

NEW AND NOTEWORTHY GRAMINEAE FROM NEW GUINEA

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With two text-figures

THE GRASSES reported in the present paper were collected in the Morobe district of Northeast New Guinea by Mrs. Mary S. Clemens. They were received for identification from the Herbarium of the Arnold Arboretum of Harvard University. These grasses were part of a lot of about twelve hundred numbers of New Guinea plants collected by Mrs. Clemens and recently sent from the Berlin Herbarium as part of the regular exchange between the Arnold Arboretum and that Institution. During the war these plants were stored in the basement of the Berlin Herbarium and so escaped destruction.

Among the grasses in this collection were a number of new records from Northeast New Guinea, one apparently undescribed species, and three topotypes. The material from the type localities is of particular interest since the species in question were originally described by Dr. Pilger, who deposited the type specimens in the Berlin Herbarium. With the destruction of the herbarium these types were probably lost and until now no other collections of these species were known from the type localities.

In addition to the above collection, a species of *Hierochloë*, collected by L. J. Brass in British New Guinea, is described as new. Previously only one species of this genus, *H. redolens* (Vahl) Roem. & Schult., was known from New Guinea, since *H. angustum* Hitchc. has been found to be a member of the genus *Anthoxanthum*.

Unless otherwise indicated, specimens are deposited in the Herbarium of the Arnold Arboretum (A) with duplicates in the Herbarium of Yale University (YU). Presumably the Berlin Herbarium also has specimens of these numbers.

I am indebted to Mr. E. P. Killip, Head Curator of the United States National Herbarium (US), who kindly permitted me to check certain determinations with specimens in that institution. The illustrations were prepared by my wife, Charlotte Goodding Reeder.

Monostachya oreoboloides (F. Muell.) Hitchc. in *Brittonia* 2: 107. 1936.
Festuca oreoboloides F. Muell. in *Trans. Roy. Soc. Victoria* 1(2): 38. 1899.

NORTHEAST NEW GUINEA: Mt. Sarawaket, alt. 3000–3600 m. 7437.

Although originally described from British New Guinea and since reported from Netherlands New Guinea (4, p. 79), this is apparently the first record from Northeast New Guinea. The species occurs also in the Philippines and Borneo.

Festuca papuana Stapf in Kew Bull. 1899: 117. 1899.

NORTHEAST NEW GUINEA: Samanzing, alpine meadows, alt. 2400–2700 m. 9417a; Upper Camp, alt. 2400–3000 m. 9919 (open hills); 9953 (marshy place near hut). Mt. Sarawaket, alt. about 3000 m. 7434 (abundant grass in alpine meadowland).

This species is apparently endemic. It was previously known only from British New Guinea (1, p. 117; 6, p. 107).

Brachypodium longisetum Hitchc. in Brittonia 2: 107. 1936.

NORTHEAST NEW GUINEA: Mt. Sarawaket: alt. 2700–3000 m., Upper Camp A, 10017A₁; Upper Camp B, 10078c.

This apparently endemic species has been previously collected only in British New Guinea. The only previously published records for this species seem to be those which accompany the original description.

Brachypodium pubifolium Hitchc. in Brittonia 2: 118. 1936.

NORTHEAST NEW GUINEA: Mt. Sarawaket: 7433 (lake margin and on near-by grass ridges); Upper Camp A, alt. 2700–3000 m., 10017A.

This species was previously known only from British (6) and Netherlands New Guinea (4, p. 79). It is apparently endemic.

Poa saruwagetica Pilger apud Diels in Bot. Jahrb. 62: 459. 1929.

NORTHEAST NEW GUINEA: Sattelberg, Sambanga Mt., alt. 1800 m., 6909 (forest grass); Samanzing, alt. about 1660 m., 9218 (open bank of rivulet below village, flowers gray-green, purple in age).

The cited specimens are certainly conspecific and agree well with Pilger's original description based on a specimen from Mt. Sarawaket collected at somewhat higher elevations. While these specimens are not exactly topotypes, they come from very near the type locality. Except for the type collection, this species was previously known only from a collection from Netherlands New Guinea (4, p. 79).

Poa minimiflora Stapf in Hook. Ic. 27: pl. 2608. 1899.

NORTHEAST NEW GUINEA: Mt. Sarawaket, Upper Camp A, alt. 2700–3000 m., 9995 (mossy flat by pools); 10048A.

This apparently endemic species was originally described from British New Guinea and has since been reported from Netherlands New Guinea (9, p. 251).

Poa crassicaulis Pilger apud Diels in Bot. Jahrb. 62: 458. 1929.

NORTHEAST NEW GUINEA: Mt. Sarawaket, alt. 3300–3600 m., 7436 (A) (highland meadows); Samanzing vicinity, alt. 2700–3000 m., 9913 (open wet place).

These specimens are of particular interest since the first is a topotype. The species is apparently endemic and is also known from British (6, p. 110) and Netherlands New Guinea (4, p. 82).

Danthonia vestita Pilger apud Diels in Bot. Jahrb. 62: 457. 1929.

NORTHEAST NEW GUINEA: Mt. Sarawaket, alt. about 3900 m., 10044.

The cited specimen agrees well with Pilger's original description in all particulars except that the glumes tend to be about 1 mm. longer. Since the measurements given in the original description are 10 and 10.5 mm., this slight difference does not seem significant. Our specimen is a topotype. Except for the type collection, this species was previously known only from British New Guinea (6, p. 115).

Calamagrostis filifolia Merr. in Philip. Jour. Sci. Bot. 1. Suppl.: 179. 1906.

NORTHEAST NEW GUINEA: Mt. Sarawaket, Upper Camp A, alt. about 2800 m., 10019A, 10056A₁, 10096 bis.

The cited specimens are certainly conspecific and compare favorably with a type duplicate of *Calamagrostis filifolia* (at US). The species has been reported from British New Guinea (6, p. 117) but I know of no previous record from Northeast New Guinea.

? *Calamagrostis Brassii* Hitchc. in Brittonia 2: 116. 1936.

Mixed with 7428 (*Agrostis Reinwardtii* Van Hall), which was collected on Mt. Sarawaket at an elevation of about 3300 m., was a portion of an inflorescence of a *Calamagrostis* which agrees in most particulars with *C. Brassii*. That species was originally described from a specimen collected on Mt. Albert Edward, British New Guinea, at an altitude of 3680 m. I know of no other published report of this species.

Calamagrostis (§ *Deyeuxia*) *pusilla* sp. nov. (FIG. 1).

Gramen perenne caespitosum 2–5 cm. altum; culmis 2-nodiis teretibus striatis glabris circiter 0.5 mm. diametro; vaginis artis quam internodiis longioribus valde striatis glabris sed sub lente minute papillois, marginibus hyalinis et cum ligula continuis; ligula circiter 0.5 mm. longa hyalina glabra, apice rotundata vel plus minusve truncata integra vel minute erosa; laminis rigidibus setaceis plus minusve falcatis conduplicatis et subteretibus (Fig. 1, G) ad 2.8 cm. longis 0.4–0.6 mm. latis, glabris sed sub lente minute papillois, apice calloso anguste obtuso, nervis 5 prominulis, medio crassiore; panicula foliis subaequali, pauciflora, 1.5–1.8 cm. longa, in sicco contracta, in humido patente propter pulvinos in axilli ramorum, ramis spicula terminali exclusa quam internodiis rhacheos paullo longioribus, rigidis simplicibus vel cum ramulo singulari praeditis, ramulis quoque cum pulvinis in axilli; ramis ramulis pedicellisque angularibus scabris; spiculis pallide viridibus vel plus minusve purpurascentibus ovatis plus minusve valde compressis, cum arista 2.5–2.8 mm. longis; glumis 1-nerviis leviter induratis glabris et plus minusve nitidis, a latere viditis ovatis obtusis, subaequalibus (vel gluma prima paullo longiore) 1.2–1.5 mm. longis; lemmate arista exclusa 1.8–2.0 mm. longo circiter 0.6 mm. lato leviter indurato, callo excluso glabro, 5-nervio (nervis obscuris et in humido solo

viditis), dorso anguste rotundato vel leviter carinato, apice obtuso integro, arista infra apicem lemmatos inserta, erecta vel leviter falcata crassa levi circiter 1.3 mm. longa 0.15 mm. diametro, pilis calli argenteis erectis circiter 0.2–0.3 mm. longis, rhachilla pilis argenteis inclusis circiter 1 mm. longa, pilis apicem rhachillae versus paullo longioribus; palea lemmate subaequante, nervis 2 contiguis; lodiculis anguste ovatis circiter 0.8 mm. longis; antheris 0.6 mm. longis; fructibus maturis leviter rostratis quam lemmate et palea paullo longioribus et a eis protrudentibus.

NORTHEAST NEW GUINEA: Morobe District: Samanzing vicinity, Upper Camp A, alt. 2700–3000 m., *Clemens 9995 bis* (A; YU, TYPE) March 7, 1939 (mossy flat by pools, mixed with *Poa minimiflora* Stapf); *Clemens* (sine coll. no.), March 27, 1939 (US) (wet place near pools, with *Poa callosa*); Rawlinson Range, alt. about 3600 m., *Clemens 12499* (US) (common near dried pools and oasis in tussock land, usually intermixed with *Gentiana* and *Poa*); *Clemens* (sine coll. no.), July, 1941 (US) (wet meadows).

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass 9185* (A) (with other dwarf grasses on wet boggy ground; each plant forming a distinct tuft about 1.5 cm. high; leaves falcate).

This species appears to be most closely related to *Calamagrostis* (§ *Deyeuxia*) *Gunniana* (Nees) comb. nov. (*Echinopogon Gunnianus* Nees in Lond. Jour. Bot. 2: 413. 1843) and in spikelet characters the two are superficially quite similar. In vegetative characters the new species differs in its much smaller size, in its smooth culms, sheaths, and blades,

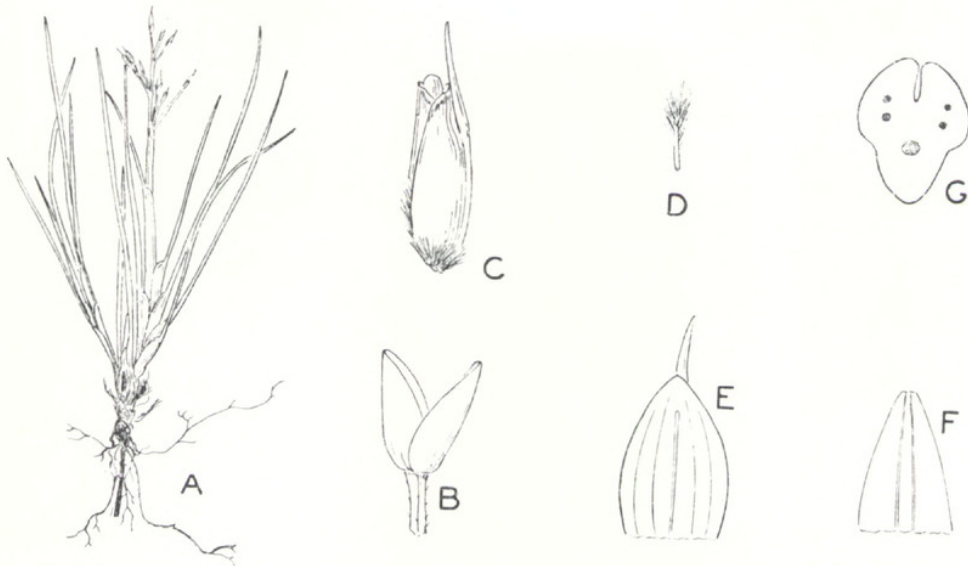


FIG. 1. *Calamagrostis pusilla* Reeder (*Clemens 9995 bis*): A. habit, $\times 1$; B. glumes; C. floret; D. rachilla; E. lemma flattened out, ventral view; F. palea flattened out (B–F, $\times 10$); G. cross-section of leaf blade, approximately $\times 20$.

and in its shorter ligule. The inflorescence of *C. Gunniana* is usually larger, the panicle branches are more slender, scarcely scaberulous and are once or twice trichotomously divided. In *C. pusilla* the panicle branches

are very stiff, strongly scabrous, and are simple or with a single branchlet. The spikelets are of about the same size in both these species, but in *C. Gunniana* the glumes and lemma are of a thinner texture and the lateral nerves of the lemma are much more prominent; the glumes are scabrous on the keels; the awn of the lemma is minutely scabrous, more slender, and arises from between the teeth of a bifid apex; the callus hairs are fewer and less uniform in length; and the rachilla is glabrous or only slightly hairy. In *C. pusilla* the awn is definitely dorsal and the apex of the lemma is not bifid but is entire.

Comparison may also be made with *Calamagrostis uncinoides* (S. T. Blake) comb. nov. (*Ancistragrostis uncinoides* S. T. Blake*), but that species has longer flexuous leaves, the panicle is borne well above the leaves, the spikelets are larger, and the lemma is bifid at apex and bears a hooked awn.

Agrostis Reinwardtii Van Hall in Miquel, Fl. Ind. Bat. 3: 750. 1855.

NORTHEAST NEW GUINEA: Mt. Sarawaket, alt. about 3300 m., 7428 (high ridge points in mossy forest). Samanzing vicinity, alt. 2400–2700 m., 8847a (A) (alpine meadows); 9910 (A).

This species, originally described from Java, has previously been reported from British (6, p. 117) and Netherlands New Guinea (4, p. 83).

Anthoxanthum angustum (Hitchc.) Ohwi in Bull. Tokyo Sci. Mus. 18: 8. 1947.

Hierochloë angusta Hitchc. in Brittonia 2: 118. 1936.

BRITISH NEW GUINEA: Central Division: Mt. Albert Edward, alt. 3680 m., Brass 4412 (type coll. of *H. angusta*, US) (common on grasslands).

NORTHEAST NEW GUINEA: Morobe District: Samanzing, Upper Camp A, alt. 2700–3000 m., Clemens 9441A; Mt. Sarawaket, near alpine meadow, Clemens 7261 (US) (bank of rivulet); alt. 2700–3000 m., Clemens 10019A₁, 10078.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., Brass 9117 (scattered in shrubberies of forest edge, slender erect tufts 70–100 cm. high), Brass 9577 (one erect tuft in a forest glade).

* The genus *Ancistragrostis* consists of a single species, *A. uncinoides*, which is known only from the type collection. In his original description of the genus, Blake (2, p. 56) states, "affine *Deyeuxiae* Beauv., sed glumis atque lemmate induratis, lemmate quam glumis conspicue longiore ejus arista robusta uncinata distinguendum." I have examined a type fragment (consisting of two groups of spikelets) at the U. S. National Herbarium and find that the glumes and lemmas are not more indurated than they are in many species of *Calamagrostis* § *Deyeuxia*. Moreover *Calamagrostis parviseta* (J. Vickery) comb. nov. (*Deyeuxia parviseta* J. Vickery in Contr. Nat. Herb. N. S. Wales 1: 71. 1940) and *C. Gunniana*, both from Australia, have their lemmas exceeding the glumes quite as strikingly as in Blake's plant. The only real difference then seems to be the hooked awn which is stouter than is usual. In all other characters it agrees well with *Calamagrostis* § *Deyeuxia*. Since some members of the genus have awns which are geniculate while in others the awn is straight or flexuous, the hooked awn of Blake's plant seems hardly significant enough to warrant generic designation.

In the original description (as *Hierochloë*) Hitchcock refers to staminate florets. Examination of a type duplicate (at US), however, reveals that both the lower florets are neuter, containing neither paleas nor stamens. Chase (4, p. 84) reduces the species to synonymy under *Hierochloë Horsfieldii* (Kunth) Maxim. and comments upon the variability of that species. She states, "This is the type species of the Section *Ataxia* (R. Br.) Hack., in which the lower floret is staminate or neuter and the second neuter and usually without a palea. In *Hierochloë* proper the lower florets are staminate." She further states that the type of *Hierochloë angusta* (Brass 4412) is a slender specimen with glabrous foliage, narrow blades, and a narrow panicle, while the plate of *Ataxia Horsfieldii* shows a much larger plant with wider blades and looser panicle.

I have examined specimens of *Anthoxanthum Horsfieldii* (Kunth) Mez [*Hierochloë Horsfieldii* (Kunth) Maxim.] from the Netherlands Indies and find that the lower floret in that species contains a rather well developed palea and usually a staminate flower. In all the specimens cited above, however, both lower florets are neuter containing neither stamens nor paleas. A further difference is seen in the insertion of the awn on the second lemma which arises from about the middle in *A. Horsfieldii*, while in *A. angustum* it is inserted at the lower third or below. In the specimens examined, there seems to be a correlation between the spikelet characters mentioned above and the narrow blades and contracted panicle. Apparently *A. Horsfieldii* does not occur in New Guinea. All of the New Guinea plants are *A. angustum* and in addition, two specimens from Sumatra (*van Steenis* 8479 and 9588)* appear to represent this species. The broad-leaved plant, *Brass* 9049, mentioned by Chase (*loc. cit.*), is a species of *Hierochloë* which is described below.

***Hierochloë longifolia* sp. nov.**

(FIG. 2).

Gramen perenne circiter 1 m. altum, rhizomate brevi ramoso; culmis erectis simplicibus 3-4-nodiis striatis glabris sed nodis plerumque retrorse pubescentibus; vaginis artis vel plus minusve laxis quam internodiis plerumque longioribus valde striatis et sub lente minute retrorse scabris, marginibus scariosis; ligula 5.5-7 mm. longa subhyalina, apice ciliata vel erosa, ventro glabra, dorso puberula pilis brevibus rigidibus; laminis elongatis planis vel involutis ad 75 cm. longis et 12 mm. latis, supra retrorse pubescentibus, subtus levibus vel plus minusve scaberulis; panícula straminea vel purpurascente confertiflora subcontracta ad 23 cm. longa, rhachi glabra, ramis gracilibus teretibus inferioribus ad 9 cm. longis; ramisque sparse puberulis vel glabris; pedicellis plerumque 0.5-1.0 cm. longis pubescentibus vel hispidis; spiculis 3-floris aristis exclusis ad 8 mm. longis; glumis subhyalinis ovatis glabris, gluma prima 1-nervia 4.5-6 mm. longa, gluma secunda 3-nervia plerumque 6-8 mm. longa; lemmatibus masculis 2, fuscis dorso pubescentibus marginibus ciliatis; lemmate inferiore 5.5-6 mm. longo pilis calli rigidis circiter 1 mm. longis, arista

* At the Gray Herbarium of Harvard University.

erecta scabra circiter 3 mm. longa paullo supra medium lemmatas inserta, palea quam lemmate $\frac{1}{4}$ – $\frac{1}{2}$ brevior, staminibus 3, antheris ad 1.6 mm. longis; lemmate secundo a lemmate primo circiter 0.3 mm. separato, arista scabra 7–8 mm. longa leviter geniculata sed non torta medio lemmatas inserta, palea staminibusque eis lemmatas primi similibus; lemmate tertio hermaphrodito circiter 4 mm. longo, 5-nervio, a lemmate secundo circiter 0.5 mm. separato, plerumque glabro sed apicem versus hispidulo, mutico sed interdum cum arista brevi ad 1 mm. longa infra apicem inserta; palea quam lemmate paullo brevior, staminibus 2, antheris circiter 1.5 mm. longis; stigmatibus 2 plumosis.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass* 9461 (A; YU, TYPE) August, 1938 (abundant among tussock grasses in a limestone sinkhole); *Brass* 9049 (US) (sporadic and common among tussock grasses of lakeshore glades, etc.; not tufted; inflorescence nodding).

The above collections consist of mixtures. *Brass* 9049 at A and YU are *Hierochloë redolens*. *Brass* 9461 at US is also *H. redolens*. In the type specimen the spikelets are slightly larger than in the others cited and the two lower lemmas contain well-developed stamens. In the other specimens, the stamens are sometimes rudimentary, but paleas are always present.



FIG. 2. *Hierochloë longifolia* Reeder (*Brass* 9461): A. glumes; B. florets spread out to show perfect floret between two staminate florets; C. perfect floret (all $\times 5$).

The only other species of *Hierochloë* known from New Guinea is *H. redolens*, which may be distinguished from *H. longifolia* by its papillose, rather than pubescent, lower florets which are awned from just below the tip. A further difference is seen in the smooth sheaths and in the indument on the blades which in *H. redolens* is antrorse rather than retrorse.

The new species may also be compared with *Anthoxanthum Horsfieldii*, but in that species the sheaths are smooth or essentially so but ciliate on the margins, and the blades are narrower, shorter, and the indument, when present, is quite different. The spikelets are superficially alike in

both these species and the lower lemmas are clothed with hairs of a similar type. In *A. Horsfieldii* the second lemma does not bear stamens nor, as far as I have been able to determine, a palea. The awn of this lemma is, moreover, distinctly geniculate, the portion below the bend being dark brown and closely twisted. In *Hierochloë longifolia* the awn is uniformly light brown in color, flexuous or weakly geniculate but not twisted. Both lower lemmas contain paleas and more or less well-developed stamens. The fertile lemma in the new species is somewhat larger, of a firmer texture, scabrous toward the tip, and usually bears a short awn from below the apex. The rachilla joint between the second and upper floret is also noticeably longer in *H. longifolia*.

Hierochloë redolens (Vahl) Roem. & Schult., Syst. Veg. 2: 514. 1817.
Holcus redolens Vahl, Symb. Bot. 2: 102. 1791.

NORTHEAST NEW GUINEA: Mt. Sarawaket, summit ridge peaks above mossy forest, alt. 3000–3300 m., 7430.

This species has been reported previously from British (6, p. 119) and Netherlands New Guinea (4, p. 84). It is an antarctic species occurring northward in mountains to Ecuador, Australia, New Zealand, and New Guinea.

Microlaena stipoides (Labill.) R. Br., Prod. Fl. Nov. Holl. 1: 210. 1810.
Erharta stipoides Labill., Nov. Holl. Pl. 1: 91. 1804.

NORTHEAST NEW GUINEA: Sattelberg, Sambanga, Eugenia trail, alt. 1500–1800 m., 7837 (high forest).

Previously reported from British New Guinea (5, p. 119), this species also occurs in Malaysia, Australia, New Zealand, and the Hawaiian Islands.

Leersia hexandra Swartz, Prod. Veg. Ind. Occ. 21. 1788.

NORTHEAST NEW GUINEA: Boana, alt. about 950 m., 8293A (small bog by airdrome).

Although this species is pantropic, I know of no previous record of its having been collected in Northeast New Guinea. It has been reported from British (3, p. 307) and Netherlands New Guinea (7, p. 3).

Setaria viridis (L.) Beauv., Ess. Agrost. 51, 171, 178, pl. 13, fig. 3. 1812.
Panicum viride L., Syst. Nat. ed. 10, 2: 870. 1759.

NORTHEAST NEW GUINEA: Sattelberg, Sio to Kalasa, 7972M (grassland trail near sea).

This is apparently the first record of this species from New Guinea and may be a recent introduction. It was included with the Panicoideae of New Guinea by Reeder (8, p. 302) based on a record from New Britain, but no specimens from New Guinea proper were seen.

LITERATURE CITED

1. ANONYMOUS. Flora of British New Guinea. Kew Bull. 1899: 95–126. (Gramineae by O. Stapf, pp. 114–118). 1899.

2. BLAKE, S. T. Two new grasses from New Guinea. *Blumea* Suppl. **3**: 56-62, *fig. 1, 2*. 1946.
3. CHASE, A. Papuan grasses collected by L. J. Brass, II. *Jour. Arnold Arb.* **20**: 304-316. 1939.
4. ———. Papuan grasses collected by L. J. Brass, III. *Jour. Arnold Arb.* **24**: 77-89, *fig. 1-4*. 1943.
5. DIELS, L. Beiträge zur Flora des Saruwaged-Gebirges. *Bot. Jahrb.* **62**: 452-501. (Gramineae by R. Pilger, pp. 457-461). 1929.
6. HITCHCOCK, A. S. Botanical results of the Archbold Expedition. No. 1. Papuan grasses collected by L. J. Brass. *Brittonia* **2**: 107-130. 1936.
7. OHWI, J. The Kanehira-Hatusima 1940 collection of New Guinea plants. VI. Gramineae. *Bot. Mag. (Tokyo)* **56**: 1-13. 1942.
8. REEDER, J. R. The Gramineae-Panicoideae of New Guinea. *Jour. Arnold Arb.* **29**: 257-392, *pl. 1-7*. 1948.
9. RIDLEY, H. N. Report on the Botany of the Wollaston Expedition to Dutch New Guinea, 1912-13. *Trans. Linn. Soc. II. Bot.* **9**: 1-269, *pl. 1-6*. (Gramineae, pp. 247-251). 1916.

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Journal of the Arnold Arboretum 31(3), 320–328.
<https://doi.org/10.5962/p.333929>.

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