected at Miñaca, Chihuahua, April 1, 1908, by J. N. Rose (no. 11648).

No other specimens have been observed. This species is allied to *Poa chilensis* Trin.<sup>1</sup> (not Moris<sup>2</sup>), as represented by two specimens in the U. S. National Herbarium, one from Chile, distributed by Dr. R. A. Philippi, and one from the province of San Juan, Argentina (Kurtz no. 9666). These differ in having longer ligules and abruptly acute blades.

**10. *Poa strictiramea* sp. nov.**

Perennial; culms cespitose, 30 to 40 cm. high, erect, about 3-noded, glabrous; sheaths scabrous; ligule 2 mm. long; blades erect, flat or folded, scabrous, 1 to 2 mm. wide, those of the innovations 15 to 20 cm. long, those of the culm shorter; panicle not much exserted, open, about 10 cm. long, the branches mostly in pairs, slender, ascending, the lower stiff, 5 to 6 cm. long, spikelet-bearing toward the ends; spikelets tawny, lanceolate, short-pedicelled, 3 to 5-flowered, 5 to 6 mm. long; glumes unequal, acute, glabrous, scabrous on the keel, the lower 2.5 mm. long, the upper broader, 3.5 mm. long; lemmas acuminate, faintly nerved, scaberulous all over the back, not cobwebby, the lowermost about 4 mm. long.

Type in the U. S. National Herbarium, no. 820909, collected on "cool ledges of La Bufa Mountain above Cusihuiriachic, Chihuahua," Mexico, September 2, 1887, by C. G. Pringle (no. 1437).

Known only from the type collection.

**11. *Poa griffithsii* sp. nov.**

Perennial; culms cespitose, not producing rhizomes, 50 to 60 cm. high, erect, 1-noded, scabrous; sheaths scabrous; ligule about 0.5 mm. long; blades firm, pungently pointed, flat or folded, scabrous above, glabrous beneath, 1 to 2 mm. wide, those of the innovations 15 to 20 cm. long, the lower blades of the culm about 5 cm. long, the upper mostly reduced to a mere point; panicles long-exserted, narrow, 6 to 10 cm. long, the branches short, appressed, spikelet-bearing from near the base; spikelets pale green or tawny, nearly sessile, lanceolate, about 1 cm. long, 3 to 4 mm. wide, about 8-flowered, the florets closely imbricated; glumes acute, about 5 mm. long, glabrous, a few serrations on the keel above; lemmas firm, smooth, slightly serrate on the upper part of the keel, the nerves indistinct, no cobwebby hairs at the base; palea shorter than the lemma, ciliate-scabrous on the keels.

Type in the U. S. National Herbarium, no. 691228, collected at Cananea, Sonora, July 7-8, 1903, by David Griffiths (no. 4865).

RANGE: Known only from the type collection.

<sup>1</sup> Mém. Acad. St. Pétersb. VI. Sci. Nat. 2<sup>1</sup>: 62. 1836.

<sup>2</sup> Ann. Stor. Nat. Bologna 4: 60. 1830.

12. *Poa scabrella* (Thurb.) Benth.; Vasey, Grasses U. S. 42. 1883.

*Atropis scabrella* Thurb. in S. Wats. Bot. Calif. 2: 310. 1880.

*Poa orcuttiana* Vasey, West. Amer. Sci. 3: 165. 1887.

Type locality, Oakland, California, the type specimen collected by Bolander.

RANGE: Pacific slope, Oregon to Lower California.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Near Vallecito, *Orcutt* 1440. Todos Santos Bay, *Fish* 28, 30. Guadalupe Canyon, *Orcutt* 1269b. Guadalupe Ranch, *Orcutt* in 1886. Carisito, *Orcutt* in 1885. Cantillas Mountains, *Orcutt* 1148.

119. **GRAPHEPHORUM** Desv. Nouv. Bull. Soc. Philom. Paris 2: 189. 1810.

KEY TO THE SPECIES.

Panicle narrow, contracted ..... 1. *G. altijugum*.  
Panicle open, the branches spreading ..... 2. *G. pringlei*.

1. *Grappheporum altijugum* Fourn. Mex. Pl. 2: 111. 1886.

*Trisetum altijugum* (Fourn.) Scribn. Rhodora 8: 89. 1906.

Type locality, "In monte Orizabensi," the type specimen collected by Liebmann (no. 603).

It is probable that this species and also *G. pringlei* should be referred to *Trisetum*, but the present disposition is retained until the allied species can be given further study.

RANGE: High mountains of southern Mexico.

HERBARIUM SPECIMENS:

MÉXICO: Popocatepetl, rather moist places in woods, *Hitchcock* 5982½; woods, *Hitchcock* 5997; open woods, *Hitchcock* 6013. Sierra de las Cruces, dry ledges under firs, *Pringle* 4306. Tres Marias, *Orcutt* 3740.

OAXACA: Sierra de San Felipe, *Pringle* 4775, *Smith* 941.

2. *Grappheporum pringlei* Scribn.; Beal, Grasses N. Amer. 2: 561. 1896.

Type locality, "Mexico, \* \* \* Summit of Sierra San Felipe," the type specimen collected by Pringle (no. 4765).

RANGE: Known only from the type locality.

HERBARIUM SPECIMENS:

OAXACA: Sierra de San Felipe, summit, *Pringle* 4765; *Nelson* 1108.

120. **PANICULARIA** Fabr. Enum. Pl. Hort. Helmst. 2: 373. 1763.

1. *Panicularia nervata* (Willd.) Kuntze, Rev. Gen. Pl. 2: 783. 1891.

*Poa nervata* Willd. Sp. Pl. 1: 389. 1797.

Type locality, "in America boreali."

RANGE: British America to central Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Collected in the Sierra Madre near Colonia García, in wet ground, *Townsend & Barber* 112.

HIDALGO: Under spray of a waterfall, barranca below Trinidad Iron Works, *Pringle* 8870.

121. **FESTUCA** L. Sp. Pl. 73. 1753.

FESCUE GRASS.

KEY TO THE SPECIES.

Plants annual.

Lemmas ciliate..... 4. *F. megalura*.

Lemmas not ciliate.

- Glumes strongly unequal, the lower not more than one-third as long as the second..... 3. *F. myuros*.
- Glumes but slightly unequal.
- Main panicle branches divergent..... 2. *F. pacifica*.
- Main panicle branches appressed.
- Lemmas smooth or scabrous..... 1. *F. octoflora*.
- Lemmas hirtellous..... 1a. *F. octoflora hirtella*.
- Plants perennial.
- Plants loosely tufted, the slender culms decumbent at base; blades narrow, folded or involute, smooth or nearly so..... 5. *F. rubra glaucodea*.
- Plants densely tufted.
- Blades flat, coarse; culms 1 meter high or more... 11. *F. amplissima*.
- Blades folded or involute, or sometimes with flat blades intermixed.
- Blades smooth.
- Plants not in cushions; culms usually over 40 cm. high, the open panicles much exceeding the leaves; spikelets 8 to 10 mm. long, the glumes about 4 mm. long..... 10. *F. willdenoviana*.
- Plants in dense cushions; culms 10 to 20 cm. high, the short panicles not much exceeding the leaves; spikelets few, pendulous, 10 to 14 mm. long, the glumes 10 to 13 mm. long. 13. *F. livida*.
- Blades scabrous.
- Plants tall and coarse; blades scattered; lemmas distinctly awned.
- First glume 4 to 5 mm., second 5 to 6 mm. long; lemma scaberulous.. 8. *F. toluensis*.
- First glume 7 to 8 mm., second 8 to 9 mm. long, both of them narrow and long-acuminate; lemma strongly scabrous..... 12. *F. mirabilis*.
- Plants lower and more delicate; blades mostly basal; lemmas awnless or mucronate (or short-awned in no. 7).
- First glume 5 mm. long; blades of innovations very slender, 0.5 mm. wide, 30 cm. or more long..... 9. *F. rosei*.
- First glume 3 to 4 mm. long.
- Lower panicle branches short, appressed; blades of innovations mostly less than 10 cm. long; lemmas often short-awned..... 7. *F. hephaestophila*.
- Lower panicle branches spreading, naked below; lemmas not awned.
- Blades all involute, capillary..... 6a. *F. ovina callosa*.
- Blades partly flat, these 2 to 5 mm. wide..... 6. *F. ovina elliptica*.

**1. *Festuca octoflora* Walt. Fl. Carol. 81. 1788.**

Type locality, presumably South Carolina.

RANGE: Quebec to British Columbia, southward, on the Pacific slope, extending into Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Chuparosa, *Brandege* 61 in 1893. San Martín Island, *Anthony* 214. Hansen's ranch, *Orcutt* 1142. San Quentín Bay, *Palmer* 684 in 1889. Guadalupe Ranch, *Orcutt* 1432 in part. Todos Santos Island, *Anthony* 195.

**1a. *Festuca octoflora hirtella* Piper, Contr. U. S. Nat. Herb. 10: 12. 1906.**

Type locality, "Santa Catalina Mountains, Arizona," the type specimen collected by Shear (no. 1962).

RANGE: Southwestern United States and Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Lagoon Head, *Palmer* 655 in 1889. San Quentín Bay, *Palmer* 683 in 1889. Guadalupe Island, *Palmer* 657 and 674 in 1889. Guadalupe Ranch, *Orcutt* 1432. Near Mission, Santa Gertrudis, *Orcutt* in 1899.

**2. *Festuca pacifica* Piper, Contr. U. S. Nat. Herb. 10: 12. 1906.**

Type locality, "Pullman, Washington," the type specimen collected by Elmer (no. 262).

RANGE: Pacific slope, British Columbia to Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* 2 in 1890. Guadalupe Ranch, *Orcutt* in 1886.

**3. *Festuca myuros* L. Sp. Pl. 74. 1753.**

Type locality, given as "In Anglia, Italia."

RANGE: Introduced in the United States and south to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6732; near small pond, *Hitchcock* 6746; sandy river bed, *Hitchcock* 6755.

MÉXICO: Toluca, rocky hill, *Hitchcock* 6899; *Rose & Painter* 6786. Popo Park, edge of woods, *Hitchcock* 5969; open ground, *Hitchcock* 6026. Salto de Agua, dry sunny hills, *Purpus* 1642. Ixtaccihuatl, foothills, *Deam* 22; rocks above timber line, *Purpus* 1641. Amecameca, *Deam* in 1899. Parras, *Orcutt* 3804.

MORELOS: El Parque, *Orcutt* 3860.

**4. *Festuca megalura* Nutt. Journ. Acad. Phila. II. 1: 188. 1848.**

Type locality, "Santa Barbara, Upper California," the type specimen collected by Gambel.

RANGE: Pacific slope, British Columbia to Chile.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Nachognero Valley, *Schoenfeldt* 3442. Guadalupe Island, *Palmer* 672 in 1889.

**5. *Festuca rubra glaucodea* Piper, Contr. U. S. Nat. Herb. 10: 22. 1906.**

*Festuca glaucescens* Hegetschw. & Heer, Fl. Schweiz. 93. 1840, not Roth, 1821.

Type locality, Switzerland.

RANGE: The species and its varieties ranging throughout northern Europe and North America, only this form found in northern Mexico.

## HERBARIUM SPECIMEN FROM MEXICO:

CHIHUAHUA: Sierra Madre near Colonia García, canyon, *Townsend & Barber* 114.

**6. *Festuca ovina elliptica* (Beal) Piper, Contr. U. S. Nat. Herb. 10: 43. 1906.**

*Festuca amplissima elliptica* Beal, Grasses N. Amer. 2: 603. 1896.

Type locality, "Mexico (Chihuahua)," the type specimen collected by Pringle (no. 1438).

RANGE: Mountains of Chihuahua and Durango.

HERBARIUM SPECIMENS:

CHIHUAHUA: Sierra Madre, moist canyons, *Pringle* 1438.

DURANGO: Durango, *Rose* 2358.

6a. *Festuca ovina callosa* Piper, subsp. nov.

Densely tufted, the 2 or 3-jointed culms 50 to 70 cm. long, much exceeding the leaves, the persistent sheaths of the latter becoming explanate; blades filiform, pale green, minutely scaberulous but nearly smooth to the touch, closely involute, 12 to 20 cm. long, much longer than the sheaths, bearing on each side at the junction of the sheath a prominent callosity; ligule short; panicle narrow, 8 to 12 cm. long, the short slender rays in 2's; spikelets ovate-oblong, purplish, glaucous, 5 or 6-flowered, 7 to 12 mm. long; lemma acute, not awned; palea bidentate.

Type in U. S. National Herbarium, no. 691783, collected on a rocky hill at 2,500 meters altitude, Esperanza, Puebla, Mexico, August 28, 1910, by A. S. Hitchcock (no. 6490).

In bearing callosities at the base of the leaf blades this plant resembles *Festuca ovina calligera* Piper and in its explanate leaf sheaths, *F. ovina arizonica* (Vasey) Hack., but in other characters it is quite distinct from either.

RANGE: Known only from the type locality, a second specimen, Hitchcock no. 6472, having been collected at the same place.

7. *Festuca hephaestophila* Nees in Steud. Syn. Pl. Glum. 1: 310. 1854.

Type locality, "In cratero montis ignivomi: Volcan de Agua Mexico."

RANGE: High mountains of southern Mexico.

HERBARIUM SPECIMENS:

MÉXICO: Nevado de Toluca, bottom of crater, *Pringle* 4221. Ixtaccihuatl, rocky soil, *Purpus* 228. Cima, *Orcutt* 3775.

PUEBLA: Mount Orizaba, *Rose & Hay* 5768; rocky slopes, alpine region, *Purpus* 3015; *Liebmann* 509; *Ross* 1272, 1283; *Pringle* 8588; bald hills, *Hitchcock* 6255; bunches in open ground, *Hitchcock* 6260; *Rose & Hay* 5774. Santa Bárbara, *Nicolas* in 1910.

8. *Festuca toluensis* H. B. K. Nov. Gen. & Sp. 1: 153. 1816.

Type locality, "in montosis, scopulosis, apricis regni Mexicani, inter Islahuaca et Toluca."

RANGE: Mountains of Mexico.

HERBARIUM SPECIMENS:

CHIHUAHUA: Mount Mohinora, *Nelson* 4900.

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer* 924 in 1878.

JALISCO: Nevado de Colima, pine woods, the dominant grass above timber line, *Hitchcock* 7158; above timber line, at its maximum development, *Hitchcock* 7167; at summit, *Hitchcock* 7165½; *Ross* 498.

MÉXICO: Popocatepetl, *Rose & Hay* 5978a, 6297; overhanging bank, open ground, *Hitchcock* 6001. Tres Marias, *Orcutt* 3743, 3748. Nevado de Toluca, *Rose & Painter* 7983; *Nelson* 14. Cima, *Orcutt* 3773.

PUEBLA: Mount Orizaba, open pine woods, *Hitchcock* 6256; large bunches, *Hitchcock* 6267; *Seaton* 193; sandy plains, *Seaton* 228; *Rose & Hay* 5697, 5735; *Liebmann* 510, 511; alpine region, *Ross* 1276.

9. *Festuca rosei* Piper, Contr. U. S. Nat. Herb. 10: 45. 1906.

Type locality, "near Cima, State of Mexico," the type specimen collected by *Rose & Painter* (no. 7210).

RANGE: Known only from the type collection.

10. *Festuca willdenoviana* Schult. Mant. 2: 650. 1824.

Type locality, "Mexico."

RANGE: High mountains of southern Mexico.

HERBARIUM SPECIMENS:

MÉXICO: Popocatepetl, open woods, *Hitchcock* 5984, 5999, 6012. Sierra de las Cruces, dry banks, *Pringle* 4484.

PUEBLA: Mount Orizaba, *Rose & Hay* 5743, 6349.

11. *Festuca amplissima* Rupr. Bull. Acad. Sci. Brux. 9<sup>2</sup>: 236. 1842 (description insufficient); Fourn. Mex. Pl. 2: 125. 1886.

Type locality, "pres de la Vaqueria del Jacal," Mount Orizaba, the type specimen collected by Galeotti (no. 5766).

RANGE: High mountains of southern Mexico.

HERBARIUM SPECIMENS.

HIDALGO: Sierra de Pachuca, *Rose, Painter & Rose* 8776.

MICHOACÁN: Pátzcuaro, mountains, *Pringle* 3945.

MÉXICO: Ixtaccihuatl, rocks, *Purpus* 1639. Popocatepetl, common, open woods, *Hitchcock* 5979; *Rose & Hay* 6262. Federal District, *Pringle* 9555; *Bourgeau* 1307; *Rose & Hay*, 5515.

PUEBLA: Mount Orizaba, large bunches, open woods, *Hitchcock* 6263; *Liebmann* 506, 508. Sierra de San Felipe, *Smith* 924.

OAXACA: Mount Zempoaltepec, side of summit, *Nelson* 648.

12. *Festuca mirabilis* Piper, Contr. U. S. Nat. Herb. 10: 47. 1906.

Type locality, "Alvarez, about 2,700 meters altitude, State of San Luis Potosí," the type specimen collected by Palmer in 1904.

RANGE: Mountains of Mexico.

HERBARIUM SPECIMENS:

CHIHUAHUA: Sánchez, rocky pine woods, *Hitchcock* 7683.

SAN LUIS POTOSÍ: Alvarez, *Palmer* 164 in 1904.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6731.

MÉXICO: Cima, *Rose & Painter* 7208.

13. *Festuca livida* (H. B. K.) Willd.; Spreng. Syst. Veg. 1: 353. 1825.

*Bromus lividus* H. B. K. Nov. Gen. & Sp. 1: 150. 1816.

Type locality, "in alta planitie Tolucana."

RANGE: High mountains of southern Mexico.

HERBARIUM SPECIMENS:

MÉXICO: Nevado de Toluca, in the crater, *Pringle* 4304; *Rose & Painter* 8017; *Nelson* 3. Popocatepetl, *Rose & Hay* 5978; black sand barrens, *Hitchcock* 5986. Ixtaccihuatl, *Purpus* 27; gravelly soil of glaciers, *Purpus* 1614.

PUEBLA: Mount Orizaba, common between snow and timber lines, *Hitchcock* 6257; *Liebmann* 615; *Smith* 598.

VERACRUZ: Perote, *Nelson* 45.

122. **BROMUS** L. Sp. Pl. 76. 1753.

BROME GRASS.

KEY TO THE SPECIES.

Awn bent, somewhat twisted, from between the acuminate teeth of the lemma..... 1. *B. trini*.

Awn straight.

Spikelets strongly compressed-keeled.

Plants annual..... 7. *B. carinatus*.



## Plants perennial.

- Lemmas glabrous or scabrous..... 5. *B. pendulinus*.  
 Lemmas villous on the margins..... 6. *B. exaltatus*.

## Spikelets not strongly compressed-keeled.

- Lemmas scabrous..... 2. *B. texensis*.  
 Lemmas villous.  
 Lemmas villous all over..... 3. *B. porteri*.  
 Lemmas villous on the margin..... 4. *B. richardsoni*.

1. *Bromus trinii* Desv. in Gay, Fl. Chil. 6: 441. 1853.

Type locality, "Andes de Chile austral."

RANGE: Mexico to Chile, introduced in California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Near Vallecito, *Orcutt* in 1886. Guadalupe Ranch, *Orcutt* in 1886. Guadalupe Island. *Palmer* 658 and 667 in 1889. Cedros Island, *Palmer* 659 in 1889. San Quentín Bay, *Palmer* 686 in 1889.

2. *Bromus texensis* (Shear).

*Bromus purgans texensis* Shear, U. S. Dept. Agr. Div. Agrost. Bull. 23: 41. 1900.

Type locality, "Bexar County, Texas," the type specimen collected by Jermy (no. 230).

RANGE: Texas and northeastern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

NUEVO LEÓN: Sierra Madre near Monterey, *Pringle* 2652.

3. *Bromus porteri* (Coulter) Nash, Bull. Torrey Club 22: 512. 1895.

*Bromus kalmii porteri* Coulter, Man. Rocky Mount. 425. 1885.

Type locality, "Colorado, at Twin Lakes," the type specimen collected by Porter.

RANGE: Manitoba to Alberta, south to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: La Chuparosa, *Brandege* 73 in 1893, 27 in 1899.

CHIHUAHUA: Southwestern Chihuahua, *Palmer* in 1885. Sánchez, rocky pine woods, *Hitchcock* 7665. Sierra Madre near Colonia García, *Townsend & Barber* 327.

ZACATECAS: Sierra de Los Morones near Plateado, *Rose* 2727.

SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 129.

JALISCO: Zapotlán, pine woods, hillside, *Hitchcock* 7241.

HIDALGO: Pachuca, rocky hill, *Hitchcock* 6741. Tula, along railroad, *Rose, Painter & Rose* 8357.

MÉXICO: Popocatepetl, open woods, *Hitchcock* 6011. Toluca, *Rose & Painter* 6796, rocky hill, among maguey plants, *Hitchcock* 6895.

TLAXCALA: Contadero Station, hills, *Pringle* 8597.

PUEBLA: Mount Orizaba, open woods, *Hitchcock* 6264. Esperanza, barren hills, *Pittier* 424; rocky hill, *Hitchcock* 6484. San Marcos, railway embankment, *Hitchcock* 6516. San Luis Tultitlanapa, Cerro de Paxtle, moist soil, *Purpus* 2898; Chalchicomula, ravine in rocky hill, *Hitchcock* 6277.

OAXACA: Sierra de San Felipe, *Pringle* 4898, *Smith* 942.

4. *Bromus richardsoni* Link, Hort. Berol. 2: 281. 1833.

Type locality, "in America septentrionali occidentali," the source of seed from which the type specimen was grown.

RANGE: Rocky Mountains, British America to central Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, rocky ravine, *Hitchcock* 7708, 7713.

PUEBLA: Puebla, *Nicolas* in 1908.

5. *Bromus pendulinus* Sessé in Lag. Gen. & Sp. Nov. 4. 1816.

*Bromus laciniatus* Beal, Grasses N. Amer. 2: 615. 1896.

*Bromus proximus* Shear, Bull. Torrey Club 28: 245. 1901.

Type locality, Mexico, whence seed was sent by Sessé to Madrid.

RANGE: Highlands of Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, rocky ravine, *Hitchcock* 7704, 7718; along railway, *Hitchcock* 7719. Southwestern Chihuahua, *Palmer* in 1885.

DURANGO: Durango, edge of a wheat field in bottom land, *Palmer* 171 and 171a in 1896; among willows, bank of pond, *Palmer* 734 in 1896; among bushes by pond, *Hitchcock* 7569. Otinapa, *Palmer* 346 in 1906.

COAHUILA: Saltillo, canyon and elevated portion of Sierra Madre, *Palmer* 1372, in 1880; *Arsène* in 1909; irrigation ditch, *Hitchcock* 5584, 5594; cultivated ground, *Palmer* 5 and 266 in 1898.

TEPIC: Sierra Madre, near Santa Teresa, *Rose* 2138.

ZACATECAS: Zacatecas, in gulch in dry sterile hills, *Hitchcock* 7505.

SAN LUIS POTOSÍ: Cárdenas, irrigated field, *Hitchcock* 5744. San Luis Potosí, alfalfa field, *Hitchcock* 5667, 5711. Alvarez, *Palmer* 171 in 1904.

GUANAJUATO: Obregón, along railway, *Hitchcock* 5800. Acámbaro, along road, *Hitchcock* 6947.

QUERÉTARO: Querétaro, edge of field, *Hitchcock* 5819.

HIDALGO: Between Somoriel and Las Lajas, *Rose, Painter & Rose* 9203. Ixmiquilpan, river banks, *Rose, Painter & Rose* 9061, limestone hillside, *Rose, Painter & Rose* 8998. Between Pachuca and Real del Monte, in oak woods, *Rose, Painter & Rose* 8683. Pachuca, *Rose & Painter* 6750; rocky hill, *Hitchcock* 6745. Tula, along railroad, *Rose, Painter & Rose* 8358.

MÉXICO: Popocatepetl, woods, *Hitchcock* 5993; open places, *Hitchcock* 5994. Popo Park, along stream, *Hitchcock* 5964. Lechería, fields, *Pringle* 13243. Toluca, rocky hill, *Hitchcock* 6907. San Angel, rocky banks of stream, *Rose, Painter & Rose* 9481. Federal District, lava field, *Hitchcock* 5949; *Orcutt* 3722; along trolley, *Hitchcock* 5872; along ditch, *Hitchcock* 5921; *Holway* 3034; *Bourgeau* 220; *Pringle* 9601.

TLAXCALA: Contadero, *Rose & Hay* 5966.

PUEBLA: Chinantla, *Liebmann* 483, Teziutlán, *Orcutt* 4037. Chalchicomula, waste ground, *Hitchcock* 6269, 6290. San Marcos, railway embankment, *Hitchcock* 6517, 6537. Mount Orizaba, near timber line, *Hitchcock* 6250. Esperanza, rocky hill, *Hitchcock* 6495; along railway, *Hitchcock* 6497. Rancho Posados, *Nicolas* in 1909. Puebla, talus, *Nicolas* in 1909. Tehuacán, along ditch, *Hitchcock* 6043.

VERACRUZ: Orizaba, *Botteri* 726; roadside ditch, *Hitchcock* 6332. Jalapa, by railway track, *Hitchcock* 6592.

MORELOS: Cuernavaca, along street, *Hitchcock* 6885.

OAXACA: Sierra de San Felipe, *Pringle* 4897.

CHIAPAS: San Cristóbal, *Nelson* 3172.

6. *Bromus exaltatus* Bernh. in Linnaea 15: Litt. 90. 1841.

Type locality, "in regno Mexicano."

RANGE: Mountains of southern Mexico.

HERBARIUM SPECIMENS:

JALISCO: Nevado de Colima, in timber, *Hitchcock* 7152.

MÉXICO: Popocatepetl, open woods, hillside, *Hitchcock* 5985.

OAXACA: Sierra de San Felipe, *Smith* 925.

PUEBLA: Mount Orizaba, *Rose & Hay* 5733. Vaquería del Jacal, *Liebmann* 488.

**7. *Bromus carinatus* Hook. & Arn. Bot. Beechey Voy. Suppl. 403. 1841.**

Type locality, California.

RANGE: Pacific slope, Washington to Lower California.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Guadalupe Ranch, *Orcutt* in 1886. Nachognero Valley, *Schoenfeldt* 3444, *Mearns* 3481. San Julio Canyon, *Brandege* 17 in 1889. Potrero Valley, *Orcutt* in 1889. Todos Santos Bay, *Fish* in 1882.

**123. BRACHYPODIUM Beauv. Ess. Agrost. 100, 155. pl. 19. f. 3. 1812.**

## KEY TO THE SPECIES.

Lemmas awnless..... 1. *B. pringlei*.  
Lemmas awned..... 2. *B. mexicanum*.

**1. *Brachypodium pringlei* Scribn.; Beal, Grasses N. Amer. 2: 627. 1896.**

Type locality, "Mexico \* \* \* moist banks [in the Sierra Madre] near Monterey," the type specimen collected by Pringle (no. 2525).

RANGE: Known only from the type collection.

**2. *Brachypodium mexicanum* (Roem. & Schult.) Link, Hort. Berol. 1: 41. 1833.***Festuca mexicana* Roem. & Schult. Syst. Veg. 2: 732. 1817.

Type locality, "in Imperio Mexicano."

RANGE: Highlands of Mexico to Colombia.

HERBARIUM SPECIMENS:

LOWER CALIFORNIA: Sierra de la Laguna, *Brandege* in 1899.SAN LUIS POTOSÍ: San Luis Potosí, *Schaffner* 128. Alvarez, *Palmer* 166 in 1904.JALISCO: Nevado de Colima, in timber, *Hitchcock* 7148. Ravines of mountains near Lake Chapala, *Pringle* 6198.HIDALGO: Pachuca, rocky hill, open ground, *Hitchcock* 6703; among shrubs, rocky Hill, *Hitchcock* 6719, 6739.MICHUACÁN: Pátzcuaro, mountains, *Pringle* in 1891.MÉXICO: Tres Marías, *Orcutt* 3738. Popo Park, shady mossy bank, *Hitchcock* 5962, 5967. Sierra de las Cruces, *Pringle* 4231. Popocatepetl, bank of deep cut, *Hitchcock* 5977; shady bank, *Hitchcock* 6007, 6008. Iztaccihuatl, sunny hill-sides, *Purpus* 1640. Toluca, rocky hill, *Hitchcock* 6900. Federal District, shady rich moist soil, *Hitchcock* 5930; *Pringle* 9607.PUEBLA: Teziutlán, *Orcutt* 4005. Chalchicomula, rocky hill, *Hitchcock* 6284. Chinantla, *Liebmann* 556. Mount Orizaba, *Liebmann* 562. Esperanza, along railway, *Hitchcock* 6504; barren hills, *Pittier* 421.OAXACA: Cumbre de Estepec, *Liebmann* 558.**124. LOLIUM L. Sp. Pl. 83. 1753.**

## RYE GRASS.

## KEY TO THE SPECIES.

Spikelets awnless..... 1. *L. perenne*.  
Spikelets awned..... 2. *L. multiflorum*.

**1. *Lolium perenne* L. Sp. Pl. 83. 1753.**

Type locality, "in Europa."

RANGE: Introduced from Europe in the United States, adventive in Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

SONORA: Guaymas, *Palmer* 52 in 1887.**2. *Lolium multiflorum* Lam. Fl. Franç. 3: 621. 1778.**

Type locality, "environs de Péronne," France.

RANGE: Introduced in the United States, adventive in Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

MÉXICO: Popo Park, escaped, along road, *Hitchcock* 6022.

PUEBLA: Near Puebla, waste ground, *Arsène* in 1907.

125. *JOUVEA* Fourn. Bull. Soc. Bot. Belg. 15: 475. 1876.

KEY TO THE SPECIES.

Blades mostly flat, rather lax; culms slender, erect; pistillate spike slender, 1 mm. in diameter..... 1. *J. straminea*.  
Blades folded, thick and firm, pungently pointed; culms spreading; pistillate spike conical, about 4 mm. in diameter at base.... 2. *J. pilosa*.

1. *Jouvea straminea* Fourn. Bull. Soc. Bot. Belg. 15: 475. 1876.

Type locality, "In arena littorali maris Pacifici prope San Augustin," the type specimen collected by Liebmann.

RANGE: Pacific coast of southern Mexico and Central America.

HERBARIUM SPECIMENS FROM MEXICO:

GUERRERO: Acapulco, *Palmer* 443 in 1895.

OAXACA: Playa de San Augustín, sandy shore of Pacific Ocean, *Liebmann* 738.

2. *Jouvea pilosa* (Presl) Scribn. Bull. Torrey Club 23: 143. 1896.

*Brizopyrum pilosum* Presl, Rel. Haenk. 1: 280. 1830.

Type locality, "in Acapulco."

RANGE: Pacific coast from Lower California to Salvador.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Cape St. Lucas, *Xantus* 121. San José del Cabo, *Purpus* 529; *Brandege* 42 in 1890, 43 in 1899, September, 1893, October, 1902. La Paz, *Palmer* 124.

SINALOA: Mazatlán, *Rose, Standley & Russell* 14018. Altata, *Rose, Standley & Russell* 14832.

TEPIC: María Madre Island, *Maltby* 71.

COLIMA: Socorro Island, *Barkewell* 183. Manzanillo, *Palmer* 1384 in 1891.

GUERRERO: Acapulco, *Palmer* 235 in 1895, 443½ in 1895.

OAXACA: San Augustín, *Liebmann* 479. Santa Cruz, *Liebmann* 480.

126. *AGROPYRON* Beauv. Ess. Agrost. 101. pl. 20. f. 1, 2. 1812.

WHEAT GRASS.

KEY TO THE SPECIES.

Lemmas awned, the awn longer than the lemma, spreading..... 3. *A. arizonicum*.  
Lemmas awnless or with short straight awns.  
Plants producing rhizomes..... 1. *A. repens*.  
Plants without rhizomes..... 2. *A. tenerum*.

1. *Agropyron repens* (L.) Beauv. Ess. Agrost. 102, 146. 1812. QUACK GRASS.

*Triticum repens* L. Sp. Pl. 86. 1753.

Type locality, Europe [Sweden].

RANGE: Introduced from Europe; weed in the eastern United States, rare on the Pacific coast and in Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, *Hitchcock* 7706.

DURANGO: Otinapa, *Palmer* 347 in 1906.

HIDALGO: Cuyamboya, *Pringle* 13432. Pachuca, sandy river bed, *Hitchcock* 6769.

PUEBLA: Chalchicomula, along railway, *Hitchcock* 6306.

**2. *Agropyrum tenerum* Vasey, Bot. Gaz. 10: 258. 1885.**

Type locality, "Rocky Mountains."

RANGE: Labrador to Alaska and southward to northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Las Juntas, *Orcutt* 1163. Without locality, *Orcutt* in 1889.CHIHUAHUA: Colonia García, meadow valley, *Townsend & Barber* 328.**3. *Agropyron arizonicum* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 27. 1897.**

Type locality, "In the mountains of \* \* \* Arizona."

RANGE: Southwestern United States and northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sierta Madre, *Nelson* 6495a; cool ledges, *Pringle* 1439. ColoniaGarcía, *Townsend & Barber* 337. Sánchez, *Hitchcock* 7711. Canyon de San Diego, *Hartman* 805.**127. HORDEUM L. Sp. Pl. 84. 1753.**

BARLEY. WILD BARLEY. FOXTAIL.

KEY TO THE SPECIES.

- Plants perennial; awns an inch long or more; lateral spikelets reduced to slender awns..... 1. *H. jubatum*.  
 Plants annual; some of the glumes dilated.  
 Glumes, or some of them, ciliate..... 3. *H. murinum*.  
 Glumes not ciliate..... 2. *H. pusillum*.

**1. *Hordeum jubatum* L. Sp. Pl. 85. 1753.***Hordeum adscensionis* H. B. K. Nov. Gen. & Sp. 1: 180. 1816.

Type locality, "in Canada," the type specimen collected by Kalm.

RANGE: Ontario to Alaska and southward, adventive in Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

MÉXICO: Federal District, along trolley, Xochimilco, *Hitchcock* 5873, 5877; *Orcutt* 4101.**2. *Hordeum pusillum* Nutt. Gen. Pl. 1: 87. 1818.**

Type locality, "On the arid and saline plains of the Missouri."

RANGE: Middle and western United States to northern Mexico.

HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Sánchez, along railway, *Hitchcock* 7694.**3. *Hordeum murinum* L. Sp. Pl. 85. 1753.**

Type locality, Europe [Sweden].

RANGE: Pacific slope from Idaho to Vancouver Island and south into Lower California; introduced from Europe.

HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Guadalupe Island, *Palmer* 671 in 1889. Nachognero Valley, *Schoenfeldt* 3449.**128. ELYMUS L. Sp. Pl. 83. 1753.**

WILD RYE.

KEY TO THE SPECIES.

- Plants producing rhizomes; awn shorter than the lemma or none. 1. *E. triticoides*.  
 Plants not producing rhizomes; awn longer than the lemmas.  
 Glumes subulate, 1 to 2-nerved..... 2. *E. pringlei*.  
 Glumes lanceolate, 3 to 5-nerved..... 3. *E. brachystachyus*.

1. *Elymus triticoides* Buckl. Proc. Acad. Phila. 1862: 99. 1863.

Type locality, "Rocky Mountains," the type specimen collected by Nuttall.

RANGE: Western United States and Lower California.

## HERBARIUM SPECIMENS FROM MEXICO:

LOWER CALIFORNIA: Tecate River, near Monument no. 245, *Schoenfeldt* 3726. Sierras Cantillas, *Orcutt* 1152. Tepo, *Orcutt* 1162. Las Juntas, *Orcutt* 1164. Mountains, *Orcutt* in August, 1884.

2. *Elymus pringlei* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 30. 1901.

Type locality, "in a valley near Tula, State of Hidalgo," the type specimen collected by Pringle (no. 6637).

RANGE: Highlands of Mexico.

## HERBARIUM SPECIMENS:

SAN LUIS POTOSÍ: Las Canóas, rich copse, *Hitchcock* 5763.

HIDALGO: Ixmiquilpan, river banks, *Rose, Painter & Rose* 9060. Tula, wet soil, *Pringle* 6639. Dublán, wet soil, *Pringle* 11222.

VERACRUZ: Orizaba, roadside ditch, Río Blanco, *Hitchcock* 6316; *Botteri* 142.

3. *Elymus brachystachyus* Scribn. & Ball, U. S. Dept. Agr. Div. Agrost. Bull. 24: 47. f. 21. 1901.

Type locality, "in the Indian Territory," the type specimen collected by Palmer (no. 420).

RANGE: Southern United States and northern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

CHIHUAHUA: Chihuahua, along aqueduct, *Hitchcock* 7771. Valley near Chihuahua, *Pringle* 505.

COAHUILA: Saltillo, along irrigation ditch, *Hitchcock* 5603; along shady ditch, *Hitchcock* 5622; in old orchard, *Palmer* 260 in 1898.

129. *SITANION* Raf. Journ. de Phys. 89: 103. 1819.

## KEY TO THE SPECIES.

Glumes cleft into several lobes; lemmas glabrous..... 1. *S. jubatum*.

Glumes entire; lemmas hirsute-scabrous..... 2. *S. pubiflorum*.

1. *Sitanion jubatum* J. G. Smith, U. S. Dept. Agr. Div. Agrost. Bull. 18: 10. 1899.

Type locality, "Waitsburg, Wash.," the type specimen collected by Horner (no. 573).

RANGE: Pacific coast from Washington to Lower California.

## HERBARIUM SPECIMEN FROM MEXICO:

LOWER CALIFORNIA: Nachognero Valley, *Schoenfeldt* 3439.

2. *Sitanion pubiflorum* J. G. Smith, U. S. Dept. Agr. Div. Agrost. Bull. 18: 19. 1899.

Type locality, "Tucson, Ariz.," the type specimen collected by Toumey (no. 795).

RANGE: Southwestern United States to southern Mexico.

## HERBARIUM SPECIMENS FROM MEXICO:

HIDALGO: Cerro Ventoso above Pachuca, *Pringle* 6944. Pachuca, sandy river bed, *Hitchcock* 6785. El Salto, hills, *Pringle* 9568.

PUEBLA: Esperanza, rocky hill, *Hitchcock* 6482.

130. *ARUNDINARIA* Michx. Fl. Bor. Amer. 1: 73. 1803.

## KEY TO SPECIES.

Blades 2 mm. wide; lemmas 1 to 1.5 mm. wide..... 1. *A. acuminata*.

Blades 5 to 8 mm. wide; lemmas 2 mm. wide..... 2. *A. longifolia*.

1. *Arundinaria acuminata* Munro, Trans. Linn. Soc. Bot. 26: 25. 1868.

Type locality, "Mexico, Dep. Vera Cruz," the type specimen collected by Liebmann (no. 73).

RANGE: Known only from Veracruz.

HERBARIUM SPECIMEN:

VERACRUZ: Xalcomulco, *Liebmann* 127.

2. *Arundinaria longifolia* Fourn. Mex. Pl. 2: 131. 1886.

Type locality, "Jicaltepec," the type specimen collected by Liebmann.

RANGE: Central to southern Mexico.

HERBARIUM SPECIMENS:

DURANGO: Huasemote, *Rose* 3494.

TEPIC: Between Pedro Paulo and San Blascito, *Rose* 3344.

SAN LUIS POTOSÍ: Rascón, *Palmer* 650 in 1905.

OAXACA: Las Sedas, wet calcareous bluffs, *Pringle* 6742.

131. *ARTHROSTYLIDIUM* Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 3<sup>1</sup>: 117. 1839.1. *Arthrostylidium racemiflorum* Steud. Syn. Pl. Glum. 1: 336. 1854.

Type locality, "Mexico," the type specimen collected by Ghiesbreght (no. 234).

RANGE: Southern Mexico.

HERBARIUM SPECIMENS:

VERACRUZ: Mirador, *Nelson* 78, *Liebmann* 126. Zacuapan, *Liebmann* 144; moist forest banks, *Purpus* 2892.

132. *CHUSQUEA* Kunth, Syn. Pl. Aequin. 1: 254. 1822.

## KEY TO THE SPECIES.

Branchlets pubescent; base of sheath tumid..... 1. *C. nelsoni*.  
Branchlets glabrous; base of sheath not tumid..... 2. *C. bilimeki*.

1. *Chusquea nelsoni* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 16. 1897.

Type locality, "between Chilapa and Tuxtla, Guerrero," the type specimen collected by Nelson (no. 2612).

RANGE: Known only from the type collection.

2. *Chusquea bilimeki* Fourn. Mex. Pl. 2: 132. 1886.

Type locality, "In convalle Mexicensi," the type specimen collected by Bilimek.

RANGE: Known only from the type locality.

HERBARIUM SPECIMEN:

MÉXICO: Valley of Mexico, *Bilimek* 448.

133. *BAMBOS* Retz. Obs. Bot. 5: 24. 1789.1. *Bambos aculeata* (Rupr.).

*Guadua aculeata* Rupr.; Fourn. Mex. Pl. 2: 130. 1886.

Type locality, "Colipa."

RANGE: Southeastern Mexico.

HERBARIUM SPECIMEN:

VERACRUZ: Colipa, *Liebmann* 136.

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