

## NOTES ON MALAYSIAN GRASSES II\*

BY

P. JANSEN (Amsterdam)

(Received June 30th 1952)

### DEYEUXIA Clar. ex Beauv.

This genus is closely related to *Calamagrostis* Adans.. Confusion between the two genera in the past was due to the attempt to apply artificial characters in delineating them, e.g. the degree of prolongation of the rhachilla. The unsatisfactory nature of these characters has been emphasized by J. D. HOOKER (Fl. Br. Ind. 7 : 265. 1896).

Miss J. W. VICKERY (Contr. N. S. Wales Nat. Herb. I, 2 : 46. 1940) was the first to study the character of the lemma, which is indurate and more or less densely scabrous in *Deyeuxia*, very thin and hyaline in *Calamagrostis*. Besides, the species of *Calamagrostis* have very long, narrow, acuminate glumes with a relatively short lemma and the hairs of the callus usually much exceed the lemma. The species of *Deyeuxia* have relatively shorter and broader glumes, less clearly exceeding or even distinctly shorter than the lemma; the callus hairs are much shorter than or rarely as long as the lemma. With one exception the species of *Calamagrostis* occur on the northern hemisphere, while those of *Deyeuxia* occur in both hemispheres.

The Malaysian species, up till now arranged in *Calamagrostis*, should be transferred without exception to the genus *Deyeuxia*.

#### 1. *Deyeuxia brassii* (Hitchc.) Jansen, nov. comb.

*Calamagrostis brassii* Hitchc. Brittonia 2 : 116. 1936; Reeder, J. Arn. Arb. 31 : 322. 1950.

Distr. Only known from New Guinea: Mt. Albert Edward (Brass 4205, typus); Mt. Wilhelmina (Brass & Meijer Drees 9711, 9927, 10213); Mt. Sarawaket (Clemens 10238).

The specimens from Mt. Sarawaket differ from the type-specimen in the tip of the lemma, which is longer 4-toothed, the sharp teeth being c. 1 mm long; glumes punctulate-scaberulous with a strongly scabrous nerve; panicle and sheaths purplish.

#### 2. *Deyeuxia sclerophylla* Stapf, Kew Bull. 115. 1899; in Hook. Icon. Pl. t. 2605. 1899.

*Calamagrostis sclerophylla* (Stapf) Hitchc. Brittonia 2 : 117. 1936.

Distr. Only known from New Guinea: Mt. Scratchley (Guilianetti), 3600 m altitude.

\* ) The first part is in print in Reinwardtia vol 2. and will probably appear end 1952.

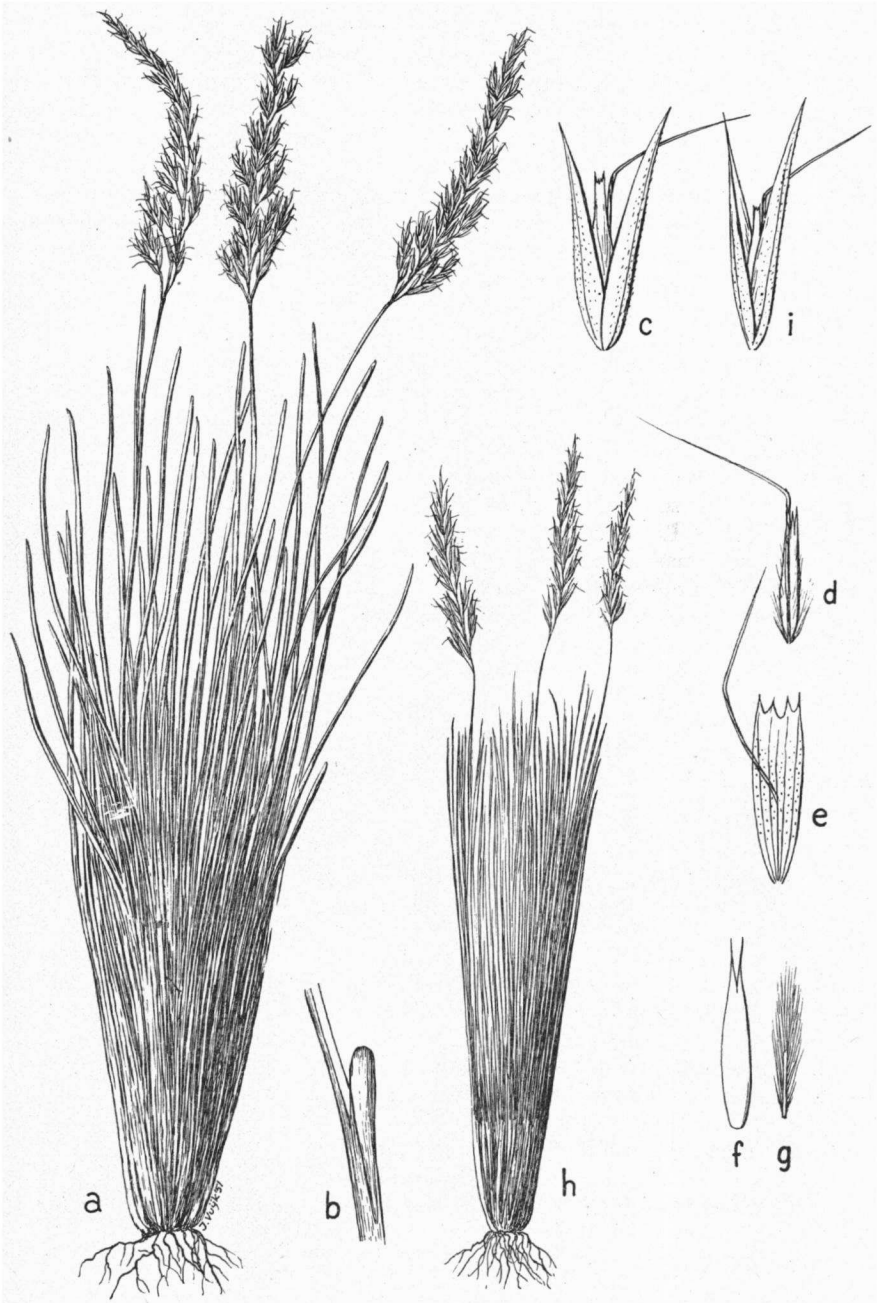


Fig. 1. *Deyeuxia macgregorii*. *a.* type from Owen Stanley Range. *b.* ligule. *c.* spikelet. *d.* floret. *e.* lemma. *f.* palea. *g.* prolongation of the rachilla. *h.* specimen from Mt. Knutsford. *i.* spikelet of that specimen.

### 3. *Deyeuxia macgregorii* Jansen, nov. spec.

Gramen perenne, dense caespitosum. Culmi erecti, paucis nodis, 30—50 cm alti, glabri et laeves vel leviter scaberuli infra tamen proxima paniculam; nodi glabri. Vaginae implerisque ad basin culmorum, internodia superantes, inferiores desintegrantes fibrosae, superiores angustae. Ligula hyalina, 2—2,5 mm longa, obtusa. Laminae anguste lineares, acutae, glabrae, nervis densibus fortibusque, leviter scabrae superne, rigidae, inferiore involutae vel convolutae, usque ad 30 cm longae, superiores breviores et saepe latiores, acutissimae. Panicula breve exserta, laxe contracta, 8—12 cm longa, densior. Axis laevis vel delicate scaberulus. Rami suberecti vel adpressi, raro patentiores in paniculis maturis, inferiores 3—4-nati et 3—4 cm longi, per partem basalem nudi, superiores 2-nati vel solitarii, gradatim breviores, spiculas agentes fere ab insertione. Pedicelli implerisque breviores quam spiculas, delicate scaberuli et paullo incrassati apicem versus. Spiculae 7—8 mm longae, lateraliter compressae, atrovirides. Gluma inferior spiculam aequans, superior paullo brevior, 1- vel sub-3-nervata, scabra imprimis nervo medio et apice versus, lanceolata et acuta. Lemma manifeste brevior quam glumas, 5—5,5 mm longum, scaberulum, 5-nervatum, 2-4-dentatum, aristam dorsalem infra et proxime medium agentem; arista spiculam superat, usque ad 8 mm longa, manifeste geniculata et leviter torta parte inferiore. Palea brevior quam lemma, magis minusve bifida. Antherae 1,5—2 mm longae, latiores. Callus barbatus pilis  $\frac{1}{2}$  mm longis. Rhachilla ad setam longiorem producta, pilos delicatos agens.

Distr. New Guinea: Papua, near the summit of Owen Stanley Range (MacGregor sin.num., a. 1889, typus in Herb. Melbourne); Mt Knutsford (MacGregor sin.num., a. 1889, in Herb. Melbourne).

The latter specimens are lower with shorter, narrower panicles and slightly smaller spikelets.

Note. The loosely contracted inflorescence resembles that of *Deyeuxia monticola* (R. & Sch.) Vickery (Contr. N. S. Wales Nat. Herb. I, 2 : 56. 1941). *D. macgregorii* differs from that species in the awn, which is inserted near the centre of the lemma (and not down to the base), the lemma which is much shorter than the glumes (and not equalling the lower glume), the very scabrous and much longer glumes. In the latter character it would agree with *D. monticola* var. *valida* Vickery (l.c. 57), but the other cited characters distinguish it from this variety.

### 4. *Deyeuxia atjehensis* (Ohwi) Jansen, nov. comb.

*Calamagrostis atjehensis* Ohwi Bull. Tokyo Sc. Mus. 18 : 13. 1947.

Distr. North Sumatra: Atjeh, Mts Losir, Goh Lembuh, and Kemiri (Van Steenis 9583, typus, 8371, 8469, 8480, 8593, 9043, 9083a).

Ecol. Locally abundant on slopes and tablelands at 2400—3300 m altitude, in burned scrub or on open soil, not forming a closed stand.

### 5. *Deyeuxia arundinacea* (L.) Jansen, nov. comb.

*Agrostis arundinacea* L. Sp. Pl. 61. 1753. — *Calamagrostis arundinacea* (L.) Roth, Tent. Fl. Germ. 2, 1 : 89. 1789; incl. var. *nipponica* Hack.

Bull. Herb. Boiss. 7 : 652. 1889; incl. var. *brachytricha* Hack. l.c.; Ohwi, Act. Phytotax. et Geobot. 5 : 241. 1936.

When wanting to transfer the name *Calamagrostis arundinacea* (L.) Roth into the genus *Deyeuxia*, we find in Ind. Kew. 1, p. 74: "*Deyeuxia arundinacea* Beauv. Agrostogr. 160. 1812". This record needs some discussion.

BEAUVOIS described in his work the genus *Deyeuxia* on p. 43 following a manuscript name of CLARION. He cites 4 species "*Arundo Sedenensis, acutiflora* Willd., *Airoides* Mich., *montana* Gaud." They represent respectively: *Deyeuxia varia* (Schrad.) Kunth. 1829; a hybrid between *Calamagrostis epigeios* and *Calamagrostis arundinacea* Roth; *Trisetum melicoides* (Michx.) Scribner; *Deyeuxia varia* (Schrad.) Kunth. 1829.

On this page of the Agrostographie no reference is made to *Deyeuxia arundinacea*. We only find this name on p. 160 in the "Explication des planches et des figures". Here Beauvois certainly made an error, as "*Deyeuxia arundinacea*" of Pl. XV fig. XI does not represent a *Deyeuxia*, but the grass that is usually called *Ampelodesmos tenax* Link Hort. Berol. 1 : 136. 1827. This is evident when we look at p. 77 of the Agrostographie. There BEAUVOIS described the genus *Arundo* and cited Pl. XV fig. XI as an illustration of this genus. On p. 78 he proposed the name *Ampelodesma* as a subgenus and ascribed the details of fig. XI to it. Hence "*Deyeuxia arundinacea* Beauv". is manifestly without status, and, hence, a nomen nudum. Therefore the combination *Deyeuxia arundinacea* is not pre-empted.

*Deyeuxia arundinacea* (L.) Jansen is a species with a wide distribution in Europe and Asia, extending into Malaysia in the mountains of the Philippines (Luzon, Mindanao).

The Philippine specimens are rather variable. The blades of the innovations are more or less complicate to involute, the culmblades are usually flat; the blades are much narrower than in the average European specimens. The panicle is always contracted when young, but some specimens have the short-branched panicle also contracted at maturity (e. g. B. S. 4487). Other specimens have open spreading panicles with long capillary flexuous branches (e. g. B. S. 40222) and there are many intermediate specimens. The spikelets are usually slightly shorter than in the European plants, but they show the same characteristics: palea as long as the lemma, both shorter than the glumes, basal awn tightly twisted below the knee and about twice as long as the spikelet, callus-hairs short.

MERRILL referred the Philippine specimens to var. *nipponica* Hack. l.c. (En. Philip. Fl. Pl. 1 : 41. 1923). Ohwi (l.c.) referred other specimens to var. *brachytricha* (Steud.) Hack.

There are specimens more or less agreeing with the description of the first variety, and others with that of the second, but there are more intermediate states. The inconstancy of the panicle-shape is so evident, that it does not seem worthwhile to distinguish these varieties in Malaysian specimens.

6. **Deyeuxia stenophylla** Jansen, nom. nov.

*Calamagrostis filifolia* Merr. Philip. J. Sc. 1, Suppl.: 179. 1906; En. Philip. Fl. Pl. 1 : 82. 1923; Hitchc. Brittonia 2 : 117. 1936; Reeder, J. Arn. Arb. 31 : 322. 1950, non *Deyeuxia filifolia* Wedd.

WEDDELL, Bull. Soc. Bot. Fr. 22 : 173. 1875 gave a latin key to the species of *Deyeuxia* from the Cordilleras de los Andes. On p. 178 & 179 he mentioned *Deyeuxia filifolia*.

PILGER, Engl. Bot. Jahrb. 42 : 67. 1908 changed that name into *Calamagrostis filifolia*, overlooking a name already occupied by MERRILL for a Philippine species. HENRARD in Meded. 's Rijksherbarium Leiden 40 : 23. 1921 made the same transfer for the second time.

Distr. Philippines and New Guinea.

Note. Merrill 4537 & 4715 are cleistogamous forms, differing in having 0,5 mm long anthers, persisting with the ripening fruit within the closed glumes.

7. **Deyeuxia australis** (Zoll. & Mor.) Jansen, nov. comb.

*Lasiagrostis australis* Zoll. & Mor., Mor Syst. Verz. 100. 1846. — *Stipa australis* (Zoll. & Mor.) Steud., Zoll. Syst. Verz. 55. 1854; Syn. 1 : 132. 1854. — *Calamagrostis australis* (Zoll. & Mor.) Buse, Pl. Jungh. 343. 1854; Miq. Fl. Ind. Bat. 3 : 379. 1857; Back., Handb. Fl. Java 2 : 210. 1928. — *Calamagrostis javanica* Steud., Syn. 1 : 194. 1854; Miq., Fl. Ind. Bat. 3 : 379. 1857. — *Deyeuxia javanica* (Steud.) Boerlage, Ann. Jard. Bot. Buitenz. 8 : 71. 1889.

A rather variable species. Usually the spikelets are 5 mm long, but in some specimens from Sumatra they reach 6 mm. The length of the hairs on the nerves of the glumes varies: from minute to 0,6 mm long.

var. *montana*, nov. var.

Culmi geniculatim ascendentes patenteque, 20—30 cm alti. Folia brevissima, angustissima, convoluta. Paniculae breves, laxe spicatae. Spiculae distincte breviores, 3—3½ mm longae. Arista 15 mm longa.

Distr. Java: on the windswept mountaintops of Mt Gedeh (Kuhl & v. Hasselt sin. num. in Herb. Bog.) and Mt Welirang (Van Steenis 10949 in Herb. Bog.).

var. *bifida* nov. var.

Apex lemmae bifida, uterque dens aristatus, aristis c. 1 mm longis. Panicula magna, usque 35 cm longa, erecta et patentissima.

Distr. Java: Mt Slamet (Van Steenis 11631 in Herb. Lugd. Bat.).

8. **Deyeuxia archboldii** (Hitchc.) Jansen, nov. comb.

*Calamagrostis archboldii* Hitchc. Brittonia 2 : 115. 1936.

Distr. Only known from N. Guinea, Murray Pass (Brass 4570 & 4592). Ecol. Open grasslands at 2800 m altitude.

9. **Deyeuxia pusilla** (Reeder) Jansen, nov. comb.

*Calamagrostis pusilla* Reeder, J. Arn. Arb. 31 : 322. 1950.

Distr. New Guinea, Morobe district and Lake Habbema.

Ecol. With other dwarf grasses on wet boggy ground, 3000 to 3500 m altitude, each plant forming a distinct tuft.

**DICHANTHIUM** Willemet.

**Dichanthium erectum** Ohwi, Bull. Tokyo Sc. Mus. 18: 11. 1947.

The following is an emendation of the short original description: Perennial on a short hard rhizome without stolons. Culms 30—60 cm high, simple, erect, wiry, very slender, many-noded, glabrous and smooth. Sheaths shorter than the internodes, tight, terete, glabrous, closed nearly to the tip. Ligule very short to nearly absent. Blades rather stiff, those of the innovations and the lower culm-blades erect, the upper more spreading, linear, flat, rounded at the base, 3—4 cm long, 2—4 mm wide, glaucous, glabrous to sparsely tubercle-based hairy near the base. Panicle reduced to one long-exserted raceme, 3—5 cm long, rather loosely spikeled, 5—10 articulated, the slender joints 3—2½ mm long, ciliate along the margins and at the tip. Lower 2—4 spikelets male or reduced, awnless. Sessile spikelets lanceolate to elliptic, 4½—5 mm long, the base white-bearded. First glume as long as the spikelet, lanceolate-elliptic, acute, very narrowly winged, the keels minutely ciliolate towards the tip, indistinctly 6—7-nerved. Second glume as long, obtusish or minutely mucronate. Sterile lemma 3 mm long, hyaline, unnerved. Fertile lemma nearly reduced to a twice geniculated awn, 15—20 mm long. Pedicels 1½ mm long, ciliate along the margins and at the tip. Pedicelled spikelets male or neuter, awnless, the first glume often with one or more pits.

Distr. Timor (Walsh 45, typus; Walsh 32; Monod de Froideville 1242). Sumba (Hoekstra 13; Iboet 209).

Ecol. On calcareous hills, 700—800 m altitude.

This species differs from one-racemed specimens of *D. caricosum* in the wiry, erect culms, the stiff, short blades, the loosely spikeled raceme with long, tender joints, the nearly glabrous, indistinctly nerved and very acute first glume of the sessile spikelets. The type-sheet contains both specimens with unpitted and with 1—3-pitted pedicelled spikelets. In the specimen Walsh 32 (in Herb. Br. Mus. London) most of the pedicelled spikelets are unpitted, whereas some of them show a series of pits. Monod 1242, though apparently representing the same species, differs from the type by higher, more or less straggling, very wiry culms (those of the innovations are strictly erect), very glaucous, stiff, short blades which are erect in the innovations and the lower part of the culms but spreading in the upper part. The spikelets are unpitted.

**Dichanthium mucronulatum** Jansen nov. sp.

Perenne, laxe caespitosum. Culmi rigide erecti, usque ad 80 cm alti, teretes, glabri et laeves, nodis glabris, ab nodis superioribus ramosi. Vaginae glabrae, breviores quam internodia, inferiores subcompressae et laxae, superiores angustae. Ligula membranacea, c. 1 mm longa, truncata. Laminae lineares, paullo angustatae basin versus, apice longe acuminatae, molles, planae, nervo medio forti

inferne albescenti, marginibus laevibus, subglaucae, glabrae vel pilis longis sparsiter indutae. Inflorescentia elongata, erecta; racemi solitarii et terminales in culmis et ramis. Racemi 5—6 cm longi, 5 mm lati, virides; articulis et pedicelli filiformibus, solidis, c. 1 mm longis, prope basin glabris, apicem versus per margines ciliatis, pilis superioribus longioribus. Spiculae lineari-oblongae, 5—6 mm longae, pares 2—3 inferiores steriles vel ♂ et inermes; callus brevis, dense pilosus. Gluma I dorso rotundata, plurinervosa, glabra, minute ciliata per margines anguste inflexas apicem versus, mucronulata, nervo medio paullo exserto. Gluma II primam aequans, acuta vel minuta bidentata, glabra. Lemma sterile obtusum, valde brevior quam glumam. Lemma superior ad stipem hyalinum reductum, in aristam geniculatam 3 cm longam transiens, columna aristae laxae torta. Antherae lineares, minutae. Caryopsis oblonga. Spiculae pedicellatae c. sessiles aequantes, ♂ vel steriles, glabrae et inermes.

Distr. Mal. Peninsula; Gira Bate (Ridley 8129), typus in Herb. Singapore. Ecol. On rocks at low altitude.

A nearly glabrous species differing from *D. annulatum* (Forsk.) Stapf in the strictly erect, tall culms, the solitary racemes terminating the culms and their branches, the narrower and longer spikelets with a glabrous distinctly mucronate lower glume, and the long awn with a slightly wavy stipe and a loosely geniculate and twisted column.

### ECTROSIOPSIS (Ohwi) Jansen

#### ***Ectrosiopsis curvifolia* Jansen nov. spec..**

Gramen annuum, caespitosum. Culmi gracillimi et tenaces, erecti, 30—40 cm alti, pleraque folia ad basin conferta, hirsuti pilis minute basi-tuberculatis, albis, patentibus, c. 1 mm longis. Vaginae inferiores elaminata, rudimenta breviora quam internodia, laxa, hirsuta pilis mox caducis basi-tuberculatis. Ligula ad pilos brevissimos seriatim confertos reducta. Laminae anguste lineares, usque ad 20 cm longae et 2—2½ mm latae per partem dimidiam basalem, apicem versus attenuatae ad partem superiorem curvatam, involutam, acutissimam, hirsutae superne et inferne pilis basi-tuberculatis, densissimis prope basin. Panicula elongata, 10—15 cm longa, axis ramis et pedicellis hirsutis pilis patentibus; rami solitarii et distantes (internodia inferiora 5—3 cm longa), oblique erecti sive patententes, inferiores 2—3 cm longi, 5—8 spiculas breve pedicellatas, magis minusve erectas, superiores gradatim breviores et spiculas pauciores gerentes. Spiculae lineari-oblongae, 6—7 mm longae, manifeste lateraliter compressae, pallide virides, glabrae, laeves. Glumae membranaceae, naviculi-formes, inequales, inferior 1 mm longa, superior c. 2 mm longa, utraque acuta, 1-nervia, longe persistens; rhachilla inter flosculas disarticulans. Flosculorum 3 inferiores bisexuales; lemma membranaceum, rectum dorso, a latere visu ovatum, c. 2 mm longum, latior, in apice acuminata attenuatum, 3-nervium, nervis lateralibus ab medio cum ab margine aequae remotis. Lemma flosculorum

superiorum sterilius longior et angustior, in apicem acuminatissimum breviter aristatum et recurvatum attenuatum. Antherae 0.3—0.4 mm longae. Caryopsis ellipsoideus.

Distr. New Guinea, Mai Kussa, leg. MacGregor a. 1890; No. 9 in Herb. Melbourne (typus).

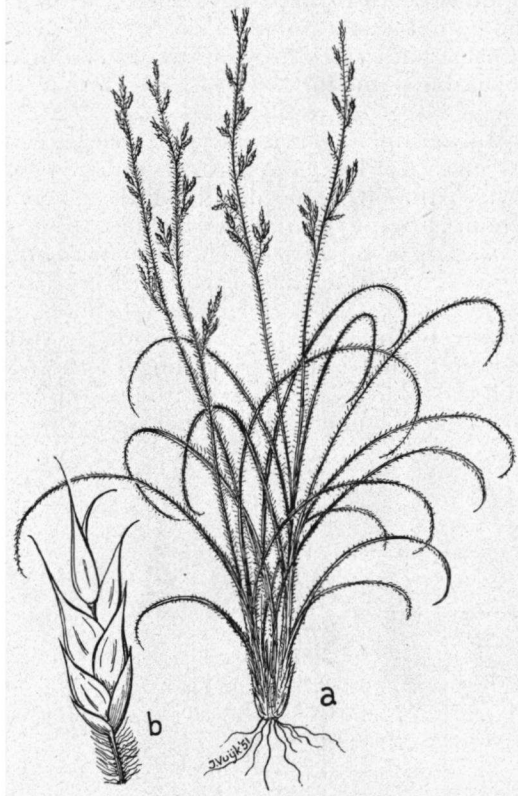


Fig. 2. *Ectrosiopsis curvifolia*  
a. type from Mai Kussa. b. spikelet

### SPOROBOLUS R. Br.

#### 1. *Sporobolus javensis* Ohwi, Bull. Tokyo Mus. 18: 12. (1947)

BACKER (Handb. Fl. Jav. 2: 205. 1928,) mentions the occurrence of *Sporobolus lindleyi* (Steud.) Bth. from East Java, where this species occurs on open brackish soil at the base of the hill Semongkrong. *Sp. lindleyi* Bth. is based on *Vilfa lindleyi* Steud., the latter being only a name change of *Sp. pallidus* Lindl. 1848, non Nees 1840. NEES originally gave the name to an Arabian grass, LINDLEY applied it for an Australian grass. HOOKER F. discussed the nomenclatural position of *Sp. pallidus* in Fl. Br. Ind. 7: 252. 1897,. He came to the conclusion that it was preferable to retain the name *Sp. pallidus* for



the Australian plant and to call the Arabian species *Sp. arabicus* Boiss. (Diagn. Pl. Or. I, 13, 1853, p. 14).

C. E. HUBBARD examined Lindley's type specimen in Herb. Univ. Cambridge and stated that it represents *Eragrostis japonica* (Thunb.) Trin. Therefore, BENTHAM's name *Sp. lindleyi* (Steud.) Bth. can no more be used for this Australian species.

The next synonym of it is *Sp. subtilis* F. v. M., but this is a homonym of a different species described by KUNTH. S. T. BLAKE concluded that the only available name for it is *Sp. caroli* Mez (in Fedde, Repert. 17: 299. 1921).

The East Javan specimens do not at all agree with the Australian species (figured e. g. by TURNER, Austral. Grass. 1895, p. 53) and I agree with OHWI that it is specifically distinct, a view shared by Mr. BLAKE whom I sent specimens.

Likewise *Sp. javensis* is not nearly related to *Sp. australasicus* Domin (in Fedde, Repert. 9: 53. 1911,) and to *Sp. coromandelianus* (Retz) Kunth (Rév. Gram. I: 68 1829,). *Sp. australasicus* is a more slender species with shorter relatively broader spikelets on longer widely spreading pedicels; the lower glume is relatively longer; the grain is globular. The margins of the blades are more strongly thickened and bear more numerous, much longer and stouter spine-like hairs.

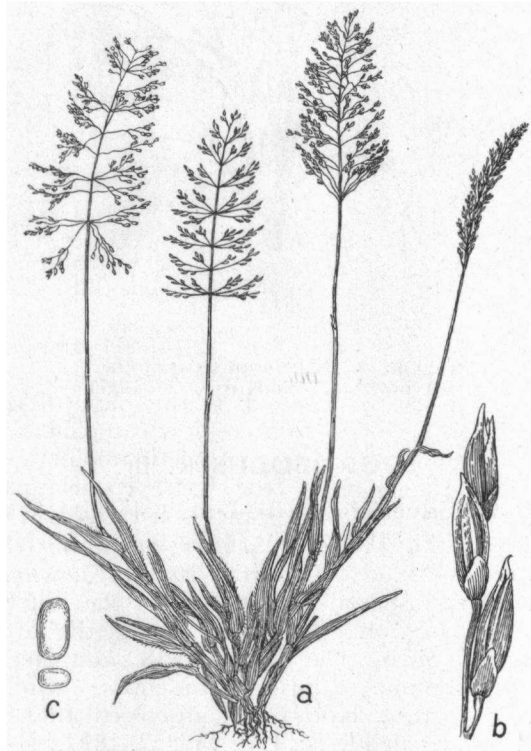


Fig. 3. *Sporobolus javensis* Ohwi  
a. type from Java. b. spikelets. c. grain

*Sporobolus coromandelianus* has more or less the same habit but the pedicels are shorter, the first glume minute and the axis of the panicle is glandular above the first whorl.

Here follows a slightly emended description of *Sporobolus javensis* Ohwi.

Annual, caespitose. Culms geniculate-ascending to erect, simple, glabrous and smooth, 2—4-noded, 20—35 cm high. Lower sheaths short, subcompressed, glabrous, the margins ciliate; uppermost sheaths about 1 dm long and nearly bladeless. Ligule  $\frac{2}{3}$  mm long, densely ciliate. Blades lanceolate-linear, flat and soft, 3—9 cm long, 4—8 mm wide, crowded at the base of the culms, the margins slightly thickened and ciliate with short, tubercle-based hairs, especially in the lower part. Panicle exserted, erect, oblong-ovate, 6—8 cm long, 3—4 cm wide, the filiform branches in distinct whorls, obliquely spreading, the lower 2,25—4 cm long, naked below for  $\frac{1}{3}$ — $\frac{2}{3}$  of their length, scabrid in the upper part, the spikelets tending to occupy only the outside of the panicle and shortly pedicelled, about 15 mm long, greyish to blackish. First glume short,  $\frac{1}{4}$ — $\frac{1}{3}$  the length of the spikelet, ovate, obtuse. Second glume as long as the spikelet, usually adpressed, when young scabrid to pilose in the upper part. Lemma slightly shorter than the second glume, 1-nerved. Palea shorter, obtuse, easily splitting up in 2 parts. *subangular*, 0.8—0.9 mm long.

Distr. Only known from East Java.

Ecol. On open, sunny, brackish soil at the base of the hill Semonkronk (Van Slooten 2394, *typus* in Herb. Bogor.).

2. ***Sporobolus lenticularis*** S. T. Blake, Univ. of Queensl. Papers I, 18: 1941, p. 4.

BACKER (Handb. Fl. Jav. 2: 205. 1928) mentions *Sporobolus pulchellus* R. Br. to occur in Sumatra. I compared the Sumatran specimens with Brown's type in Herb. Kew. They certainly are different and represent another species.

OHWI (Bull. Tokyo Sc. Mus. 18: 12. 1947) described them as a new species: *Sporobolus sumatranus* Ohwi. Culms slender, up to 45 cm long; most of the leaves crowded at the base. Blades lanceolate-linear (when flattened out), more or less canaliculate and involute towards the acute tip, their margins pectinate-ciliate with bulbous-based hairs, especially towards the base. Panicle exserted, up to 12 cm long and 3—4 cm wide; branches arranged in distant whorls, spreading, naked at their base, simple or with short branchlets; spikelets short-pedicelled, tending to occupy the outside of the panicle. Spikelets glossy, red-brown, 1.5—1.7 mm long. First glume rather long, reaching  $\frac{1}{2}$ — $\frac{2}{3}$  the length of the spikelet, hyaline, acute, unnerved. Second glume as long as the spikelet, acute, 1-nerved. Lemma nearly as long, more obtusish, membranous, 1-nerved. Grain elliptic to lenticular, *laterally compressed with thin edges*.

This species agrees with the description of *Sporobolus lenticularis* S. T. Blake, l. c.. By courtesy of Mr. BLAKE I received a duplicate

of the type number (Blake 13384, from Queensland) an examination of which sustained my opinion.

Distr. Australia, Malaysia: North Sumatra, Atjeh (Ostwald 77, Jeswiet 558 & 668), East Sumatra (Sohns 7, Bartlett 8343), Toba Plain (Lörzing 9869, Weiland a. 1920).

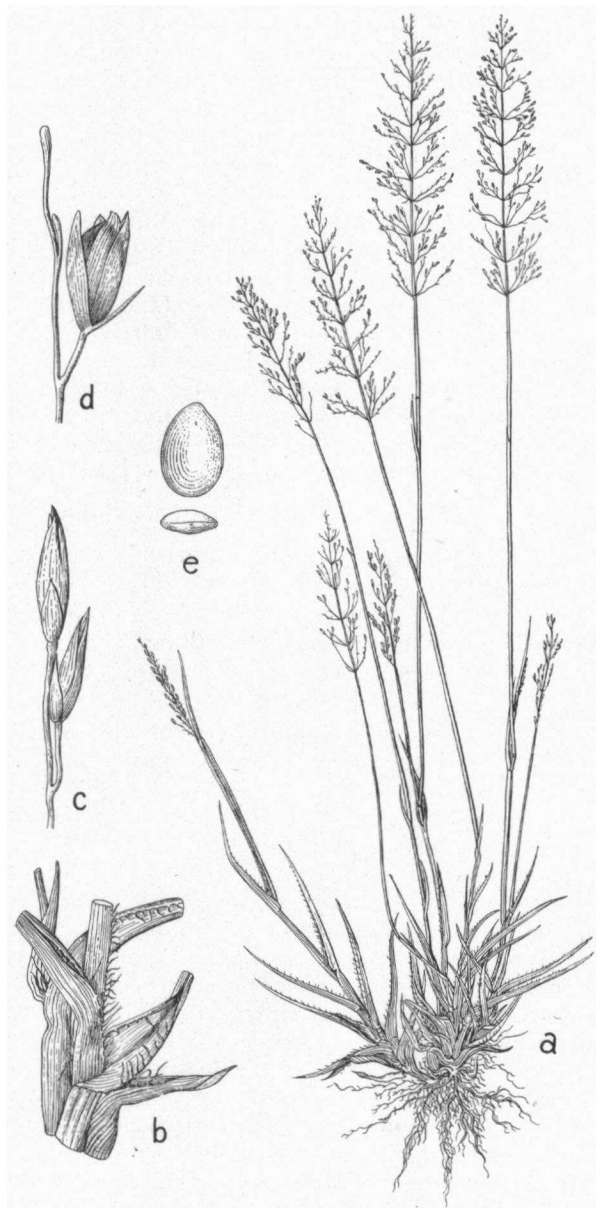


Fig. 4. *Sporobolus lenticularis* S. T. Blake  
 a. specimen from Sumatra. b. lower sheaths. c. young  
 spikelets. d. mature spikelet. e. grain

### 3. *Sporobolus virginicus* (L.) Kunth.

This species, a cosmopolitan, coastal, sand-dune plant with creeping rhizomes is very variably in habit, leaf-shape, and panicle.

OHWI (Bull. Tokyo Sc. Mus. 18: 1. 13. 1947) described *Sporobolus sundaicus*, differing slightly from typical *S. virginicus*.

The type specimens in Herb. Bogor. do not possess stolons. However, the specimens of the same number in Herb. Leiden have long and freely branching stolons like in typical *S. virginicus*. They are strongly branched from the lower nodes; the shoots and branches erect, virgate, 20—40 cm high with numerous very narrow complicate blades, 7—12 cm long and 2 mm wide when expanded. The panicle is 7—12 cm long, contracted with erectly adpressed short branches. I see no difference in the spikelets: they are similar to those of typical *S. virginicus* save they are slightly shorter. Given the extensive distribution of *S. virginicus* it is evident that such slight deviations may be expected. They have at most varietal significance.

## THEMEDA Forsk.

1. *Themeda arguens* (L.) Hack. D. C. Monogr. Phan. 6: 657. 1889, is based on *Stipa arguens* L., Sp. Pl. ed. 2: 117. 1762, the specific epithet being derived from but not based on *Gramen arguens* Rumph., Herb. Amboin. 6: 15. 1750, tab. 6 fig. 1. The Linnean description in one respect (“bracteis basi barbatis—Bracteae longiore basi extens valde pilosae”) applies better to HACKEL’s conception of *Th. arguens* than to *Th. quadrivalvis* (L.) O. Kuntze, Rev. Gen. Pl. 2: 794. 1891, based on *Andropogon quadrivalvis* L. In other respects it would apply well to both species. MERRILL (Interpr. Herb. Amboin. 89. 1917) rejected the combination of HACKEL and accepted the name *Th. frondosa* (R. Br.) Merr., based on *Anthistiria frondosa* R. Br. Prodr. 200. 1810. Probably he did not compare the type of *Stipa arguens* L. himself, at least he does not actually say so, but based his remarks on the interpretation of MUNRO. At my request Dr. C. E. HUBBARD kindly examined the type in the Linnean herbarium. He states that it is definitely identical with *Th. arguens* as described by HACKEL and not with *Th. quadrivalvis* (L.) O. Kuntze.

var. **balinensis**, var. nov..

Culmis brevibus gracilibusque folia angusta plicata gerentibus distincta. Vaginae glabrae nodis pubescentibus et ore longe ciliato exceptis. Panicula brevis fasciculis 1—2 paucospiculatis composita. Spathae et glumae glabrae vel sparsissime pilosae.

Distr. Bali (Van Steenis 7763a, typus), Timor (Monod de Froideville 1356), Sumba (Monod de Froideville 2009).

Ecol. On hot grassy slopes at 50—150 m altitude.

2. *Themeda quadrivalvis* (L.) O. Kuntze.

HACKEL (DC. Monogr. Phan. 6: 664. 1889) mentioned this species as *Th. ciliata* (L. f.) Hack., based on *Anthistiria ciliata* L. f. Suppl.

113. 1781. This is an illegitimate name as the younger LINNAEUS cited in his synonymy: *Andropogon quadrivalvis* L., Syst. ed. 13 p. 158.

Distr. Native of SE. Asia and the Seychelles, in Malaysia only known from Timor and Sumba. In Timor it grows in savannahs with no or few cattle and is subjected to annual burning.

The group of species taken together as *Th. gigantea* by Hackel, DC. Monogr. Phan. 6 : 670. 1889, has been split up again by STAFF, A. CAMUS and others. The Malaysian species may be divided in 2 series as follows:

A. Involucral spikelets densely hirsute with fulvous tubercle-based hairs.

1. Each raceme with 1 fertile spikelet or very rarely 2.
2. Fertile spikelet awnless or shortly and imperfectly awned. Involucral spikelets 5—7 mm long. 3. **Th. gigantea**
2. Fertile spikelets with a long, hairy, perfect awn. Involucral spikelets 10—18 mm long. 4. **Th. arundinacea**
1. Each raceme with 2—3 fertile spikelets with the awn reduced to a short, subule or wanting. 5. **Th. intermedia**

B. Involucral spikelets glabrous or scabrous.

3. Each raceme with 2—4 fertile spikelets.
  4. Fertile spikelets 7—8 mm long, awnless or very shortly and imperfectly awned. 6. **Th. villosa**
  4. Fertile spikelets 9—11 mm long with a long, hairy, perfect awn. 7. **Th. caudata**
3. Each raceme with 1 fertile spikelet.
  5. Involucral spikelets 12—15 mm long. Fertile spikelets brown-villous with a scabrous perfect awn. Sheaths glabrous and smooth. Panicle elongate, dense with long racemes. 8. **Th. idjenensis**
  5. Involucral spikelets shorter. Fertile spikelets scabrous, not villous, with a hairy perfect awn. Lower sheaths hairy. Panicle open with short racemes. 9. **Th. novoguineensis**

3. **Themeda gigantea** (Cav.) Hack., sens. str. in DC. Monogr. Phan. 6: 670. 1889.

*Anthistiria gigantea* Cav. Icon. 5: 36. t. 458, 1799. *Androscepia gigantea* (Cav.) Brongn. Duperr. Voy. Bot. 78. 1829; Buse, in Miq. Pl. Jungh. 363. 1854, partly; Miq. Fl. Ind. Bat. 3: 506. 1857, partly. — *Perobachne secunda* Presl, Rel. Haenk. 1: 348. t. 48, 1830; Miq. Fl. Ind. Bat. 3: 507. 1857. — *Th. gigantea* subsp. *genuina* var. *genuina* Hack. in DC. Monogr. Phan. 6: 672. 1889; Merr. En. Philip. Pl. 1: 50. 1923; Reeder, J. Arn. Arb. 29: 373. 1948.

This species is characterized by its short densely hirsute racemes on a short peduncle with small involucral spikelets and one fertile spikelet (very rarely 2), with the upper lemma awnless or with a very short imperfect awn.

Distr. Restricted to the Philippines, where it is locally abundant in open grasslands and savannahs, at low and medium altitudes. Reeder l.c. mentions a specimen from the Solomon Islands (Brass 3518).

var. **vulpina** (Anderss.) Hack. l.c. 673.

*Anthistiria vulpina* Anderss. Nov. Act. III, 2 : 423. 1856.

The glumes of the involucrel spikelets are densely bearded with golden or fulvous hairs based on whitish tubercles. The spikelets are slightly larger.

Distr. Only known from Luzon (Cuming 1272, type).

Note. This variety is of minor value.

4. ***Themeda arundinacea*** (Roxb.) A. Camus, in Lecomte, Fl. Gén. Indochine 7 : 363. 1922. — *Anthistiria arundinacea* Roxb. Fl. Ind. ed. Carey 1 : 251. 1820. — *Themeda gigantea* subsp. *arundinacea* (Roxb.) Hack., in DC. Monogr. Phan. 6 : 674. 1889; Back. Handb. Fl. Java 2 : 108. 1928.

This species differs from the preceding in the large involucrel spikelets up to 18 mm long, the upper lemma of the solitary fertile spikelet which has a perfect, geniculate, hairy awn, the pedicelled spikelets which are 8—12 mm long. The type of *Anthistiria arundinacea* in Herb. Br. Mus. London agrees perfectly with the Philippine specimens (e. g. Loher 1843).

Distr. India, Indochina, Malaysia: Philippines, W. Java, and Borneo (Motley 205).

var. *subsericans* (Nees ap. Steud.) A. Camus, in Lecomte, Fl. Gén. Indo-Chine 7 : 363. 1922.

*Anthistiria subsericans* Nees ap. Steud., Syn. 1 : 401. 1855. — *Themeda gigantea* var. *subsericans* Hack., l.c. 674. 1889. — *Themeda subsericans* (Nees) Ridley, Fl. Mal. Pen. 5 : 262. 1925.

Panicle-axis slightly pubescent, especially below the nodes. Peduncle of the racemes at the top often with long spreading hairs. Spikelets slightly shorter. Column of awn about 3 cm long.

Distr. India, Annam, Malaysia: Mal. Peninsula, Sumatra, and Borneo.

5. ***Themeda intermedia*** (Hack.) Dur. & Jacks. Ind. Kew. Suppl. 1 : 424. 1906.

*Themeda gigantea* subsp. *intermedia* Hack., in DC. Monogr. Phan. 6 : 675. 1889. — *Themeda gigantea* var. *amboinensis* Hack. l.c. 673.

This species agrees with *Th. gigantea* in the hairy glumes and with *Th. villosa* in having racemes with 2—3 fertile spikelets. The hairiness of the glumes is usually less dense than in *Th. gigantea* and *Th. arundinacea*, the tubercle-based hairs vanishing upwards. The fertile spikelets, the blunt callus included, are about 10 mm long, the imperfect awns are usually reduced to the subule, very rarely they are perfect.

Distr. Malaysia: not yet from Sumatra and Java.

var. **intorta** var. nov.

Racemis spiculas hermaphrodita binas fere semper gerentibus distincta. Spiculae hermaphroditae perfectae aristatae, aristas flexuosis, ad se invicem intortis.

Distr. SE. Borneo (Van Loenen 16, typus, Neth. Ind. For. Serv. 59).

6. **Themeda villosa** (Poir.) Dur. & Jacks., Ind. Kew. Suppl. 1: 424. 1906.

*Anthistiria villosa* Poir. Encycl. Suppl. 1: 396. 1810. — *Heterolytron scabrum* Jungh. Tijdschr. Nat. Gesch. 7: 294. 1839. — *Anthistiria mutica* Hassk. Tijdschr. Nat. Gesch. 7: 117. 1843. — *Androscopia gigantea* Brongn. var. *sundaica* Buse, in Miq. Pl. Jungh. 364. 1854. — *Androscopia gigantea* Brongn. var. *mutica* Anderss. Nov. Act. Upsal. III, 2: 248. 1856. — *Themeda gigantea* subsp. *villosa* Hack., in DC. Monogr. Phan. 6: 675. 1889; Back. Handb. Fl. Java 2: 108. 1928.

This is among the tall species the most common one in Malaysia. It is characterized by the short racemes with 2—3 (rarely 4) densely brown-villous fertile spikelets, 7—8 mm long. The involucral spikelets with glabrous or rarely scabrous glumes are up to 10 mm long. The fertile lemma is awnless or very shortly and imperfectly awned.

Distr. Throughout Malaysia.

7. **Themeda caudata** (Nees) Dur. & Jacks. Ind. Kew. Suppl. 1: 424. 1906; A. Camus, in Lecomte, Fl. Gén. Indo-Chine 7: 364. 1922; Honda, Bot. Mag. Tokyo 40: 108. 1926; Bor, Fl. Assam 5: 410. 1940.

*Anthistiria caudata* Nees in Hook. & Arn., Bot. Beech Voy. 245. 1838. — *Themeda gigantea* subsp. *caudata* Hack., in DC. Monogr. Phan. 6: 676. 1889; Merr., Bibl. Enum. Born. Pl. 42. 1921.

Closely allied to *Th. villosa* but differing in the longer fertile spikelets (9—11 mm); lower glume very coriaceous, nearly covering the second; the upper lemma with a perfect, hairy, geniculate awn 4—8 cm long.

Distr. Malaysia: not yet recorded from the Philippines, Moluccas, and New Guinea.

8. **Themeda idjenensis** nov. spec.

*Themeda gigantea* subsp. *avenacea* (non Hack.) Back. Handb. Fl. Java 2: 108. 1928.

Ab *Th. villosa* differt robustiore usque ad 5 m altum, perglabrum et laeve. Panicula longissima et angustissima, ramis saepe dense fasciculatis. Spatheae angustissimae, implerisque breviores quam racemos. Racemes usque ad 2 cm longi, spiculam fertile unam anguste lanceolatam et breviter pedicellatam agentes. Pedicellus glaber sive brevissime pilosus apice. Spiculae involucrales glabrae, 12—15 mm longae, longe acutissimae sive breve aristatae. Spicula fertile breviter brunneo-villosum, arista scabra, haud pilosa, geniculata, usque ad 6 cm longa, columna subulam superante.

Distr. East Java, gregarious on the northern slopes of the Idjen plateau and Mt Tenger (Koorders 42922, typus, Backer 25158, 36158, 36946; Beumée 1594; Bijhouwer 16).

This very robust species is quite glabrous and smooth. The elongate densely contracted, composite, spatheate panicle is up to 1 m long. The spathes of the racemes are very narrow and shorter than the racemes. The involucreal spikelets with smooth, glabrous glumes are very long (12—15 mm) exceeding the solitary fertile spikelet. The awn of the upper lemma is only scabrous (not hairy), geniculate, about 6 cm long, the column much exceeding the subule.

9. ***Themeda novoguineensis*** (Reeder) nov. stat.

*Themeda gigantea* (Cav.) Hack. var. *novoguineensis* Reeder, J. Arn. Arb. 29 : 374. 1948. — *Themeda gigantea* (non Hack.) Hitchc. Brittonia 2 : 912. 1936.

This species belongs by its glabrous glumes of the involucreal spikelets to the group of *Th. villosa*. It is characterized by whitish, long-pubescent lower sheaths and pubescent nodes and panicle. The spathes are 2½ cm long and contain one fertile spikelet. The involucreal spikelets are placed in 2 pairs, slightly distant from each other. The glumes of the fertile spikelet are only aculeolate-scabrous, but not villous. The hairy, perfect awn is 4—5 cm long.

Distr. New Guinea (Brass 3710, typus, Brass 3589, Carr 11235, Armit 44, Chalmers a. 1883 in Herb. Melbourne) and Celebes (Eyma 14681).

Ecol. Often the main contingent of grassy vegetation on mountain slopes at medium altitudes.