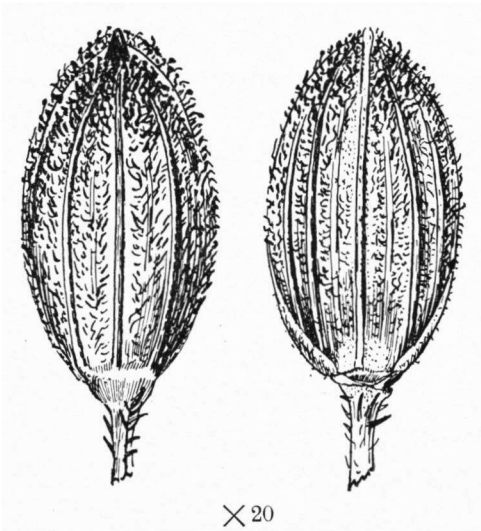
No. 61. New or insufficiently known species and new binomials in the genus Digitaria.

BY

Dr. J. TH. HENRARD.

Digitaria mattogrossensis (Pilger) Henr. nov. spec.
= *Panicum adustum* NEES var. *mattogrossense* PILG. in Engl. Bot. Jahrb. XXX. [1901] p. 131.

This species is very different from the true *Digitaria adusta* (NEES) GRISEB. and to distinguish by the flat, broad, glabrous leaves, the rather obtuse more turgid spikelets with a shorter pubescence and the shorter and whitish clavellate hairs, moreover also by the nearly equal length of glume II and III (the upper glume and sterile lemma). *Digitaria adusta* GRISEB. differs in the narrower, pungent, firm, convolute blades, hairy sheaths with velvety pubescent scales at the base of the plant, the spikelets are narrower, lanceolate and acutish, the upper glume in *D. adusta* is much shorter than the sterile lemma and both have longer fulvous hairs. Most allied to *Digitaria adusta* is ARECHAVALETA'S *Anthaenantia Hackeli* and only to accept as a



DIGITARIA MATTOGROSSENSIS Henr.
From type specimen.

variety of *D. adusta:* **Digitaria adusta** var. **Hackeli (Arechav.) Henr.** nov. var.

This variety has spikelets as in typical *adusta* but the hairs are longer and more copious and there are no velvety pubescent scales at the base of the culms, the racemes are moreover longer and more numerous.

Panicum adustum var. *leianthum* HACK. in FEDDE, Rep. VI. [1909] p. 342 is a distinct species and accepted already by Dr. PARODI as *Digitaria leiantha* (HACK.) PARODI. Prof. HITCHCOCK has the same opinion about this species.

Panicum adustum var. *leucotrichum* HACK. in Bull. Herb. Boiss. IV. [1904] p. 271 is as to the characters of the spikelets not allied to *Digitaria adusta* GRISEB., but agrees better with *Digitaria leiantha* and is therefore placed by me under this species as a variety: **Digitaria leiantha (Hack.) Parod.** var. **leucotricha (Hack.) Henr.** nov. comb.

Digitaria corynotricha (Hack.) Henr. nov. comb.

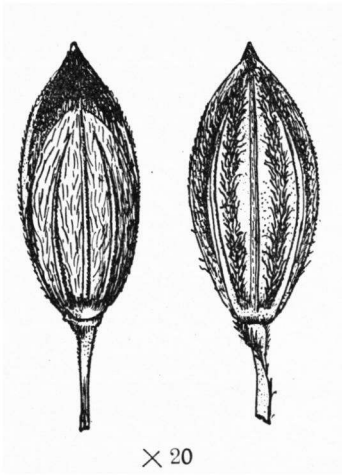
= *Panicum corynotrichum* HACK. in Oe. B. Z. LI. [1901] p. 335, a species described from Brazil is as to the spikelets most allied to *Digitaria mattogrossensis* and has the same 3-nerved upper glume equalling in length the sterile lemma, but it differs in the thick velvety pubescent blades. It may be that both species *D. mattogrossensis* and *D. corynotricha* belong to the same species as varieties.

Digitaria Balansae Henr. nov. spec.

Racemi 5—9, graciles, spiculae ternatae, ovato-ellipticae, leviter acuminatae, parvae, 1,8 mm. longae vel vix 2 mm. attingentes, gluma I deest, II et III aequilongae pilis clavatis dense puberulae, gluma fertilis atrofusca, longitudinaliter punctato-striolata.

Tufted perennial, apparently flowering already in the first year, elegant, up to $1^1/_2$ m. high, inclusive of the panicle, simple or sparingly branched from the lower or some of the upper nodes, the branches not rarely panicle-bearing, without or with few innovations. Culms strictly erect, about 2 mm. thick, many-noded, nodes rather equally distributed, the uppermost internode long-exserted, internodes terete, glabrous, nodes contracted, dark, glabrous; sheaths many-nerved, scaberulous on the nerves, much shorter than the internodes, slightly compressed with prominent protruding glabrous auricles, ligules up to 2 mm. long, truncate, slightly lacerate, brownish; blades flat, up to 2 dm. long, 5—7 mm broad,

linear-lanceolate, gradually narrowed and pointed, about 7-nerved, the nerves equidistant, prominent and whitish, margins thin, both surfaces glabrous and smooth or minutely scaberulous along the margins; inflorescence strictly erect, racemes 5—9, quite sessile, subdigitately arranged, solitary or the uppermost ones 2—3-nate, on a short, 3 cm. long, angular, slightly scabrous common axis, strictly erect, slender, about 12 cm., not rarely up to 20 cm. long, finely pubescent at the base or with a tuft of short hairs, rhachis straight, triquetrous, with very narrow, scabrous, green-winged margins, very characteristically reddish- or brownish-punctulate on the back, the racemes not very dense, somewhat loose, especially at the base, the spikelets loosely appressed, scarcely imbricate, pedicels ternate, the lower groups of each raceme not rarely 5-nate towards the base, more or less flexuous or curved upwards, filiform with discoid tips, scabrous by whitish, hyaline, thick spiny hairs, the hairs at the tip somewhat more copious but not exceeding the tip, the shorter pedicels nearly as long as, the longer ones much longer than the spikelets, the latter appressed, densely crowded especially at the base, subimbricate or rather loose upwards, oblong-lanceolate, acutish but not acuminate, about 1,8 mm. long or scarcely up to 2 mm. brownish-green, silky pubescent, lower glume absent or a very delicate hyaline, truncate membrane, upper glume oblong, rounded at the tip, slightly shorter than the fertile valve, 3-nerved with hyaline margins and with dense lines of hairs between the nerves and mostly also along the margins, the hairs distinctly capitellate, lower floret quite corresponding in outline and length to the spikelet, the sterile lemma thin, flat, 3-nerved or with a pair of additional side nerves, with dense lines of capitellate hairs between the side-nerves and the margins, the inner spaces along the mid-nerve smooth, the upper valve (valvula) very minute, truncate and glabrous, upper floret oblong-lanceolate, acutish, dark purplish to black, the valve with broad whitish overlapping margins especially upwards, slightly keeled dorsally, finely longitudinally striate-punctulate.



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DIGITARIA BALANSAE Henr.

From type specimen.

Specimens examined:

Paraguay: Cosme, in swamps, 2. III. 1876, leg. B. BALANSA no. 91 (type).
Guarapi, in marshy places, II. 1880, BALANSA no. 2936.
Posta-Cué, in moist prairies, III. 1884, BALANSA no. 4353.

Argentina: Misiones, Santa Inés (Posadas), 8. II. 1924, leg. PARODI no. 5465.
Misiones, Puerto Paranay, 15. II. 1924, leg. PARODI no. 5529.

Most allied to *Digitaria mattogrossensis* HENR., from which it is easy to distinguish by the much smaller, narrower and acutish spikelets. All the specimens cited above have quite the same vegetative parts and racemes with the curious spotted dorsal side, a character also found in *Digitaria mattogrossensis.*

Digitaria eriostachya Mez in Beiblatt no. 125, Engl. Bot. Jahrb. LVI. [1921] p. 8.
= *Digitaria fallens* PARODI in Physis VIII. [1926] p. 375.

This beautiful species belonging to HACKEL's *„Binata"* is rather common in Paraguay. The species is very striking on account of the long white hairs on the two outer scales, at maturity these hairs are spreading and mixed with reddish or not rarely black ones, especially towards the summit of the scales. Prof. MEZ described the second glume as 5-nerved and Dr. PARODI gives it as 3-nerved. Having seen both PARODI's and MEZ's types, I must observe that the nervation of the upper glume is variable in the same specimen, often distinctly 5-nerved and by suppression of one of the lateral nerves not rarely 4-nerved and in the same panicle not rarely sub-3-nerved. This kind of nervation is also observed in different other species of the genus *Digitaria.*

Specimens examined:

Paraguay: Paraguari, in fields, 18. XII. 1876, BALANSA no. 146 (type).
Villa-Rica in fields, XII. 1874, BALANSA no. 146a.
Paraguari, in fields, 1875, BALANSA no. 150.
Ypacaray in central Paraguay, II. 1913, HASSLER no. 11565.

Argentina: Corrientes, Torrent, 29. II. 1924, PARODI no. 5699.

Digitaria malacophylla (Hitchc.) Henr. nov. comb.
= *Syntherisma malacophylla* HITCHC. Contrib. U. S. Nat. Herb. XXII. [1922] p. 466.

This species, one of the most beautiful plants of our genus was hitherto only known from the type collection in British Guiana,

collected by Prof. HITCHCOCK (no. 17284!). It occurs however also in French Guiana. Perfect specimens, quite agreeing with the type were already found in the year 1840 by LEPRIEUR. (Mus. Hist. Nat. Paris and Herb. Lugd. Bat. sub no. 808, 100—350).

Digitaria aequatoriensis (Hitchc.) Henr. nov. comb.
= *Syntherisma aequatoriensis* HITCHC. Contr. U. S. Nat. Herb. XXIV. [1927] p. 426.

This is once more a species with silky-villous spikelets. The nearly equal outer scales of the spikelets distinguish this species from allied ones with about the same form of inflorescence, they are characterized by their panicles with an elongate axis and a great many racemes. Such species are:

Digitaria myriostachya (Hack.) Henr. nov. comb.
= *Panicum myriostachyum* HACK. in Oe. B. Z. LI. [1901] p. 294. This species was accurately described.

Digitaria sejuncta (Hack.) Henr. nov. comb.
= *Panicum sejunctum* HACK. in Oe. B. Z. l. c. p. 294 = *Paspalum distans* NEES, Agrost. Bras. [1829] p. 21, non *Digitaria distans* (CHASE) FERNALD in Rhodora XXII. [1920] p. 103.

Digitaria sejuncta occurs, so far as is known to me, only in Brazil. Prof. MEZ has given the determination *Digitaria distans* also to a species from Paraguay, but this Paraguayan plant is totally different from the true *Paspalum distans* as described by NEES and figured by TRINIUS (Spec. Gram. tab. 94).

The true *Digitaria distans* was based upon *Syntherisma distans* CHASE, a species from Mexico and only known from the type locality Jalisco, it is said to be nearly glabrous and more related to *Syntherisma velutina* CHASE. To my opinion it is also related to a group of South American species with equal outer scales.

There are in South America two species with acute or pointed but not acuminate spikelets, one is *Digitaria cuyabensis* PARODI based upon *Panicum cuyabense* TRINIUS and described by him in Panicearum Genera from the year 1834. The same species was already published in the year 1829 by NEES as *Paspalum lanuginosum* (Agrost. Bras. p. 63). This name has priority, *Paspalum lanuginosum* Bosc, given by BEAUVOIS in Ess. Agrost. [1812] p. 12, is a nomen nudum. The species is therefore named here **Digitaria lanuginosa (Nees) Henr.** nov. comb. This species has spikelets with puberulous margins of the glume and sterile lemma. Most allied to this species

is another one described by TRINIUS as *Panicum connivens*, it is the **Digitaria connivens (Trin.) Henr.** nov. comb., it has perfectly glabrous and smooth spikelets.

Two other allied species from the same regions are *Digitaria aequiglumis* (HACK.) PARODI and *Digitaria laetevirens* MEZ, they are to distinguish from the two other ones mentioned above by the longer and distinctly acuminate spikelets, the outer scales much exceeding the fertile lemma. The species described by MEZ has quite glabrous spikelets, *Digitaria aequiglumis* is always more or less hairy along the margins or lateral nerves of the glume and sterile lemma. If we are obliged to unite *Digitaria connivens* and *Digitaria cuyabensis* we must for the same reasons also accept *D. aequiglumis* and *D. laetevirens* as varieties of the same species.

In Proc. Biol. Soc. Washington. Vol. 40. [1927] p. 84, Prof. HITCHCOCK has suggested the combination *Digitaria velutina* for the well-known Mexican species *Syntherisma velutina*, based upon the *Milium velutinum* DC. Cat. Hort. Monsp [1813] p. 126.

This combination however cannot be accepted, because in the year 1812 BEAUVOIS placed FORSKAL'S *Phalaris velutina* correctly in the genus *Digitaria* as *Digitaria velutina* P. B., we find this combination cited also in the Index Kewensis.

TRINIUS cited in the year 1826 *Digitaria villosa* PERSOON as a synonym of *Milium velutinum* DC., but PERSOON'S name is based upon *Syntherisma villosa* of WALTER, a species from North America. We are thus obliged to take up another name for the Mexican species. TRINIUS named it in 1826 *Panicum leucites* in Diss. bot. altera p. 85. I therefore propose the name **Digitaria leucites (Trin.) Henr.** nov. comb.

Digitaria pseudo-ischaemum Busc, in Plantae Junghuhnianae [1854] p. 382.

A well-known species from the Old World is *Digitaria longiflora* PERS., based upon *Paspalum longiflorum* RETZIUS. Dr. STAPF has given an accurate description of this species in Flora of Trop. Africa IX. [1919] p. 469. He describes the spikelets with the characteristic dense lines of appressed hairs between the nerves and along the margins. American agrostologists have a different idea of this species.

So we find this species figured by HITCHCOCK in his work on the grasses of Hawaii and the species is also described in his work on the grasses of British Guiana. I have studied HITCHCOCK'S Hawaiian

plant and also his specimen from Guiana. This eminent agrostologist has placed his beautiful collections with great liberality at my disposal, so I could compare his specimens with Old World plants in our Institute. Both plants with such a different range have indeed quite glabrous spikelets and differ moreover in some other characters from the Old World plants. Prof. HITCHCOCK's descriptions and figure were prepared from the specimens collected by himself, these specimens do not agree with the true *Digitaria longiflora*. Going over the asiatic and african material of *Digitaria longiflora*, we find that there occur in the eastern hemisphere two well-marked species, both having a long prostrate rooting base with numerous nodes and short, spreading, flat blades. One of these species is the *Digitaria longiflora* as described by Dr. STAPF with the spikelets having the characteristic pubescence as given in his description. The other species is distinct from *Digitaria longiflora* and belongs indeed to a different although allied species. This species was overlooked since it was described in the year 1854 by BUSE as *Digitaria pseudo-ischaemum*. BUSE's description exactly applies to the species with glabrous scales. The species was first collected by JUNGHUHN in Sumatra on the sandy seashore, without exact locality. The type is in the herbarium at Leyden, it bears an authentic label in BUSE's handwriting and the collector's label: Sumatra locis litoralibus arenosis Oct.

In BUSE's description the glumes (outer scales) are given as having the same length as the fertile lemma (ambabus floris fertilis glumellas laeves aequantibus). In the type, if we study a spikelet under a strong lens, we find an interesting character, I must explain here. The spikelets are acute on account of the the somewhat acuminate fertile lemma, the point of this lemma protrudes distinctly above the two outer scales, the latter are not so pointed and less acute. This character is very striking if we study the recent specimens collected by Prof. HITCHCOCK, here the fertile lemma is stramineous as in the type but the slightly coloured point exceeds the two outer scales and is therefore more prominent. In this character there is no difference between the Hawaiian and the Guiana plant, the latter is thus certainly introduced. I have seen this *Digitaria pseudo-ischaemum* from Java, Sumatra, the island of Bangka, British North Borneo, the Philippine Islands, Ceylon, Hawaiian Islands and British Guiana. Under the material of continental British India there are probably also specimens belonging to BUSE's species but the specimens from that region are not represented enough to prove this. I indicate here all the specimens I hitherto could examine:

Java: Buitenzorg, leg. H. HALLIER, 19. III. 1893, no. 638. Preanger, Tjidadap, south of Tjibeber, alt. 1000 ft. 11. VII. 1917, leg. W. F. WINCKEL no. 1023β (vern. name Kakawattan).
Sumatra: no precise locality, leg. JUNGHUHN (type).
Bangka: Muntok, alt. 20 m. leg. BÜNNEMEYER, 14. X. 1917, no. 1492 (partly).
British North Borneo: Sandakan and vicinity, in 1920, leg. RAMOS no. 1604.
Philippine Islands: Luzon, Prov. Sorsogon, Irosin, Mt. Bulusan, in 1926, leg. A. D. E. ELMER.
Ceylon: Pointe de Galles, 14. VII. in 1868, leg. BALANSA.
Hawaii: Hilo, side of moist cut along railroad, 18. VIII. 1916, leg. HITCHCOCK no. 14186.
British Guiana: Bartica, Hills Estate, 3 miles south of Bartica. Open dry bank. 10. XII. 1919, HITCHCOCK no. 17193.

Digitaria pseudo-ischaemum also inhabits the Malay Peninsula, as a weed in gardens. It was identified by RIDLEY (Flora of the Malay Peninsula, Vol. V. [1925] p. 214 with *Digitaria pertenuis* BUSE. RIDLEY'S description agrees with the specimens cited above, especially with the plants from the island of Bangka, the latter have somewhat longer racemes. RIDLEY mentions Bangka under the distribution.

The true *Digitaria pertenuis* BUSE differs from the species treated here, immediately in the densely pubescent spikelets, the narrowly winged racemes and the rather dense hirsute pubescence of all the vegetative parts, the sheaths and blades provided with long spreading hairs. *Digitaria pertenuis* has 1,2 mm. long spikelets and dark purplish lemmas. It is allied to *Digitaria chinensis* (NEES) HORNEM. Hort. Hafn. Supp. p. 8, a species with longer broadly winged racemes, longer spikelets and glabrous vegetative parts.

Digitaria pertenuis as mentioned by A. CAMUS in Fl. Gén. Indo-Chine, VII. [1922] p. 404 is certainly somewhat else, Mss. CAMUS gives the spikelets as longer than 2 mm. in the key on p. 396–397. I unfortunately did not see the specimen from Siam, collected by KERR.

Digitaria fuscescens (Presl) Henr. nov. comb.
= *Paspalum fuscescens* PRESL Rel. Haenk. [1830] p. 213.

This species was described by PRESL from Peru, but given in his Corrigenda as coming from California. It is a species with perfectly glabrous spikelets. A plate is published by SCRIBNER in the Grasses in the Bernhardi Herb. from Ann. Rep. no. X. of the Missouri Bot.

Gard. [1899] (plate X. no. 1.). From the detailed description and the plate given by SCRIBNER it is a spscies allied to *Digitaria pseudo-ischaenum*, it has the same character of the slightly exserted fertile lemma but the latter is not pale but brownish. It is probable that PRESL'S species inhabits the Old World. The localities given by PRESL are in many cases wrong and HAENKE'S authentic labels are often commutated. In the New World we have a species from Cuba with such glabrous spikelets, the *Digitaria curvinervis* (HACK.) FERNALD, the latter occurs probably also in South America, specimens from Columbia I cannot distinguish from *Digitaria curvinervis* but we must have more material to prove the identity.

From the work of HITCHCOCK and CHASE on the North American and Central American species of *Panicum* we see that there are in that genus many allied species, often not easy to distinguish but fairly well-marked. In the genus *Digitaria* occur undoubtly a great many of such species, we cannot unite all these well-characterized plants in but one species.

Digitaria montana Henr. nov. nom.

= *Panicum collinum* BALANSA in Bull. Soc. Bot. France XIX. [1872] p. 323 non *Digitaria collina* SALISB. Prod. [1796] p. 19.

A beautiful species, belonging to the „*Binata*", with spikelets thickly clothed with grayish-white hairs, somewhat resembling those of the genus *Trichachne* NEES (*Valota*), but the spikelets are quite the same as those of the genus *Digitaria*. The well-developed first glume in *Digitaria montana* is perfectly glabrous and the fertile valve is yellowish at maturity.

The two genera *Digitaria* and *Trichachne* are much allied and not always easy to separate and different species described under *Trichachne* form a transition between the two genera. The *Panicum phaeotrix* of TRINIUS was correctly placed by PARODI in the genus *Digitaria* as *D. phaeotrix* (TRIN.) PARODI. *Digitaria montana* is only observed on New Caledonia. I saw following specimens:

New Caledonia: Mouth of the Dumbea river, BALANSA no. 3078. (type in Herb. Lugd. Bat. Balansa's private collection). No precise locality, collected by DEPLANCHE no. 244 in Balansa's own herbarium at Leyden.

The rather long first glume of the spikelets is also found in an Australian species, the *Panicum villosum* R. BR. non LAM., identified by BENTHAM with *Panicum leucophaeum* H. B. K. This species was

placed by Mss. HUGHES in Kew Bulletin [1923] p. 313 under *Digitaria Brownei* (R. et S.) HUGH.. The species is however as to the spikelet-characters and the vegetative parts a member of the genus *Trichachne*, I therefore propose the name **Trichachne Brownei (R. et S.) Henr.** nov. comb.

HACKEL'S *Panicum Eggersii* in Oe. Bot. Z. LI. [1901] p. 292 is not allied to *Digitaria connivens* (TRIN.) HENR. but belongs to the genus *Trichachne* as **Trichachne Eggersii (Hack.) Henr.** nov. comb.

Digitaria bifasciculata (Trin.) Henr. nov. comb.

= *Panicum bifasciculatum* TRINIUS, Diss. bot. altera. De Gram. paniceis [1826] p. 76. = *Panicum fasciculatum* HORT. non SW. = *Panicum cruciatum* NEES ex STEUDEL, Syn. Gram. [1854] p. 39 = *Digitaria cruciata* NEES in Herb. Stach. et Winterb., CAMUS in LECOMTE, Fl. Gén. Indo-Chine VII. [1922] p. 399.

This Old World species is characterized by its thick, turgid, nearly glabrous spikelets with a very minute lower glume, the upper one is 3-nerved with scabrous nerves and about 1/4 as long as the fertile lemma, the sterile lemma (gluma III) is 7-nerved, the nerves are very prominent and scabrous with not rarely a short pubescence along the margins. The fertile valve is lead-coloured at maturity with a bluish hue.

This species was formerly cultivated in botanical gardens. TRINIUS mentioned the plant from the Bot. Gard. at Vienna, he changed the name on account of SWARTZ'S *Panicum fasciculatum* from the year 1788. In a latter work of TRINIUS, the Panicearum Genera from the year 1843 the species was mentioned on p. 199 as *Panicum fasciculare Ht. Goett.* This is however a nomen nudum. LINK published the species as *Digitaria fascicularis* in the year 1827, giving *Panicnm fasciculare* SCHRAD. *goett.* as a synonym. KUNTH, probably overlooked the *Panicum bifasciculatum* of TRINIUS and named the species *Panicum Schraderi* (Gram. I. 1829 p. 32) with the synonyms *Digitaria fascicularis* LINK and *Panicum fasciculare* SCHRAD. *Hort. Goett.* We have thus the following conclusion: Even if we accept two names *fasciculatum* and *fasciculare* as valid in the same genus, we cannot take up the name *Digitaria fascicularis* given by LINK in the year 1827, because the species treated in this paper was accurately described by TRINIUS already in the year 1826 as *Panicum bifasciculatum* and the combination proposed by me is the valid name of the species hitherto known as *Digitaria cruciata*. HOOKER has placed this species as a variety under *Digitaria sanguinalis* SCOP., it is

however very different in the characters of the spikelets and has moreover a different habit.

In BALANSA'S private herbarium of grasses, one of the most valuable collections of the Rijks Herbarium at Leyden, I found the species mentioned here as collected by him in a botanical garden (Hort. Mus. Pav. 21. IX. 1866) under the incorrect name of *Panicum mollissimum*. In BALANSA'S collection there is another specimen from Herb. Nestler as *Digitaria serotina*. The habitat of the species is British India and China. Besides the cultivated specimens I saw the following ones:

British India: Nalipur, leg. WALLICH, no. 6681 F.
Himal. bor. occ. 4—8000 ft. THOMSON in Herb. Hook. f. et TH.
Sikkim, 5—9000 ft., HOOKER in Hb. Hook. f. et TH. (both as Digitaria sanguinalis Scop.)

China: Province of Yun-nan, leg. DELAVAY no. 3129 (Hb. Paris, Hb. Leyden).

Digitaria Junghuhniana (Nees) Henr. nov. comb.
= *Panicum Junghuhnianum* NEES ap. STEUDEL, Syn. Gram. [1854] p. 63 = *Digitaria pruriens* (TRIN.) BUSE var. *Arnottiana* BUSE in Plantae Junghuhnianae [1854] p. 380.

Among JUNGHUHN'S grasses, published by BUSE, there is a series from Sumatra and Java, placed under *Digitaria pruriens* as β and γ, the latter with the varietal name *Arnottiana* and *Panicum Arnottianum* NEES as a manuscript name. One sheet in BUSE'S collection bears a label with the name *Panicum Arnottianum* N. ab E. in the handwriting of NEES. The *Panicum Arnottianum* was however never published by NEES, it was STEUDEL who in the year 1854 published the species, the type being a Ceylon plant in Herb. Wight. NEES gave the same name to a quite different grass in the collection worked out by BUSE, but recognized afterwards that the two plants he named *Panicum Arnottianum* belonged to different species. The plant collected by JUNGHUHN he consequently labeled thus as *Panicum Junghuhnianum*, a manuscript name, published afterwards by STEUDEL in the year 1854. At the same time BUSE published his var. *Arnottiana* of *Digitaria pruriens*. The plant from Ceylon, a very common species in the Malayan region, belongs to a genus, afterwards separated by STAPF from the genus *Panicum* as **Hemigymnia**, this genus has indeed in the spikelet-characters some affinity with *Digitaria*, BUSE'S plant is a true *Digitaria*. Both names published by

STEUDEL belong to two different species and are valid names. The true *Panicum Arnottianum* belongs to the same genus as *Poa malabarica* L., but it was wrongly identified by MERRILL with the linnean species. *Poa malabarica* is indeed a chinese species allied to *Panicum Arnottianum* but with much smaller spikelets. This species is the **Hemigymnia malabarica (L.) Henr.**, it occurs also in Tonkin collected by Balansa and published by him as var. *micranthum* of *Panicum nodosum* KUNTH. (See CAMUS; Fl. Gén. Indo-Chine VII. p. 455).

In BALANSA'S Herbarium are the following specimens belonging to *Hemigymnia malabaria:*

Tonkin: Dong-Dang, in forests, 10. II. 1886, BALANSA no. 480.
Tu-phap, in woods, 7. I. 1887, BALANSA no. 1610.
Valley of Lankok (Mont Bavi) in woods, 11. X. 1887, BALANSA no. 1609.

The species was collected by OSBECK in China and Dr. STAPF gives a locality near Hongkong (Happy valley Woods, WILFORD no. 254.)

Let us now return to the *Panicum Junghuhnianum*, placed by me in the genus *Digitaria*. BUSE'S plant is not a variety of *Digitaria pruriens* at all, the fertile lemma is chestnut-brown at maturity, not pale and stramineous as in *Digitaria pruriens* and the latter has a quite different shape of inflorescense. The *Digitaria Junghuhniana* belongs to those *Digitarias* where the racemes are more or less branched and at the same time placed along a more or less elongated common axis. The Indian species was wrongly identified with a very different British Indian species known as *Digitaria Wallichiana* STAPF and supposed by HOOKER to be the *Panicum Perrottetii* KUNTH, the latter a quite different species of tropical Africa. HOOKER'S description, taken from the British Indian plants proves immediately that it is very different from the true *Digitaria Perrottetii*, because he gives the upper spikelet of each pair as long-pedicelled. In recent works on the grasses of Java (BACKER, HEYNE) the javanese plant in question was identified with HOOKER'S plant from British India, although the description of HOOKER does not at all apply to the javanese grass. HOOKER gives the outer scales as about equal, a character indeed belonging to the British Indian *Digitaria Wallichiana* STAPF, in the javanese grass the upper glume is however only half as long as the sterile lemma. BACKER has made for the plant from Java the combination *Digitaria Perrottetii* BACKER. Fortunately this

name is anteceded by STAPF's *Digitaria Perrottetii* in Flora of Trop. Africa. Vol. IX. [1919] p. 435. BACKER's combination was published in HEYNE, De nuttige planten van Ned. Indie I. (Herdruk) [1922] p. 158. The indication of the length of the second glume in BACKER's description is incorrect. BACKER's determinations of Indian *Digitarias* are often wrong and his descriptions in many cases include more than one species.

I have seen *Digitaria Junghuhniana* from the following localities:

Java: Tjibogo, leg. JUNGHUHN; Wijnkoopsbaai, leg. JUNGHUHN; without precise locality leg. BLUME; Bandoeng in fields about 700 met. Nov. 1886 leg. B. BALANSA; Base of the Mount Salak, near Buitenzorg, 16 Nov. 1886 leg. BALANSA; garden of Tjibodas, 2300 met. 25 Nov. 1886 leg. BALANSA.
G. Handjawoeng near Buitenzorg, in 1912 leg. BACKER no. 6154; Klaten, in 1918, leg. LEEUWEN (pp.),

Sumatra: Hochankola, leg. JUNGHUHN; Goenoeng Singalang, 1500 m., 31. V. 1918 leg. BÜNNEMEYER no. 2824; Padangsche bovenlanden, Goenoeng Talang, 1300 m., 11. XI. 1918 leg. BÜNNEMEYER no. 5600; West coast, Koerintji, 850 m., 19. II. 1920 leg. BÜNNEMEYER no. 8291; Exped. Gajoe en Alas Landen in 1904, VAN DAALEN no. 305.

Philippine Islands: Prov. of Benguet, Luzon, Jan. 1909 leg. RAMOS no. 5925.

The plant from the Philippine Islands agrees in habit and most of the characters with the other specimens cited here, but the upper glume is only about 1/4 as long as the lemma. This character is also given by PRESL for his *Panicum microbachne* = **Digitaria microbachne (Presl) Henr.** nov. comb. The description of PRESL is rather short but the plant is certainly a *Digitaria*, allied to *D. pruriens* (TRIN.) BUSE. Both species belong together with the *Digitaria sanguinalis* to the group of the „*Binata*". *Digitaria pruriens* is very different from the *D. sanguinalis* and a common species in the malayan regions. The true *Digitaria sanguinalis* does not occur in the tropics, in this opinion I fully agree with Prof. PILGER and Dr. STAPF.

Digitaria singularis Mez in Beibl. Bot. Jahrb. LVI. [1921] p. 8.

This species is only known from Paraguay, where it was collected by BALANSA. The description is rather short and in some cases not quite correct, so the ligules are described as pilose, in reality

the mouth of the sheaths of the innovations is hispid, the hairs arrising from tubercles, the sheaths are somewhat hispid, but the upper ones are glabrous, in the description the spikelets are given as „binatae", the species belongs however to the group „Ternata" and the fertile lemma (palea) is dark purplish at maturity as in the allied species

Specimens from other localities belong probably to another species. *Digitaria singularis* is mentioned in STANDLEY'S work the Flora of the Panama Canal Zone (Contr. U. S. Nat. Herb. Vol. XXVII. [1928] p. 76), where the rhachis is given as not winged, a character found in the annual *Digitaria filiformis* (L.) KOEL. The rhachis in *Digitaria singularis* is however flat and distinctly winged, it is triquetrous or angled and not winged at all in *D. filiformis*, a species with moreover much smaller spikelets.

Digitaria singularis has hispidulous pedicels of the spikelets, the pedicels with a cup-shaped or patelliform tip, the sparse hairs not forming a protruding ring of stiff hairs at the summit, in *D. filiformis* this ring is wanting too but the pedicels are naked without a patelliform tip.

I saw *D. singularis* only from two localities:

Paraguay: Itangu, meadows near Villa-Rica, 17. II. 1876, leg. BALANSA without number.
Valley of Y-acan-guazu near Valenzuela in prairies, 15. III. 1884, BALANSA no. 4368 (type locality).

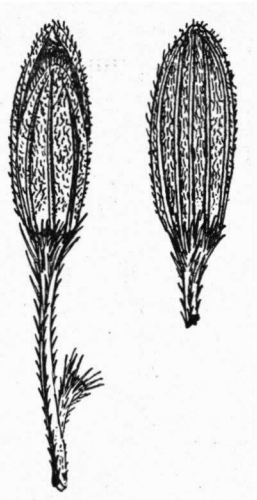
The *Digitaria filiformis* was described by KOELER in the year 1802. His description and the localities apply to a common and well-known European species, the *Digitaria Ischaemum* (SCHREB.) MUHL. (Descr. Ub. Gram. [1817] p. 131), taken up in ASCHERSON and GRAEBNER'S Synopsis as *Panicum lineare*. The basis of KOELER'S species was however the *Panicum filiforme* of LINNAEUS, the latter was cited by KOELER and also the locality America (loc. cit. p. 27). *Panicum filiforme* L. is a species of America and different from the European plant described by KOELER. According to the method of the type basis the *Digitaria filiformis* is based upon the *Panicum filiforme* L. and although the description of KOELER applies to a quite different species, the correct name of the American species is *Digitaria filiformis* (L.) KOELER.

There occurs in South America a species with the habit of *Digitaria singularis* but differing in some important characters. It

has hirtellous pedicels with a ring of stiff hairs at the cup-shaped or patelliform summit, the hairs extending beyond the apex of the pedicels. By this character the species is to distinguish from the annual *Digitaria filiformis*. The new species is described here as:

Digitaria paraguayensis Henr. nov. spec.

Perennis, caespitosa. Culmi erecti, cum panicula ad 40 cm. alti, teretiusculi, glaberrimi, leviter striati, graciles, 3-nodes, inferne parce ramosi, ramis paniculiferis, superne longiuscule nudi. Vaginae teretiusculae vel subcompressae, marginibus hyalinis, striolatae, internodiis breviores, glabrae vel leviter scaberulae, pilis paucis obsitae, auriculae bene evolutae, acutiusculae, fuscae. Ligula brevissima, $^1/_2$ mm. longa, albo-membranacea vel fusca, scariosa, glabra, interdum pilis paucis stipata. Laminae basi aequilatae, a vagina parum distinctae, lineares, planae, sensim longe acuminatae, inferiores tempore florendi delapsae plus minusve fibrosae, ad 15 cm. longae, 1—$1^1/_2$ mm. latae, superiores breviores, utrinque glabrae vel parce puberulae, marginibus scabris. Inflorescentia erecta, e spica unica (vel rariter 2) formata, 5—7 cm. longa, gracilis, 1—$1^1/_2$ mm. lata, rhachis subflexuosa, subtriquetra, spiculis angustior, pubescens vel hirtula, carinata, angustissime sed distincte viridi-marginata, ad insertionem sublanata. Spiculae ternatae vel abortu spicularum binatae, inaequaliter pedicellatae, pedicellis angulosis, appresse hispidulis, apice clavatis, patellatis, setis barbatis, primario spiculam duplo superante, secundario et tertiario spiculam breviore fultae, spiculae elliptico-ovatae vel ovato-lanceolatae, apiculatae, $1^1/_2$ mm. circa longae, $^1/_2$ mm. latae, inter nervos longitudinaliter striatae pilis clavatis, gluma I vix evoluta vel nulla, gluma II obtusa, spicula paullo brevior, 3-nervis vel sub-5-nervis, gluma III plana, 7-nervis, spiculam aequans, gluma fertilis lanceolato-oblonga, atro-violacea, apiculata, longitudinaliter striato-punctata, opaca, marginibus inflexis hyalinis.



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DIGITARIA PARAGUAYENSIS Henr.
From type specimen.

Paraguay: in collibus incultis prope Paraguari, 18. II. 1874. leg. B. Balansa no. 94. (Typus speciei in H. Lugd. Bat. sub no. 908, 93—551).
Cerro Pelado, prope Paraguari, 3. IV. 1882, leg. Balansa no. 4365 (cotype).

Digitaria argyrostachya (Steud.) Fernald in Rhodora, Vol. XXII. [1920] p. 103.

= *Panicum argyrostachyum* STEUDEL, Syn. Plant. Gram. [1854] p. 40 no. 38 = *Digitaria rhopalotricha* BUSE in Pl. Jungh. [1854] p. 381.

This species was described in the year 1854 under two different names. STEUDEL's type was the plant collected by ZOLLINGER no. 260, that of BUSE was collected by JUNGHUHN near Pesawahan, both types studied by me agree perfectly with another, they have spikelets 1,8—2 mm. long. STEUDEL's publication was issued in parts, the first part was issued in January of the year 1854, BUSE's enumeration appeared in February of the same year. STEUDEL's name has priority and the combination proposed by FERNALD is the valable one under *Digitaria*. STEUDEL's work was also known to BUSE, who wrote on the label of the Zollinger plant his own determination, followed by STEUDEL's name and no. 38 (that is the plant mentioned by STEUDEL on p. 40 of his Synopsis). BUSE's label in his own handwriting proves thus that STEUDEL's work was published at the time BUSE prepared his manuscript.

I saw this species hitherto only from Java and Madoera, according to American agrostologists it is also found in the New World, probably introduced, if at least the identification is correct. The recent material of this species in our herbarium was collected by ZWAARDEMAKER, BEGUIN and BACKER, it was uniformly determinated by BACKER as *Paspalum Royleanum*, the latter is a different species from British India and belongs to *Digitaria puberula* LINK.

Digitaria ternata, *argyrostachya* and *puberula* belong to those species where the pedicels have a characteristic setuliferous, patelliform tip, the hairs exceeding beyond the summit, the 3 species differ however in important characters of the spikelets.

BUSE described also a var. *glabrescens* of his *D. ropalotricha* and mentioned under the very short description three plants. ZOLLINGER's plant no. 260 was placed under this variety, this plant is however the type of STEUDEL's species and quite the same as BUSE's typical plant, the main culm has the characteristic tubercle-based, long, spreading hairs below the inflorescence and the same vegetative parts, the varietal name does not occur on BUSE's authentic label. The two other plants in BUSE's collection have culms without the tubercle-based hairs. Although the hairs in the typical plant are often deciduous, the remaining tubercles are always conspicuous and this is a character to recognize the typical plant. Only the plant collected near Wijnkoopsbaai by JUNGHUHN bears the varietal name *glabrescens* in BUSE's script, there is but one sheet of this

locality, other sheets, all from Magelang bear only the name *Digitaria ropalotricha* in BUSE's handwriting. Taking the plant collected at Wijnkoopsbaai as the type of the var. *glabrescens* (because it is the first specimen mentioned and the only one bearing BUSE's varietal name in his script) we see that the tubercle-based hairs are absent, other differences from typical *Digitaria argyrostachya* are the smaller spikelets, scarcely $1^1/_2$ mm. long and the shorter racemes, it is not so robust and more elegant, moreover the pubescence of the spikelets is somewhat different. Under the plants collected by BEGUIN (no. 2) near Bojolali there is in our herbarium one sheet with typical *D. argyrostachya*, a second sheet is BUSE's variety. The specimens in the Herb. at Buitenzorg under this number may be a mixture of the two forms too. The variety, treated here is very important, it agrees in habit (but not in the spikelet-characters) with *Digitaria digitata* BUSE and it may be that we have here a „populus hybrydogeneus". This is an interesting problem for field study.

Digitaria digitata was placed by BACKER (Handboek Flora v. Java II. [1928] p. 129) as a synonym under *Digitaria longiflora* PERS. This is wrong, the two species, belonging to two different groups of the genus, are so widely different, that we need not to enter here in particulars. *Digitaria digitata* is allied to *Digitaria chinensis* and *Digitaria violascens*. The study of this difficult group I wish to give in a following article.

Digitaria Camusiana Henr. nom. nov.

= *Digitaria caespitosa* BOIVIN ex CAMUS in Bull. Soc. Bot. France 73 Sér. 5. T. II. [1926] p. 914 non *Digitaria caespitosa* RIDLEY, Fl. Malay Peninsula V. [1925] p. 215.

Distribution: Madagascar.

Digitaria was accepted by HACKEL as a subgenus of *Panicum*, he divided it into 3 sections. The species mentioned in my paper belong to the *Binata* and *Ternata*. HACKEL'S first section, the *Solitaria*, is very interesting, the species are peculiar in having a somewhat thickened rhachis, the solitary spikelets sunken in the alternate notches. Having found a new member of this group, I will treat it here briefly, see moreover HACKEL'S work in Oe. B. Z. LI. [1901] p. 290—291. *Panicum strephioides* mentioned there belongs to a different genus, it is *Mniochloa strephioides* (GRISEB.) CHASE. See CHASE: Notes on Genera of Paniceae III. in Proc. Biol. Soc. Washington, XXI. [1908] p. 186.

Te section *Solitaria* of *Digitaria* contains 5 species.

Digitaria stenotaphrodes (Nees) Stapf in Kew Bull. [1906] p. 77.
= *Panicum stenotaphrodes* NEES ex STEUDEL Syn. Pl. Glum. [1854] p. 41.
Distribution: Carolines; Wilson Island, Uteite, Canton Island, Bow Island, Chain Island, Kings Island.

Digitaria Gaudichaudii (Kunth) Henr. nov. comb.
= *Panicum Gaudichaudii* KUNTH, Gram. II. tab. 106, Enum. Plant. I. [1833] p. 86. = *Digitaria stricta* GAUDICHAUD in FREYC. It. bot. [1826] p, 409 non *Digitaria stricta* ROTH Nov. Pl. Spec. [1821] p. 38.
Distribution: Marianae Islands.

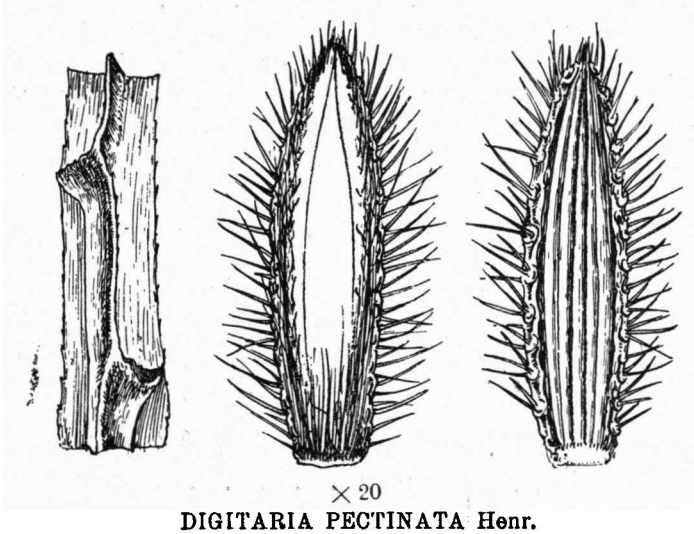
Digitaria pacifica Stapf in Kew Bull. [1906] p. 77.
Distribution: Christmas Island.

Digitaria platycarpha (Trin.) Stapf in Kew Bull. [1906] p. 78
= *Panicum platycarphum* TRINIUS, Panicearum Genera, Mém. Acad. Petersb. Sér. VI. Tom. IV. [1834] p. 198. = *Panicum tristachyum* HACK. in Bull. Herb. Boiss. IV. Sér. 2. [1904] p. 525 non *Digitaria tristachya* SCHULTES, Mantissa II. [1824] p. 261 = *Digitaria Matsumurae* HENR. in Herb. olim.
Distribution: Island of Bonin.
Panicum platycarphum and *P. tristachyum* were both accurately described from the same locality, Bonin Islands, where the plants grow on the summits of mountains in dense bunches. The identity of the two described plants is not quite sure. TRINIUS gives the „flosculus neuter 1-valvis" as 7-nerved, HACKEL says it is 5-nerved, but as in these group of *Digitarias*, the inflexed margins have a more or less distinct nerve (not to observe by studying the spikelet only in front), it may be that this nerve is often overlooked, moreover the marginal nerves are not rarely doubled.
TRINIUS described the culm as „ramosissimo", HACKEL as subsimple probably on account of the not so complete specimen, received by him from Prof. MATSUMURA. More important is TRINIUS's character of the acute spikelets, HACKEL gives the gluma III as „oblongo, obtusissimo". On account of these differences I based upon HACKEL's species *Panicum tristachyum* the new name for this species *Digitaria Matsumurae*. The type of TRINIUS not being accessible, we must for the moment accept both plants as belonging to one species, the long description of TRINIUS (with exception of the few characters mentioned) agrees very exactly with HACKEL's description and his type specimen is better to verify.

All the other species of this remarkable group grow on low coral islands, as is probably also the case with the new species from the coast of Timor.

Digitaria pectinata Henr. nov. spec.

Culmi decumbentes, ad nodes inferiores radicantes, e nodis inferioribus ramosi, graciles, striati, teretes, glaberrimi, 10—30 cm. alti vel cum panicula ad 40 cm. longi; vaginae laxae, subcompressae, internodiis multo breviores, apice hiantes, dorso carinatae, multistriatae, inferiores pubescentes, pilis paucis longis praeditae, superiores glabrae vel glabrescentes, marginibus hyalinis, auriculae bene evolutae, hyalinae, fuscae, ligula circa 1 mm. longa, membranacea,



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DIGITARIA PECTINATA Henr.
From type specimen.

glabra, obtusa, scariosa, pilis longis albis nonnullis stipata; folia lineari-lanceolatae, acuminatae, 4—5 cm. longae vel interdum breviores, 3—5 mm. latae, basi rotundatae vel subcordatae, inferiores molliter pubescentes, praesertim inferne pilis longis albis fimbriatae, nervo medio albo valde prominulo, marginibus incrassatis distincte undulatis praeditae, laminae superiores glabrescentes; inflorescentia e spicis 2—3 conjugatis formata, racemi glabri, suberecti vel divaricati, graciles, stricti, subdensiflori, ad insertionem incrassati, ibidem minute puberuli, rhachi dorso plana, leviter undulata, late viridimarginata, ad 8 cm. longa, 1,5 mm. lata, ventre crista elevata instructa; spiculae solitariae, distichae, in jugis transversis sitae, sessiles, appressae, fere immersae, 3 mm. longae, 0,5—0,7 mm. latae,

angustae, lineari-lanceolatae, acutae, gluma I deest, gluma II minutissima, membranacea, enervis, vix evoluta, ciliis nonnullis praedita, gluma III viridi-fusca, 7—9-nervis, nervis centralibus valde prominentibus, glabris, lateralibus valde incrassatis, pilis tuberculiferis confluentibus formatis, marginibus pubescentibus vel villosis, hyalinis inflexis, gluma IV (fertilis) straminea, spiculam aequans, haud punctulata, laevis, minutissime nervata.

Timor: Coepang, leg. R. BROWN, IV. anno 1803. Ex Herbario Musei Brittannici, sub nom. *Digitaria sanguinalis*. Typus speciei in Herb. Lugd. Bat. sub no. 908,92—1882.

There is in our herbarium a second sheet of this species, same label with the determination: *Digitaria*. (H. L. B. no. 908,92—2162). These plants are smaller with shorter racemes, otherwise they do not differ. The spikelets of this interesting species, seen in front (the flat side) show 5 glabrous nerves and 2 very thick nerves formed by the tubercles from which the hairs arrise, the overlapping margins are to see only at the back of the spikelet (convex side), this part of the glume is thin with hyaline margins and provided with long appressed hairs and one nerve, the latter is mostly very distinct, sometimes less so and nearly wanting, I have seen also spikelets (in the same raceme) where there are two such nerves in the hyaline part.

Key to the species of the section Solitaria of Digitaria.

Racemes more than 10, rarely only 7, commonly 12—16, fasciculate, spikelets scabrous, hispidulous . . . . . **D. Gaudichaudii.**

Racemes less than 10, only 2—3, conjugate or digitate.

Second glume conspicuous, about half as long as the sterile lemma, lanceolate, acute, minutely pubescent, not fringed, sterile lemma acute, as long as the spikelet, pubescent between the nerves and along the margins. **D. stenotaphrodes.**

Second glume a minute scale or almost wanting.

Sterile lemma rigidly ciliate along the margins in front, the hairs tubercle-based, the inflexed overlapping margins pubescent, 7—9-nerved, lanceolate, acute, as long as the fertile lemma, second glume scarcely visible or indicated only as a minute nerveless membrane, bearing some long hairs, fertile lemma linear-lanceolate, acute . . . . . **D. pectinata.**

Sterile lemma minutely pubescent only, not ciliate, without tubercle-based hairs along the margins in front.

Spikelets 2—2¼ mm. long, ovate or elliptical, ligules 2—2,5 mm. long, rhachis 2—3 mm. broad, second glume broadly ovate, very obtuse 0,3 mm. long, minutely pubescent or glabrous, fertile valve ovate, subacute. . . . . **D. pacifica.**

Spikelets 3 mm. long, linear-oblong, ligules 1 mm. long, rhachis 1½ mm. broad, second glume ovate, 0,6 mm. long, 1-nerved, ciliate, fertile valve lanceolate to oblong, obtuse, distinctly longer than the sterile lemma. . . . . **D. platycarpha.**

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