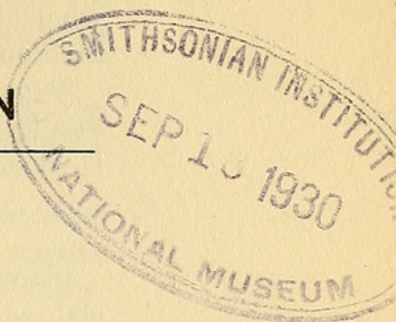


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



FIFTEEN NEW SPECIES OF GRASSES, SIX FROM
AFRICA, NINE FROM CHINA.

BY A. S. HITCHCOCK.

Recently Dr. Carl Christensen, the Director of the Copenhagen Botanical Museum, sent to me for identification a collection of grasses made by Mr. O. Hagerup during the Danish Sudan expedition of 1927 to the French Sudan and Niger Territory.

Two collections from China have also been received, one from Mr. T. Tang, who collected in Shansi, and one from Mr. R. C. Ching, who collected in Kansu.

Among these specimens the following appear to represent undescribed species:

***Diheteropogon hagerupii* Hitchc., sp. nov.**

D. grandifloro spiculis et aristis minoribus, laminis basi cordatis differt.

The specimens consist of the upper part of the culms only but the label states that the height is 1.5 meters. Culms and nodes glabrous; sheaths glabrous; ligule a membrane about 1 mm. long; blades of the inflorescence flat or folded, cordate-clasping at the widened base, this about 1 cm. wide, the upper ones successively smaller; branches fascicled in the upper sheaths, each bearing a long peduncle with 1 node and a long sheath with a much reduced blade, these branches 10 to 15 cm. long, bearing a pair of erect racemes; racemes, excluding awns, 2 to 3 cm. long, one sessile, the other with a peduncle about 4 mm. long; sessile raceme with a pair of sterile spikelets at base and 3 or 4 pairs of heterogamous spikelets above; peduncled raceme with 4 or 5 pairs of heterogamous spikelets; sessile fertile spikelet 9 mm. long including the slender acuminate callus 3 mm. long, this densely pubescent except for a glabrous line on one side; first glume somewhat indurate, 6 mm. long, pubescent on the sides, a deep cleft in the lower 4 mm. of the back, the upper 2 mm. flat, the joint of the rachis nearly as long as the glume, densely villous on the sides, the oblique summit excavated; second glume a little shorter than the first, pubescent; fertile lemma with 2 thin slender teeth 2 mm. long, the stout awn arising between; awn twice geniculate, the first segment 2 cm. long, brown, villous, twisted, the second

segment similar but a little shorter, the third segment straight, slender, scabrous, about 4 cm. long.

Type in the U. S. National Herbarium, no. 1,445,573, collected in a dry locality at Bara near Ansongo, Soudan Français, September 24, 1927, by O. Hagerup (no. 401).

***Panicum glaucifolium* Hitchc., sp. nov.**

Planta glauca; culmi graciles, glabri, 100 cm. alti; laminae planae, glabrae, 15-20 cm. longae, 4-5 mm. latae, basi supra pubescentes; panicula patens, 15-20 cm. longa, ramis gracilibus ascendentibus, 7-10 cm. longis; spiculae glabrae, acutae, 4 mm. longae; gluma prima acuta, 2 mm. longa.

Plant glaucous; culms slender, glabrous, apparently erect, 100 cm. tall; sheaths glabrous or sparingly villous, sometimes villous around the summit; ligule a dense ciliate line less than 1 mm. long; blades spreading or ascending, flat, glabrous or scabrous on the upper surface toward the acuminate tip, villous on upper surface at base or sometimes above the base, 15 to 20 cm. long, 4 to 5 mm. wide; panicle open, 15 to 20 cm. long, about 10 cm. wide, the branches ascending, slender, the lower solitary, 7 to 10 cm. long, naked on the lower half or third, the branchlets appressed; spikelets pale, glabrous, acute, gaping, about 4 mm. long, the pedicels sometimes with a few long hairs at the summit; first glume acute, about half as long as the spikelet, mostly 5-nerved; second glume acuminate, about 9-nerved, the nerves rather prominent; sterile lemma a little shorter than the second glume, obtusish, about 9-nerved, staminate; fertile lemma about 2 mm. long, pale.

Type in the U. S. National Herbarium, no. 1,445,576, collected near water at Zinder, Colonie du Niger, alt. 360 meters, November 13, 1927, by O. Hagerup (no. 616).

This species differs from *P. coloratum* in the larger spikelets and the longer more acute first glume. The Hagerup specimens show only the upper half of the culms but the label states the height to be 1 meter.

***Panicum nigerense* Hitchc., sp. nov.**

Culmi ascendentes, glabri, 100 cm. alti; vaginae glabrae marginibus dense villosis; laminae planae, basi ciliatae; panicula patens, ovalis, 20-30 cm. longa, ramis ramulisque patentibus vel ascendentibus, axillis villosis; spiculae lanceolatae, acuminatae, glabrae, 5-6 mm. longae; gluma prima, acuta, 2.5-3 mm. longa.

Culms glabrous, ascending, 100 cm. tall, sheaths glabrous, densely ciliate on the margins; ligule a densely ciliate membrane about 2 mm. long; blades flat, glabrous beneath, scabrous on the upper surface, ciliate toward the base, villous above the ligule, the uppermost 4 mm. wide; panicle oval, open, 20 to 30 cm. long, the branches and branchlets spreading or ascending, the lower branches 15 cm. long, the branchlets bearing 2 or 3 spikelets toward the tip, the main axils villous; spikelets lanceolate, acuminate, glabrous, 5 to 6 mm. long, pale or tinged with purple; first glume acute, 3-nerved, about half as long as the spikelet;

second glume and sterile lemma equal, acuminate, about 7-nerved, the sterile floret staminate; fertile lemma elliptic, yellowish, a little more than 3 mm. long.

Type in the U. S. National Herbarium, no. 1,445,575, collected in dry locality, Niamey, Colonie du Niger, October 9, 1927, by O. Hagerup (no. 481).

Only the upper parts of the culms are present, with a single uppermost leaf. The label states that the plant is "1 m., ascendens." The species appears to be allied to *P. miliaceum* but differs in the glabrous sheaths, erect open panicle and narrower spikelets.

***Pennisetum molle* Hitchc., sp. nov.**

Laminae planae, hispidulae, 7-16 mm. latae, basi cordatae vel subcordatae; spica erecta, mollis, pallescens, solitaria, 5-10 cm. longa, 12-15 mm. lata, involucellis sessilibus, numerosis, dense confertis, 2-floribus; setae numerosae, graciles, erectae, inaequales, exteriores minores, interiores plumosae, 1 cm. longae; spiculae 6 mm. longae.

Culms glabrous, pubescent below the spike, the nodes pubescent; sheaths glabrous or roughened with papillae, these sometimes bearing stiff hairs, the collar pubescent; ligule of stiff hairs 2 to 3 mm. long; blades flat, thin, sparsely hispid on both surfaces, rounded or cordate at base, long-acuminate, about 15 cm. long, 5 to 15 mm. wide; spike solitary, erect, pale yellow or stramineous, 5 to 10 cm. long, 12 to 15 mm. wide, the axis villous; involucre densely crowded, sessile, 2-flowered; bristles numerous, erect, one a little longer than the others, the outer scabrous, shorter than the inner plumose ones, these about 1 cm. long; spikelets lanceolate, glabrous below, scabrous above, about 6 mm. long; first glume one-third as long as the spikelet.

Type in the U. S. National Herbarium, no. 1,445,572, collected in dry locality at Gao, Soudan Français, September 13, 1927, by O. Hagerup (no. 340).

Also collected at Timbuktu, Soudan Français, by O. Hagerup (no. 194).

The specimens show only the upper part of the culms with 2 or 3 of the upper leaves. The height of the plants is given on the label as 0.5 meter.

***Leptochloa longiglumis* Hitchc., sp. nov.**

Planta annua; culmi erecti, glabri, 30-50 cm. alti; vaginae villosae; laminae planae, parce villosae, 5-10 cm. longae, 2-4 mm. latae; panícula 10-15 cm. longa, spicis 10-20, 2-4 cm. longis; spiculae appressae, circ. 5 mm. longae; glumae subulato-acuminatae, quam flores paulum longiores; lemmata 3-4, 2.5-3 mm. longa, pubescentia, nervis lateralibus dense villosis.

Plant annual; culms erect, branching, glabrous, 30 to 50 cm. tall; sheaths rather sparsely villous; ligule membranaceous, truncate-erose, 1 mm. long; blades flat, sparsely villous, 5 to 10 cm. long, 2 to 4 mm. wide; panicle erect or slightly curved, 10 to 15 cm. long, the spikes 10 to 20, straight or slightly falcate, ascending, 2 to 4 cm. long, 1 to 3 at a node, distant 1 to 1.5 cm. on the axis; spikelets appressed, slightly pedicelled, about 5 mm.

long, somewhat overlapping, about 4-flowered, glumes narrow, subulate-acuminate, a little longer than the florets; lemmas 2.5-3 mm. long, slightly keeled, appressed-pubescent, the lateral nerves densely villous-ciliate, awned from a cleft apex, the awn slender, straight, 0.5 to 1.5 mm. long.

Type in the U. S. National Herbarium, no. 1,445,574, collected at Labezanga, Soudan Français, September 29, 1927, by O. Hagerup (no. 453).

***Eragrostis hagerupii* Hitchc., sp. nov. (Sect. *Pteroessa*).**

Planta perennis; culmi erecti, glabri, graciles, 100 cm. alti; vaginae glabrae, summo villosae; laminae angustae, involutae, versus apicem scabrae; panícula contracta, nutans, circ. 30 cm. longa; spiculae lineares, 10-12-fl., 4-7 mm. longae; lemmata scaberula, circ. 1.8 mm. longa.

Plant perennial; culms erect, glabrous, slender, 100 cm. tall; sheaths glabrous, villous at summit; ligule a dense ciliate ridge 0.5 mm. long; blades narrow, involute, attenuate to a slender point, scabrous toward the tip, 10 to 15 cm. long; panicle yellowish-drab, nodding, contracted, about 30 cm. long; spikelets linear, 10 to 12-flowered, 4 to 7 mm. long; glumes acute, 1.5 and 2 mm. long; lemmas slightly keeled, scaberulous, about 1.8 mm. long, the nerves not prominent.

Type in the U. S. National Herbarium, no. 1,445,577, collected near mangroves, at Lagos, Nigeria, December 16, 1927, by O. Hagerup (no. 784).

***Oryzopsis chinensis* Hitchc., sp. nov.**

Planta perennis; culmi erecti, caespitosi, glabri, 60-70 cm. alti; laminae graciles, filiformes, involutae, scabrae, 15-25 cm. longae; panícula ovalis, patens, 15 cm. longa, ramis binis, distantibus, gracilibus, 5-7 cm. longis; glumae aequales, glabrae, acutae, 3.5-4 mm. longae; lemma ellipticum, pubescens, flavescens, 2.5 mm. longum, callo brevissimo obtuso glabro; arista decidua, flexuosa, non geniculata, scabra, 5-7 mm. longa.

Perennial; culms erect, caespitose, glabrous, 2-noded, the upper node below the middle of the culm; sheaths glabrous or very slightly roughened; ligule a very short membrane (0.3 mm. long); blades involute, setaceous or filiform, flexuous, slightly scabrous, the basal about half as long as the culms, the upper culm blade about 5 cm. long; panicle oval, open, about 15 cm. long, the branches in pairs, slender, 5 to 7 cm. long, branched toward the ends; spikelets clustered toward the ends of the branches; glumes equal, acute, glabrous, 3.5 to 4 mm. long; lemma elliptic, yellow or brownish, pubescent with light hairs, 2.5 mm. long, the callus very short, obtuse, glabrous or nearly so; awn deciduous, curved but not geniculate, scabrous, 5 to 7 mm. long.

Type in the U. S. National Herbarium, no. 1,445,578, collected by mountain path, southern Shansi, China, alt. 1200 meters, May 18, 1929, by T. Tang (no. 788).

This species has more slender blades and smaller spikelets than other Chinese species.

***Poa alta* Hitchc., sp. nov.**

Planta perennis; culmi erecti, scabri, circ. 100 cm. alti; vaginae scabrae; laminae planae, scabrae, 30 cm. longae, 2–4 mm. latae; panicula angusta, straminea, 12 cm. longa, ramis erectis; spiculae circ. 4-fl., 4–6 mm. longae; glumae subaequales, quam spiculae paulum breviores; lemmata 4 mm. longa, basi paulum arachnoidea, nervis mediis marginalibusque pubescentibus.

Plant perennial; culms erect, apparently solitary, scabrous, about 100 cm. tall; sheaths scabrous; ligule about 2 mm. long; blades elongate, flat, scabrous, about 30 cm. long, 2 to 4 mm. wide, the uppermost blade below the middle of the culm, about 15 cm. long; panicle narrow, about 12 cm. long, the branches in pairs, appressed, naked below, the lowermost 5 cm. long; spikelets stramineous, about 4-flowered, 4 to 6 mm. long, the two upper florets reduced and scarcely longer than the lower florets; glumes nearly equal, a little shorter than the spikelet; lemmas (the 2 lower) 4 mm. long, the keel and marginal nerves pubescent on the lower half, the base with a few cobwebby hairs.

Type in the U. S. National Herbarium, no. 1,445,582, collected on open slope of mountain below summit, at Ning-wu Hsien, northern Shansi, China, alt. 2500 meters, August 21, 1929, by T. Tang (no. 1439).

This species is unusually tall, with elongate blades.

***Poa debilior* Hitchc., sp. nov.**

Planta flaccidissima; culmi tenues, retrorsum scabri, 20–30 cm. alti; vaginae retrorsum scabrae; laminae planae, glabrae, 5–8 cm. longae, 1 mm. latae; panicula patens, parva, 7 cm. longa, ramis paucis, gracilibus; spiculae 2-fl., 2.5 mm. longae; lemmata acuta, 2 mm. longa, minute hispida, basi non arachnoidea, nervis mediis pubescentibus.

Plant very weak and flaccid; culms slender, retrorsely scabrous, 20–30 cm. tall; sheaths retrorsely scabrous; ligule acute, about 1 mm. long; blades flat, glabrous, 5 to 8 cm. long, 1 mm. wide; panicle open, small, about 7 cm. long, the branches solitary, few, slender, 2 to 3 cm. long, bearing spikelets on the upper half; spikelets 2-flowered, 2.5 mm. long; glumes narrow, acute; lemmas elliptic, minutely hispidulous, 2 mm. long, not cobwebby at base, the keel pubescent.

Type in the U. S. National Herbarium, no. 1,445,581, collected in a watery crevice, at Ning-wu Hsien, Shansi, China, alt. 2000 meters, August 21, 1929, by T. Tang (no. 1435).

Characterized by the very slender weak habit and small spikelets.

***Poa shansiensis* Hitchc., sp. nov.**

Planta perennis; culmi tenues, erecti, caespitosi, glabri, 30–40 cm. alti; laminae flaccidae, 1 mm. latae; panicula parva, patens, 2–6 cm. longa, ramis binis, paucis, gracilibus, ascendentibus; spiculae paucae, stramineae, 3–5-fl., 5 mm. longae; glumae acutae, 2–2.5 et 3–3.5 mm. longae; lemmata glabra, basi arachnoidea, 3–3.5 mm. longa.

Plant perennial; culms slender, erect, caespitose, glabrous, mostly 2-noded,

30 to 40 cm. tall; sheaths glabrous; ligule 1 mm. long; blades flaccid, glabrous, scabrous toward the apex, 1 mm. wide, the uppermost culm blade 2 to 3 cm. long; panicle open, 2 to 6 cm. long, the branches few, in pairs, ascending, naked below, 1 to 3 cm. long, bearing 1 or 2 spikelets; spikelets few, stramineous, 3-5 flowered, about 5 mm. long, the internodes of rachilla about 1 mm. long; glumes acute, 2 to 2.5 and 3 to 3.5 mm. long; lemmas glabrous except for a few cobwebby hairs at base, obtusish and scarious at apex, the nerves rather prominent.

Type in the U. S. National Herbarium no. 1,445,580, collected in a shaded place at Mien-shan, Lin-shib Hsien, southern Shansi, China, alt. 1600 meters, May 30, 1929, by T. Tang (no. 906).

***Poa tangii* Hitchc., sp. nov.**

Planta perennis; culmi erecti, 40 cm. alti; laminae planae, glabrae, 1-2 mm. latae; panicula patens, 2-6 cm. longa, ramis binis, patentibus; spiculae circ. 4-fl., 6-8 mm. longae, lucidae; glumae 3 et 4 mm. longae; lemmata obtusa, 4-4.5 mm. longa, basi non arachnoidea, nervis mediis marginalibusque pubescentibus.

Plant perennial, bearing slender rhizomes; culms erect, glabrous, 40 cm. tall; sheaths glabrous; ligule truncate, 1 mm. long; blades flat, soft, those of the culm 1.5 to 3 cm. long, 1 to 2 mm. wide; panicle small, open, 2 to 6 cm. long, the branches spreading or ascending, in pairs, the lower 2 to 3 cm. long; spikelets 1 to 3 at the ends of the branches, 4-flowered, 6 to 8 mm. long, shining; glumes 3 and 4 mm. long; lemmas obtuse, 4 to 4.5 mm. long, the apex hyaline, the base not cobwebby, the keel and marginal nerves pubescent on the lower half.

Type in the U. S. National Herbarium, no. 1,445,579, collected in a shady ravine at Me-chaio-ku village, Ping-yao, Hsien, Shansi, China, alt. 1700 meters, May 21, 1929, by T. Tang (no. 835).

***Stipa chingii* Hitchc., sp. nov.**

Planta perennis; culmi caespitosi, graciles, erecti, circ. 80 cm. alti; vaginae glabrae; laminae filiformes, flexuosae, scaberulae, 15-20 cm. longae; panicula patula, 15-20 cm. longa, ramis capillaribus, scabris; glumae subaequales, 7-9 mm. longae, obtusae; lemma circ. 6 mm. longum, pubescens; arista circ. 13 mm. longa, geniculata.

Perennial, caespitose; culms slender, erect, about 80 cm. tall; sheaths glabrous; ligule of culm leaves firm, 2 to 3 mm. long; blades filiform, flexuous, scaberulous, 15 to 20 cm. long; panicles loose, open, 15 to 20 cm. long, the branches capillary, scabrous; spikelets toward the ends of the branches; glumes subequal, 7 to 9 mm. long, obtuse; lemma about 6 mm. long including the callus about 1 mm. long, narrowed upward, rather sparsely pubescent on the lower half; awn twice geniculate, the lower bend obscure, pubescent below, scabrous above, the first section about 1 mm. long, the second 4 mm. long, the third 8 mm. long.

Type in the U. S. National Herbarium, no. 1,245,799, collected in open woods, alt. 4000 meters, at Labrang, Kansu, China, by R. C. Ching (no. 785).

This species differs from *S. sibirica* Lam. in the filiform blades, the smaller spikelets, and the less pubescent lemma. It may be the same as *S. sibirica* var.? *pallida* Hook. f. (not *Stipa pallida* Kuntze).

***Stipa purpurascens* Hitchc., sp. nov.**

Planta perennis; culmi caespitosi, erecti, glabri, circ. 20 cm. alti; vaginae glabrae; ligula acuta, 5 mm. longa; laminae filiformes, scabrae, involutae, 10–15 cm. longae; panícula angusta, pauciflora, purpurea, 2–5 cm. longa, axi glabro, ramis erectis; glumae aequales, 12 mm. longae; lemma fuscum, pubescens, 7 mm. longum; arista pilosa, circ. 12 mm. longa.

Perennial; culms caespitose, erect, glabrous, about 20 cm. tall; sheaths glabrous; ligule acute, about 5 mm. long on the culm leaves, about 2 mm. long on the innovations; blades erect, filiform, scabrous, involute, those of the innovations 10 to 15 cm. long, those of the 2 culm leaves 2 to 3 cm. long; panicle narrow, few-flowered, dark purple, 2 to 5 cm. long, the axis glabrous, the branches appressed; glumes equal, about 12 mm. long; lemma cylindric-fusiform, pubescent, pilose toward the summit, about 7 mm. long including the pilose callus about 1 mm. long; awn once-geniculate, about 12 mm. long, the first segment slightly twisted, pilose, the second segment straight, scabrous.

Type in the U. S. National Herbarium, no 1,245,701, collected south of Sining, in the La Che Tze Mountains, Kansu Province, China, 3350 to 3900 meters alt., by R. C. Ching (no. 686).

***Avena suffusca* Hitchc., sp. nov.**

Planta perennis; culmi erecti, 100 cm. alti; laminae angustae, involutae, scabrae; panícula ovalis vel oblonga, condensata, suffusca, 3–6 cm. longa, axi pubescente; spiculae 2-fl., rachilla pilosa; glumae aequales, glabrae, 1 cm. longae; lemmata scabra, 8 mm. longa, callo piloso; arista geniculata, 1 cm. longa.

Perennial; culms erect, about 1 meter tall, puberulent below the panicle; scaberulous below the nodes; sheaths glabrous or minutely scabrous; ligule a short ciliate membrane; blades involute, scabrous, narrow, those of the culm 2, 1 to 3 cm. long, those of the innovations 20 to 30 cm. long; panicles oval or oblong, condensed, brownish, 3 to 6 cm. long, the axis and branches pubescent; spikelets 2-flowered, the rachilla pilose; glumes equal, glabrous, 1 cm. long, the first 1-nerved, the second 3-nerved; lemmas scabrous, pilose on the callus, about 8 mm. long; awn inserted a little above the middle, geniculate, a little twisted below the bend, about 1 cm. long; palea about as long as the lemma, pubescent, the prolongation of the rachilla pilose.

Type in the U. S. National Herbarium, no. 1,245,557, collected at Ta Hwa, near Pingan, Province of Kansu, China, at 2900 to 3100 meters alt., July 17, 1923, by R. C. Ching (no. 527).

Other specimens, both from Kansu, are:

La Chang K'on, near Sining, 300 to 3300 meters alt., *Ching* 627;

La Che Tze Mountains, 3350 to 3900 meters, *Ching* 687.

The species belongs to the Section *Avenastrum*.

***Avena altior* Hitchc., sp. nov.**

Planta perennis; culmi erecti, glabri, 100–120 cm. alti, nodis pubescentibus; laminae planae, pubescentes, 3–5 mm. latae; panicula patula, angusta, 15 cm. longa, axi glabro, ramis verticillatis, gracilibus, flexuosis, scabris, 2–4 cm. longis; spiculae circ. 4-fl., 1 cm. longae, rachilla pilosa; glumae acutae, inaequales, 5 et 10 mm. longae; lemmata glabra, primum 9 mm. longum, callo piloso; arista geniculata, 1 cm. longa.

Perennial; culms erect, glabrous, 100 to 120 cm. tall, the nodes pubescent; sheaths glabrous; ligule a truncate membrane scarcely 1 mm. long; blades flat, pubescent, 3 to 5 mm. wide; panicle open, 15 cm. long, the axis glabrous; branches slender, spreading, flexuous, scabrous, several at each node, naked below, 2 to 4 cm. long, bearing 1 to 3 spikelets, the lower nodes 2 to 3 cm. apart; spikelets about 4-flowered, about 1 cm. long, the third and fourth florets reduced; the rachilla short-pilose; glumes unequal, the first 5 mm. long, the second 10 mm. long; lemmas glabrous except the pilose callus, the first about 9 mm. long, the second a little shorter; awn attached just above the middle, geniculate, somewhat twisted below, about 1 cm. long.

Type in the U. S. National Herbarium, no. 1,245,731, collected south of Sining, in the La Che Tze Mountains, Kansu Province, China, 3350 to 3900 meters alt., by R. C. Ching (no. 716).

This species belongs to the Section *Avenastrum*.



Hitchcock, A. S. 1930. "Fifteen new species of grasses, six from Africa, nine from China." *Proceedings of the Biological Society of Washington* 43, 89–96.

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