

DESCRIPTIONS OF NEW GRASSES FROM MEXICO.

By GEORGE VASEY.

Paspalum paucispicatum sp. nov. Culms rooting at the lower nodes, ascending, about 2 feet high, nodes pubescent; leaves of culm 4 to 8 inches long, 3 to 5 lines wide, smooth; panicle of 2 to 3 approximate, erect, straight spikes, 3 to 3½ inches long; spikelets in 4 rows, elliptical-oblong, 1½ lines long, acute, the outer glume minutely puberulent, 3-nerved; inner empty glume glabrous; perfect flower whitish, longitudinally striate.

Collected at Guadalajara by Dr. Edward Palmer (No. 243) in 1886.

Paspalum inops sp. nov. Culms 9 to 12 inches high, slender; leaves 2 to 4 inches long, 2 to 4 lines wide, villose with scattered hairs, the upper very short or wanting the blade; sheaths villose; panicle consisting of about 2 spikes, approximate, about 1 inch long, the rachis narrow, spikelets in two rows, roundish-obovate, pale, smooth, or minutely pubescent, little more than 1 line long.

Collected at Guadalajara by Dr. Edward Palmer (No. 592) in 1886.

Paspalum culiacanum sp. nov. Apparently annual; culms erect, 1½ to 2 feet high, leafy, smooth, rather slender; leaves linear-lanceolate, 6 to 10 inches long, acuminate, 4 to 6 lines wide, smoothish or somewhat scabrous; lower sheaths open and free when mature, compressed; ligule fimbriate; spikes 3 to 5, rarely 2; 1½ to 2½ inches long, rather loosely flowered, spreading, arcuate, ½ to ¾ inch distant; rachis narrower than the spikelets, scabrous; spikelets in 2 series, mostly in pairs, occasionally with a small additional lower glume, about 1 line long, oblong, obtuse, smooth.

Collected by Dr. Edward Palmer in the mountains of Culiacan (No. 1647) in 1891. Has somewhat the appearance of *P. lave*, but with shorter, more approximate spikes, and smaller spikelets.

Panicum (Ptychophyllum) palmeri sp. nov. Annual; culms robust, 4 to 6 feet high, leafy; leaves 1 to 1½ feet long, 1 to 1½ inches wide, acuminate, with about 15 principal nerves, scabrous on the margins; ligule short, incised; panicle racemose, 6 to 10 inches long, 2 to 3 inches wide, the simple erect branches scattered unequally and singly along the rachis, unequal, gradually diminishing from below to the apex, scabrous, the lower ones 2 to 4 inches long, flowering nearly or quite to the base or sometimes naked at the base; spikelets 2 lines long, conical, one-sided, sessile, crowded, with one bristle at the base of each; first glume ovate, one-fourth as long as the spikelet, 3-nerved; second glume nearly as long as the spikelet, 11- to 13-nerved; third or glume of the male floret the longest and as long as the spikelet; palea nearly as long, 5-nerved; perfect floret little more than 1 line long, elliptical, obtuse or subacute; bristles variable, the lower twice as long as the spikelet, the upper ones about equaling it.

Collected by Dr. Edward Palmer at Tequila in 1886. This is near *Setaria corymbosa* Fourn., but differs in its very stout culm, and the length of the lower glume.

Aristida (Ortachne) manzanilloana sp. nov. Apparently annual; culms tufted, 2 to 2½ feet high, smooth, slender, erect, simple, or geniculate and branching below; leaves 2 to 3 inches long, plane below, conduplicate above, not rigid, very narrow, almost setaceous; sheaths shorter than the blade; panicle racemose, simple, 4 to 5 inches long; branches single, or 2 or 3 together, the lower about 1 inch long, sessile, with 3 to 5 somewhat crowded spikelets; empty glumes about 3 lines long, awn-pointed, nearly equal; floral glume with the undivided awn about 1 inch long when mature, scabrous on the keel, not twisted, flattish, commonly curved above.

Collected in the mountains about Manzanillo by Dr. Edward Palmer, December 1 to 31, 1891 (No. 1084). This species differs from *A. tenuis* variety *flexuosa* in its culms being slender and flexuous, leaves softer, and spikelets with a few scattered hairs.

Aristida appressa sp. nov. Culms 2 to 4 feet high, slender, smooth; lower leaves not seen, the upper ones narrowly setaceous, erect, 4 to 6 inches long; panicle 8 to 12 inches long, narrow; the branches alternate or in twos, appressed, the lower 3 to 4 inches long, naked below, above subdivided, with appressed spikelets; empty glumes equal or nearly equal, about 5 lines long, setaceously pointed, scabrous on the keel; floral glume 3 times longer, slender, purple, somewhat twisted below the awns, which are nearly equal, the lateral ones about 5 lines and the middle one about 6 lines long.

Collected at Guadalajara by Dr. Edward Palmer in 1885. Dr. Palmer states that the long slender culms are collected by the natives and tied together in bundles for brooms.

Variety *brevior* var. nov. Culms tufted and strongly rooted, 2 to 3 feet high, with 3 or 4 leaves, 6 to 10 inches long, flat, the upper becoming involute, sheaths glabrous; ligule obsolete; panicle 8 to 10 inches long, the branches appressed; spikelets nearly as in the preceding, but the floral glume little longer than the empty ones, the awns a little longer and nearly equal.

Collected at Rio Blanco by Dr. Edward Palmer (No. 516) in 1886.

Muhlenbergia flavida sp. nov. Annual; culms weak, decumbent, and much branched below, 12 to 15 inches long, the lateral branches sometimes one-half as long; leaves narrowly linear, 2 to 4 inches long; sheaths shorter than the internodes, smooth; ligule narrow, 1 to 2 lines long; panicle 5 to 6 inches long, lax and open; the branches scattered, mostly single, capillary, rarely subdivided, 1 to 1½ inches long, very slender and racemosely flowered above, naked below; spikelets on short pedicels, alternate, rather distant below, approximate above; empty glumes equal, ovate at base, tapering to an awn-like point, with the points reaching to the middle of the floral glume, which is elliptic-oblong, flattish, 1 line long, 3-nerved, minutely pubescent on the nerves, yellowish, with an awn about as long as its glume; palea as long as the glume, bifid at the apex.

Collected at Rio Blanco by Dr. Edward Palmer (No. 645) in 1886.

Muhlenbergia elata sp. nov. Culms densely tufted, strongly rooted, 4 to 6 feet high, smooth; radical leaves 1 to 2 feet long, flat and narrow below, setaceous-involute above; ligule about 3 lines long, pointed, decurrent; panicle 1 to 2 feet long, spreading, flexuous; the main axis scabrous, the branches scattered, erect-spreading, single or semiverticillate, capillary, 4 to 6 inches long, subdivided nearly to the base, the branchlets sparsely flowered; spikelets on long pedicels; empty glumes about 1 line long, narrow, nearly half as long as the spikelet, one or both short-awned; floral glumes linear, 1½ lines long, acuminate into a fine straight awn 3 to 4 lines long.

Collected near Guadalajara by Dr. Edward Palmer (No. 770) in 1886. Very tall, with a large, graceful, bending panicle, resembling *M. capillaris* Kth.

Muhlenbergia scoparia sp. nov. Culms densely tufted, 3 feet high, erect; leaves narrowly linear, 1 to 1½ feet long, conduplicate, rigid, smooth; panicle 1 to 1½ feet long, loose, flexuous, 1 to 2 inches wide, branches scattered, erect, single, or 2, 3, or 5 together, rather distant, 1 to 3 inches long, flowering nearly to the base, much subdivided above; spikelets on pedicels 1 to 3 times as long as themselves; empty glumes nearly equal, ovate-lanceolate, awn-pointed, the points extending beyond the floral glume, which is 1 line long, purple, smooth except a small hairy tuft at the base, and with an awn 8 to 10 lines long.

Collected at Batopilas by Dr. Edward Palmer in 1885, and at Guadalajara (No. 2350) by C. G. Pringle in 1889.

Muhlenbergia longiglumis sp. nov. Culms strongly tufted, 2 to 2½ feet high; radical leaves one-half as long as the culm, rigid, narrowly linear, channeled and more or less involute, scabrous; upper culm leaves very long, lower sheath compressed, smooth; ligule narrow, 3 to 4 lines long, fimbriate, decurrent; panicle 1 foot or more long, contracted, flexuous, rather thin, the branches slender, scattered, single or semiverticillate, approximate or somewhat interrupted below, unequal, the longer about 2 inches long, erect, narrow; spikelets on short pedicels; empty glumes 2½ lines long, whitish, membranaceous, minutely puberulent, acute or mucronulately toothed, a little longer than the floral glumes, which are linear-lanceolate, tapering to the 2-toothed apex, smooth or minutely puberulent, with a short, hairy tuft at the base; awn 1½ to 2 inches long; palea nearly equaling its glume.

Collected at Guadalajara by Dr. Edward Palmer (No. 766) in 1886, and by C. G. Pringle (No. 2365) in 1889.

Muhlenbergia longifolia sp. nov. Culms densely tufted, 4 feet high, stout; radical leaves almost equaling the culm, narrow at the base, rigidly involute above, margins scabrous, sheaths smooth; ligule conspicuous, 2 to 3 lines long, acute, rigid, decurrent; panicle 1½ to 2 feet long, 1½ to 2 inches wide, erect, not very dense, the branches scattered, the lower ones 3 to 5 inches long, loosely appressed, capillary, thinly flowered, more or less naked below; spikelets very slender, on long pedicels; empty glumes unequal, the lower less than, and the upper more than, one-half as long as the floral one, the upper awn-pointed; floral glumes linear, little more than 1 line long, attenuate into the 4-line long awn.

Collected at Rio Blanco by Dr. Edward Palmer (No. 523) in 1886.

Muhlenbergia grandis sp. nov. Culm strongly rooted, robust, 4 to 6 feet high, leafy, compressed below; leaves distichous at base, one-half to two-thirds as long as the culm, scabrous on the margins, ½ inch wide below, attenuate and often convolute above, rigid; lower sheaths compressed; ligule very short (1 or 2 lines), triangular; panicle 1 to 2 feet long, 2 inches wide, dense, the branches scattered or semiverticillate, 2 to 3 inches long, crowded, flowering mostly to or near the base, erect and appressed, pedicels mostly shorter than the spikelets, which are about 1 line long; empty glumes equaling the floral one, thin-membranaceous, oblong-lanceolate, acute or subacute; floral glume elliptical-oblong, smooth except a few hairs at the base; awns 8 to 10 lines long.

Collected at Rio Blanco by Dr. Edward Palmer (No. 515) in 1886; and by C. G. Pringle at Jalisco (No. 1760) in 1888. A tall and attractive grass, with a large contracted plume-like, dense panicle, with small spikelets. It differs in its greater size, longer and larger panicle, and its short ligule from the *M. distichophylla* Kth. of our Southern border.

Sporobolus capillaris sp. nov. Perennial, tufted, with a thick rhizome; culms about 2 feet high, slender, flexuous, smooth; radical leaves narrow, smooth, setaceous-pointed, 4 to 6 inches long; those of the culm (3 or 4) similar, erect, sheaths smooth; ligule minute; panicle 5 to 7 inches long, capillary, spreading, flexuous, the branches capillary, numerous, approximate, mostly scattered, sin-

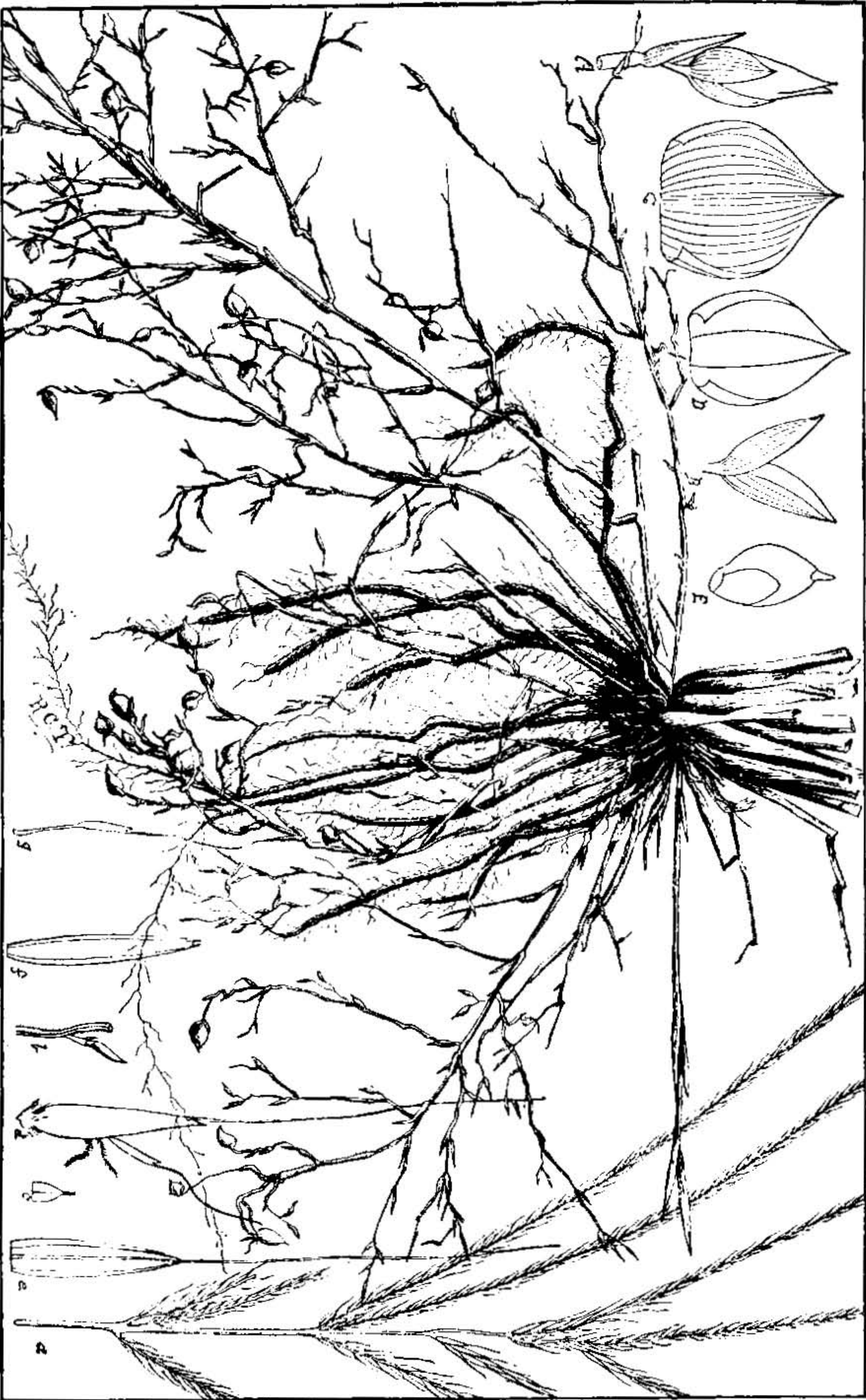
gle, 1 to 2 inches long, much branched, sometimes from the base, sometimes above, the branchlets diverging; spikelets minute on long pedicels, about $\frac{1}{2}$ line long, purplish; empty glumes unequal, the upper one-half to two-thirds as long as the floral ones, the lower one-half to two-thirds as long as the upper, both obtuse; floral glume smooth, obtuse; palet equaling its glume.

Collected at Rio Blanco by Dr. Edward Palmer in 1886 (No. 512); and by C. G. Pringle (No. 3853) near Guadalajara in 1891.

Chloris longifolia (Fourn.) Vasey. *Gymnopogon longifolius* Fourn. Mex. Pl. ii. 144 (1886). Culms $1\frac{1}{2}$ to $2\frac{1}{4}$ feet high, rather stout, leafy, caespitose, bearing at the base numerous branching seed-bearing stolon-like panicles sometimes 6 inches long; leaves 6 to 10 inches long, flat, 3 to 4 lines wide, scabrous on the margins and upper surface, longer than the internodes, the lower ligules ciliate to pilose; apical panicle 5 to 8 inches long, of 5 to 10 racemose spikes erect at first, then spreading, usually in threes below, the others irregularly scattered, narrow and spikelet-bearing to the base; spikelets somewhat imbricated above, becoming more distant, but approximate below, one-sided, with one perfect and one sterile floret; empty glumes unequal, the lower minute, subobtuse, the upper one less than 1 line long, ovate, acute or acuminate, purplish, scarious-margined; floral glume linear, $2\frac{1}{4}$ to 3 lines long, with a distinct hairy callus at the base, and finely scabrous on the midnerve near the apex, otherwise smooth, with two short teeth at the apex, and between the teeth a scabrous awn 3 to 4 lines long; palet as long as its glume, terminating in 2 slender acute teeth; imperfect floret pedicellate, $\frac{1}{2}$ to 1 line long, linear, with an awn about 2 lines long; grain linear-oblong, the hilum occupying one-third its length. The panicles at the base of the culm are numerous, from 2 to 6 inches long, and irregularly branched. These seem to run on or near the surface of the ground, and here and there give rise to fertile florets, which are larger than those in the aerial panicle, and with a larger, rounder grain; the fertile florets about 3 lines long, oblong or oval, with an abrupt point; empty glumes nearly equal, ovate, about 2 lines long, many-nerved; floral glume oval, thickish, acute, nearly as long as its palet; grain oblong, abruptly pointed, about 2 lines long, much longer and heavier than the grains of the panicle, the hilum occupying one-half its length. I have not observed any stamens in the florets of the stolons.

Collected at Ymala, Sinaloa, by Dr. Edward Palmer, in September, 1891 (No. 1763). I have no doubt that this remarkable grass should be placed in the genus *Chloris*. It is unusual in the racemose disposition of its spikes, they commonly being verticillate or digitate at the summit of the peduncle, but in *Chloris verticillata* Nutt. there is a form with two or three verticillate somewhat distant whorls of spikes. Fournier, in his account of Mexican grasses, gives 6 species of *Chloris*, all different from this. He, however, gives two species of *Gymnopogon*, one of which from the description given may be our grass, inasmuch as he remarks that the empty glumes in the species he describes are smaller than in the type of the genus. I have not seen any specimens of the species he describes, but our plant is excluded from *Gymnopogon* by the spikes being regularly floriferous throughout, instead of being interruptedly floriferous, and also in the greater development of the second floret. There is no mention in any account of the species of *Chloris*, nor of the tribe *Chlorideæ*, of the floriferous stolons at the base of the culm. The only analogous case that I know of is that of *Amphicarpum*, a grass of the pine barrens of New Jersey and extending to Florida, in which there are similar but less branching runners, bearing fertile florets, those of the upper panicle being all sterile, while our plant has perfect seeds on the upper panicle as well as on the lower panicles.

EXPLANATION OF PLATE XIX.—Base of plant, with creeping panicle of cleistogamous florets; A, bract and spikelet magnified three times; B, empty glumes; C, floral glume, ventral view; D, palet, ventral view; E, grain; a, panicle at the apex of the culm, slightly smaller than natural size; b, rachis, pedicel and empty glumes; c, second empty glume; d, florets, side view, magnified three times; e, floral glume, dorsal view; f, palet; g, imperfect floret.



CHLORIS LONGIFOLIA (Fourn.) Vasey.

Eragrostis pallida sp. nov. Apparently annual; culms erect, more or less branched at the base, $1\frac{1}{2}$ feet high, smooth; leaves 2 or 3 on the culm, 3 to 5 inches long, erect, acuminate; ligule inconspicuous, truncate; sheaths shorter than the internodes; panicle 6 to 9 inches long, $\frac{1}{4}$ to $\frac{1}{2}$ inch wide, pale, strict, sometimes interrupted below, crowded above; branches unequal, semiverticillate, numerous, the longer $1\frac{1}{2}$ inches long, strict, all closely flowered to the base; spikelets 1 line long, 5-flowered; empty glumes less than $\frac{1}{2}$ line long, 1-nerved, subacute; floral glumes $\frac{1}{2}$ line long, subacute, 3-nerved.

Collected in a ditch at Colima, January 9 to February 6, 1891 (No. 1268), by Dr. Edward Palmer. At first I thought this might be *E. alba* Presl., but it does not answer the description; neither does the Californian species, so called by Dr. Thurber, which is quite different from the present species.

Eragrostis diversiflora sp. nov. Culms densely tufted, 2 to 8 feet high, firm, leafy at the base, lower leaves 6 to 8 inches long, gradually narrowed to long, setaceous points; sheaths smooth; ligule ciliate with long hairs; upper leaves distant, filiform; panicle spike-like, interrupted below, 7 to 10 inches long, $\frac{1}{2}$ inch wide, the nearly sessile branches densely crowded, interrupted and distant below, also on the same plant some panicles open and thinly flowered; spikelets linear, 3 to 4 inches long, 7- to 13-flowered or on less perfect culms reduced to 5, 3, or 2; outer glumes ovate, subacute, similar in texture to the floral glumes, which are ovate-lanceolate, rather thick, subobtuse, smooth, the lateral nerves not prominent.

Collected at Manzanillo (No. 1335) by Dr. Edward Palmer, March 2 to 18, 1891. Here should be referred W. G. Wright's No. 1318, from Mazatlan, 1889.