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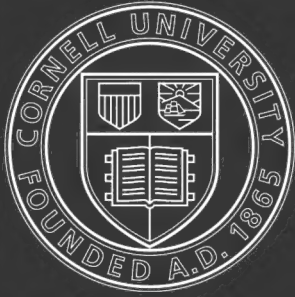
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NATAL PLANTS.

VOL. 5.

GRASSES.

. . . . EDITED BY

J. MEDLEY WOOD, A.L.S.,

DIRECTOR OF NATAL BOTANIC GARDENS, DURBAN.

— AND OF —

NATAL GOVERNMENT HERBARIUM.

Published under the auspices of Government and the Durban Botanic Society.

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PREFACE.

• • •

ON the completion of this volume of "Natal Plants" I have to say with much regret that in consequence of the inability of the Government to continue the grant in aid that we have hitherto received on the completion of each volume, the work must now come to an abrupt conclusion, as the Durban Botanic Society, under whose auspices it was commenced and has been carried on, are not able to continue their assistance without the support of the Government.

It will be noticed that the Plates Nos. 426 to 450 are printed in a different colour to the others, and the paper on which they are printed is not so good, this colour was not authorised, proofs of it were not submitted, and as the letterpress and binding was done by another firm the mistake was not discovered until too late for rectification.

The whole of the drawings and dissections of the plants figured in this volume were done by Miss Franks, botanical assistant in the Herbarium, and they have been completed to my entire satisfaction.

I have again to offer my hearty thanks to the Director of the Royal Gardens and Herbarium at Kew. The whole of the descriptions in Vol. 2 and, with four exceptions, those of the present volume were taken from the Flora Capensis by permission; almost the whole of the specimens have been verified at the Kew Herbarium, several specimens have been lent to us for copying, while some others were drawn by Miss Smith, the botanical artist at Kew, and faithfully copied here by Miss Franks. It is to be regretted that so very little information as to the value of the grasses here figured could be given, but all has been quoted that I have been able to obtain, and my thanks are due to all those persons who have supplied us with the material, and also to the members of the Durban Botanic Society for much encouragement in my work.

J. MEDLEY WOOD.

The Parts of this Volume were issued as under:—Part 1, July, 1904; Part 2, July, 1905; Part 3, March, 1906; Part 4, June, 1908.

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NOTES.

So far as at present known to us, the whole of the grasses of the Colony are figured and described in Volumes 3 and 5 of this work, with the sole exception of *Arundinaria tessellata*, Munro; of this species we have culms and leaves, but no inflorescence, and we have not been able to obtain it.

Two new species are described, viz.: *Agrostis suavis*, Stapf., and *Ischæmum Franksæ*, Wood.

Eragrostis Lehmanniana, Nees., has been credited to Natal by mistake, not having been collected in the Colony so far as at present known.

The following species are described in the *Flora Capensis*, with the exception of *Calamagrostis Huttonæ*, Hack., but Natal is not credited with them. Specimens of the whole of them, collected in the Colony, are in the Colonial Herbarium, and, with the exception of *Bromus commutatus*, Schrad., are figured in this work:—

<i>Andropogon Ruprechtii</i> , Hack. ...	...	...	South Africa.
„ <i>transvaalensis</i> , Stapf. ...	...	...	„
<i>Aristida aequiglumis</i> , Hack. ...	...	...	„
„ <i>angustata</i> , Stapf. ...	...	...	„
„ <i>vestita</i> , Thb. ...	...	...	„
<i>Briza minor</i> , L. ...	...	...	Introduced.
<i>Bromus commutatus</i> , Schrad. ...	...	...	„
„ <i>maximus</i> , Desf. ...	...	...	„
<i>Calamagrostis Huttonæ</i> , Hack. ...	...	...	South Africa.
<i>Digitaria monodactyla</i> , Stapf. ...	...	...	„
„ <i>setifolia</i> , Stapf. ...	...	...	„
<i>Diplachne fusca</i> , Beauv. ...	...	...	Introduced.
<i>Eragrostis Atherstonei</i> , Stapf. ...	...	...	South Africa.
<i>Holcus lanatus</i> , L. ...	...	...	„
<i>Lolium multiflorum</i> , Lam. ...	...	...	Introduced.
<i>Panicum lævifolium</i> , Hack. ..	...	...	South Africa.
„ <i>Ecklonii</i> , Nees. ...	...	...	„
„ <i>capillare</i> , L. ...	...	...	Introduced.
<i>Phalaris minor</i> , Retz. ...	...	...	„
<i>Setaria perennis</i> , Hack. ...	...	...	South Africa.
<i>Triraphis Rehmanni</i> , Hack. ...	...	...	„
<i>Vulpia Myuros</i> , Gmel. ...	...	...	Introduced.

Rottbœllia hordeoides, Munro, MSS. in Harvey's *Genera of South African Plants* is *Urelytrum squarrosum*, Hack., in Volume 2, Plate 110 of this work.

Panicum colonum, L., in "Handbook to the Flora of Natal," is a variety of *Panicum Crus-galli*, L., which is figured in Volume 5 of same work, Plate 473.

Panicum gossypinum, A. Rich, in the above-named Handbook, is *P. serratum*, Spreng, figured in Volume 5 of same work, Plate 148.



ARISTIDA BARBICOLLIS. TRIN

PLATE No. 401.

ARISTIDA BARBICOLLIS, Trin. and Rupr. (Fl. Cap., Vol. VII., p. 559).

Nat. Order Gramineæ.

PERENNIAL, tufted, light green to glaucous, glabrous except at the mouths of the sheaths.

CULMS slender, rather wiry, more or less compressed below, geniculately ascending or suberect, $\frac{1}{2}$ to $1\frac{1}{2}$ foot long, simple or scantily branched from some of the lower nodes, smooth, 2-3-noded; sheaths tight, smooth; ligule a dense line of short hairs passing into beards or a ring of long hairs at the mouths of the sheaths; blades usually very narrow, linear, acute, 1-3 inches by $\frac{3}{4}$ to 1 line, folded; convolute, curved, rigid or flat and then often twisted or curled, smooth below, scabrid above.

PANICLE ovate to oblong, 2-6 inches long; rhachis straight or flexuous, smooth; branches solitary, distant, filiform, spreading, flexuous or straight, scaberulous, dense, spike-like from $\frac{1}{4}$ to $1\frac{1}{2}$ inch above the base; pedicels very short.

SPIKELETS $3\frac{1}{2}$ lines long.

GLUMES keeled, the *lower* lanceolate, shortly mucronate, 2 lines long, keels smooth or scabrid, the *upper* linear, emarginate, mucronate, $3\frac{1}{2}$ lines long. Valve linear, produced into a short, stout, tightly twisted beak, somewhat shorter than the upper glume, minutely scaberulous below the beak; callus less than $\frac{1}{2}$ line long; awns jointed with the valve, not disarticulating, fine, 5-9 lines long; pale, lodicules, stamens and grain as in *A. congesta*.

Habitat: NATAL. Near Durban, *Williamson*; near Tugela, 4000 feet, *Buchanan* 290; near Tugela, *Wood* 3588; near Colenso, 3000 feet, *Wood* 4418; Umsinga and base of Biggarsberg, *Buchanan* 90; without precise locality, *Gerrard*; Zululand, *Jenkinson* 40 (*Wood* 7305); Zululand, *Jenkinson* 64 (*Wood* 7339); *Gerrard* and *McKen* 167.

Drawn from *Wood's* 3588, and compared with 4418.

The *Flora Capensis* says: "Very close to *A. congesta*, but the branches of the panicle are more numerous and longer, the spikelets a little larger, and the mouth of the sheaths is distinctly bearded, the beards sometimes uniting into a ring at the junction of the blade and the sheath."

Jenkinson says: "Native name N'gongoni, used for brushes, grows in dry, exposed situations on poor soil, has long roots, stands drought well, first green in spring, last to dry up, very wiry and of little value for stock."

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 402.

ARISTIDA VESTITA, Thunb. (Fl. Cap., Vol. VII., p. 561).

Nat. Order Gramineæ.

PERENNIAL, light green to glaucous; rhizome very short, with dense tufts of barren shoots and culms, the latter erect, 1-2 feet high, simple, 2-1-noded, terete, wiry, glabrous, smooth; sheaths tight, smooth, scarcely striate, glabrous or the lower more or less covered with a very fugacious wool; ligule a line of very short hairs; blades convolute-setaceous from a few inches to more than 1 foot by scarcely 1 line when expanded, rigid, curved or flexuous, glabrous, smooth below, scabrid to hispidulous above.

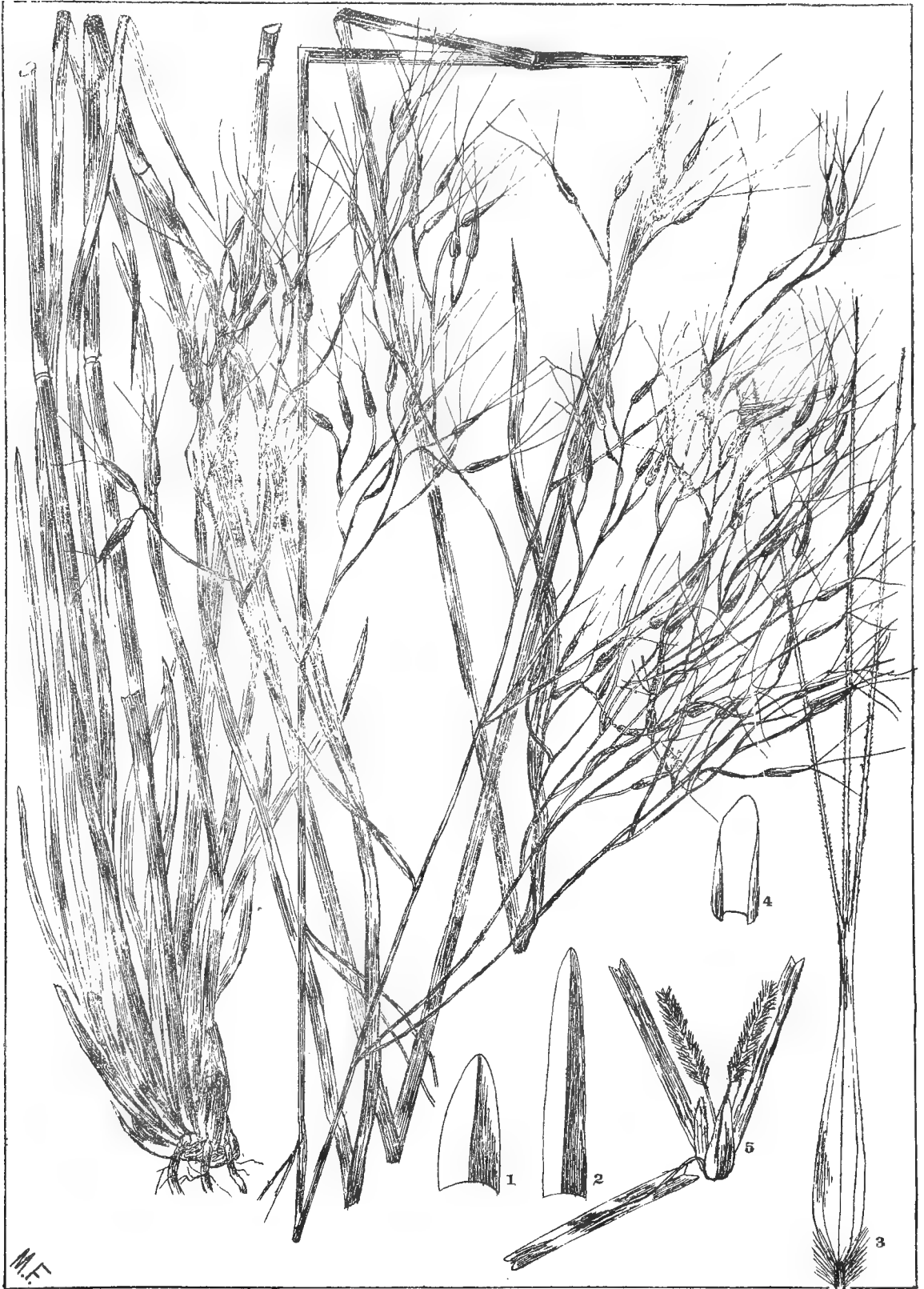
PANICLE effuse or contracted, 3-6 inches by 2-5 inches; rachis strict or flexuous; lower branches 2-3-nate, $1\frac{1}{2}$ to 3 inches long, usually spreading, sparingly and remotely branched; branchlets very flexuous, filiform to capillary, scaberulous; pedicels very fine, the longest equalling the spikelets.

SPIKELETS often secund, nodding, yellowish, rarely purplish, 5-6 lines long.

GLUMES rather firm, rounded at the back, obtuse or more or less 2-toothed, the *lower* linear-oblong, about half the length of the upper or less, this narrow lanceolate-linear, 5-6 lines long. Valve linear, $4\frac{1}{2}$ to $5\frac{1}{2}$ lines long, not beaked, scaberulous from the middle or almost smooth; callus $\frac{1}{2}$ line long; awn disarticulating from the valve, stipitate, foot 1 to $2\frac{1}{2}$ lines long, twisted, bristles divaricate or the lateral upright, $\frac{2}{3}$ to 1 inch long; pale broad, $\frac{1}{2}$ line long; lodicules $\frac{2}{3}$ - $\frac{3}{4}$ line long, finely nerved; anthers $2\frac{1}{2}$ lines long; grain very slender, 3 lines long.

Habitat: NATAL. Near Dundee, *Green* 90 (*Wood* 7450), March, 1899.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens, and lodicules. *All enlarged.*



ARISTIDA VESTITA. THB.



PEROTIS LATIFOLIA. *ATT.*

PEROTIS, Ait.

Nat. Order Gramineæ.

SPIKELETS very small, narrow, sessile or subsessile on the continuous axis of a spike or a lax spike-like raceme, jointed on and falling entire from the axis or the rudimentary pedicels; rhachilla not continued beyond the floret. Floret 1, perfect, much shorter than the glumes.

GLUMES equal, linear or linear-lanceolate, rigidly membranous, 1-nerved, passing into capillary awns. Valve lanceolate, acute, delicately hyaline, 1-nerved. Pale very minute, hyaline, nerveless. Lodicules 2, broad, cuneate. Stamens 3. Styles distinct, short; stigmas plumose, laterally exerted. Grain cylindrical, slender, exerted from the unchanged floret and enclosed with it in the glumes; embryo about $\frac{1}{3}$ the length of the grain; hilum punctiform, basal.

ANNUAL OR SUBPERENNIAL.—**CULMS** leafy; blades usually broad, rigid and ciliate; ligules hyaline; spikes or pseudo-spikes slender, crinite from the long capillary awns.

Species 2 or 3, in the tropics of the Old World and in subtropical Australia.

PLATE 403.

PEROTIS LATIFOLIA, Ait. (Fl. Cap., Vol. VII., p. 575).

CULMS fascicled, geniculate, suberect, ascending often from a few inches to $1\frac{1}{2}$ inch long, smooth, glabrous, many-noded, lower internodes short, not or slightly exerted, uppermost 1 or 2 by far the longest, long exerted; leaves rather numerous in the lower $\frac{1}{3}$ - $\frac{1}{4}$ of the culm; sheaths thin, striate, smooth; ligules very delicate, short, ciliolate; blades linear-lanceolate to ovate-lanceolate from a clasping broad base, acute or acuminate, $\frac{3}{4}$ -3 inches by $1\frac{1}{2}$ -4 lines, flat or somewhat wavy, glaucous, margins rigidly ciliate or fimbriate, rarely smooth; spike slender, rigid or flexuous, 3-8 inches long, rather dense; axis smooth, terete.

SPIKELETS about 1 line long, linear-lanceolate.

GLUMES scaberulous, 3-10 lines long, very fine, flexuous, often purplish. Valve less than $\frac{1}{2}$ line long; pale under $\frac{1}{4}$ line long; tip finely ciliolate; anthers $\frac{1}{4}$ line long; grain almost 1 line long.

Habitat: NATAL. Near Durban, below 500 feet, *Drège*; valleys between Tugela and Umpumulo, 1000 feet, *Buchanan* 168; without precise locality, *Gerrard* 687; Van Reenen, 5000-6000 feet, *Wood* 5990; near Durban, *Wood*.

Drawn from *Wood's* 5990, from which the stamens and stigmas had fallen away, these were drawn from *Buchanan's* 168.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

TRAGUS, Haller.

Nat. Order Gramineæ.

SPIKELETS, sessile, in deciduous clusters of 2-4 on the filiform continuous axis of a cylindric, spike-like panicle; rhachilla tough, not continued beyond the floret. Floret 1, perfect, somewhat shorter than the upper glume.

GLUMES very dissimilar, *lower* facing the rhachis, minute, hyaline, or suppressed, *upper* 5-ribbed or 5-nerved, membranous between the hispid spine-hooked ribs or nerves, exceeding the valve. Valve lanceolate or lanceolate-oblong, membranous, 3-nerved. Pale as long as the valve, 2-nerved. Lodicules 2, broad, cuneate, fleshy. Stamens 3. Styles distinct, very slender; stigmas narrow, plumose, terminally exerted. Grain enclosed by the valve and pale, oblong to ellipsoid, slightly compressed from the back; embryo about $\frac{1}{3}$ the length of the grain; hilum punctiform, basal.

ANNUAL OR PERENNIAL.—CULMS erect, ascending or decumbent; blades linear, rather rigid with cartilaginous spinulously ciliate margins; ligules reduced to a delicate, ciliate, rim; panicles cylindric, slender; all the spikelets of a cluster fertile, or often 1 more or less reduced.

Species 2, one in South Africa, the other throughout the warm parts of both hemispheres.

PLATE 404.

TRAGUS RACEMOSUS, All. (Fl. Cap., Vol. VII., p. 577).

ANNUAL OR SUBPERENNIAL (?)—CULMS fascicled, simple or branched with the branches often fascicled and densely leafy, geniculate, ascending often from a decumbent base or wholly decumbent, slender, from a few inches to 1 foot long, glabrous or pubescent near the panicle, smooth, 3-5-noded, intermediate internodes exerted, uppermost 1 or 2 usually enclosed, and from less than 1 to 4 inches long; lowest sheaths short, broad, pallid, the following more or less herbaceous, rather loose, uppermost tumid, usually embracing the base of the panicle; blades linear to lanceolate, acute, $\frac{1}{3}$ -2 inches by 1-2 lines, flat or wavy, rigid, very glaucous, closely striate.

PANICLE 1-5 inches long, slender; axis straight or slightly wavy, pubescent; branches very close or the lowest distant, very short, 2-3-spiculate, sometimes minutely continued beyond the uppermost spikelets.

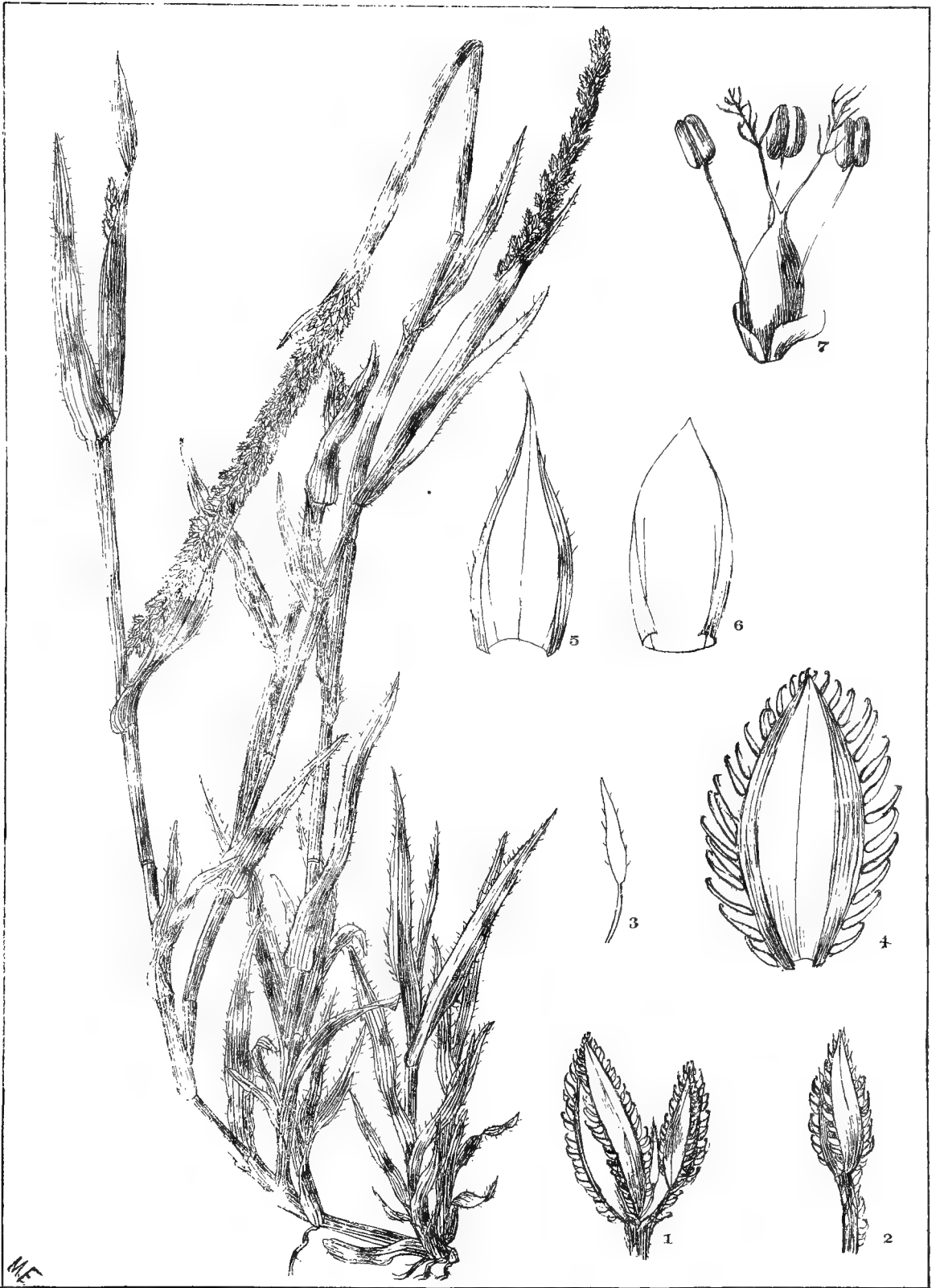
SPIKELETS facing each other when paired, $1\frac{1}{2}$ -2 lines long, one of a cluster often reduced; *lower* glume very minute, up to $\frac{1}{4}$ line long, hyaline, ciliolate, or quite suppressed; *upper* glume slightly curved, involute, completely enveloping the floret, strongly 5-ribbed, thin between the ribs, these with rows of stout hooked spines. Valve lanceolate-oblong, apiculate or mucronulate, $1-1\frac{1}{2}$ line long, thinly membranous, very minutely pubescent, faintly 3-nerved; pale sub-acute, obscurely 2-nerved; anthers ellipsoid, $\frac{1}{6}$ - $\frac{1}{8}$ line long; grain oblong to obovoid-ellipsoid, subterete, $\frac{1}{2}$ line long.

Habitat: NATAL. Banks of Tugela River, near Colenso, 3000 feet, *Wood* 4417; banks of Lower Tugela River, 600 feet, *Buchanan* 175; without precise locality, *Gerrard* 673, 157.

Throughout most warm regions.

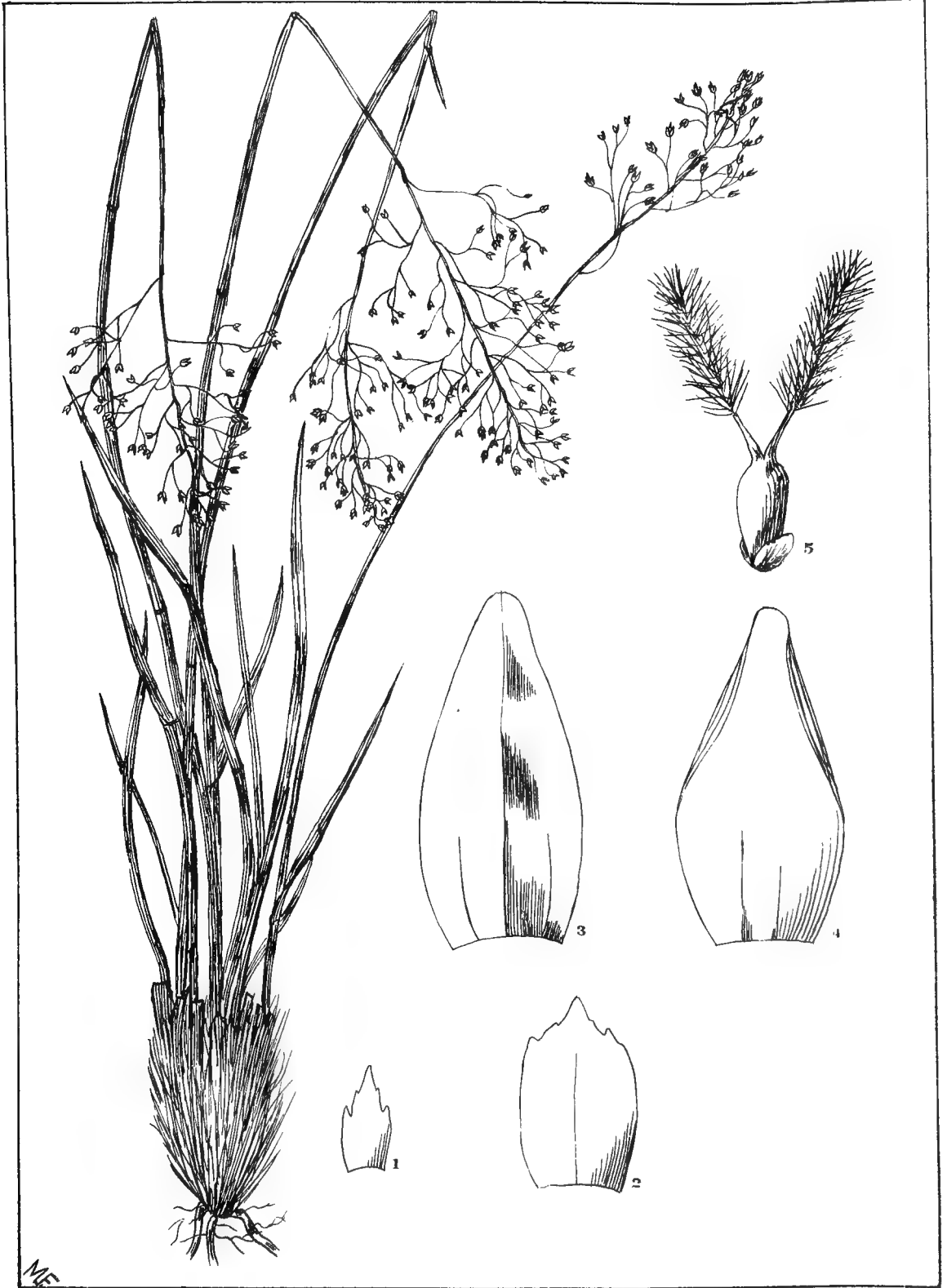
This grass is of no economic or agricultural value.

Fig 1, Cluster of spikelets; 2, empty spikelet; 3, lower glume; 4, upper glume; 5, valve; 6, pale; 7, pistil, stamens and lodicules. *All enlarged.*



ME

TRAGUS RACEMOSUS ALL.



SPOROBOLUS FESTIVUS, HOUGHST.
Var: stuppeus, Stapf.

SPOROBOLUS, R. Br.

SPIKELETS usually very small, variously paniced, continuous on the pedicels; rhachilla more or less readily disarticulating above the glumes, not continued, or very rarely produced into a bristle. Floret 1, perfect.

GLUMES 2, delicately membranous, *lower* usually smaller, nerveless, *upper* 1-nerved, falling away one after the other. Valve more or less resembling the upper glume, 1-nerved or more or less distinctly 3-nerved. Pale usually almost as long as the valve, 2-nerved, folded between the nerves, often split by the maturing grain. Lodicules 2, small, broadly cuneate, glabrous, thin. Stamens 3, rarely 2. Ovary glabrous; styles short, distinct, terminal; stigmas plumose or subspergilliform. Grain free, falling out or retained and dehiscing; pericarp thin, usually swelling in water, rigid, dehiscing, or the inner layers mucilaginous when wetted, and adherent, or the whole pericarp adnate and indistinct; hilum small, punctiform, basal, embryo rather large.

ANNUALS OR PERENNIALS of various habits; ligules reduced to a ciliate or ciliolate rim.

PANICLES contracted to spike-like, or more or less open, sometimes extremely lax; spikelets mostly $\frac{1}{2}$ to 1 line long.

PLATE 405.

SPOROBOLUS FESTIVUS, Hochst. var *stuppeus*, Stapf. (Fl. Cap., Vol. VII., p. 582).

Nat. Order Gramineæ.

PERENNIAL, compactly tufted.—CULMS erect or geniculate-ascending, slender, $\frac{1}{2}$ to 1 foot long, glabrous, smooth, 2 or 3-noded; *upper* sheaths glabrous except at the ciliate margins, smooth, the *lower* short, firm, at length breaking up into numerous persistent fibres, about $\frac{1}{2}$ inch long, the inner covered with pallid tow-like hairs; ligules a minutely ciliolate or almost woolly rim; blades narrowly linear, tapering to an acute point, usually setaceously convolute, 1-2 inches long, rarely more, by 1 line (when expanded), glabrous, smooth.

PANICLE oblong to ovate, erect, 2 to 4 inches, by 1 to $1\frac{1}{2}$ inch, lax; rhachis straight; branches solitary or irregularly fascicled, at length spreading, filiform to capillary, repeatedly branched from near the base; secondary branchlets flexuous, capillary; pedicels extremely fine, smooth, 2 to 3 times the length of the spikelets, rarely longer.

SPIKELETS oblong, rather obtuse, purplish, $\frac{3}{4}$ line long or rather less.

GLUMES hyaline, acute or acuminate, minutely denticulate, the *lower* oblong, nerveless, almost half the length of the spikelet, the *upper* ovate, nerveless or faintly 1-nerved, about half the length of the spikelet. Valve oblong, obtuse or subacute in profile, 1 to sub-3-nerved. Pale slightly shorter. Stamens 3; anthers $\frac{3}{8}$ line long; grain globose-ellipsoid, $\frac{1}{4}$ line long, pericarp swelling and bursting in water; seed free, compressed, obtusely quadrangular; albumen glassy.

Habitat: NATAL. Umsinga and base of Biggarsberg, *Buchanan* 96; near Maritzburg, *St. George*, 25 (*Wood* 7236).

Drawn from *Wood's* 7236, the only specimen in the Herbarium. No stamens could be found in the specimen drawn from.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil and lodicules. *All enlarged.*

PLATE 406.

SPOROBOLUS CENTRIFUGUS, Nees. (Fl. Cap., Vol. VII., p. 584).

Nat. Order Gramineæ.

PERENNIAL, compactly tufted.—CULMS erect, rather slender, $\frac{3}{4}$ to 2 feet long, glabrous, smooth, usually 2 rarely 1-noded; *lower* sheaths very firm, persistent, $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, glabrous except the usually long-ciliate margins, sometimes hairy all over, smooth, finely striate, *upper* tight, the uppermost up to $\frac{3}{4}$ foot long; ligule a very minutely ciliolate rim; blades linear, usually very narrow, tapering to an acute point, 3 to 10 inches, by $\frac{1}{2}$ to 2 lines, involute, often setaceous, particularly those of the barren shoots, rarely flat, firm, more or less glaucous, glabrous, except the often serrulate-fimbriate lower margins, rarely scantily hairy, smooth below, subscaberulous above, margins rough or tubercled.

PANICLE erect, ovate or ovate-oblong, 1 to 4 inches, by $\frac{3}{4}$ to 2 inches, usually rather dense; lower branches in whorls of 8 to 5, obliquely erect or spreading, filiform, smooth, branched from the middle or above it; branchlets contracted; lateral pedicels very short.

SPIKELETS rather crowded towards the tips of the branches, dark olive-grey, $1\frac{1}{2}$ to $2\frac{1}{4}$ lines long.

GLUMES unequal, the *lower* lanceolate-acuminate or acute, $\frac{2}{3}$ to $\frac{3}{4}$ the length of the spikelet, rarely longer, 1-nerved or nerveless, the *upper* broad-oblong-lanceolate, acutely acuminate, somewhat longer than the valve, 1-nerved, rarely with 2 obscure side-nerves. Valve very similar, sometimes with 2 to 4 short obscure side-nerves. Pale equalling the valve. Stamens 3; anthers $\frac{3}{4}$ line long.

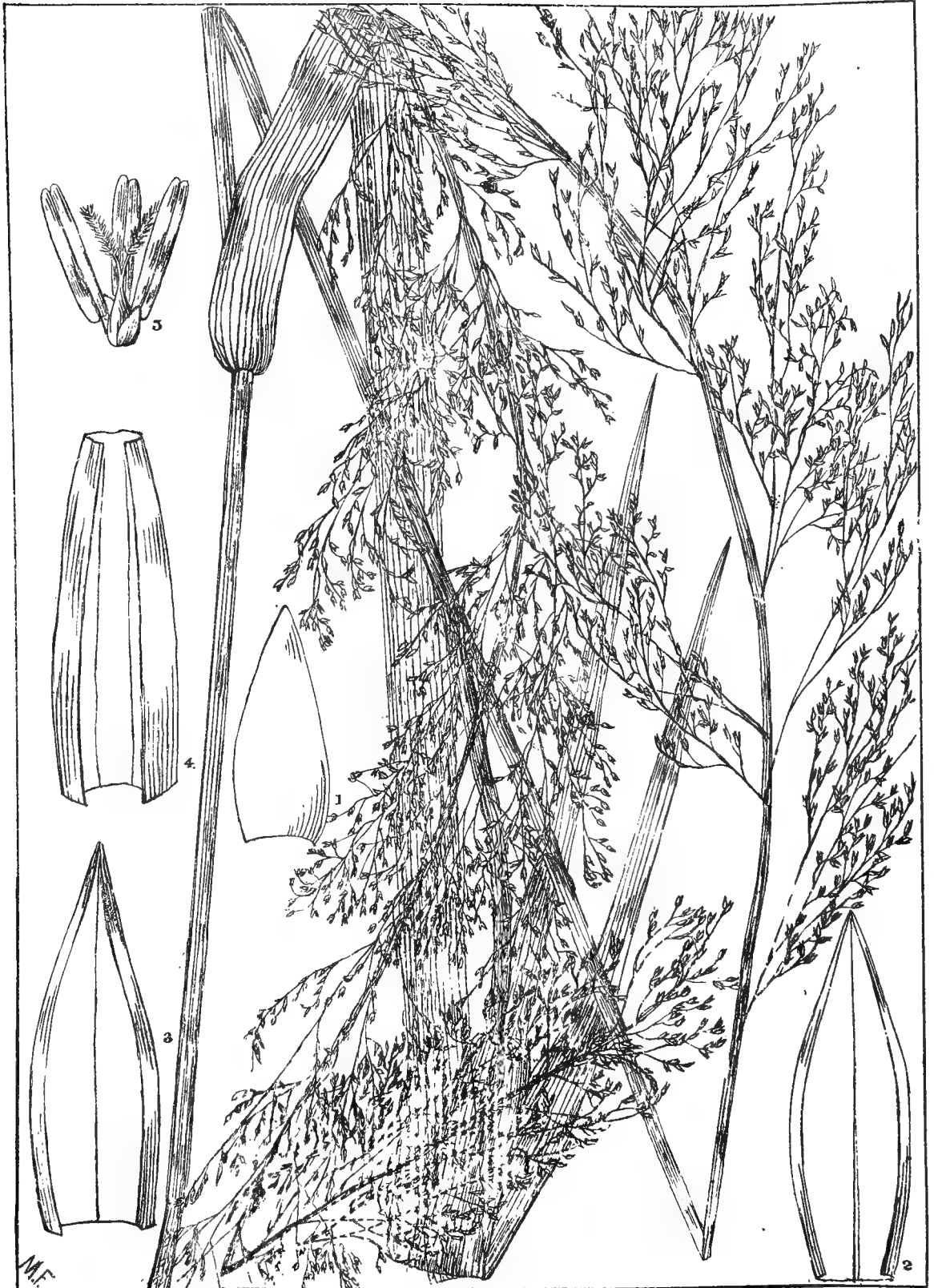
Habitat: NATAL. Near Durban, *Williamson* 3; Durban Flats, *Buchanan* 42, 64; on bare hills at Umpumulo, 2400 to 2800 feet alt., *Buchanan* 297; Umsinga and base of Biggarsberg, *Buchanan* 92; var. *angustus*; Inanda, *Rehmann* 1854; *Wood* 1578; Zululand, 1000 feet alt., *Buchanan* 300; Van Reenen, *Wood* 7218.

Drawn from *Wood's* 7218, gathered at Van Reenen, 5000-6000 feet alt.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



SPOROBOLUS CENTRIFUGUS. NEES.



SPOROBOLUS REHMANNI. HAGK.

PLATE 407.

SPOROBOLUS REHMANNI, Hack. (Fl. Cap., Vol. VII., p. 585).

Nat. Order Gramineæ.

PERENNIAL.—CULMS rather robust, geniculate, more or less compressed below, 2 to 4 feet long, glabrous, smooth, 3 or 4-noded; leaf sheaths rather tight, the lower slipping from the culms and rolling in or folding, broad, glabrous and smooth, or tubercled and hispid; ligules reduced to a ciliate rim; blades linear, tapering to a long fine point, 6 to 10 inches by 3 to 4 lines, flat or almost so, glaucous, glabrous or tubercled and hispid, primary nerves distant.

PANICLE erect, narrow, oblong, 1 to $1\frac{1}{4}$ foot by 2 inches, ultimately rather lax; rhachis smooth; branches solitary or often irregularly crowded, obliquely erect or at length spreading, filiform, smooth or almost so, 1 to 3 inches long, loosely and repeatedly branched, the lowest branchlets up to 9 lines long; lateral pedicels extremely short.

SPIKELETS olive-grey, lanceolate-oblong, $\frac{3}{4}$ to almost 1 line long.

GLUMES unequal, the *lower* oblong, subacute, nerveless, about half the length of the spikelet, the *upper* lanceolate-oblong, acute, about $\frac{4}{5}$ the length of the spikelet, 1-nerved. Valve like the upper glume, but longer. Pale almost equalling the valve. Stamens 3; anthers $\frac{1}{2}$ line long.

Habitat: NATAL. Durban Flats, *Buchanan* 6; at the borders of woods near Umlazi River, *Krauss* 7; Tugela River, 600 to 1000 feet alt., *Buchanan* 245, 246.

Drawn from *Buchanan's* 245, and compared with *Buchanan's* 246.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 408.

SPOROBOLUS INDICUS, R. Br. (Fl. Cap., Vol. VII., p. 586).

Nat. Order Gramineæ.

PERENNIAL, tufted.—CULMS erect, 2 to 3 feet long, glabrous, smooth, usually 2-noded below the middle, sheathed all along or the upper nodes exerted.

LEAVES mostly crowded near the base, often numerous; sheaths glabrous except at the often ciliate margins, smooth, the lowest sometimes compressed, short, broad, pallid, the upper tight; ligule a minutely ciliate rim; blades linear, long tapering to a fine point, 4 to almost 12 inches, by 1 to $1\frac{1}{2}$ lines, usually convolute, glabrous, smooth.

PANICLE erect, spike-like, slender, often interrupted below; branches solitary, often irregularly crowded, very short and adpressed to the rachis, or the lowest up to 1 inch long, filiform, smooth or scaberulous; lateral pedicels very short.

SPIKELETS dark olive-green, crowded, 1 line long.

GLUMES unequal, the *lower* oblong or elliptic, obtuse, often denticulate, about $\frac{1}{3}$ the length of the spikelet, nerveless, the *upper* ovate-oblong, acute or subacute, about $\frac{5}{8}$ the length of the spikelet, sometimes 1-nerved. Valve lanceolate-oblong, acute or acuminate, 1-nerved. Pale scarcely shorter. Stamens 3; anthers $\frac{1}{2}$ line long; grain ellipsoid, truncate, quadrangular, slightly compressed, $\frac{1}{2}$ line long, brown, pericarp thin.

Habitat: NATAL. *Gerrard* 388; Zululand, *Jenkinson* 6 (*Wood* 7303).

Var. laxus (Stapf), usually more robust; panicle looser, $\frac{1}{2}$ to $1\frac{1}{4}$ foot long; branches more distant, longer, more or less spreading; spikelets often secund; "all over the Colony."

Buchanan 243; near Durban, *Williamson* 2, 101; at the borders of woods near the Umlazi River, *Krauss* 7, partly; between the Umzimkulu and Umkomanzi Rivers, *Drège*.

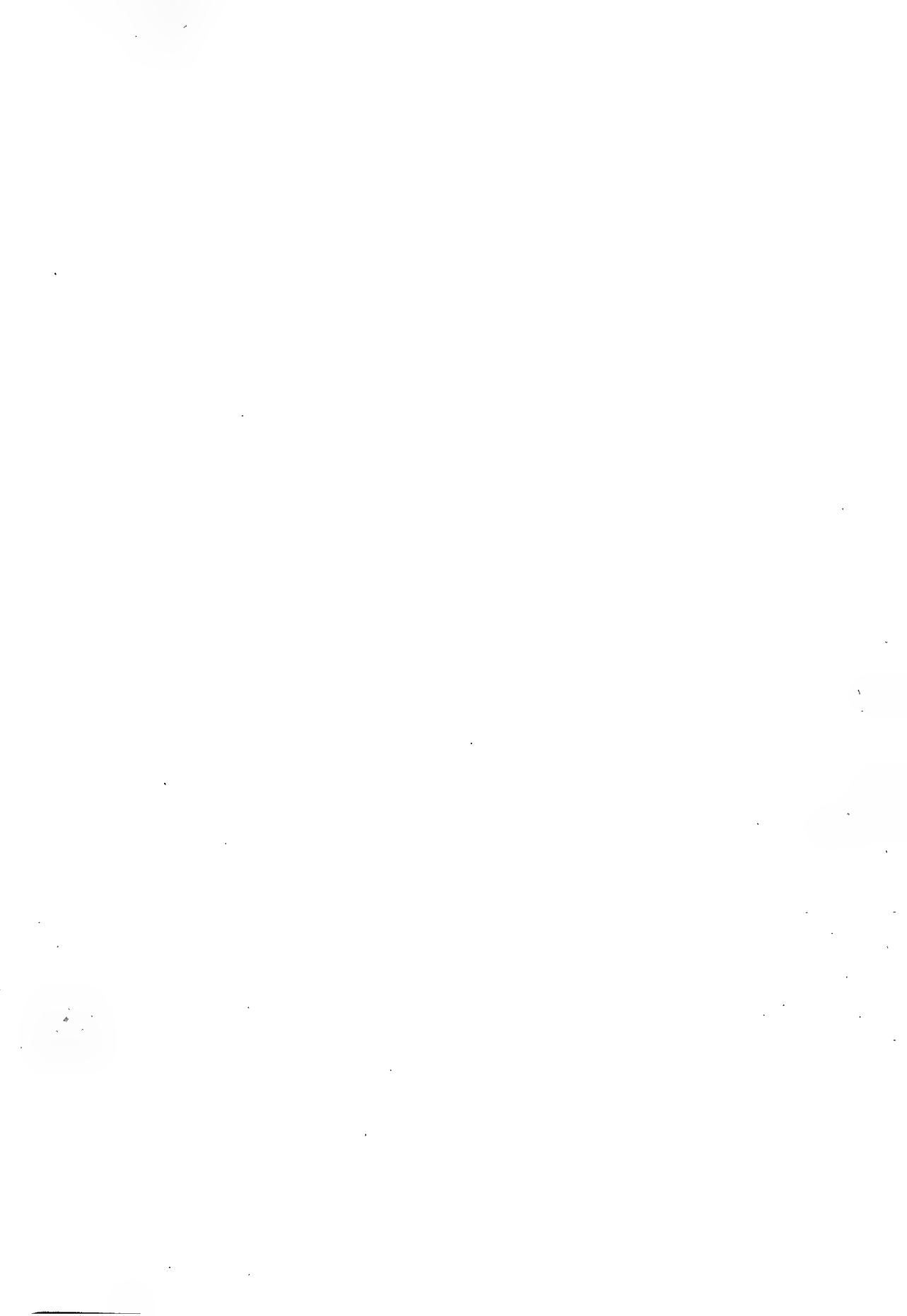
Drawn from *Jenkinson's* 6 (*Wood* 7303).

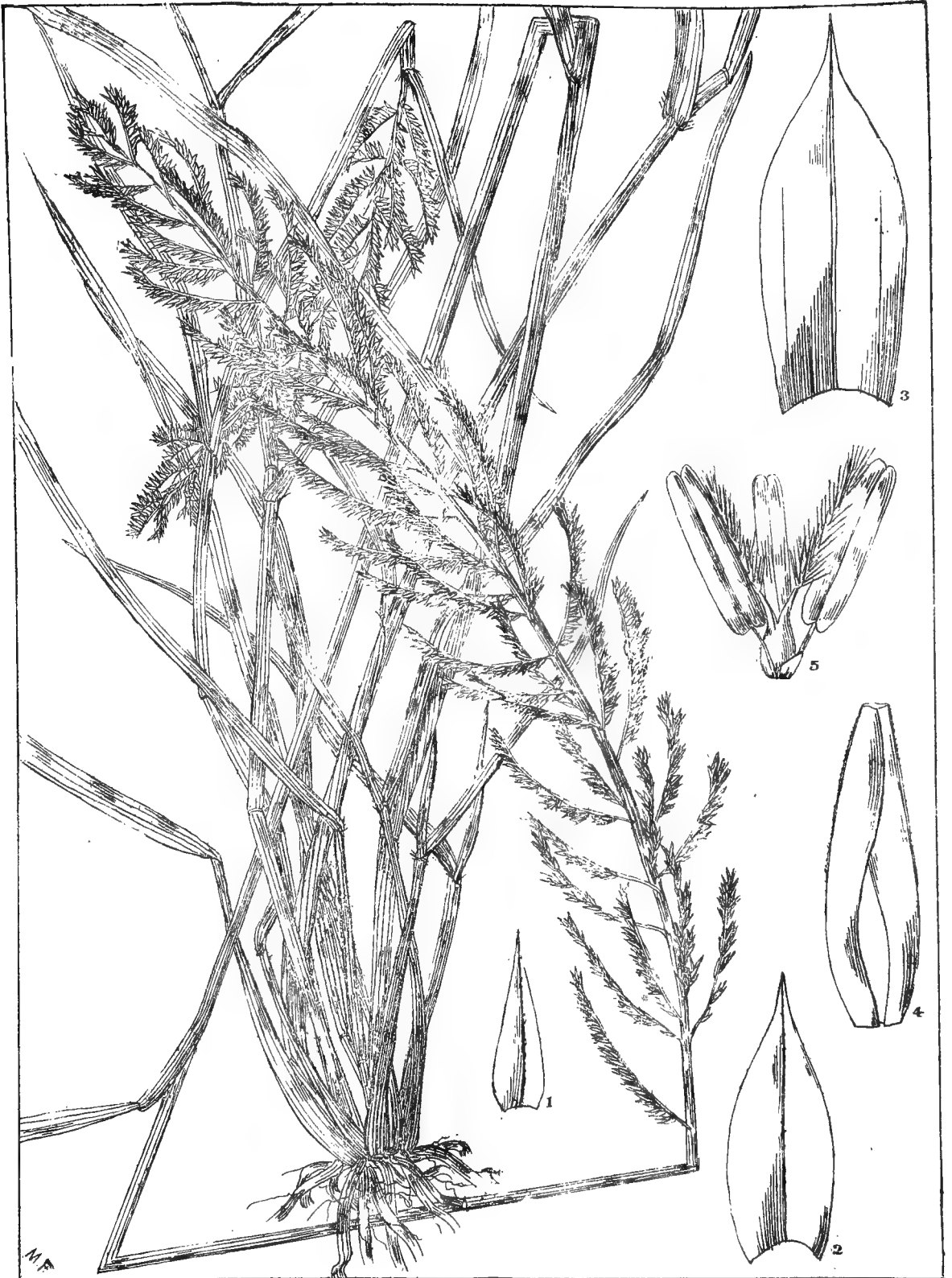
Jenkinson says of this grass: "Used for cattle, seeds much liked by birds and poultry."

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



SPOROBOLUS INDICUS. R. BB.





POGONARTHRIA FALCATA, RENDLE.

POGONARTHRIA, Stapf.

SPIKELETS laterally compressed, subsessile, more or less imbricate, secund on the irregularly spirally arranged branches of a panicle; rhachilla disarticulating above the glumes and between the valves, tips of the joints ciliate. Florets 2 to 8, perfect.

GLUMES rigidly membranous, 1-nerved. Valves oblong, rigidly membranous, acuminate, quite glabrous, 3-nerved; side-nerves evanescent above the middle. Pales 2-keeled, slightly shorter than the valves. Lodicules 2, minute, delicate. Stamens 3. Ovary glabrous; styles distinct; stigmas plumose. Grain tightly embraced by the scarcely altered valve and pale, linear-oblong, obtusely triquetrous or oval in cross section; embryo less than $\frac{1}{2}$ the length of the grain; hilum basal, punctiform.

PERENNIAL, stiff; blades rigid, usually convolute; ligule a fringe of cilia; panicles straight, with spreading more or less curved branches in irregular spirals; spikelets secund, crowded, livid, purplish or dark grey.

Species 1, in tropical South-East Africa, and in extra-tropical South Africa.

Hackel, who described the only species of this genus under *Leptochloa*, has already remarked that it differs considerably from all other species of *Leptochloa*. The differences exist mainly in the coarse rigid habit and in the structure of the spikelets, the glumes and valves of which are more rigidly membranous, livid purplish or dark grey, and quite glabrous, whilst the tips of the rhachilla joints are ciliate; the valves resemble more those of *Eragrostis* than of *Leptochloa*, and the affinity of the genus lies most certainly with the former.

PLATE 409.

POGONARTHRIA FALCATA, Rendle. (Fl. Cap., Vol. VII., p. 589).

Nat. Order Gramineæ.

PERENNIAL, cæspitose, quite glabrous except the mouth of the sheath.

CULMS strictly erect or subgeniculate, 1 to $2\frac{1}{2}$ feet long, terete, smooth, about 3-noded, internodes exerted; sheaths tight, terete, smooth, mouth bearded; ligule a fringe of minute cilia; blades linear, setaceously attenuated, 4 to 8 inches, by 1 to 2 lines, flat or more often convolute, rigid, subglaucous, quite smooth, striate.

PANICLE linear, 4 to 10 inches, by $\frac{1}{2}$ to 2 inches, usually straight; rhachis sulcate, scaberulous; branches often 2 to 5 close together, more or less spreading, usually curved, up to 1 inch long, flat on the back, wavy, simple, bearing spikelets from the base, scabrid.

SPIKELETS $1\frac{1}{2}$ to 3 lines long, livid, purplish or dark grey; rhachilla joints up to $\frac{1}{4}$ line long.

GLUMES lanceolate to lanceolate-oblong, reddish, subacuminate, scaberulous, lower $\frac{3}{8}$ to $\frac{1}{2}$ line long, upper $\frac{3}{4}$ to 1 line long. Valves lanceolate in profile, oblong when expanded, acutely acuminate or mucronulate, 1 line long; callus very minute, obtuse, glabrous; pales 1 line long; keels scabrid; lodicules $\frac{1}{8}$ line long; anthers $\frac{3}{8}$ to $\frac{1}{2}$ line long; grain linear-oblong, oval in cross section, $\frac{3}{8}$ line long.

Habitat: NATAL. Tugela River, 600 feet alt., *Buchanan* 242; Umlaas Drift, *Wood* 1910; near Dundee, *W. E. Green* 98 (*Wood* 7453).

Also in tropical South Africa as far as the Zambesi.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

DIPLOCHNE, Beauv.

SPIKELETS shortly pedicelled or subsessile, somewhat distant or remote on the simple slender branches of a panicle; rachilla disarticulating above the glumes and between the valves, glabrous. Florets 2 to 10, perfect, or the uppermost reduced.

GLUMES unequal or subequal, membranous, 1-nerved, keeled, persistent. Valves oblong to linear-oblong, 2-toothed or minutely notched, rarely quite entire, mucicous or mucronulate from the sinus, very rarely shortly awned from below the apex, membranous, 3-nerved, usually finely ciliate in the lower part of the nerve, or sometimes quite glabrous; side nerves percurrent or almost (or sometimes very shortly) excurrent. Pales 2-keeled, shorter than the valves. Lodicules 2, cuneate, fleshy, nerved. Stamens 3. Ovary glabrous; styles distinct, slender; stigmas plumose, laterally exerted. Grain enclosed by the slightly altered valve and pale, oblong to obovoid-oblong, dorsally compressed, sometimes quite flat, rarely terete; embryo equalling $\frac{1}{3}$ to $\frac{1}{2}$ the length of the grain; hilum punctiform, basal.

Mostly perennial, tufted, somewhat coarse grasses; blades long, narrow, flat or involute; ligules membranous, sometimes reduced to a rim.

PANICLES consisting of slender, usually long, simple, loosely spike-like and more or less distant branches.

SPIKELETS light or olive-green, often tinged with purple and dark.

Species about 12, mainly in the warm regions of the Old World and in North America.

PLATE No. 410.

DIPLOCHNE FUSCA, Beauv. (Fl. Cap., Vol. VII., p. 591).

Nat. Order Gramineæ.

PERENNIAL, glabrous.—CULMS tufted, stout, geniculately ascending or erect, often branched from the lower nodes, 3 to 5 feet long, terete, smooth, 3-4-noded, or many noded when branched, internodes enclosed except the uppermost or shortly exerted; sheaths smooth, almost shining or the upper rough, the basal whitish, slightly compressed, bluntly keeled; ligules hyaline, oblong, acute, up to $2\frac{1}{2}$ lines long; blades very narrow, linear, tapering to a fine often subpungent point, 3 to 6 inches, by 1 to $1\frac{1}{2}$ line when expanded, folded or convolute or sometimes flat, rather rigid, rough on both sides, rarely almost smooth below.

PANICLE erect, straight or slightly nodding, obovate-oblong to linear, contracted or open; rachis slender, angular, rough; branches scattered or 2-3 close together, often more or less flexuous, the longest 3 to 5 inches, usually racemose; pedicels short.

SPIKELETS distant by half their length or more, narrow, oblong, 3 to 5 lines long, 5 to 10-flowered, usually dark olive-grey, rarely light or whitish.

GLUMES lanceolate to oblong, obtuse or acute, often obscurely mucronate, the lower about 1 line long, the upper $1\frac{1}{2}$ to 2 lines; valves oblong, tips broad, entire or minutely emarginate, and with a tooth on one or both sides, middle and side-nerves excurrent into a short or obscure mucro, or only the former, side-nerves silky ciliate below; callus hardly any, pales minutely 2-toothed, flaps hairy along the keels; anthers $\frac{3}{4}$ line long; grain oblong, dorsally compressed, up to 1 line long; embryo almost $\frac{1}{2}$ the length of the grain.

Habitat: NATAL. Clairmont, near Durban, 50 feet alt., Wood 6045.

Drawn from Wood's specimen, the only one in the Herbarium.

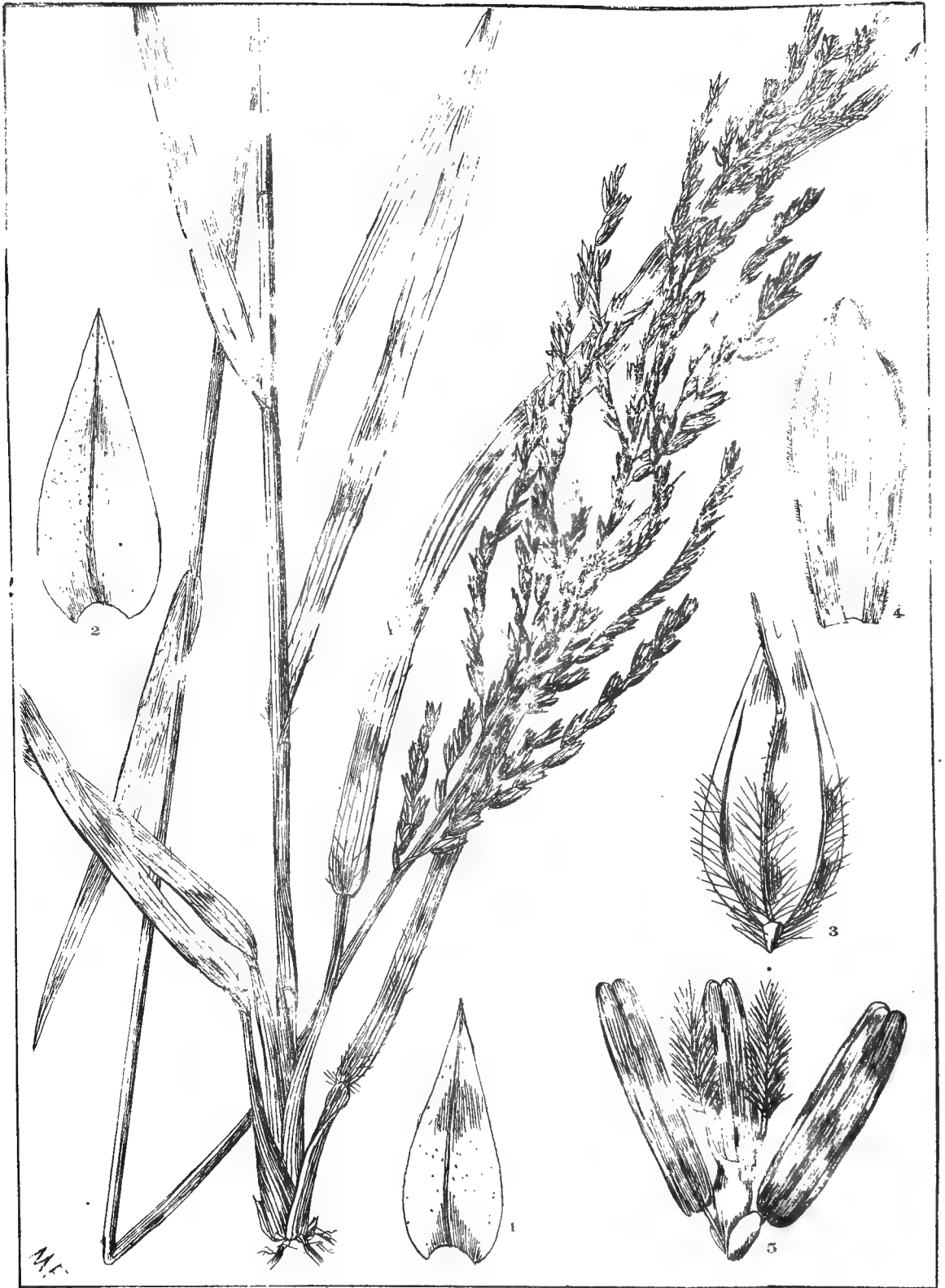
Natal is not credited with this species in the Flora Capensis.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. All enlarged.



DIPLACHNE FUSCA. BRADF





DIPLACHNE BIFLORA, HACK.

PLATE 411.

DIPLACHNE BIFLORA, Hack. (Fl. Cap., Vol. VII., p. 593).

Nat. Order Gramineæ.

PERENNIAL, almost glabrous.—CULMS tufted on a short oblique rhizome, erect, 1 to 2 feet long, terete, simple, slender, rough below the nodes, about 3-noded, internodes usually enclosed except the uppermost.

LEAVES crowded near the base; sheaths tight, terete, scaberulous or smooth, firm, the lowest reduced to bladeless scales; ligule a membranous ciliolate rim; blades linear, tapering to an acute point, 3 to 7 inches, by 2-3 lines, rigidly erect, flat or convolute, with scattered stiff hairs, particularly near the base, rough on both sides, glaucous.

PANICLE contracted, obovate to linear-oblong, 2 to 6 inches long, glaucous, purplish; rhachis scabrid, angular; branches simple, solitary or paired, subflexuous, bearing spikelets from the base or almost so, lowest up to 2 inches long.

SPIKELETS 2-3-flowered, subsecund, 2-ranked, *lower* slightly exceeding the internodes, *upper* closer, shortly but distinctly pedicelled, about $2\frac{1}{2}$ lines long.

GLUMES subequal, lanceolate, acute, 2 to $2\frac{1}{4}$ lines long, minutely scabrid; margins and tips hyaline; valves up to $2\frac{1}{4}$ lines long, entire, acute or very minutely 2-toothed, very shortly awned from below the readily splitting pruinose tips, nerves silky-ciliate to the middle (at least in the lower floret); callus minute, acute, bearded; pales obtuse, not quite 2 lines long, keels scabrid; anthers 1 line long; grain oblong-linear, terete, 1 line long.

Habitat: NATAL. Mountain slopes near Umpumulo, 2500 feet alt., *Buchanan* 282.

Drawn from Buchanan's 282, the only specimen in the Herbarium.

A note in the *Flora Capensis* says: "Rather different from the other species of the genus, and perhaps not a true *Diplachne*."

Also in Transvaal and Basutoland.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

ERAGROSTIS, Beauv.

SPIKELETS usually strongly laterally compressed, pedicelled in open or contracted panicles, rarely sessile in simple or compound spikes, very rarely articulate on the pedicels; rhachilla disarticulating above the glumes and between the valves or tough and persistent, glabrous, sometimes more or less scaberulous; very rarely minutely hairy. Florets 2 to many, perfect or the uppermost reduced.

GLUMES unequal or equal, usually membranous, 1-nerved, or the upper sometimes 3-nerved, keeled, persistent or deciduous. Valves more or less imbricate, ovate to lanceolate, acute or obtuse, entire, muticous, membranous to chartaceous, 3-nerved, glabrous, very rarely minutely pubescent; side-nerves short or almost percurrent. Pales equal to the valves or slightly shorter, membranous, 2-keeled, deciduous or persistent on the rhachilla. Lodicules 2, small, cuneate, more or less fleshy. Stamens 3, rarely 2. Ovary glabrous; styles distinct; stigmas plumose, laterally exerted. Grain enclosed by the scarcely altered valve and pale and deciduous with them, or more commonly falling, with the deciduous valve, leaving the more or less persistent pale behind, oblong to obovoid or globose, round or very obtusely triquetrous or quadrangular in cross section; pericarp thin, sometimes slightly swelling or separating; embryo often $\frac{1}{2}$ as long as the grain (or sometimes longer); hilum punctiform, basal.

PERENNIAL OR ANNUAL, of very varying habit; blades narrow; ligule reduced to a fringe of usually minute hairs; panicles lax to effuse or contracted to spike-like, or transformed into simple or compound spikes; spikelets usually more or less olive-green or olive-grey, breaking up variously, very rarely deciduous as a whole.

Species very numerous in the warm parts of the world.

PLATE 412.

ERAGROSTIS CÆSIA, Stapf. (Fl. Cap., Vol. VII., p. 599).

Nat. Order Gramineæ.

PERENNIAL, densely tufted.—CULMS erect, slender, compressed, simple, $\frac{3}{4}$ to $1\frac{1}{2}$ foot long, glabrous, smooth, 1-noded, at or below the middle, internodes shortly exerted, or both or the upper alone enclosed; lower sheaths crowded, almost flabellate, strongly compressed and keeled, often pinkish with white margins, upper tight or widening upwards, all quite glabrous and smooth except at the scantily bearded mouth; ligule a fringe of minute hairs; blades tightly convolute, finely setaceous, 3 to 10 inches long, flexuous, rather firm, glabrous, smooth.

PANICLE nodding, contracted, more or less linear, 3 to 8 inches long; axis filiform, smooth; branches solitary, rather distant, lowest often enclosed at the base in the uppermost sheath, finely filiform, compressed, smooth, divided from the base or some distance above it; branchlets distant, simply racemose or the lower again divided and then up to $\frac{3}{4}$ inch long, usually adpressed to the branches; pedicels short to very short.

SPIKELETS rather crowded, lanceolate, acute, $2\frac{1}{2}$ to $5\frac{1}{2}$ lines by 1 line, grey, closely 3 to 5-flowered, rhachilla disarticulating, smooth.

GLUMES unequal, deciduous, linear-oblong in profile, acute or subobtuse, subhyaline, 1-nerved or (particularly the lower) nerveless, lower $\frac{3}{4}$ to $\frac{4}{5}$ line long, upper over 1 line long. Valves lanceolate, acute or sometimes mucronulate, $1\frac{1}{2}$ to $1\frac{3}{4}$ line long, thin, smooth except on the scaberulous acute keels. Pales 1 line long, keels narrowly winged, scaberulous. Anthers $\frac{3}{4}$ line long.

Habitat: NATAL. Riet Vley, 4000 to 5000 feet alt., *Buchanan* 240.

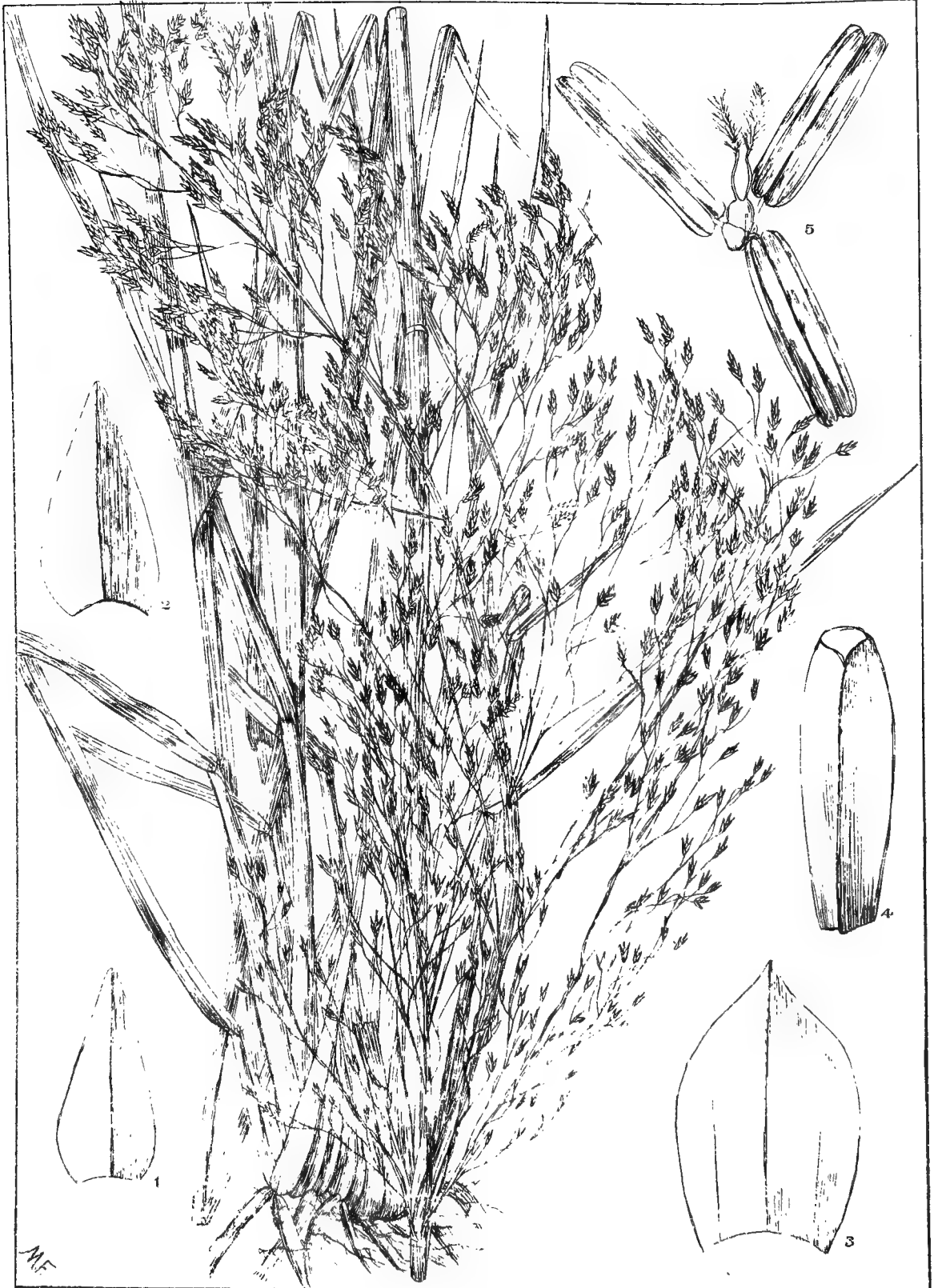
Drawn from *Buchanan's* specimen.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, stamens, pistil and lodicules. *All enlarged.*



ERAGROSTIS CÆSIA. STAPP.





ERAGROSTIS CURVULA, VES.

Var. curvula, Stapf

PLATE 413.

ERAGROSTIS CURVULA, Nees, var. *valida*, Stapf. (Fl. Cap., Vol. VII., p. 599).

Nat. Order Gramineæ.

PERENNIAL, very densely tufted, with numerous closely packed innovation shoots.

CULMS erect or geniculate, usually slender, simple, 1 to 2 feet high, glabrous, smooth, 2 to 3 noded, internodes usually exserted, uppermost very long; *lower* sheaths crowded, short, firm, strongly striate, tomentose at the base, gradually less hairy to glabrous upwards, persistent, *upper* tight, glabrous or rarely hairy, smooth; ligule a fringe of short hairs. Blades narrow, linear, long tapering and usually capillary in the upper part, 3 inches to more than 1 foot long, 1 to 1½ line wide at the base when expanded, more or less filiform-involute or convolute, at least in the upper part, flexuous, somewhat firm, glabrous, very rarely hairy, scabrid on the upper side and all over towards the tips, otherwise smooth.

PANICLE open or contracted, erect or more or less nodding, 3 to 10 inches long; axis filiform, more or less angular, smooth, at least below; branches solitary, unequally distant or partly subverticillate, first erect then more or less spreading, finely filiform, flexuous, smooth or almost so, glabrous or sometimes with a few fine hairs at the axils, *lower* divided from 3 to 6 lines above the base; branchlets rather loose, usually contracted, simple or the lowest again divided, smooth, rarely the ultimate divisions scaberulous; pedicels unequal, lateral usually short rarely up to 2 lines long.

SPIKELETS linear-oblong to oblong, 2 to 3 lines by 1 line, loosely 3 to 6- (rarely to 8-) flowered, usually dark olive-grey; rhachilla subsistent, then disarticulating, more or less very minutely hairy.

GLUMES more or less unequal, lanceolate to oblong, acute to subobtuse, thinly membranous to almost hyaline, 1-nerved or sometimes nerveless, keel if present scaberulous, *upper* up to 1 line long, *lower* slightly shorter. Valves lanceolate-oblong in profile, obtuse or subobtuse, 1 line long or slightly longer, membranous, scaberulous above the middle, tips usually hyaline and white, side-nerves fine. Pales equal to the valves, obtuse, keels fine, smooth or scaberulous above. Anthers $\frac{3}{8}$ to $\frac{1}{2}$ line long. Grain sub-ellipsoid, obtusely quadrangular, $\frac{1}{2}$ line long, brown, embryo large.

VAR. *CONFERTA*, Nees.—On the whole taller and more robust; panicle contracted, dense, with the branches more or less verticillate and divided from the base, divisions more often scabrid than in the type. Spikelets usually crowded, linear to linear-oblong, up to 5 lines long, and to 13-flowered, light olive-green to dark olive-grey.

VAR. *VALIDA*, Stapf—Culms usually robust, tall, 3 to 4-noded; sheaths glabrous and smooth or more or less hairy from often tubercle-based hairs; blades up to more than 2 feet, by 2 to 3 lines. Panicle $\frac{1}{2}$ to 1 foot, contracted or open; axis smooth or scabrid; branches 3 to 6 inches long, flexuous, much divided from the base or simple for as much as 1 inch. Spikelets linear to linear-oblong, $3\frac{1}{2}$ to $5\frac{1}{2}$ lines long, 7 to 13-flowered. Glumes and valves very slightly larger than in the type.

Habitat: NATAL. Umsinga and base of Biggarsberg, *Buchanan* 93; *var. conferta*, near Durban, *Plant* 57; *Gerrard* and *McKen* 35 (approaching the type); Umpumulo, 2000 feet alt., *Buchanan* 248, 249a; very common at Riet Vlei, 4000 feet alt., *Buchanan* 78, 249; *Gerrard* 675 (approaching the type); *var. valida*, Berea, *Wood* 5940; Umhlanga, 6060; Van Reenen's Pass, 7224; Pietermaritzburg, 7229.

A generally useful grass; native name Uviti (Jenkinson).

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 414.

ERAGROSTIS CHLOROMELAS, Steud. (Fl. Cap., Vol. VII., p. 602).

Nat. Order Gramineæ.

PERENNIAL, very densely tufted with closely packed innovation shoots.

CULMS erect or geniculate, slender, simple, very rarely branched above the base, $\frac{1}{2}$ to $1\frac{1}{2}$ foot long, sub-compressed, glabrous, or very rarely scantily hairy, smooth, usually 2-noded, internodes exerted, uppermost very long; *lower* sheaths crowded, very short, firm, adpressedly hairy to tomentose at the very base or quite glabrous, persistent, *upper* tight, glabrous or with few fine scattered hairs, long-bearded at the mouth; ligule a fringe of short hairs. Blades very narrow, filiform-convolute, capillary above, flexuous, 3 to 6 inches long, rarely longer, $\frac{1}{2}$ to 1 line broad when expanded, somewhat rigid, glaucous, glabrous or scantily hairy, scaberulous or scabrid on the upper face and all over towards the tips, otherwise smooth.

PANICLE open, ovoid or pyramidal, lax, 2 to 8 inches long, erect, rather rigid; axis filiform, smooth; *lower* branches in whorls of 5-3, or 2-nate, rarely all solitary, spreading, finely filiform, straight or subflexuous, glabrous or sometimes with a few fine hairs at the axils, longest $1\frac{1}{2}$ to 4 inches long, undivided for $\frac{1}{3}$ to 1 inch from the base, then very loosely and at length divaricately branched, smooth or the ultimate divisions scaberulous; pedicels capillary, the lateral 1 to 3 lines long.

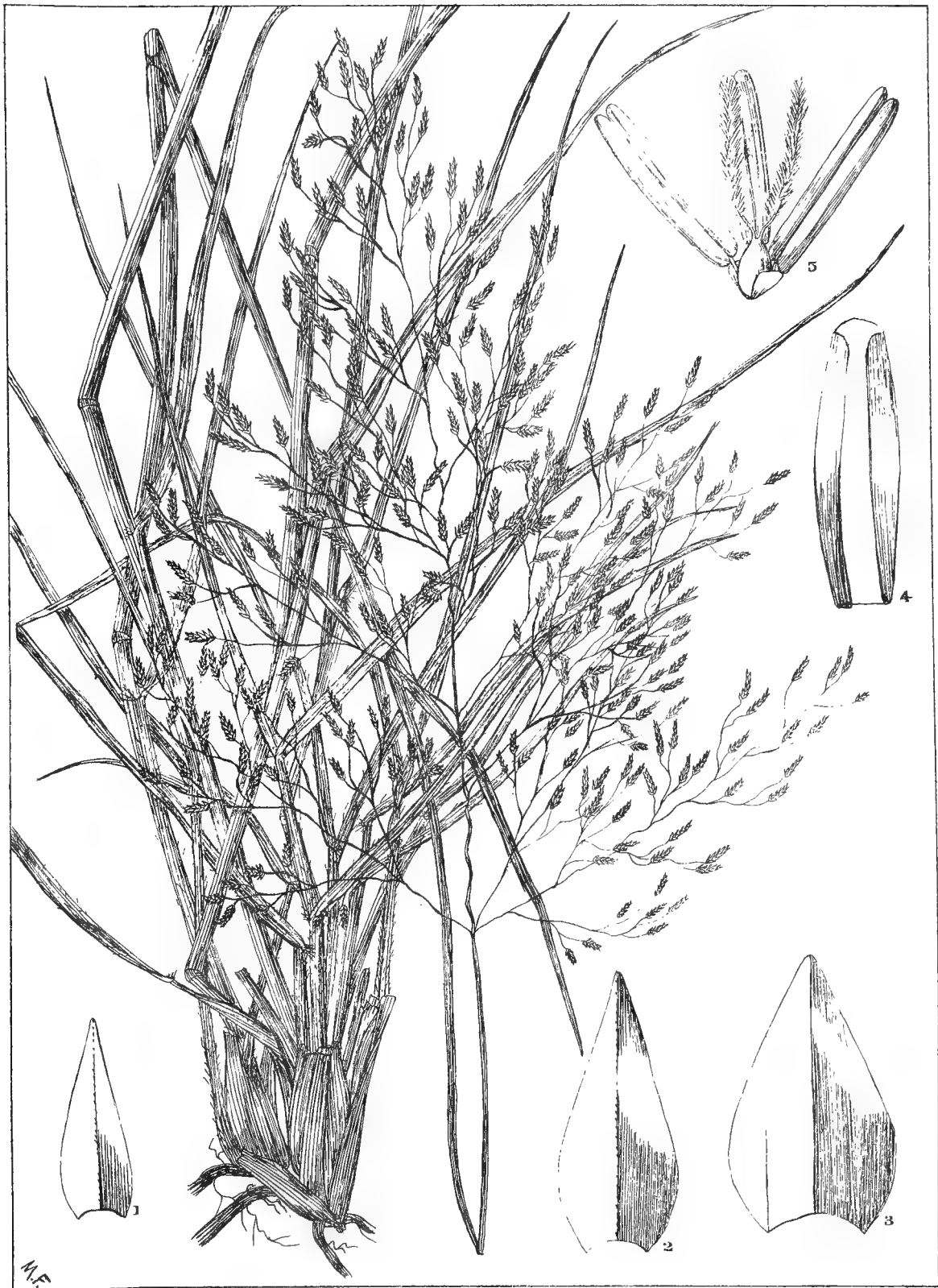
SPIKELETS scattered, linear, acute, 2 to 4 lines by $\frac{1}{2}$ to $\frac{3}{4}$ line, loosely 5 to 13-flowered, dark olive-grey to slate-grey; rhachilla subpersistent, then disarticulating, very slender, flexuous, smooth, or almost so, joints up to $\frac{3}{8}$ line long.

GLUMES unequal, deciduous, lanceolate to lanceolate-oblong in profile, thinly acute or subacute, membranous or hyaline, 1-nerved, scaberulous on the nerve; *lower* $\frac{1}{2}$ to $\frac{3}{4}$ line, *upper* $\frac{3}{4}$ to 1 line long. Valves obliquely oblong in profile, subacute to acute, $\frac{3}{4}$ to $\frac{7}{8}$ line long, membranous, smooth, side-nerves fine; pales equal to the valves, obtuse, keels fine, smooth or nearly so. Anthers about $\frac{2}{5}$ line long; grain oblong-ellipsoid, obtusely quadrangular, $\frac{1}{2}$ line long, brown; embryo large.

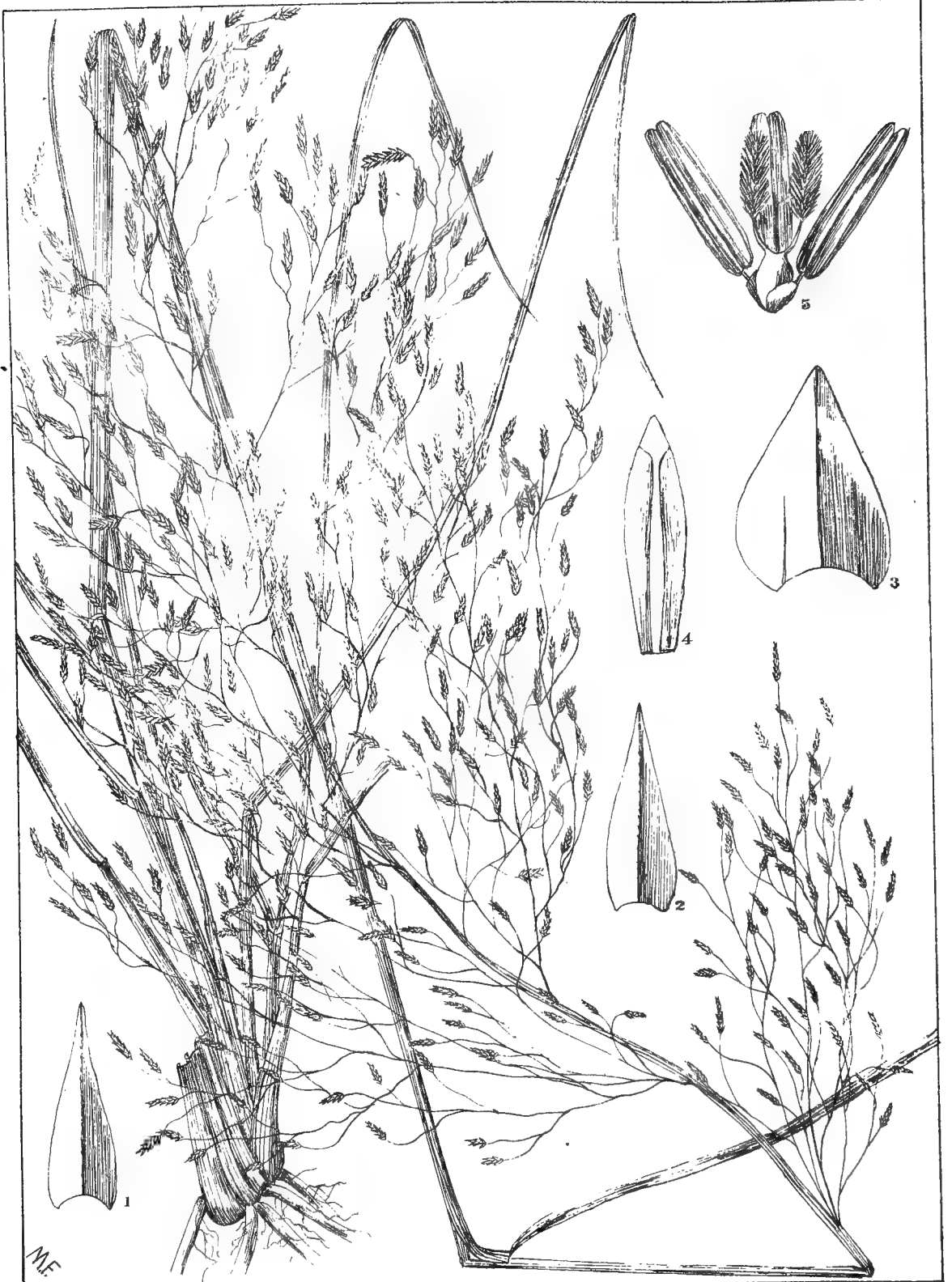
Habitat: NATAL. Near Ladysmith, *Rehmann* 7130, 7134; Umhlanga, *Wood* 6058; near Van Reenen's Pass, 5000 to 6000 feet alt., *Wood* 7221.

Drawn from *Wood's* 7221, Van Reenen, 14-12-1898.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ERAGROSTIS CHLOROMELAS. *STUD*



ERAGROSTIS NEBULOSA. STAFF.

PLATE 415.

ERAGROSTIS NEBULOSA, Stapf. (Fl. Cap., Vol. VII., p. 603).

Nat. Order Gramineæ.

PERENNIAL, densely tufted on a short oblique rhizome.

CULMS erect, rather slender, stiff, 2 to 3 feet long, glabrous, smooth, about 3-noded, internodes long, exerted, nodes slightly marked; *lower* sheaths compressed, more or less keeled, 4 to 5 inches long, very firm, usually scarcely striate, quite glabrous, very smooth, often shining, *upper* tight, terete scantily bearded at the mouth or quite glabrous; ligule a fringe of very minute hairs; blades very narrow, finely filiform and caniculate below, capillary in the upper part, 1 foot long or longer, conspicuously narrower than the sheath at their junction, rather rigid below, very flexuous above, glabrous, smooth or scaberulous towards the tips.

PANICLE erect or nodding, large, at length open and very lax, $\frac{3}{4}$ to $1\frac{1}{4}$ foot long and almost as wide, axis filiform, terete, smooth; branches 3-2-nate or partly solitary, at length spreading, the longest 4 to 6 inches long and undivided for 1 to 2 inches from the base, then like the rest distantly branched, finely filiform, glabrous, smooth or scaberulous; branchlets again scantily and loosely divided, up to $1\frac{1}{2}$ inch long, like the often long pedicels capillary and very flexuous.

SPIKELETS linear, acute, 2 to 3 lines by $\frac{1}{3}$ to $\frac{2}{3}$ line, loosely 4 to 10-flowered, olive-grey; rachilla subsistent, very slender, smooth.

GLUMES subequal, lanceolate, acute in profile, $\frac{2}{3}$ to $\frac{3}{4}$ line long, delicate, 1-nerved, keel scaberulous. Valves lanceolate-oblong, in profile, acute to sub-acuminate $\frac{5}{8}$ line long, membranous, smooth, slightly shining, side-nerves faint and short. Pales equalling the valves, keels smooth or almost so. Anthers $\frac{1}{3}$ to $\frac{1}{2}$ line long; grain oblong, $\frac{2}{5}$ line by $\frac{1}{8}$ line, brown.

Habitat: NATAL. On the Drakensberg Range, near Newcastle, *Buchanan* 196; De Beer's Pass, 5000-6000 feet alt., *Wood* 5992; Mooi River, 3000 to 4000 feet alt., *Mason* 40 (*Wood* 7325); near Greytown, 3000-4000 feet alt., *Wood* 7343.

Drawn from *Wood's* 7343.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 416.

ERAGROSTIS PLANA, Nees. (Fl. Cap., Vol. VII., p. 309).

Nat. Order Gramineæ.

PERENNIAL, densely tufted.—CULMS erect or suberect, strongly compressed, 2 to 3 feet long, glabrous, smooth, 3-noded, upper internodes long, usually more or less exerted.

LEAVES crowded and almost flabellate at the base, striate, glabrous; *lower* sheaths strongly compressed, keeled, pallid; ligule a dense fringe of short hairs; blades very narrow, linear, long tapering to a setaceous point, tightly folded, flexuous, 8 to more than 12 inches long, closely striate, smooth on the lower, scabrid and whitish on the upper side.

PANICLE narrow linear to oblong, nodding, $\frac{1}{2}$ to 1 foot long; axis angular, smooth; branches solitary, very unequally distant, erect or slightly spreading, subflexuous or somewhat nodding, longest 1 to 4 inches long, finely filiform, more or less triquetrous, smooth or scabrid along the angles, remotely divided from near the base with the lower branchlets 3-2 spiculate, or all simply racemose; pedicels up to $1\frac{1}{2}$ line long.

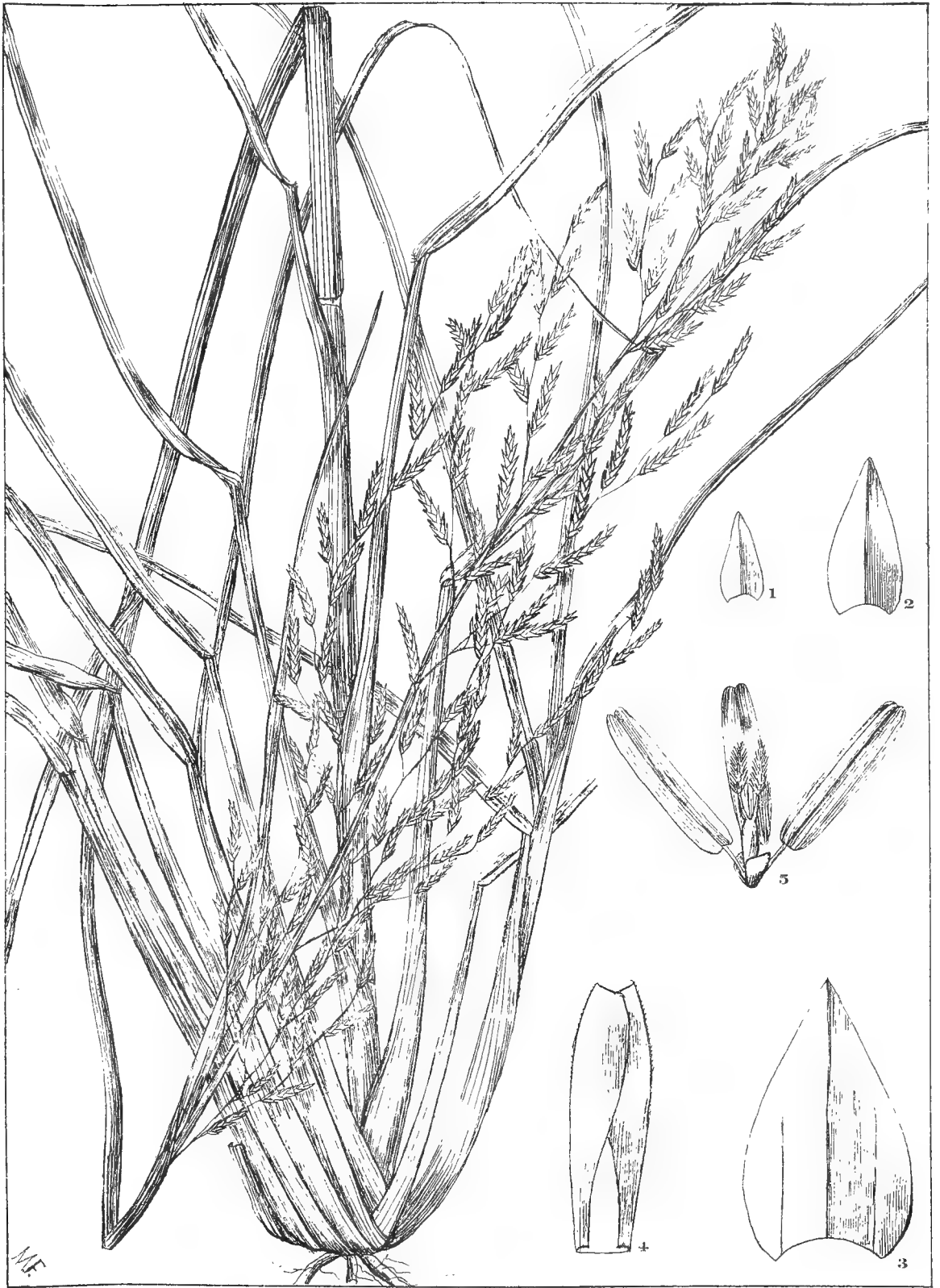
SPIKELETS linear, 3 to 6 lines, by 1 line, olive-green to olive-grey, loosely 7 to 15-flowered; rhachilla subpersistent.

GLUMES very unequal, lanceolate to oblong, acute or obtuse, pallid, 1-nerved, *lower* about $\frac{1}{4}$ line long, *upper* $\frac{1}{2}$ line long. Valves somewhat spreading, obliquely oblong in profile, folded, acute or subacute, 1 to $1\frac{1}{4}$ line long, keel smooth, like the side-nerves prominent, rigid, almost straight. Pales equal to the valves, keels curved, scaberulous above. Anthers $\frac{2}{3}$ to $\frac{3}{4}$ line long; grain oblong, $\frac{2}{3}$ line by $\frac{1}{3}$ line, reddish brown.

Habitat: NATAL. Berea, *Wood* 5928, 5937; Mooi River, *Wood* 7320; Riet Vlei, *Buchanan* 247; near Durban, *Williamson* 54; and without precise locality, *Buchanan* 244.

Drawn from *Wood's* 5937.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



M.F.

ERAGROSTIS PLANA. *NEES*



ERAGROSTIS CHAPELIERI W&A

PLATE 417.

ERAGROSTIS CHAPELIERI, Nees. (Fl. Cap., Vol. VII., p. 614).

Nat. Order Gramineæ.

PERENNIAL, tufted.—CULMS erect or suberect, simple, somewhat stout, 2 to 3 feet high, glabrous, 3-4-noded, intermediate and upper internodes exerted, uppermost very long; sheaths glabrous except at the more or less bearded mouth, or the lower scantily hairy, striate, *lower* very firm, persistent; ligule a narrow long hairy rim; blades very narrow, linear, tapering to fine point, usually involute or convolute, 3 to 10 inches long, 1 line broad at the base when expanded, rigid, closely striate, more or less hairy towards the base on the upper side, glabrous and smooth underneath.

PANICLE erect, contracted, very narrow, 3 to 9 inches long; axis slender, striate; branches erect, more or less adpressed to the axis, lowest solitary, 2 to 5 inches long, undivided for some distance, then (like the upper part of the axis) bearing fascicles of shortly pedicelled or sessile spikelets on short branchlets crowded towards the tips, or all branches very short, and then the panicle resembling an interrupted false spike; ultimate divisions and pedicels scabrid.

SPIKELETS linear, much compressed, 3 to 8 lines by $1\frac{1}{4}$ to $1\frac{1}{2}$ line, reddish-brown, 7 to 20-flowered; rhachilla persistent, glabrous, smooth, joints very short.

GLUMES equal or more or less unequal, deciduous, lanceolate, about 1 line long, 1 nerved or upper sub-3-nerved, membranous, keels scaberulous above. Valves broad, obliquely ovate in profile, shortly subacuminate or acute, 1 line long or very slightly longer, rather firm, deciduous from the base upwards, keels scaberulous above, side-nerve strong. Pales slightly shorter than the valves, persistent, keels stout and rigidly ciliolate. Stamens 2, anthers about $\frac{1}{5}$ to $\frac{1}{3}$ line. Grain short ellipsoid, laterally compressed, $\frac{1}{4}$ to $\frac{1}{3}$ line long, whitish, subtranslucent.

Habitat: NATAL. Umpumulo, 2000 feet alt., *Buchanan* 254a; near Durban, *Williamson* 58; valley of the Umlazi River, *Drège*; without precise locality, *Plant* 59; *Gerrard* 481.

—Also in tropical Africa, Delagoa Bay, and the Mascarene Islands.

“When the spikelets are very crowded the lower florets are often more or less reduced and barren.”

Drawn from *Buchanan's* 254a.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 418.

ERAGROSTIS CHALCANTHA, Trin. (Fl. Cap., Vol. VII., p. 615).

Nat. Order Gramineæ.

PERENNIAL, densely cæspitose.—CULMS erect, straight, $\frac{1}{2}$ to 1 foot long, glabrous, smooth, 1-noded, uppermost internode occupying $\frac{3}{4}$ or more of the culm and long exserted.

LEAVES crowded at the base, more or less beset with spreading often tubercle-based hairs, rarely quite glabrous; sheaths striate, tight, bearded at the mouth or not, lowest firm, persistent; ligule a dense fringe of very short hairs; blades linear, tapering to a fine often subcallous point, 1 to 4 inches by 1 to 2 lines, flat or more or less involute or convolute, particularly in the upper part, rigid, smooth or scaberulous on the upper side, obscurely striate above, conspicuously so below.

PANICLE ovate to oblong, 1 to 3 inches long, more or less contracted; axis smooth below, compressed and scabrid along the angles above; branches solitary, spreading, 3 to 9 lines long, racemosely 6 to 2-spiculate or shorter and reduced to a single spikelet, filiform, more or less angular, scabrid; pedicels often puberulous, very short.

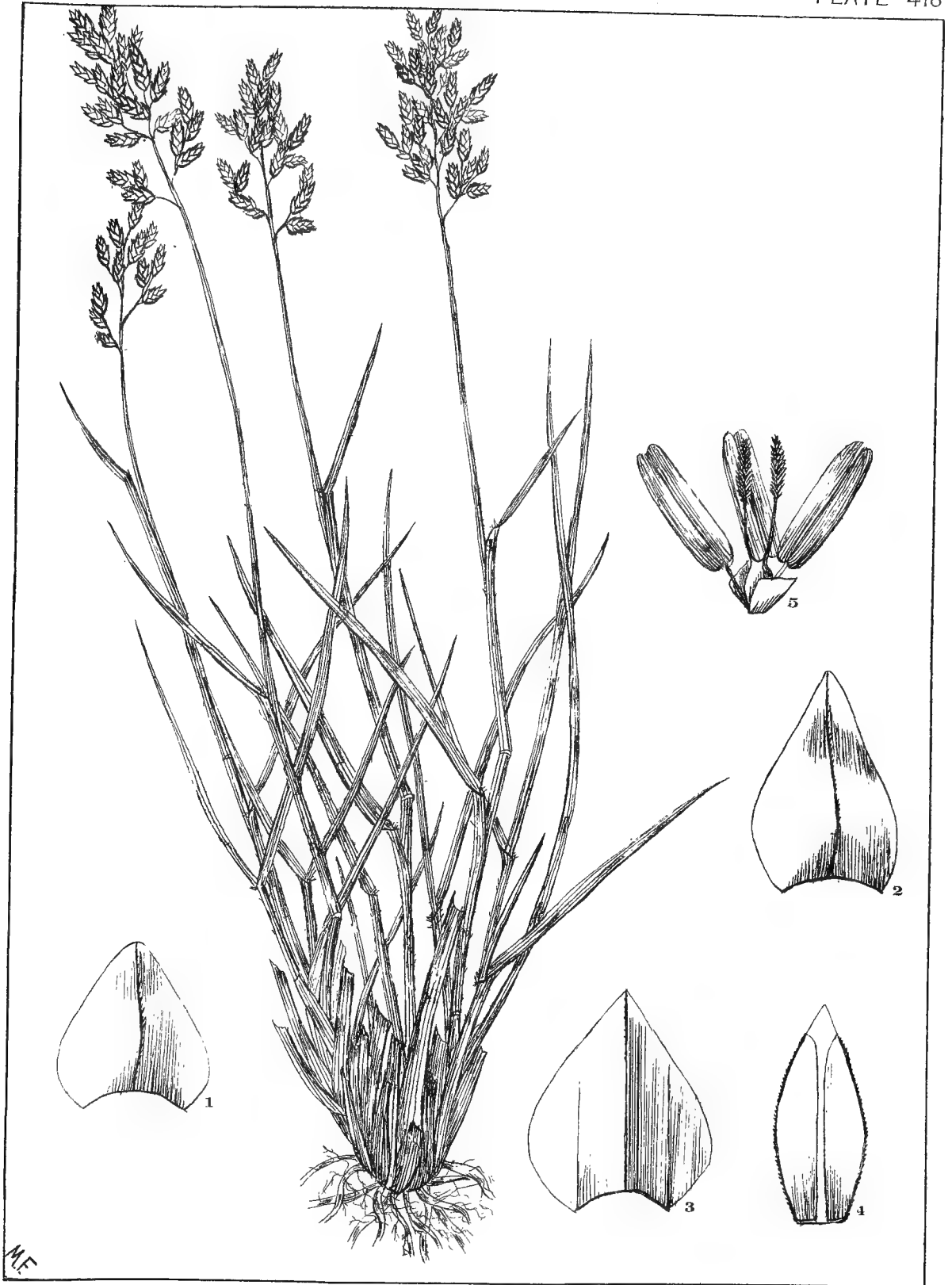
SPIKELETS ovate-oblong to oblong, obtuse, somewhat turgid, $2\frac{1}{2}$ to 4 lines, by $1\frac{1}{4}$ to $1\frac{3}{4}$ line, closely 7 to 15-flowered, olive-green to almost leaden-grey; rhachilla persistent, smooth, joints very short.

GLUMES unequal, ovate, obtuse to subacute, *upper* longer, about $\frac{3}{4}$ line long, keels scabrid. Valves broadly and obliquely ovate, obtuse to subacute, 1 line long, membranous, side-nerves more or less inconspicuous, keel scaberulous near the tip, pales $\frac{3}{4}$ line long, keels spinulously scabrid. Anthers about $\frac{1}{2}$ to $\frac{2}{3}$ line long. Grain subglobose to almost cubic, less than $\frac{1}{4}$ line long, brown, embryo very large.

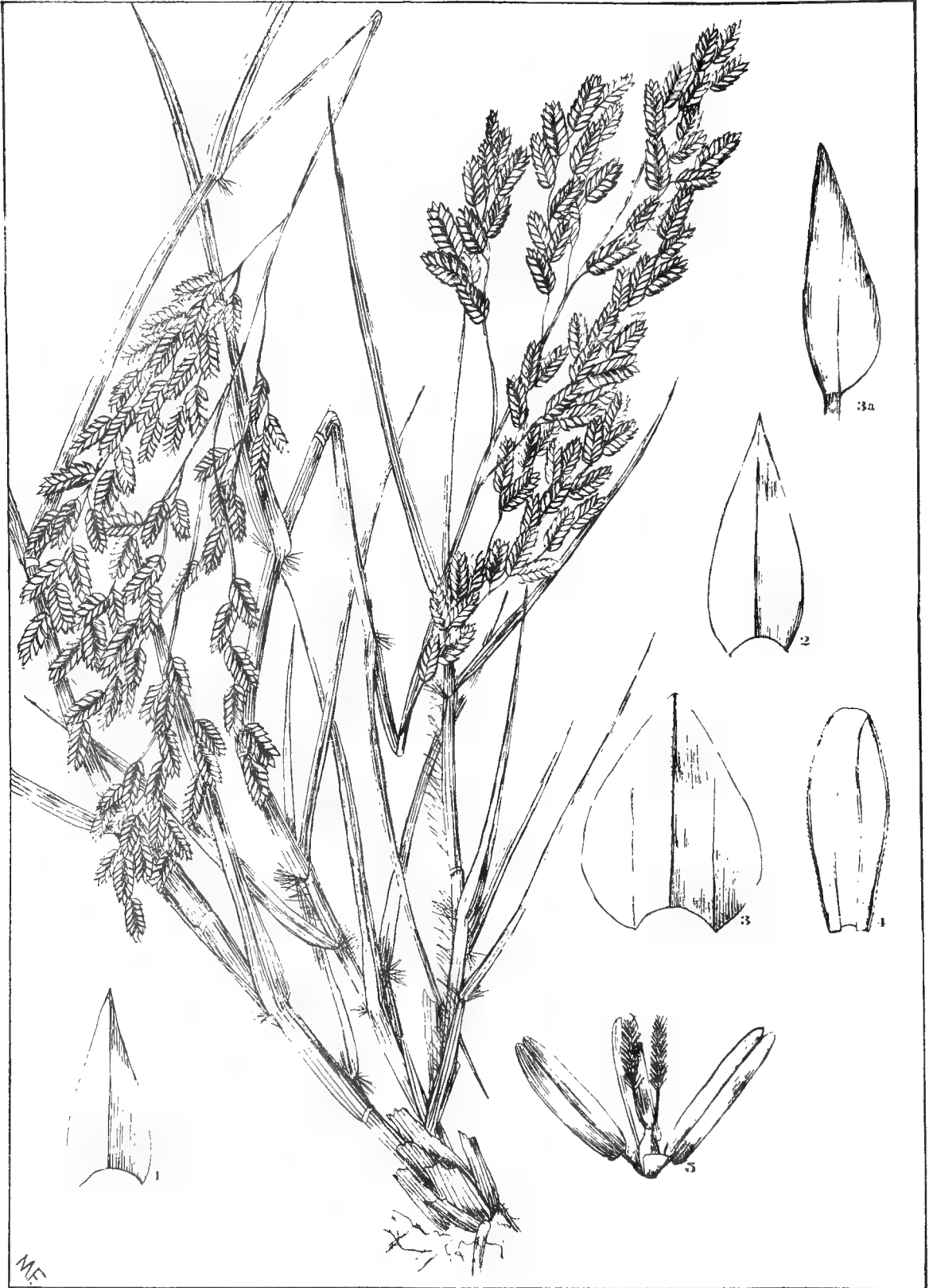
Habitat: NATAL. Durban Bay, *Krauss* 295; Durban Flats, *Buchanan* 46; Umpumulo, common, *Buchanan* 256; Rovel Hills, *Sutherland*; De Beer's Pass, *Wood* 5995; near Maritzburg, *Wood* 7230; Van Reenen's Pass, 5000 to 6000 feet alt., *Wood* 7223.

Drawn from *Wood's* 7223. The culms in this specimen are sometimes 2-noded.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ERAGROSTIS CHALCANTHA. *TRIM.*



ERAGROSTIS GANGETICA. SEED.

PLATE No. 419.

ERAGROSTIS GANGETICA, Steud. (Fl. Cap., Vol. VII., p. 617).

Nat. Order Gramineæ.

PERENNIAL, tufted.—CULMS geniculate, suberect or erect, rather stout, simple or branching below, 1 to 3 feet long, glabrous, smooth, about 4-noded, *upper* internodes exerted.

LEAVES few at the base of each culm; sheaths glabrous except at the often bearded mouth, smooth, firm, *upper* tight, lowest persistent; ligule a very minutely ciliolate rim; blades linear, tapering to an acute or setaceous point, 2 to 6 inches by $1\frac{1}{2}$ to 2 lines, flat or more often involute, rather rigid, glabrous, smooth below, densely scaberulous and whitish above.

PANICLE oblong, 2 to 6 inches long, rarely shorter or longer, generally contracted, often nodding, or the lower branches spreading; axis smooth below; branches solitary, rather distant, *lower* up to 4 inches long, more or less flexuous, filiform, scaberulous, the lowest undivided for $\frac{1}{2}$ to 1 inch or like the rest divided from near the base, their branchlets usually short and bearing shortly pedicelled crowded spikelets.

SPIKELETS linear-oblong to linear, up to 8 lines by 1 line, sometimes rather flexuous, usually olive-grey to leaden-grey, 8 to 30-flowered; rachilla persistent.

GLUMES subequal, ovate-oblong, acute, up to 1 line long, 1-nerved, deciduous. Valves obliquely oblong, acute to subobtuse, $\frac{4}{5}$ to $1\frac{1}{4}$ line long, side-nerves slender, prominent, keels scaberulous above; pales deciduous, slightly shorter than the valves, keels scabrid. Anthers $\frac{2}{3}$ to $\frac{3}{8}$ line long; grain oblong, $\frac{3}{8}$ line by $\frac{1}{6}$ - $\frac{1}{5}$ line, brown.

Habitat: NATAL. Near Durban, *Williamson* 61; moist sandy soil near Pinetown, *Buchanan* 115; Umpumulo, 2000 feet alt., *Buchanan* 254; Clairmont 50 feet alt., *Wood* 7262; and without precise locality, *Gerrard* 672.

Also in tropical Africa and throughout tropical Asia.

In Australia this grass is said to be a valuable fodder plant, "palatable and nutritious, and unaffected by drought."

Fig 1, Lower glume; 2, upper glume; 3, valve; 3a, valve in profile; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 420.

ERAGROSTIS MAJOR, Host. (Fl. Cap., Vol. VII., p. 620).

Nat. Order Gramineæ.

ANNUAL, tufted.—CULMS geniculate-ascending or sub-erect, usually stout and branched below, $\frac{1}{2}$ to 2 feet long, glabrous, smooth, 3 to 4-noded, internodes more or less exerted; sheaths loose, strongly striate, keeled in the upper part, often glandular, particularly on the keel and the nerves above, glabrous or scantily hairy, bearded; ligule a fringe of short hairs; blades linear or lanceolate-linear, long tapering to a fine point, 2 to 6 inches by $1\frac{1}{2}$ to 4 lines, flat, more or less flaccid, light green or subglaucous, glabrous or very scantily hairy, smooth below, scaberulous above, usually glandular along the margins.

PANICLE oblong to ovate-oblong, stiff, 2 to more than 6 inches long, dense or rather lax; axis terete, smooth; branches sub-solitary spreading, stiff or flexuous, lowest up to $3\frac{1}{2}$ inches long or all short, branched from near the base; lateral pedicels $\frac{1}{2}$ to $1\frac{1}{2}$ line long, all the divisions filiform, angular, scabrid.

SPIKELETS linear to ovate-oblong, 2 to 6 lines long, by 1 to almost 2 lines, subflexuous if very long, light or dark olive-green, few to 50-flowered; rhachilla persistent.

GLUMES subequal, ovate oblong, subobtuse to acute, $\frac{3}{4}$ or almost 1 line long, 1- (or the upper 3-) nerved, keels scabrid, margins minutely serrulate. Valves broadly and obliquely ovate in profile, obtuse or subobtuse, 1 to $1\frac{1}{4}$ line long, side-nerves prominent, strong. Pales persistent, somewhat shorter than the valves, broad, keels scabrid or ciliolate. Anthers oblong, about $\frac{1}{5}$ to $\frac{1}{4}$ line long; grain globose, brown, loose within the turgid valves, $\frac{1}{3}$ to $\frac{1}{4}$ line in diameter.

Habitat: NATAL. By the Tugela River, 600 to 1000 feet alt., *Buchanan* 253; without precise locality, *Gerrard* 472.

Probably introduced. A native of the Mediterranean regions and India.

Drawn from Buchanan's 253, the only specimen in the Herbarium.

Fig 1, Lower glume; 2, upper glume; 3, valve in profile; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ERAGROSTIS MAJOR, *HOST.*



ERAGROSTIS SUPERBA. PEYR

PLATE 421.

ERAGROSTIS SUPERBA, Peyr. (Fl. Cap., Vol. VII., p. 322).

Nat. Order Gramineæ.

PERENNIAL, densely cæspitose with intravaginal innovations, glabrous.

CULMS erect or geniculately ascending, 2 to 3 feet long, rather stout, smooth, 2-noded, internodes exerted, uppermost very long; sheaths smooth, bearded at the mouth, lowest crowded, broad at the base, keeled, persistent, *upper* terete, tight; ligule a fringe of short hairs; blades linear, long tapering to an acute point, 2 to 8 inches or more by 1 to 3 lines, firm, more or less rigid, *upper* often spreading, usually more or less involute or convolute, rarely quite flat, smooth below, scaberulous on the upper side.

PANICLE narrow, linear or oblong, often interrupted below, erect, 4 to 10 inches long; axis usually straight, smooth, terete below, angular above, branches distant, erect or suberect, solitary, filiform, usually simply racemose, $\frac{1}{2}$ to 3 inches long, 1 to 10 spiculate, rarely branched; pedice's very unequal, lateral, $\frac{1}{2}$ to 3 lines long.

Spikelets articulated with the pedicels, deciduous, rather distant or clustered towards the tips of the branches or branchlets, strongly compressed from the side, suborbicular, ovate to ovate-oblong, 3 to 8 lines by $2\frac{1}{2}$ to $4\frac{1}{2}$ lines, straw-coloured rarely more or less purplish, 7 to 37-flowered.

GLUMES subequal, ovate-lanceolate to lanceolate in profile, acute or mucronate $1\frac{1}{2}$ to $2\frac{1}{2}$ lines long, 1-nerved, firmly membranous, strongly keeled. Valves obliquely oblong, subacute, $1\frac{3}{4}$ to $2\frac{3}{4}$ lines long, acutely keeled, subchartaceous, side-nerves prominent and often green. Pales 2-fid, keels winged, wings narrowed upwards, produced into obtuse auricles at base, ciliolate. Anthers 1 line long; grain oblong, 1 line long; pericarp loose; seed truncate at both ends, subquadrangular, brown.

Habitat: NATAL. Weenen County, 5000 feet alt., *Wood* 4416; at 3500 feet alt., *Wood* 3587; banks of the Tugela River, *Buchanan* 255; and without precise locality, *Gerrard* 468; Zululand, *Wood* 7307.

Also from Delagoa Bay, *Forbes*, and in tropical Africa.

Drawn from *Wood*'s 3587.

The native name of this grass is Madolwana.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 422.

ERAGROSTIS BRIZOIDES, Nees. (Fl. Cap., Vol. VII., p. 622).

Nat. Order Gramineæ

PERENNIAL, compactly tufted with intravaginal innovation shoots.

CULMS erect or geniculate-ascending, slender, firm, from $\frac{3}{4}$ to more than 2 feet long, glabrous, smooth, 1 to 3-noded, internodes exerted, uppermost occupying from $\frac{1}{2}$ to $\frac{4}{5}$ the length of the culm; sheaths tight, glabrous except the bearded mouth, lowest short, crowded, persistent; ligule a fringe of minute hairs; blades narrow, linear, tapering to a fine point, 2 to 4 inches (rarely to 8 inches) by 1 to $1\frac{1}{2}$ line, usually more or less convolute or involute and rigid, glabrous, smooth below, scaberulous above, striate.

PANICLE linear to oblong, contracted, 2 to 4 inches long, erect or nodding; axis filiform, flexuous, smooth, branches solitary, filiform, angular, smooth, racemosely 6 to 2 spiculate; pedicels very short.

SPIKELETS crowded or sometimes more distant, ovate to ovate-oblong, or suborbicular, strongly compressed, 2 to 6 lines, by $1\frac{1}{2}$ to $3\frac{1}{2}$ lines, densely 5 to 40-flowered, straw-coloured, usually tinged with dull purple; rhachilla persistent, rather stout, joint very short.

GLUMES and valves similar, closely imbricate, rigidly membranous to sub-chartaceous, obtuse, back broad, keeled. Glumes subequal, oblong in profile, $1\frac{1}{4}$ to $1\frac{1}{2}$ line long, lower 1-nerved; valves obliquely elliptic-oblong in profile, $1\frac{1}{2}$ to $1\frac{3}{4}$ line long, side-nerves prominent, keel adpressedly ciliate. Pales subequal to the valves, broad, keels very densely and minutely ciliolate. Anthers $\frac{3}{4}$ line long. Grain narrowly oblong, not quite 1 line by $\frac{1}{2}$ line; pericarp slightly swelling in water.

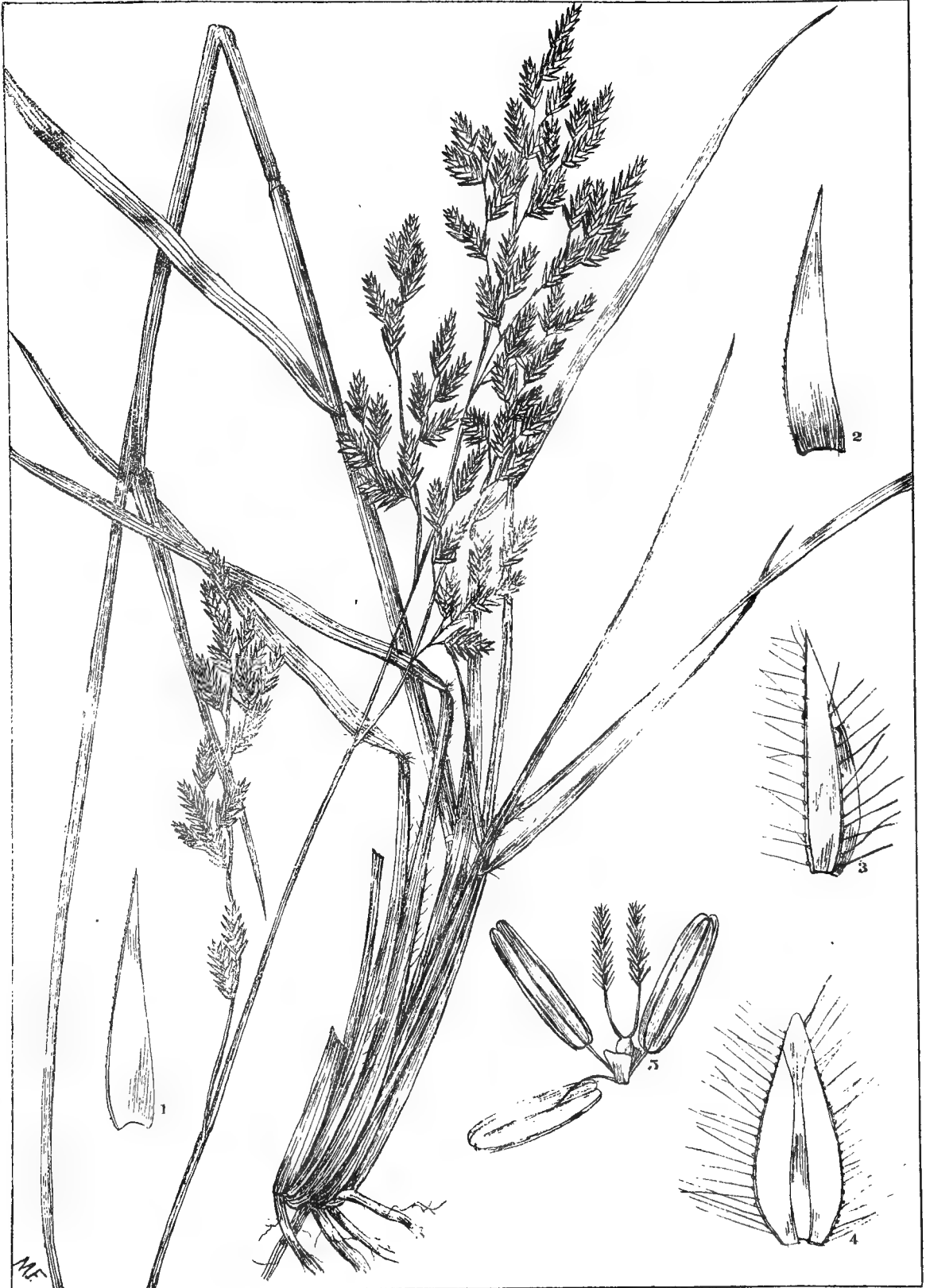
Habitat: NATAL. Riet Vlei, 4000 to 5000 feet alt., *Buchanan* 251; Durban Flats, *Buchanan* 27; near Durban, *Williamson* 59; Coastland, *Sutherland*; throughout Natal, *Krauss* 365; Inanda, 1800 feet alt., *Wood* 993; Mooi River, *Wood* 4068; Berea, *Wood* 5934; Van Reenen's Pass, 5000-6000 feet alt., *Wood* 7222, 7245; and without precise locality, *Buchanan* 102, 252; *Plant* 62.

This grass appears to be found all over South Africa.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. All enlarged.



ERAGROSTIS BRIZOIDES. NEES.



ERAGROSTIS LAPPULA. NEES

PLATE 423.

ERAGROSTIS LAPPULA, Nees. (Fl. Cap., Vol. VII., p. 627).

Nat. Order Gramineæ.

PERENNIAL, densely cæspitose.—CULMS erect or geniculate, firm, rather stout, 2 to 3 feet long, glabrous, smooth, about 3-noded, upper internodes (sometimes also the lower) exerted; *lower* sheaths firm, strongly striate, pubescent or glabrous, usually bearded at the mouth, persistent, *upper* tight, glabrous, smooth; ligule a very minutely ciliate rim; blades narrow, linear, filiform-convolute, tapering to a fine point, 6 to 12 inches long, $1\frac{1}{2}$ line broad when expanded, rigid, flexuous, glabrous or sparsely hairy particularly towards the base, smooth on the back, scaberulous or smooth on the face, strongly striate.

PANICLE erect or nodding, narrow, linear to lanceolate, contracted, dense, sometimes spike-like, 6 to 8 inches long; axis filiform, smooth; branches solitary, sometimes 2 to 3-nate or irregularly approximate, adpressed, *lower* up to 4 inches long, undivided for 1 to $1\frac{1}{2}$ inch or like the others divided from near the base; branchlets somewhat distant, adpressed, simple or again divided; lateral pedicels very short; all the divisions finely filiform, angular, smooth or scaberulous.

SPIKELETS oblong, $1\frac{1}{2}$ to 4 lines long, brownish or purplish, loosely 4 to 17-flowered; rhachilla persistent.

GLUMES subequal, lanceolate, acute, 1 line long, thin, deciduous, keel scabrid. Valves somewhat spreading, stiff, lanceolate in profile, acute, 1 line long or slightly longer, membranous, side-nerves prominent, like the keels rigidly ciliate, with the cilia tubercle-based (or rarely with the keels glabrous). Pales equal to the valves, keels tubercled, long and rigidly ciliate from the tubercles. Anthers over $\frac{1}{2}$ line long.

Habitat: NATAL. Near Durban, *Drège*; *Plant* 63; *Gerrard* 33, 475; *Williamson* 57; *Wood* 6047; *Rehmann* 8630; Berea, *Wood* 5938; Zululand, *Buchanan* 301.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 424.

ERAGROSTIS ASPERA, Nees. (Fl. Cap., Vol. VII., p. 628).

Nat. Order Gramineæ.

ANNUAL.—CULMS scantily fasciated, erect or suberect, $\frac{1}{2}$ to $\frac{3}{4}$ foot long (excluding the panicle), glabrous, smooth, simple, 2 to 3-noded, internodes usually enclosed; sheaths keeled, glabrous, except at the bearded mouth, or sparingly hairy, hairs fine, tubercle-based; ligule a fringe of long hairs; blades linear, tapering to a long setaceous point, 4 inches to more than 1 foot by 2 to 3 lines, flat, flaccid, scabrid on both sides, glabrous.

PANICLE large, very lax and open, thyriform, oblong to obovate-oblong, 8 to 20 inches long; axis terete, filiform, smooth below; branches whorled or irregularly approximate, finely filiform to capillary, scabrid, bearded at the callous base, loosely and repeatedly divided from near the base, longest up to 6 inches long; pedicels very long and fine.

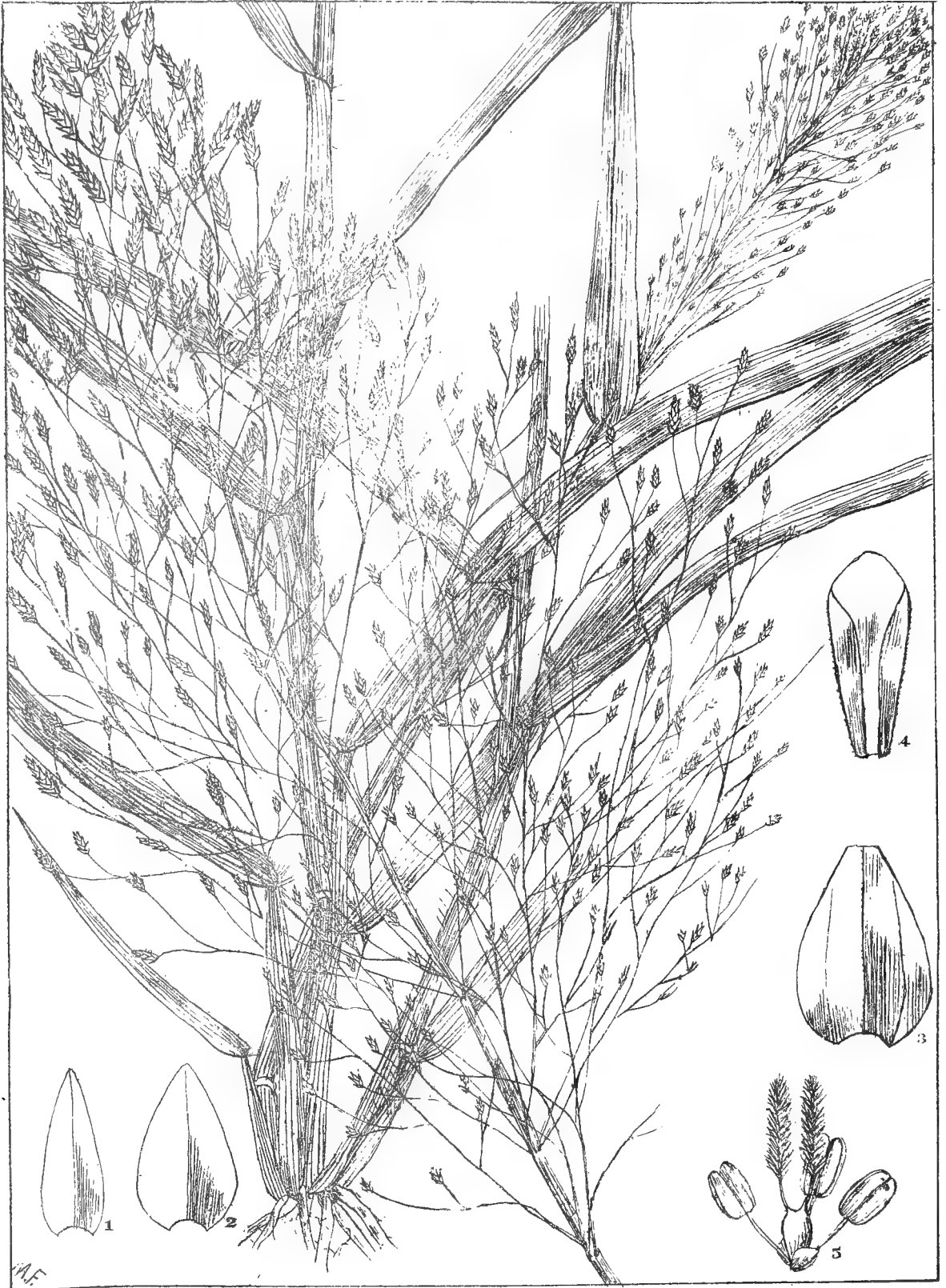
SPIKELETS scattered, linear, obtuse, $2\frac{1}{2}$ to 4 lines by $\frac{2}{3}$ to $\frac{3}{4}$ line, pallid or tinged with purple, loosely 4 to 16-flowered; rhachilla very slender, breaking up.

GLUMES subequal, oblong, obtuse, $\frac{1}{2}$ line long, 1-nerved. Valves obliquely ovate-oblong, truncate, $\frac{2}{3}$ to $\frac{3}{4}$ line long, thin, side-nerves prominent, strong. Pales equal to the valves and falling with them, obtuse, keels scabrid. Anthers about $\frac{1}{6}$ line long. Grain globose, about $\frac{1}{5}$ line diameter, brown, loose in the somewhat turgid florets.

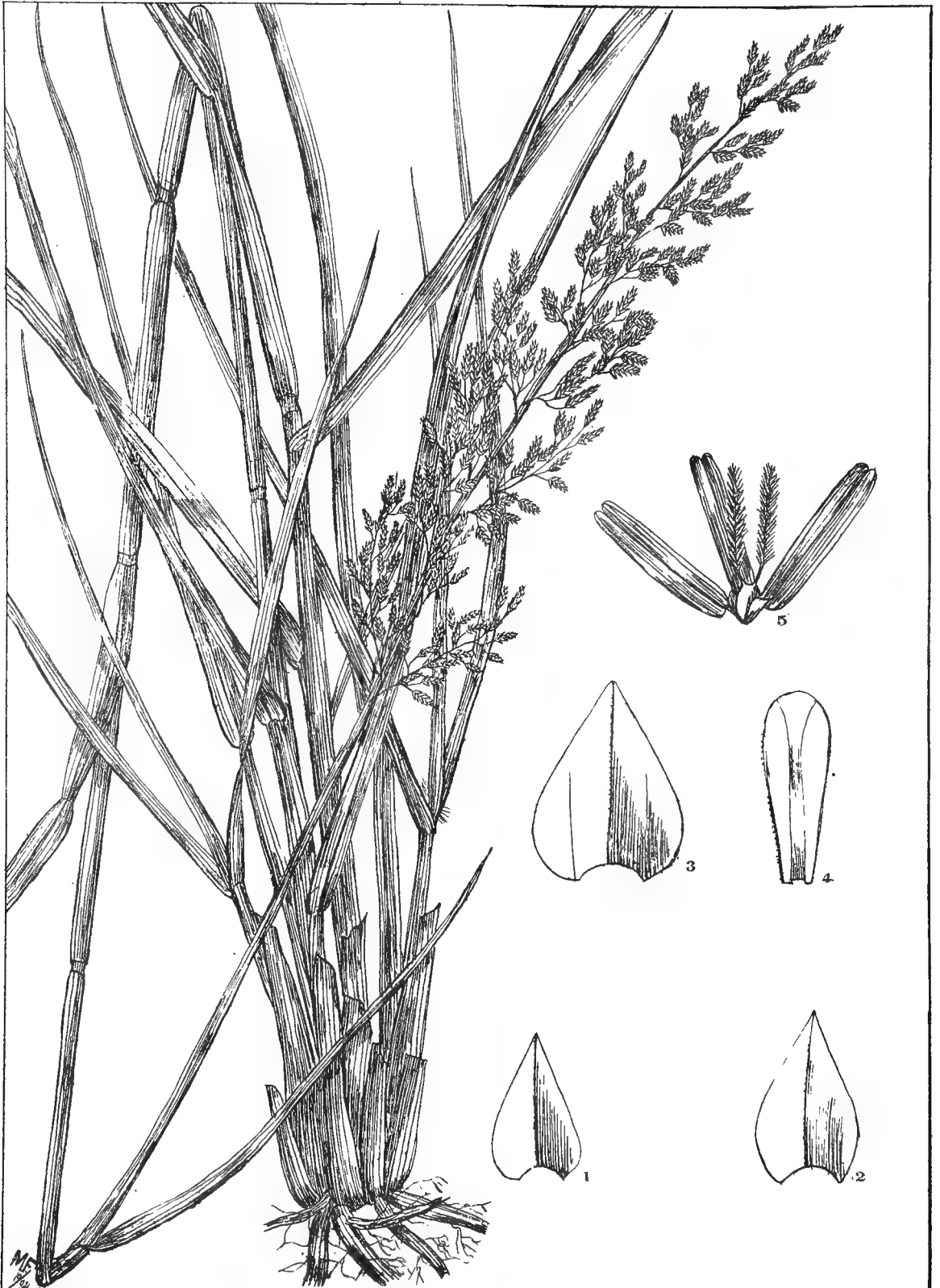
Habitat: NATAL. Near Durban in Coffee Plantations, *Drège*; slopes of Tugela, 600 to 1000 feet alt., *Buchanan* 257; Zululand, *Jenkinson* 85.

Drawn from Buchanan's 257.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ERAGROSTIS ASPERA. NEES.



ERAGROSTIS GUMIFLUA NEES

PLATE 425.

ERAGROSTIS GUMMIFLUA, Nees. (Fl. Cap., Vol. VII., p. 629).

Nat. Order Gramineæ.

PERENNIAL, compactly cæspitose.—CULMS firm, erect, slender or somewhat stout, 1 to 2 feet long, glabrous, smooth, usually very viscous below the nodes, 3 to 5-noded, internodes exserted; sheaths tight, striate, glabrous except at the bearded mouth, more or less viscous, lowest persistent; ligule a dense fringe of minute hairs; blades narrow, linear, tapering to a setaceous point, usually filiform-convolute, 4 to 10 inches long, 1 to 2 lines wide at the base when expanded, rigid, glabrous, smooth on the back, densely scabrid along the projecting nerves on the upper side.

PANICLE linear or narrow-oblong, erect, 6 to 10 inches long; rhachis angular, smooth; branches solitary or irregularly approximate and subverticillate, erect or obliquely erect, short or the lower up to 3 inches long, angular, smooth, divided from the base; branchlets mostly very short, subsecund, with the spikelets in dense clusters; pedicels very short.

SPIKELETS oblong, obtuse, up to 2 lines long, purplish or light brown, rigid, loosely 5 to 9-flowered; rhachilla disarticulating.

GLUMES subequal, oblong-lanceolate, acute, about $\frac{1}{2}$ line long, strongly keeled, keel scaberulous; valves oblong in profile, obtuse, $\frac{2}{3}$ line long, rigidly membranous, side nerves very prominent, keel scaberulous above. Pales subequal to the valves, and falling with them, keels scabrid above. Stamens 3; anthers $\frac{2}{5}$ line long; grain oblong-ellipsoid, $\frac{1}{5}$ to $\frac{1}{4}$ line long, brown, smooth.

Habitat: NATAL. Without precise locality, *Gerrard* 680; near Dundee, 4000 feet alt., *W. E. Green* 95, 96 (*Wood* 7451).

Drawn from Green's specimens, the only Natal one in the Herbarium.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules, *All enlarged.*



M.F.

ERAGROSTIS ATHERSTONEI, STAPP.

PLATE 426.

ERAGROSTIS ATHERSTONEI, Stapf. (Fl. Cap., Vol. VII., p. 607).

Nat. Order Gramineæ.

PERENNIAL.—CULMS erect, simple or with 1-2 branches from the upper nodes, over 2 feet long, wiry, glabrous, smooth, about 3-noded, lowest lengthened, internodes about $\frac{1}{2}$ foot long, like the upper long exerted, with a ring of more or less distinct glands below the nodes; sheaths tight, glabrous, smooth, substriate, intermediate 1 to $1\frac{1}{2}$ inch long; ligule a fringe of minute hairs; blades narrow, linear, tapering to a fine point, 6 to 8 inches, by 1 to $1\frac{1}{2}$ line, more or less involute or convolute, rather firm, scaberulous on the upper side, otherwise smooth.

PANICLE oblong, erect, lax, 5 to 6 inches, by 1 to $1\frac{1}{2}$ line; axis filiform, smooth; branches whorled, the lower in whorls of 4 to 7, obliquely erect or slightly spreading, loosely divided from near the base, longest 1 to $1\frac{1}{2}$ inch long, capillary or subcapillary, straw-coloured, smooth, bearded at the axils; branchlets capillary, subdivaricate, short, 3-1-spiculate, smooth or scaberulous; lateral pedicels about 1 line long.

SPIKELETS scattered, lanceolate, 1 to 2 lines long, grey, 2 to 4-flowered; rhachilla subsistent.

GLUMES subequal, lanceolate in profile, acute or acuminate, very delicate, faintly 1-nerved, up to 1 line long, or the lower slightly shorter. Valves oblong, subobtuse, $\frac{7}{8}$ line long, thinly membranous, smooth or almost so, side-nerves short, faint. Pales equal to the valves, keels scaberulous and fine. Anthers $\frac{3}{8}$ line long. Grain pallid, translucent, oblong-ellipsoid, over $\frac{1}{4}$ line long.

Habitat: NATAL. Without precise locality, *Buchanan 277*.

By an unfortunate error in the *Flora Capensis*, Natal is credited with the grass *Eragrostis Lehmanniana*, which was really gathered in the Orange River Colony, and is there quoted as *Buchanan 267*, the quotation: "Natal, without precise locality, *Buchanan 277*" should have come under *E. Atherstonei*. The specimen figured from was *Buchanan's 277*, which is the only one in the Herbarium, and we find that the culms are 2-3-branched, and the leaves $\frac{3}{4}$ line wide, and only 4 inches long, the sheath cases also are long-bearded. Dr. Stapf, who has pointed out these differences, is of opinion that, with the scanty material at our disposal, the separation of the Natal plant as a variety is not at present advisable.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 427.

ERAGROSTIS PATENTISSIMA, Hack. (Fl. Cap., Vol. VII., p. 613).

Nat. Order Gramineæ.

PERENNIAL.—CULMS tufted, shortly ascending, subcompressed, $\frac{1}{3}$ to 1 foot long, glabrous, smooth, few-noded, sheathed almost to the base of the panicle, sheaths lax, particularly the lower, glabrous except at the scantily bearded mouth, striate; ligule a ciliate rim. Blades linear to lanceolate-linear, tapering almost from the base to a fine point, 2 to 3 inches long, 1 to $2\frac{1}{2}$ lines wide at the base, flat or involute, more or less hairy on the upper side, otherwise glabrous, smooth below, scabrid in the upper part.

PANICLE erect, ovate-orbicular in outline, divaricate, effuse, very loose, up to 8 inches long; axis glabrous, smooth, subangular, branches solitary, rarely 2-nate, subdistichous, lower almost $\frac{3}{4}$ the length of the panicle, obliquely erect, divided from near the base; branches long divaricate, 2-1-spiculate, filiform to subcapillary, angular, scabrid; pedicels $\frac{1}{2}$ to $1\frac{1}{4}$ inch long.

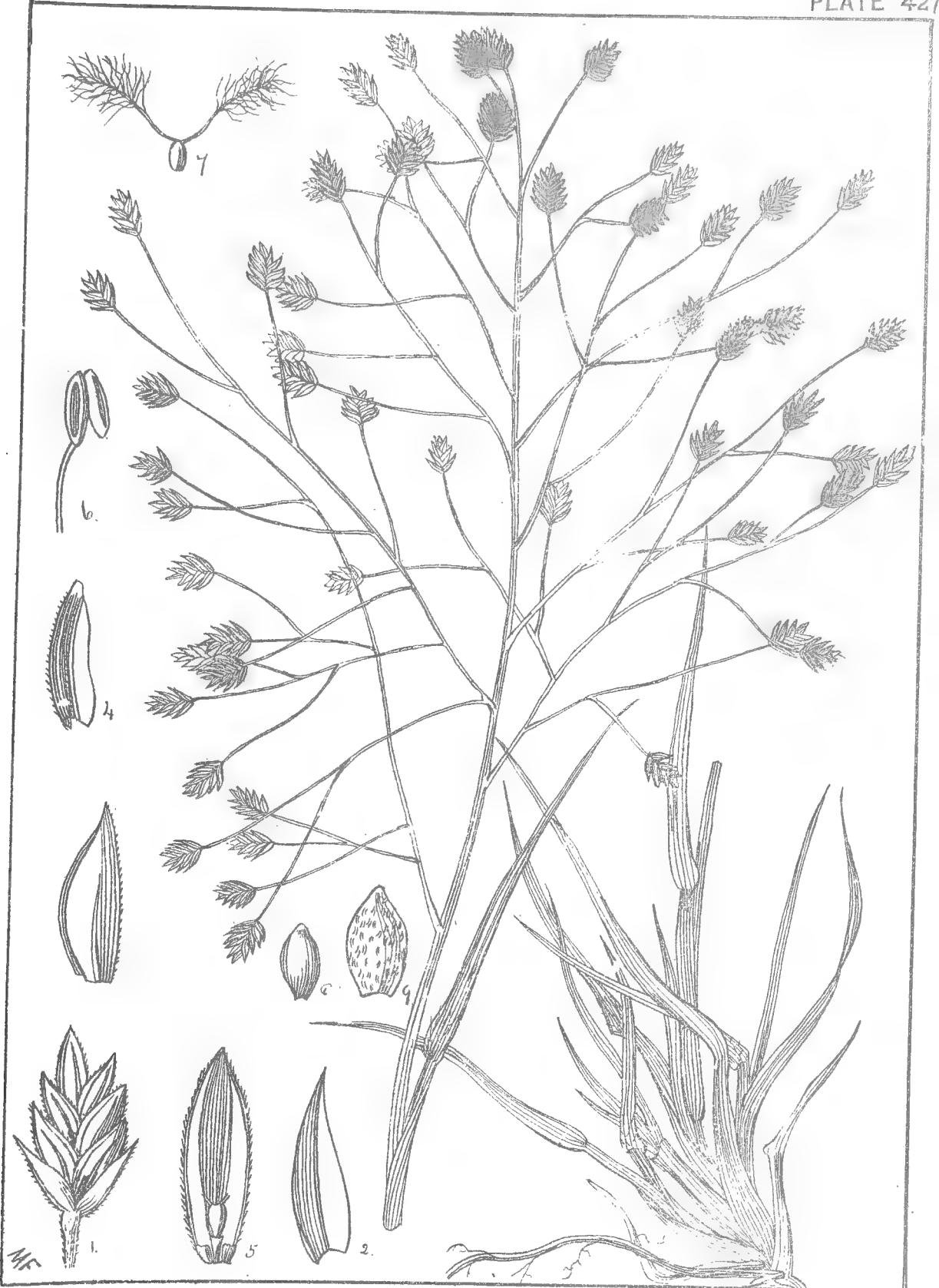
SPIKELETS oblong, compressed, 3 to 4 lines, by $1\frac{1}{4}$ to $1\frac{1}{2}$ line, 6-9-flowered, light green tinged with purple; rhachilla persistent, smooth.

GLUMES subequal, lanceolate in profile, acuminate, almost $1\frac{1}{2}$ line long, herbaceous-membranous, 1-nerved. Valves, ovate-lanceolate in profile, acuminate, $1\frac{1}{2}$ line long, firmly membranous; lateral nerves somewhat prominent, keels scaberulous; pales somewhat shorter than the glumes, strongly curved, keels stout and spinulously ciliolate. Anthers $\frac{2}{3}$ line long.

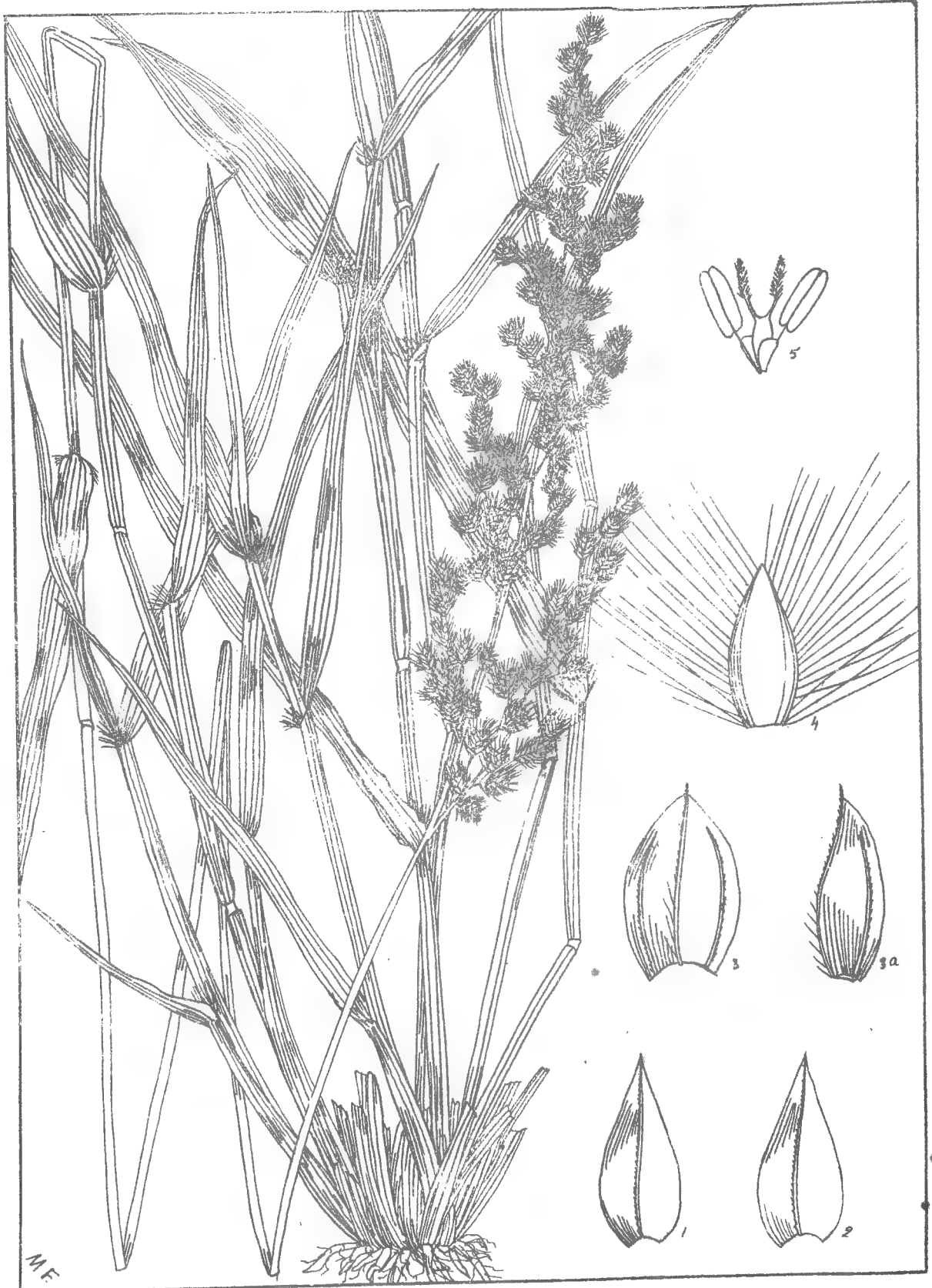
Habitat: NATAL. Hill tops at Umpumulo, 2700-2800 feet alt., *Buchanan* 278.

The drawing of this grass was made from a drawing made at the Herbarium of Kew Gardens by Miss M. Smith, by kind permission of the Director, as the plant in our Herbarium was not complete enough for the purpose.

Fig 1, A spikelet; 2, glume; 3, valve; 4, pale, back view; 5, pale, lodicules and ovary; 6, stamen; 7, pistil; 8, unripe caryopsis; 9, caryopsis. *All enlarged.*



ERAGROSTIS PATENTISSIMA. HACK.



M.F.

ERAGROSTIS CILIARIS. LINK.

PLATE 428.

ERAGROSTIS CILIARIS Link. (Fl. Cap., Vol. VII., p. 629).

Nat. Order Gramineæ.

ANNUAL OR SUBPERENNIAL (!) tufted.—CULMS geniculate, ascending, often from a procumbent base, slender, $\frac{1}{2}$ to 2 feet long, glabrous, smooth, simple or branched below, about 3-noded, internodes exerted; sheaths striate, tight, glabrous or scantily hairy, bearded with long hairs at the mouth; ligule a fringe of short hairs. Blades linear, tapering to a fine point, 3 to 6 inches by 1 to 2 lines, usually involute, somewhat stiff and spreading, glabrous, or with scattered fine long hairs, scaberulous.

PANICLE spike-like, more or less lobed or interrupted, dense to very dense, 2 to 6 inches long; axis scabrid; branches adpressed, usually all very short or the lowest up to 1 inch long, divided from the base, pedicels very short.

SPIKELETS crowded, ovate, strongly compressed, 1 to almost 2 lines long, loosely 6 to 12-flowered, pallid, sometimes purplish; rhachilla breaking up.

GLUMES oblong-lanceolate, acute, $\frac{2}{5}$ to almost $\frac{1}{2}$ line long, 1-nerved, keel scabrid. Valves oblong in profile, subtruncate and mucronulate, spreading, about $\frac{1}{2}$ line long, thin, side-nerves prominent, keel scabrid. Pales equal to the valves and falling with them, keels of pale very long and rigidly ciliate. Anthers $\frac{1}{5}$ to $\frac{1}{6}$ line long. Grain elongate-ovoid, $\frac{1}{4}$ line long, brown.

Habitat: NATAL. Common near the coast, *Buchanan* 160; margins of woods near the Umlazi River, *Krauss* 349; near Durban, *McKen* 124; Durban Flats, *Buchanan* 38; Berea, *Wood* 5926; between Umzimkulu and Umkomanzi Rivers, *Drège* 4270; and without precise locality, *Gerard* 601; Zululand, 2000 feet alt., *Jenkinson* 67, January.

Drawn from *Wood's* 5926, but not more than 2 stamens were found in all the florets examined. The keel of the valve is ciliate at base in our specimens.

“Common throughout tropical Africa and America, and in North India.”

Fig 1, Lower glume; 2, upper glume; 3, valve; 3a, valve in profile; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 429.

ERAGROSTIS NAMAQUENSIS, Nees, var. robusta, Stapf. (Fl. Cap., Vol. VII., p. 630).

Nat. Order Gramineæ.

ANNUAL OR SUBPERENNIAL (?) tufted.—CULMS erect, slender, $\frac{1}{2}$ to 1 foot long, glabrous, smooth, 1-noded, simple, upper internode by far the longest, long exerted; sheaths striate, glabrous, tight, lowest more or less compressed and keeled. Blades linear, tapering to a fine point, 2 to 4 inches, by 1 to $1\frac{1}{2}$ line, flat, flaccid, glabrous, smooth.

PANICLE tightly contracted and linear or more or less open and oblong, 4 to 6 inches long, erect; axis smooth, terete; branches solitary or 2-3-nate or irregularly approximate, erect or obliquely spreading, rather loosely and repeatedly divided from near the base, all divisions subcapillary, glabrous, smooth or almost so; lateral pedicels usually very short.

SPIKELETS crowded or more or less scattered, elliptic, obtuse, 1 line long, about 5 or 6-flowered, light purplish or brownish; rhachilla disarticulating.

GLUMES subequal, broad, oblong, obtuse, emarginate, $\frac{1}{4}$ line long, hyaline, 1-nerved, persistent. Valves oblong in profile, obtuse, $\frac{2}{5}$ line long, hyaline, side-nerves prominent, smooth, like the keel. Pales subequal to the valves, keels smooth, falling with the valves. Stamens 2; anthers almost $\frac{1}{4}$ line long. Grain oblong, $\frac{1}{4}$ line by $\frac{1}{8}$ line, brown, smooth.

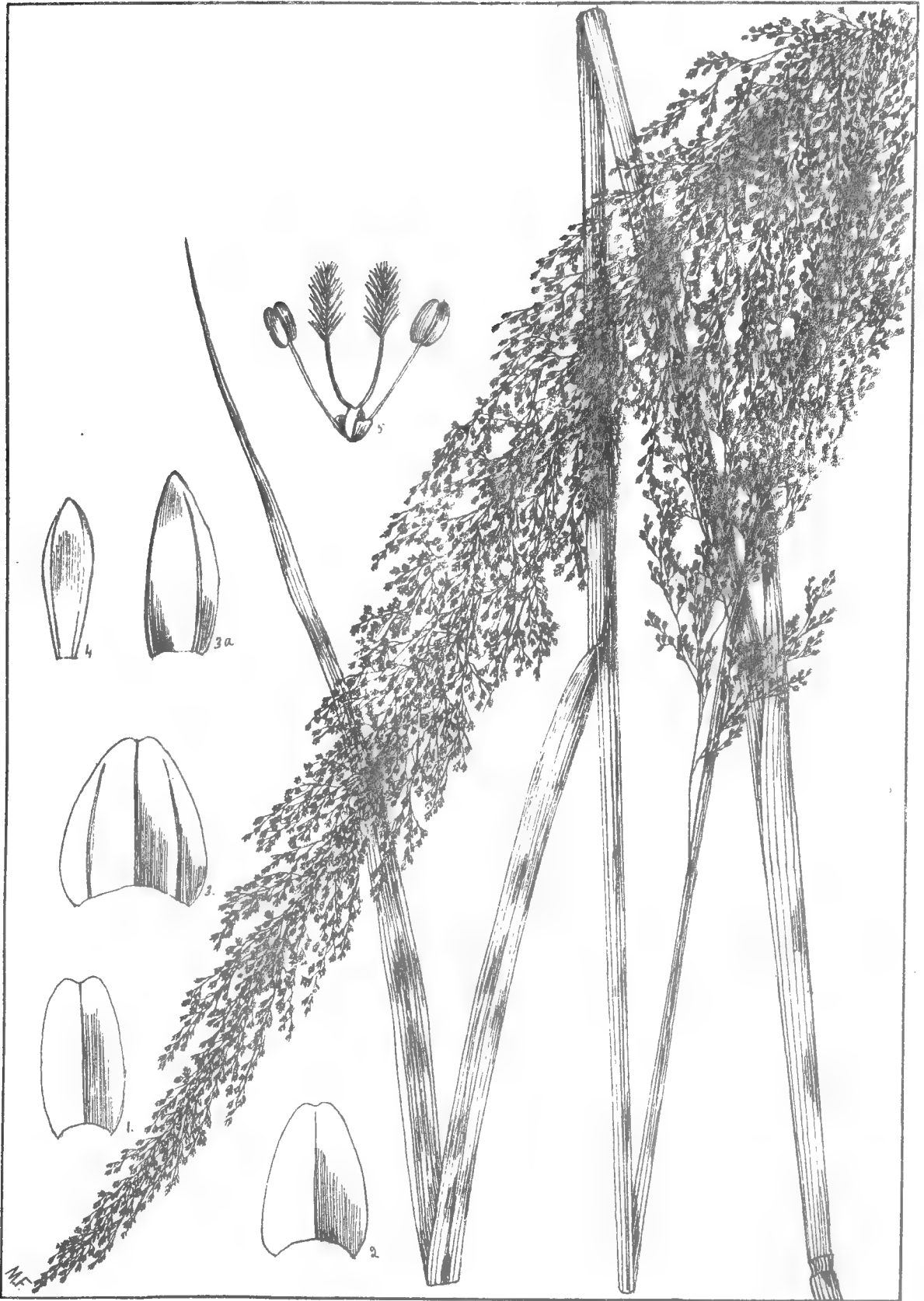
VAR. ROBUSTA (Stapf).—Culms stout, up to 3 feet high, 3-noded, simple or branched below; sheaths long, exceeding the internodes (except the uppermost) usually slipping from the stem and rolling inwards in the upper part. Panicle $\frac{3}{4}$ to $1\frac{1}{4}$ foot long, usually contracted, dense; branches more numerous, often very long; anthers $\frac{1}{6}$ line long or almost so.

Habitat: NATAL. Var. robusta, by streamlets at 1000 feet alt., without precise locality, *Buchanan* 276.

Drawn from Buchanan's specimen, the only one in the Herbarium.

In our specimen the valves are emarginate like the glumes.

Fig 1, Lower glume; 2, upper glume; 3, valve; 3a, same in profile; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ERAGROSTIS NAMAQUENSIS, NEES.

Var: robusta, Stapf.



CYNODON DACTYLON, PERS.

CYNODON, Pers.

SPIKELETS 1-flowered, small, laterally compressed, sessile, imbricate, alternately 2-seriate and unilateral on a slender keeled rhachis ; rhachilla disarticulating above the glumes, produced, or not, beyond the valve. Floret hermaphrodite.

GLUMES narrow, keeled, or subulate-mucronate, the *upper* usually deciduous with the valve, the *lower* subsistent. Valve exceeding the glumes, navicular, firmly membranous, 3-nerved, awnless, keel ciliate. Pale somewhat shorter than the valve, 2-keeled. Lodicules 2, minute, obovate-cuneate, glabrous. Stamens 3. Ovary glabrous ; styles distinct, slightly shorter than the plumose stigmas. Grain oblong, subterete ; embryo about $\frac{1}{3}$ the length of the grain ; hilum linear, $\frac{2}{3}$ the length of the grain.

PÉRENNIAL ; stems creeping, rooting at the nodes and emitting from them fascicles of barren shoots and flowering culms ; spikes 2 to 6 in terminal umbels.

Species 2, 1 in extra-tropical South Africa, the other almost cosmopolitan.

PLATE 430.

CYNODON DACTYLON, Pers. (Fl. Cap., Vol. VII., p. 634).

Nat. Order Gramineæ.

CULMS from a few inches to 1 foot long, slender, glabrous, smooth, many-noded, the *lower* internodes very short, enclosed, the *upper* 3-4 much longer, more or less exerted.

LEAVES usually conspicuously distichous in the barren shoots and at the base of the culms ; sheaths tight, glabrous or hairy, often bearded at the mouth ; ligule a very fine ciliate rim ; blades linear, finely acute to pungent, $\frac{1}{2}$ to 6 inches, by 1 to $1\frac{1}{2}$ line, very rigid to flaccid, folded or convolute or flat, more or less glaucous, glabrous or hairy, smooth below, scaberulous above. Spikes 2 to 6, straight, $\frac{1}{2}$ to $2\frac{1}{2}$ inches long ; rhachis pubescent at the base, keel and margins scabrid or the keel smooth.

SPIKELETS light green or purplish, $\frac{7}{8}$ to $1\frac{1}{8}$ line long ; rhachilla produced, very slender, equalling $\frac{1}{2}$ the length of the spikelet.

GLUMES lanceolate, acute to subulate-mucronate, the *lower* $\frac{1}{2}$ to $\frac{3}{4}$ line long, the *upper* usually slightly longer, keels scabrid or smooth. Valve obliquely oblong to semi-ovate, subobtuse or minutely apiculate, about 1 line long, keel ciliate ; keels of pale scaberulous. Anthers oblong, $\frac{1}{2}$ line long. Grain $\frac{1}{2}$ line long.

Habitat : NATAL. Durban Flats, *Buchanan*, 12 ; 34 ; Berca Wood, 5930, and without precise locality, *Buchanan* 200 ; Dundee, 4000-5000 ft. alt. ; *Green* 71.

An almost cosmopolitan grass. In India it is known as "Dub" or "Doub," in other places as "Bermuda" grass, or "Devil's" grass. In the Southern States of America it is highly valued as a pasture or fodder grass, but should only be planted where it is to remain permanently, as its creeping roots make it very difficult to eradicate when it has once got a firm footing. In India it is considered to be one of the best of grasses, it endures drought, but will not stand much frost. In the coast districts of Natal it remains green during the winter, but will not be likely to do so in the uplands.

Fig 1, Portion of sheath and blade showing ligule ; 2, spikelet ; 3, lower glume ; 4, upper glume ; 5, valve ; 6, pale ; 7, pistil stamens and lodicules. *All enlarged.*

MICROCHLOA R. Br.

SPIKELETS 1-2-flowered, small, sessile, crowded, unilateral on a flattened rhachis.

Alternating 2-seriate from near the margins of the rhachis, or in a single row; rhachilla disarticulating above the glumes, more or less produced. Floret hermaphrodite, or if 2, the *lower* hermaphrodite, the *upper* male or indicated by an empty valve.

GLUMES 2, persistent or (particularly the upper) deciduous, strongly 1-nerved, flattened from the back or keeled, subequal. Valve shorter than the glumes, delicate, white, minutely or obscurely mucronulate or emarginate, 3-nerved, densely hairy along the nerves (if 2, the upper glabrous); callus small, acute hairy. Pale slightly shorter than the valve or almost equal, 2-keeled. Lodicules 2, cuneate, glabrous, thin, faintly nerved. Stamens 3, ovary glabrous (quite suppressed in the upper floret); styles distinct; stigmas plumose, laterally exerted. Grain oblong, terete, triquetrous or compressed, embraced by the unchanged valve and pale, free; hilum punctiform; embryo equalling $\frac{1}{4}$ - $\frac{1}{2}$ the length of the grain.

PERENNIAL, rarely annual, sometimes densely tufted; leaves narrow, often subsetaceous; ligule reduced to a minutely ciliolate rim; spikes solitary, terminal (in the African species) or 2-4 in a terminal umbel, straight or curved.

Species 7, widely distributed through the tropics, 3 in Africa, 3 in Australia.

PLATE 431.

MICROCHLOA CAFFRA, Nees. (Fl. Cap., Vol. VII., p. 636).

Nat. Order Gramineae.

PERENNIAL, compactly caespitose.—CULMS erect or geniculate-erect, very slender, simple, $\frac{1}{2}$ to 1 foot long, compressed below, 1 to 2-noded, glabrous, smooth, internodes exerted, the uppermost by far the longest.

LEAVES crowded at the base; sheaths tight or the uppermost subtumid, glabrous or ciliate at the mouth, smooth, the lowest persistent, breaking up into fibres; blades subsetaceous, with an acute or callous point, $\frac{1}{2}$ to 6 inches long, folded, firm, often curved, glabrous or scantily hairy near the base, smooth, margins rough. Spike solitary, 2 to $3\frac{1}{2}$ inches long, usually curved, often purple, margins of the rhachis ciliolate.

SPIKELETS 1-flowered, divergent and biseriate or imbricate and more or less uniseriate, slightly dorsally compressed, $1\frac{3}{4}$ to $2\frac{1}{4}$ lines long, glabrous.

GLUMES lanceolate-oblong, acute or the *upper* acuminate, the *lower* asymmetric, slightly longer. Valve minutely cuspidate, $1\frac{1}{2}$ line long, densely hairy along the nerves except at the very tip; keels of pale scabrid, ciliolate above the middle. Anthers not quite 1 line long. Grain terete, over $\frac{1}{2}$ line long.

Habitat: NATAL. Riet Vlei, 4000-5000 feet alt., *Buchanan* 162; South Downs, Weenen County, 4000 feet alt., *Wood* 4403; Benvie, 3000-4000 feet alt., *Wood* 6007; Pietermaritzburg, *Wood* 7226.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



MICROCHLOA CAFFRA. NEES.



MICROCHLOA ALTERA. STAFF
Var. Nelsonii, Stapf.

PLATE 432.

MICROCHLOA ALTERA, Stapf, var. Nelsonii, Stapf. (Fl. Cap., Vol. VII. p. 637).

Nat. Order Gramineæ.

PERENNIAL, densely cæspitose.—CULMS erect, very slender, simple, 8 to 10 inches long, compressed below, 2-noded, glabrous or woolly, upper 2 internodes very long, exserted.

LEAVES mainly crowded at the base; sheaths tight or scantily woolly, the basal compressed, keeled, very narrow, persistent, at length breaking up into fibres; blades setaceous, folded, acute, scarcely distinct from the sheaths, 3 to 6 inches long, glabrous, smooth. Spike solitary, $\frac{3}{4}$ to 1 inch long, usually straight; rhachis glabrous.

SPIKELETS 2-flowered, dorsally and obliquely compressed, uniseriate or biseriate, $2\frac{1}{4}$ lines long, glabrous, brown.

GLUMES lanceolate-oblong, obtuse, the *lower* slightly longer and asymmetric, the *upper* firmer. Florets, *lower* hermaphrodite; valve minutely bilobed, $1\frac{1}{2}$ line long, ciliate along the nerves; pale glabrous, keels very finely scabrid above; *upper* floret barren, slightly smaller; valve and pale glabrous, more delicate, the latter often reduced or quite suppressed. Grain 1 line long.

Habitat: NATAL. Riet Vlei, 4000-5000 feet alt., *Buchanan* 163; Zululand, 2000 to 3000 feet alt., *Wood* 7304 (*Jenkinson* 44).

Fig 1, Lower glume; 2, upper glume; 3, valve of lower floret; 4, pale of same; 5, valve of upper floret; 6, pale of same; 7, pistil, stamens and lodicules. *All enlarged.*

CTENIUM, Panz.

SPIKELETS of 3 to 4 florets, sessile, compactly crowded, unilateral, alternately biseriate along the midrib of the flattened rhachis; rhachilla disarticulating above the glumes, continuous between the valves, the lower 2 florets barren or the second male, the third hermaphrodite, the fourth male or barren or quite rudimentary.

GLUMES unequal, the *lower* persistent, keeled, thin, 1-nerved, the *upper* much longer, oblong to lanceolate, flattened or rounded on the back, firm, 2-3-nerved, with a stiff awn from the middle. Valves oblong in profile, obtuse, 3-nerved, awned just below the tips, ciliate along the nerves or the uppermost glabrous, white, thin. Pales slightly shorter, 2-keeled or 2-nerved. Lodicules 2, quadrate-cuneate, delicate, faintly nerved. Stamens 3 in the hermaphrodite, 2 in the male florets. Ovary glabrous; styles distinct, stigmas slender, long, laterally exserted. Grain free, embraced by the unchanged valve and pale, oblong; embryo up to $\frac{1}{2}$ the length of the grain; hilum basal, punctiform.

PERENNIAL, densely tufted, rarely annual; leaves narrow, flat or convolute; spikes terminal, solitary or in umbels of 2-3, usually curved; spikelets prettily pectinate and awned. Species about 9, in Africa and America.

PLATE 433.

CTENIUM CONCINNUM, Nees. (Fl. Cap., Vol. VII., p. 638).

Nat. Order Gramineae.

PERENNIAL, densely tufted.—CULMS erect, $1\frac{1}{2}$ to 2 feet long, villous or pubescent below the spike, 2-noded, upper 2 internodes very long, at length more or less exserted.

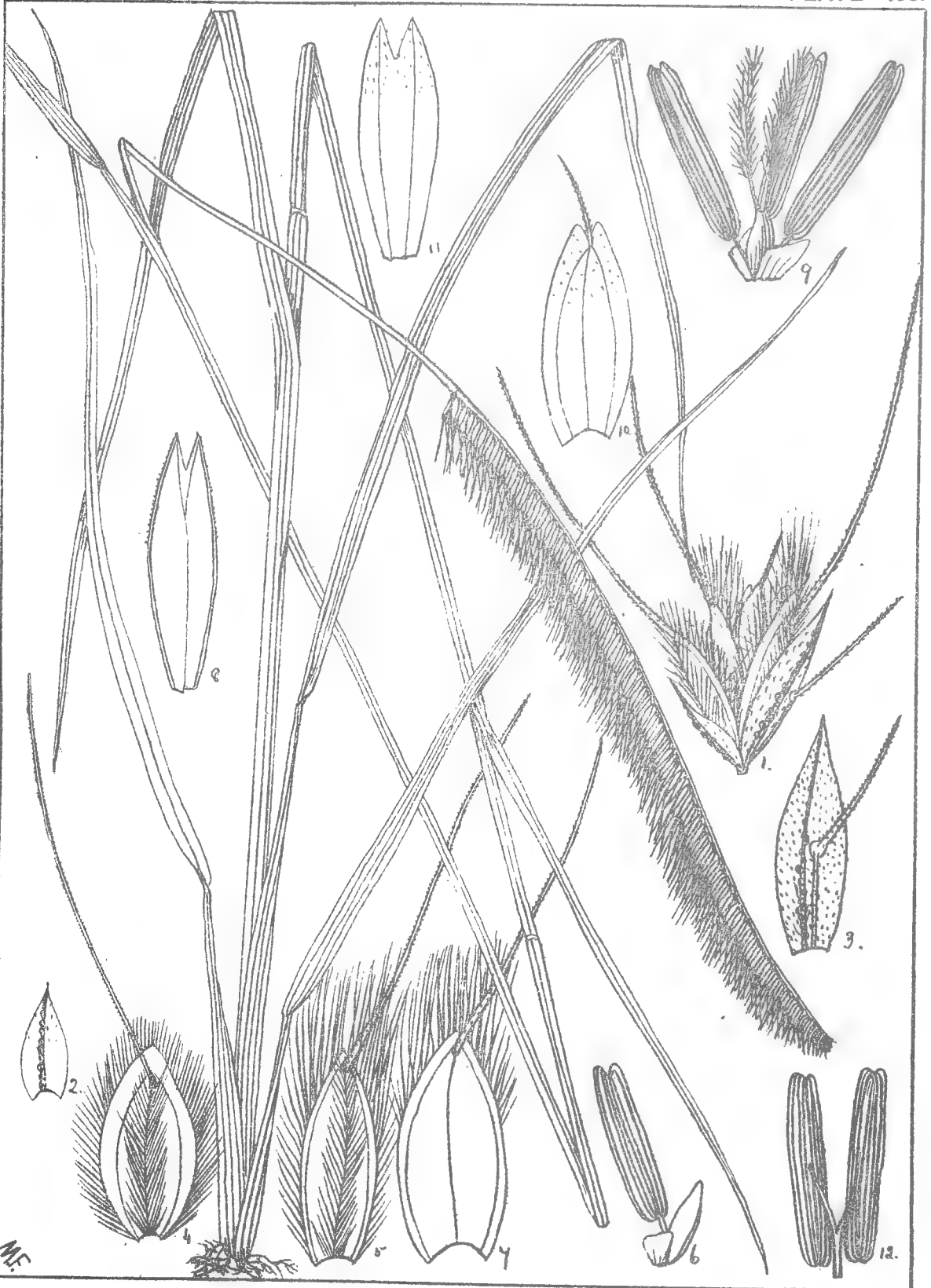
LEAVES mostly crowded at the base; sheaths tight or the upper subtumid, striate, glabrous, smooth, the basal ones compressed, persistent; ligule extremely short, minutely ciliate; blades narrow, linear, acute, the basal up to 1 foot by $\frac{1}{2}$ to 1 line, flat or setaceously convolute, smooth below, scaberulous above and along the margins. Spikes solitary, rarely paired, olive-grey, 3 to 10 inches, by 2 to $2\frac{1}{2}$ lines.

SPIKELETS 3 to $3\frac{1}{2}$ lines.

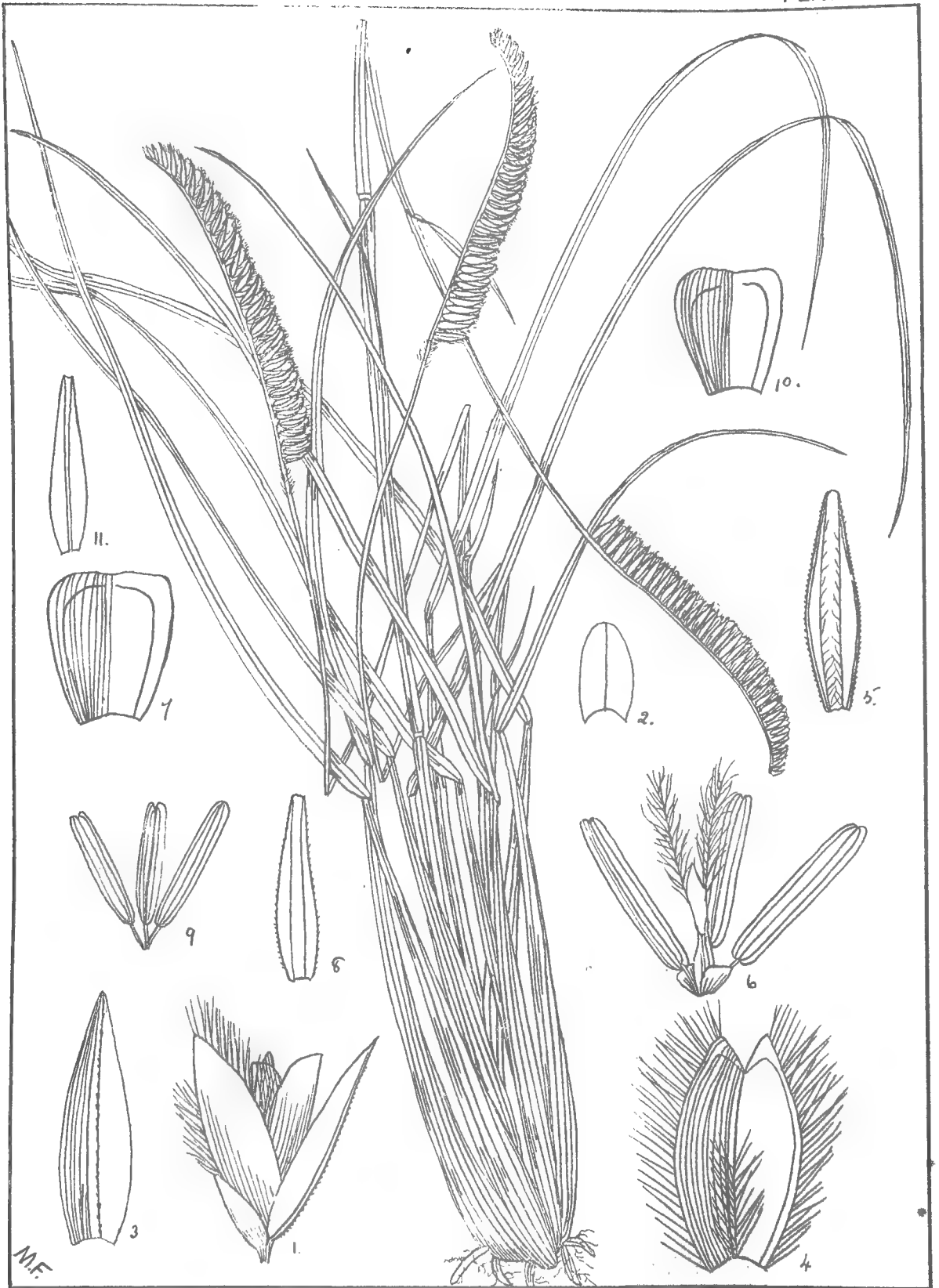
GLUMES, *lower* ovate, acuminate, about $1\frac{1}{2}$ line long, keel coarsely scabrid; *upper*, broadly lanceolate, acuminate, 3 to $3\frac{1}{4}$ lines long, scabrid to hispidulous, tubercled on the nerves, 2-nerved, middle nerve emitting an obliquely erect awn, not produced beyond it or faintly so or percurrent and even excurrent, side-nerve percurrent or excurrent, awn scarcely exceeding the glume. Valves, lowest barren, more or less cuspidate or apiculate, ciliate, $1\frac{1}{2}$ line long, awn 2 to 4 lines long; second valve slightly longer, narrower, the cilia prolonged into a beard above the middle with a rudimentary pale and 2 perfect or imperfect stamens, awn 3 to $3\frac{1}{2}$ lines long, third valve like the second, but more delicate, shorter awned, with a 2-keeled glabrous pale, and a hermaphrodite flower; fourth valve glabrous, delicate, $1\frac{1}{2}$ line long, with a broad 2-nerved delicate pale and 2 stamens; lodicules up to $\frac{1}{3}$ line long. Anthers of the hermaphrodite flower $1\frac{1}{2}$ line long, those of the male usually shorter; anther cells acute; styles very short; stigmas $1\frac{1}{2}$ line long.

Habitat: NATAL. Umpumulo, 2000 feet alt., *Buchanan* 179; Pearson's Falls, May, *F. Leath*.

Fig 1, A spikelet; 2, lower glume; 3, upper glume; 4, 1st valve; 5, 2nd valve; 6, pale, lodicules and stamens from 2nd valve; 7, 3rd valve; 8, pale; 9, pistil, stamens and lodicules; 10, 4th valve; 11, pale; 12, male flower. *All enlarged.*



CTENIUM CONCINNUM, NEES.



HARPECHLOA CAPENSIS, KUNTH.

HARPECHLOA, Kunth.

SPIKELETS of 3-4 florets sessile, crowded, unilateral, alternately biseriate along the midrib of a flattened rhachis ; rhachilla disarticulating above the glumes, continuous between the valves, the lower floret hermaphrodite, the following 1 or 2 male, the uppermost barren, rudimentary.

GLUMES unequal, the *lower* persistent, keeled, very thin 1-nerved, the *upper* much longer, oblong, flattened on the back, 2 to 3-nerved, firm. Hermaphrodite floret about equalling the upper glume. Valve folded, obliquely oblong in profile, obtuse, white, thin, 3-nerved, densely ciliate along the nerves ; callus obscure ; pale slightly shorter, 2-keeled ; lodicules cuneate, fleshy, almost 3-winged ; stamens 3 ; ovary glabrous ; styles distinct ; stigmas slender, plumose, laterally exerted. Upper florets crowded in a club-shaped body, not exceeding the hermaphrodite floret, enveloped by the valve of the lower male floret ; valves 2-nerved or with a trace of the middle nerve near the apex, ciliolate or glabrous ; pales 2-nerved ; stamens 3 or 0 ; ovary usually quite suppressed. Grain free, embraced by the unchanged valve and pale, oblong, obtusely triquetrous ; embryo $\frac{1}{2}$ the length of the grain ; hilum punctiform, basal.

PERENNIAL, densely cæspitose ; leaves firm, folded or convolute above, more or less curved ; spikes terminal, solitary, rarely germinate, dark olive-grey.

Species 1, endemic.

PLATE 434.

HARPECHLOA CAPENSIS, Kunth. (Fl. Cap., Vol. VII., p. 639).

Nat. Order Gramineæ.

CULMS erect, $\frac{3}{4}$ to 2 feet long, compressed below, 2-noded, woolly below the spike, otherwise usually glabrous, upper 2 internodes very long, exerted.

LEAVES mostly crowded at the base ; basal sheaths imbricate, firm, persistent, compressed, keeled, hairy or glabrescent, bearded at the mouth, striate, the uppermost slightly tumid, glabrous ; ligule a ciliolate rim ; blades linear, acute to obtuse, 3 to 10 inches, by $\frac{1}{2}$ to $1\frac{1}{2}$ line when flattened out, glaucous, glabrous or hairy to woolly, smooth. Spikes 1 to $2\frac{1}{2}$ inches long to 4 lines broad ; rhachis ciliate or woolly.

SPIKELETS 3 to $3\frac{1}{2}$ lines long.

GLUMES, *lower* ovate, acute to obtuse, $1\frac{1}{2}$ to $1\frac{3}{4}$ lines long ; *upper* 3 to $3\frac{1}{2}$ lines long ; valve of the hermaphrodite floret 3 to $3\frac{1}{2}$ lines long ; pale ciliate along the margins and hairy near the tip, keels scaberulous ; lodicules $\frac{1}{3}$ line long. Anthers $1\frac{1}{2}$ to $1\frac{3}{4}$ line long ; upper valves and anthers smaller. Grain $1\frac{1}{2}$ line long.

Habitat : NATAL. Near Maritzburg, 1000-2000 feet alt., *Krauss* 445 ; Riet Vlei, 4000-5000 feet alt., *Buchanan* 178 ; Mooi River, 4000 feet alt., *Wood* 7317 ; and without precise locality, *Buchanan* 57 ; 93.

Fig 1, A spikelet ; 2, lower glume ; 3, upper glume ; 4, valve ; 5, pale ; 6, pistil, stamens and lodicules ; 7, second valve ; 8, pale ; 9, stamens ; 10, third valve ; 11, pale. *All enlarged.*

CHLORIS, Swartz.

SPIKELETS of 2-4 florets, sessile, crowded, unilateral, 2-seriate on a slender rhachis; rhachilla disarticulating above the glumes, tough between the valves, more or less produced; lowest floret hermaphrodite, the second male or barren, the following, if present, barren, often minute.

GLUMES 2, persistent, narrow, keeled, acute and mucronate, very thin, or broad, and the upper obtuse, more or less bilobed and rounded on the back. Hermaphrodite floret; valve narrow or broad, 3-nerved, acute or obtuse, minutely 2-toothed, usually awned from below the apex, often ciliate; pale almost equalling the valve, 2-keeled; lodicules 2, minute, delicate, glabrous; stamens 3; ovary glabrous, styles distinct, short; stigmas laterally exerted. Male floret; valve and pale as in the hermaphrodite flower, but smaller and glabrous. Rudimentary florets glabrous, awned or awnless, small to very small, usually without a trace of a pale. Grain oblong, triquetrous; embryo rather large; hilum punctiform, basal.

PERENNIAL OR ANNUAL; leaves flat or folded; spikes solitary or several to many in terminal umbels or short racemes, erect or stellately spreading.

Species 40-45 in the tropical and subtropical regions of both hemispheres.

PLATE 435.

CHLORIS PYCNOTHRIX, Trin. (Fl. Cap., Vol. VII., p. 641).

Nat. Order Gramineæ.

PERENNIAL OR ANNUAL (flowering the first year?) $\frac{1}{2}$ to 1 foot high. Stems prostrate, emitting tufts of barren shoots and culms from the rooting nodes.

CULMS geniculately ascending, 2-3-noded, more or less sulcate below, glabrous, upper internodes exerted.

LEAVES conspicuously distichous; basal sheaths much compressed, keeled, short, uppermost usually subtumid, all glabrous, smooth; ligules membranous, up to $\frac{1}{4}$ line long, ciliolate; blades linear, obtuse, $1\frac{1}{2}$ to 2 inches by $1\frac{1}{2}$ to 2 lines, rarely longer, flat, glaucous, glabrous, smooth or scaberulous above, margins rough. Spikes 3 to 9, sessile or some shortly peduncled, umbelled or subumbelled, suberect, at length usually spreading, pallid or purplish, $1\frac{1}{2}$ to 3 inches long; rhachis scabrid.

SPIKELETS 2-awned, $\frac{1}{4}$ line long; rhachilla joints between the valves $\frac{2}{3}$ the length of the lower valve, fine, rhachilla not produced.

GLUMES very narrow, lanceolate, acuminate, the lower $\frac{1}{2}$ to $\frac{2}{3}$ line long, the upper 1 to $1\frac{1}{4}$ line, keels very scabrid. Lower valve linear-oblong in profile, acute, minutely 2-toothed, $1\frac{1}{4}$ line long, glabrous, keel and tip scaberulous; callus minutely bearded, awn very fine, 6 to 8 lines long; pale glabrous, keels scabrid; anthers $\frac{1}{4}$ line long; grain linear-oblong, $\frac{7}{8}$ line long; upper valve rudimentary, empty, $\frac{1}{3}$ line long, awn 2 to 3 lines long.

Habitat: NATAL. Umpumulo, 1800 feet alt., *Buchanan* 185; Inanda, 1800 feet alt., *Wood* 1590.

Also in tropical Africa, and Eastern Brazil and Paraguay.

Drawn from *Buchanan's* 185.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules; 6, upper valve. *All enlarged.*



CHLORIS PYCNOTHRIX. TRIN.



CHLORIS VIRGATA. SWARTZ.

PLATE 436.

CILORIS VIRGATA, Swartz. (Fl. Cap., Vol. VII., p. 641).

Nat. Order Gramineæ.

PERENNIAL OR ANNUAL (flowering the first year ?), 1 to 3 feet high.

CULMS erect or geniculately-ascending or prostrate below, rooting and emitting fascicles of barren shoots from the nodes, 3 to 5-noded, more or less compressed below, glabrous, smooth, internodes exerted; sheaths glabrous, rarely sparingly hairy, smooth, the lower much compressed, keeled; ligules membranous, very short, very minutely ciliate; blades linear, gradually tapering to an acute point, 1 to 4 inches by 1 to $1\frac{3}{4}$ line, flat or folded, sometimes flaccid, glaucous, glabrous, rarely sparingly hairy, smooth below, scaberulous above, margins rough. Spikes 6 to 15 or more, suberect, sessile, whitish-green or purplish, 1 to $2\frac{1}{2}$ inches long, straight; rhachis pubescent or villous at the base, scabrid.

SPIKELETS 2- (rarely sub-3) flowered, 2-awned, almost 2 lines long; rhachilla joint between the valves rather long, terminal joint very minute.

GLUMES narrow, lanceolate, hyaline, mucronate, keels scabrid, the *lower* 1 to $1\frac{1}{4}$ line long, the *upper* almost 2 lines; lower valve obliquely-oblong, acute or obscurely 2-toothed, $1\frac{1}{4}$ line long, whitish or almost black when mature, ciliate along the marginal nerves and bearded below the tip, finely grooved on the faces, keel glabrous or minutely ciliate below the middle; awn 5 to 8 lines long, straight; pale glabrous; anthers $\frac{1}{5}$ to $\frac{1}{4}$ line long; grain linear-oblong, obtusely triquetrous, $\frac{3}{4}$ line long; upper valve (or valves) quite empty, obliquely cuneate in profile, 1 line or less long, awn from below the tip, 3 to 6 lines long.

Var. Elegans (Stapf). Spikes up to 3 inches long. Spikelets usually sub-3-flowered; lower valve conspicuously gibbous, $1\frac{1}{2}$ line long, more deeply grooved on the faces, keel glabrous or ciliate to, and bearded at the middle.

Habitat: NATAL. Berea, *Wood* 5948; river banks at Tugela, 600 to 1000 feet alt., *Buchanan* 186; Van Reenen's Pass, 5500 feet alt., *Wood* 5990; Zululand, 2000 feet alt., *Jenkinson* 52; *var. elegans*, Inanda, 1800 feet alt., *Wood* 687.

Widely spread through the tropics of both hemispheres.

Mr. Jenkinson says of this grass: "Found chiefly in old cultivated ground, dries up altogether in winter. It is said to be a good fodder grass, and to be much relished by stock." Dr. Andrew Smith says that the natives boil the roots to make a bath for cold and also for rheumatism.

Fig 1, Lower glume; 2, upper glume; 3, valve in profile; 4, pale; 5, pistil, stamens and lodicules; 6, second valve. *All enlarged.*

PLATE 437.

CILORIS GAYANA, Kunth. (Fl. Cap., Vol. VII., p. 642.)

Nat. Order Gramineæ.

PERENNIAL OR ANNUAL, 2 to 4 feet high.—CULMS erect or geniculately-ascending, or prostrate at the base, simple or branched, often emitting fascicles of barren shoots or short runners from the lowest nodes, often robust, 3 to 9-noded, compressed below, glabrous, smooth, *upper* internodes usually exerted; sheaths glabrous or sparingly hairy near the mouth, smooth, the *lower* strongly compressed, keeled, keels sometimes scabrid, the uppermost sometimes tumid; ligules membranous, very short, long-hairy; blades linear, long-tapering to a fine point, $\frac{1}{2}$ to more than 1 foot by 3 to 4 lines when expanded, flat or folded, glabrous or hirsute near the base, green, smooth below, rough above and on the margins. Spikes 6 to 15, unbelled, sessile, suberect, rarely spreading, $2\frac{1}{2}$ to 4 inches long, greenish or brownish; rhachis scabrid.

SPIKELETS $1\frac{1}{2}$ line long, 3-4-flowered, shortly 2-awned.

GLUMES very unequal, the *lower* ovate-lanceolate, acute, subhyaline, $\frac{1}{2}$ to $\frac{3}{4}$ line long, the *upper* oblong, obtuse, mucronate, 1 to $1\frac{1}{2}$ line long, firmer, scaberulous; lowest valve oblong, subobtuse or acute, minutely 2-toothed, ciliolate along the marginal nerves and shortly bearded below the tips or only finely bearded (in the South African species), or almost glabrous, with a (sometimes minutely hairy) groove on each face; awn as long or slightly longer than the valve, straight; callus minutely bearded; pale glabrous, keels scabrid; anthers $\frac{3}{4}$ line long, second valve with a male flower, like the preceding, but glabrous, 1 line long, awn 1 line long or less; third (and fourth) valve rudimentary, cuneate in profile, empty, awnless.

Habitat: NATAL. Umlazi River, *Drège*; Umaduana, *Sutherland*; near Durban, *Williamson* 43; Umpumulo, *Buchanan* 188.

Also in tropical Africa.

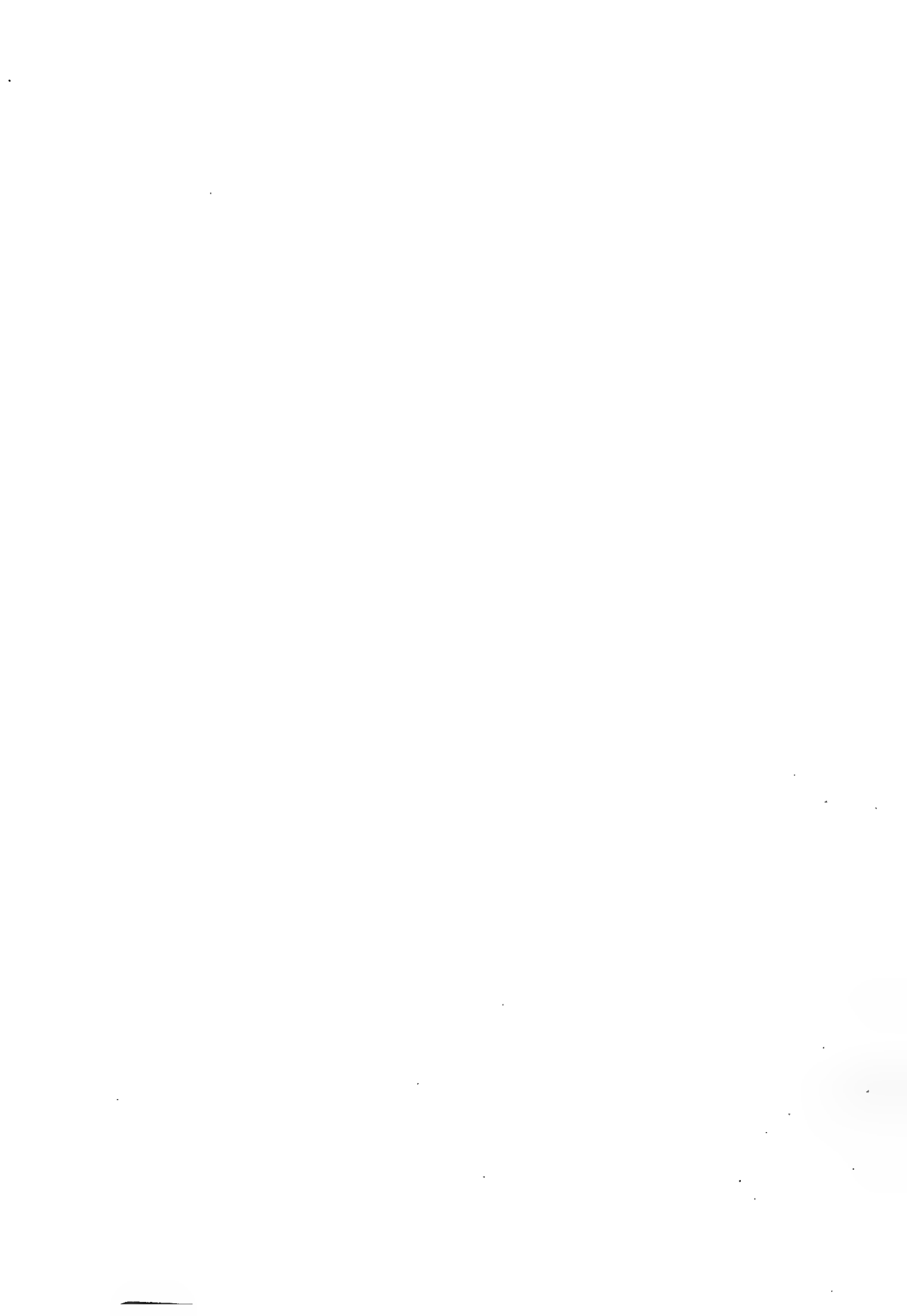
Drawn from *Buchanan's* 188.

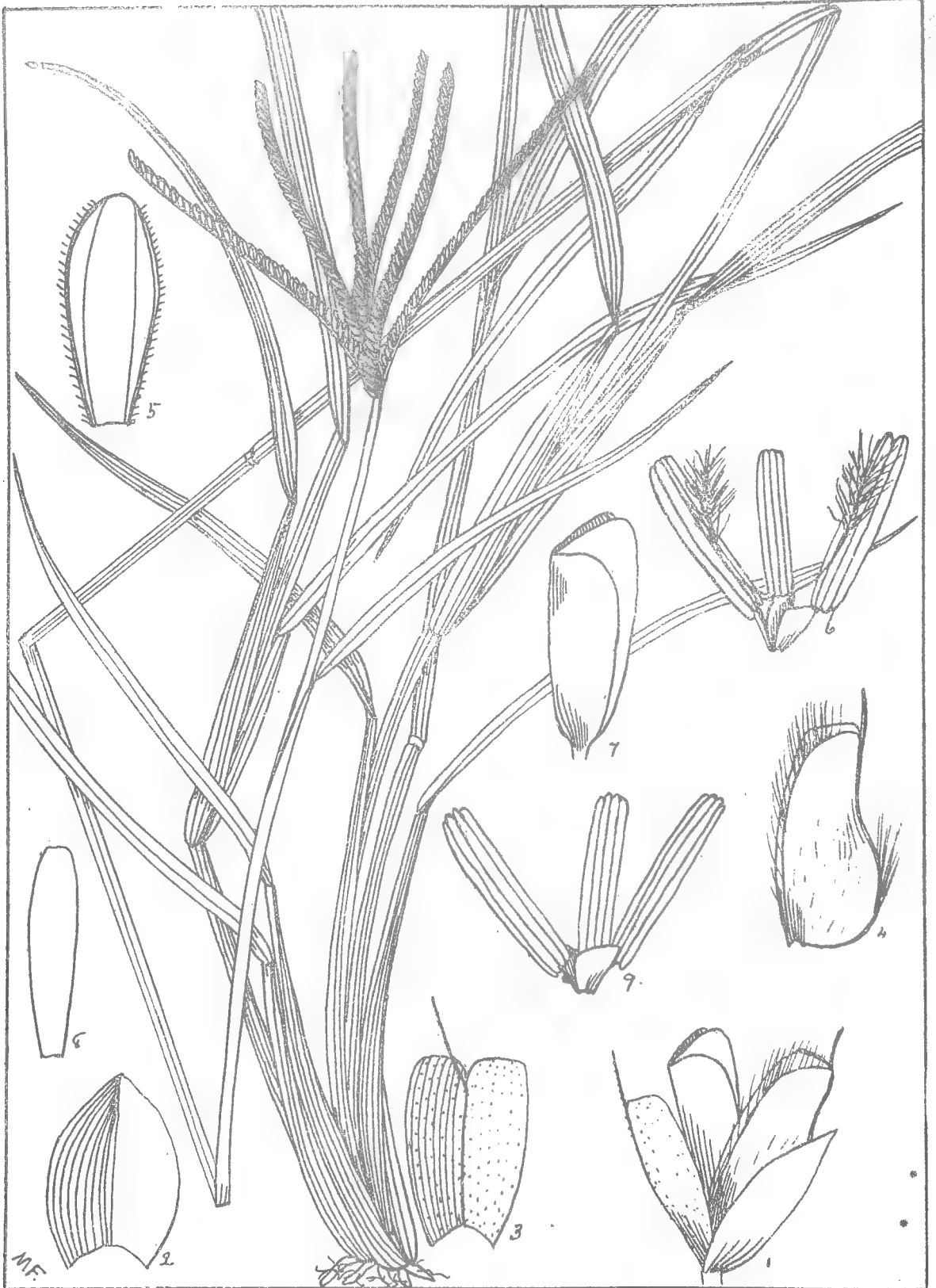
Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules; 6, second valve; 7, rudimentary valve. *All enlarged.*



CHLORIS GAYANA. KUNTH.







CHLORIS PETRÆA. THUNB.

PLATE 438.

CILORIS PETREA, Thunb. (Fl. Cap., Vol. VII., p. 643).

Nat. Order Gramineae.

PERENNIAL, densely tufted.—CULMS erect, or suberect, 1 to 2 feet long, 2-noded, compressed below, glabrous, smooth, internodes long-exserted.

LEAVES crowded at the base in a fan-like manner; sheaths strongly compressed, keeled, glabrous, smooth, except on the scabrid keels; ligule a ciliate rim; blades linear, acute or subobtusely, 2 to 8 inches by $\frac{1}{2}$ to 3 lines when expanded, usually folded, glabrous, glaucous, smooth. Spikes 3 to 8, sessile, 2 to 4 inches long, suberect, brown, straight or gently curved; rhachis pubescent at the base, scabrid.

SPIKELETS about 1 line long, 2-flowered; rhachilla joint between the valves very short, terminal joint a bristle half as long as the upper valve or longer.

GLUMES, *lower* oblong, subobtusely, not quite $\frac{3}{4}$ line long, compressed, *upper* broadly oblong, shortly and obtusely 2-lobed, about 1 line long, rounded or flat on the back, scaberulous, mucronate. Valves, *lower* obliquely ovate-oblong in profile, very obtuse, emarginate, curved-mucronate, ciliate along the side-nerves (except towards the base) and along the keel slightly beyond the middle, brown, with an elliptic-oblong subacute pale; anthers $\frac{3}{4}$ line long; *upper* valve obliquely cuneate in profile, $\frac{3}{4}$ to 1 line long, glabrous, faintly nerved, with a delicate nerveless pale, and subtending a male flower.

Habitat: NATAL. Umpumulo, *Buchanan* 189; Pietermaritzburg, 1000-2000 feet alt., *Wood* 7234. Drawn from *Wood's* 7234.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil, stamens and lodicules; 7, 2nd valve; 8, pale; 9, male floret. *All enlarged.*

ELEUSINE, Gærtn.

SPIKELETS 3-6-flowered, laterally compressed, densely imbricate, alternately biserial, unilateral, sessile on a flattened rhachis, the uppermost terminal, perfect; rhachilla disarticulating above the glumes and between the valves, or tough, produced sometimes terminating with a rudimentary valve. Florets perfect.

GLUMES 2, subequal, persistent, obtuse or obscurely mucronate, membranous, strongly keeled, 3 to 5-nerved, the lateral nerves close to the keel, the lower shorter, with the keel crested. Valves very similar, 3-nerved near the base; lateral nerves submarginal above, with 1-2 short additional nerves close to the keel. Pales slightly shorter than the valves, 2-keeled, keels winged. Lodicules 2, minute, cuneate. Stamens 3. Ovary glabrous; styles slender from a broadened base, distinct; stigmas plumose, laterally exerted. Grain broadly-oblong to globose, broadly grooved; pericarp loose, delicate, breaking up irregularly or almost circumscissile; seed finely striate; embryo suborbicular, basal; hilum punctiform, basal.

ANNUAL OR PERENNIAL; leaves long, flat, or folded, flaccid or firm; spikes in interrupted spikes or the upper or all in a terminal umbel, straight, suberect, spreading or deflexed; spikelets glabrous.

Species 6, in tropical Africa and Asia; 1 widely spread through the tropics.

PLATE 439.

ELEUSINE INDICA, Gærtn. (Fl. Cap., Vol. VII., p. 645).

Nat. Order Gramineae.

ANNUAL.—CULMS erect or geniculate-erect, from a few inches to 2 feet long, slender or stout, compressed, 2-3-noded, glabrous, smooth, upper internodes exerted.

LEAVES often numerous, crowded near the base and conspicuously distichous; sheaths compressed, pallid, glabrous except at the often ciliate margins, striate; ligules thin, membranous, short, long-fimbriate; blades linear, long, tapering to an acute point $\frac{1}{2}$ to more than 1 foot by $1\frac{1}{2}$ to 3 lines, flat or folded, sometimes flaccid, glabrous, rarely sparingly hairy below, smooth. Spikes rather slender, straight, 1 to 7 inches long, sessile, 2 to 14 in a terminal umbel, usually with 1-2 (rarely to 7) additional spikes $\frac{1}{4}$ to 3 inches below it; rhachis pubescent to villous at the base, otherwise glabrous, smooth.

SPIKELETS $1\frac{1}{2}$ to 2 lines long, 3 to 6-flowered, disarticulating above the glumes and very tardily or tough between the valves.

GLUMES and valves ovate (lanceolate-oblong in profile) acute, the latter about 2 lines long. Anthers $\frac{3}{8}$ line long. Grain oblong; seed heart-shaped in cross section, $\frac{1}{2}$ line long, dark reddish brown, obliquely-striate; embryo small.

Habitat: NATAL. Durban Flat, *Buchanan* 14; 33; Berea, *Wood* 5996; from the coast to Umpunulo in neglected gardens, *Buchanan* 181; without precise locality, *Gerrard* 694; *Cooper* 3361.; Mooi River, *W. T. Woods*.

Drawn from specimens gathered near Durban.

Tropics of the Old World; introduced (?) in the New World.

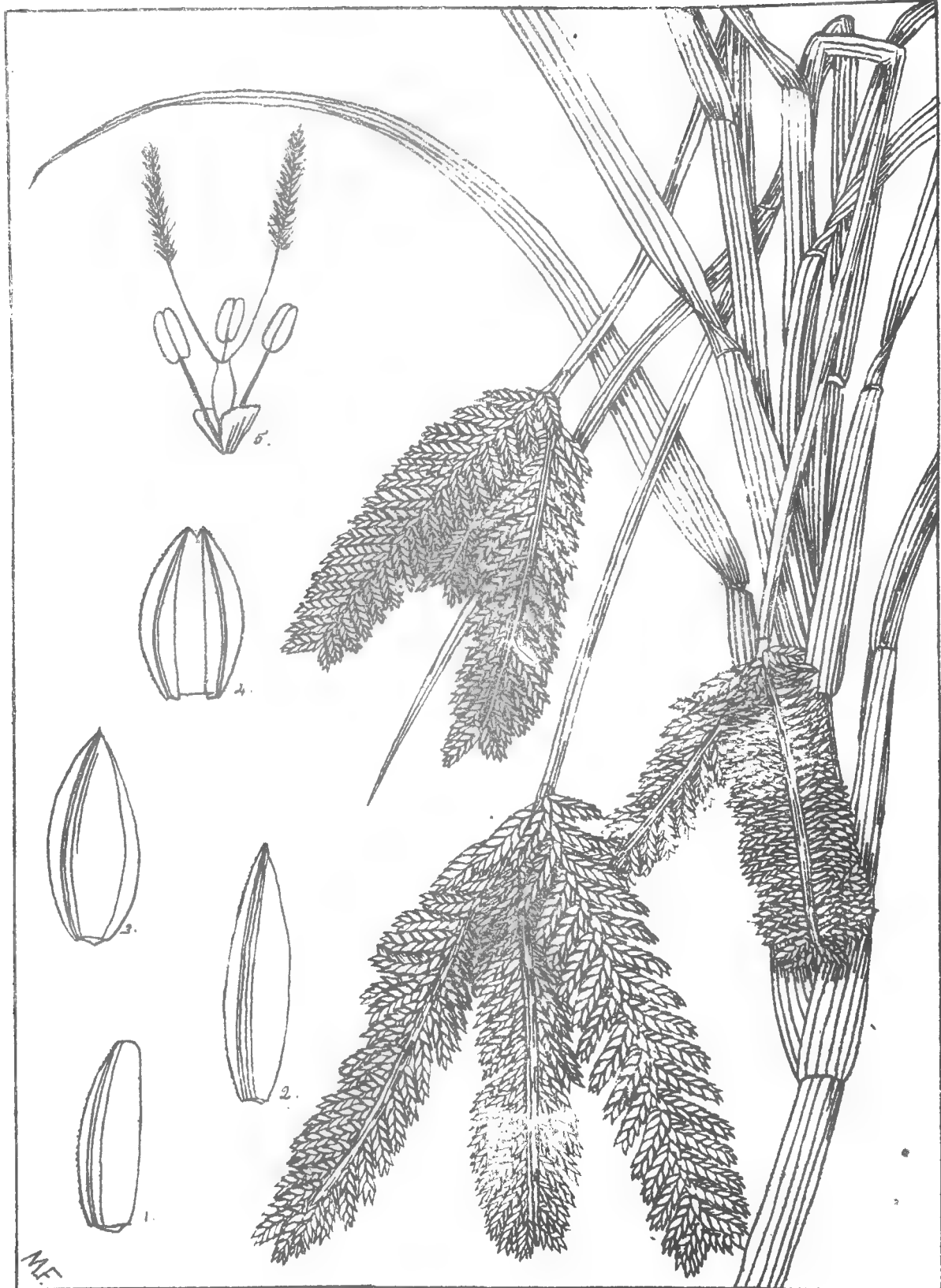
A very common grass almost all over the Colony, frequently found near Cattle Kraals, it has a strong root system, and is a nuisance amongst crops if allowed to attain any size. The roots are said to be used in some countries medicinally.

Native name u-Munyankomo.

Fig 1, A spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, valve in profile; 6, pale; 7 pistil, stamens and lodicules. *All enlarged.*



ELEUSINE INDICA, GAERTN.



ELEUSINE COROCANA. GAERTN.

PLATE 440.

ELEUSINE CORACANA, Gaertn. (Fl. Cap., Vol. VII., p. 645).

Nat. Order Gramineæ.

Very like *E. indica* but more robust, up to 5 feet high.

SPIKELETS more crowded, to as thick as a finger, often curved ; rhachilla tough.

GLUMES and valves broader, ovate in profile, obtuse. Grain globose, $\frac{1}{2}$ to $\frac{3}{4}$ line in diameter, usually dark reddish brown, finely striate, striæ curved.

Habitat: NATAL. In a coffee plantation, near Durban, *Drège* 4294 ; *Williamson* 42 ; Tugela, *Buchanan* 182 ; without precise locality, *Gerrard* 469 ; in a kaffir garden, Zululand, 2000 feet alt., May, *Wood* 3869.

“Grown in many parts of tropical Africa, tropical Arabia, and throughout India ; originated probably from *E. indica*. The figure in Gärtner represents the seed as smooth (not striate) ; there is little doubt that it refers to a variety which is grown in India and Southern Arabia, distinguished by smooth, whitish seeds. This I have not seen from any part of Africa” (*Stapf*).

Cultivated by the natives, who use the seed ground with their Amaas, and as porridge for the children, also for making beer. Baron F. v. Mueller says of it : “Southern Asia, east to Japan, ascending the Himalayas to 7000 feet. Though annual, this grass is worthy of cultivation on account of its height and nutritiveness. It is of rapid growth and the produce of foliage and seeds copious. Horses prefer the hay to any other dry fodder in India, according to Dr. Forbes-Watson. The large grains can be used like millet, and a peculiar beer can be brewed from it. One of the staple grains of Mysore. *E. indica* only differs as a variety. It extends to tropical Australia, and is recorded also from many other tropical countries, but thrives well even as far as Port Philip, and luxuriates still as far south as Gippsland during the hot season.

Native name u-Poko.

Fig 1, Lower glume ; 2, upper glume ; 3, valve ; 4, pale ; 5, pistil, stamens and lodicules. *All enlarged.*

DACTYLOCTENIUM, Willd.

SPIKELETS 3 to 5-flowered, laterally compressed, densely imbricate, biseriate, sessile, unilateral on a flattened rhachis, the uppermost reduced; rhachilla tardily disarticulating above the glumes, tough between the valves. Florets bisexual, the uppermost rudimentary.

GLUMES 2, unequal, strongly keeled, the *lower* ovate, acute, thin, persistent, the *upper* elliptic-oblong in profile, obtuse, mucronate or awned, firm, deciduous. Valves ovate, sub-acuminate, 3-nerved, mucronate or awned, deciduous with the grains. Pales about as long as the valves, 2-keeled, subpersistent. Lodicules 2, cuneate, minute. Stamens 3. Ovary glabrous; styles distinct, very long, subterminally exerted. Grain subglobose slightly laterally compressed, not grooved or hollowed, rugose or punctate; pericarp very delicate, irregularly breaking away; embryo scarcely equalling $\frac{1}{2}$ the length of the grain; hilum basal, punctiform.

ANNUAL OR PERENNIAL. Leaves flat, subflaccid. Spikes in umbels of 2 to 6, erect or stellately spreading; tips of the rhachis barren, mucroniform, usually curved.

Species 3, one widely spread through the tropics.

PLATE 441.

DACTYLOCTENIUM ÆGYPTIACUM, Willd. (Fl. Cap., Vol. VII., p. 646).

Nat. Order Gramineæ.

ANNUAL, 1-1 $\frac{1}{2}$ foot high; stems sometimes prostrate, rooting from the profusely branched nodes.

CULMS geniculately ascending, compressed, 2-3-noded, glabrous, smooth, internodes exerted; sheaths striate, the lower whitish, keeled above, glabrous, or scantily hispid; ligules membranous, very short, scantily ciliolate; blades linear, tapering to a fine point, 1 to 5 inches by 1 to 2 lines, flat, subflaccid, glaucous, glabrous or hispid or hispidly ciliate, hairs tubercle-based. Spikes 2 to 6, rarely solitary, $\frac{1}{2}$ to 2 inches long, light or dark olive-grey; rhachis keeled, scabrid.

SPIKELETS 3 to 5-flowered, spreading at right angles, up to 1 $\frac{1}{2}$ line long, glabrous.

GLUMES, *lower* about $\frac{3}{4}$ line long, the *upper* cuspidately mucronate or awned; awn curved, sometimes exceeding the glume. Valves 1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ line long, mucronate or awned; anthers about $\frac{1}{2}$ to $\frac{3}{4}$ line long; grain $\frac{1}{2}$ to $\frac{3}{4}$ line long, very rugose, reddish.

Widely spread through tropical and subtropical regions.

Habitat: NATAL. Near Durban, *Williamson* 38; *Plant* 85; Durban Flats, *Buchanan* 36; Berea, *Wood* 5929; *Gerrard* and *McKen* 111; Zululand, 2000 feet alt., *Jenkinson* 7.

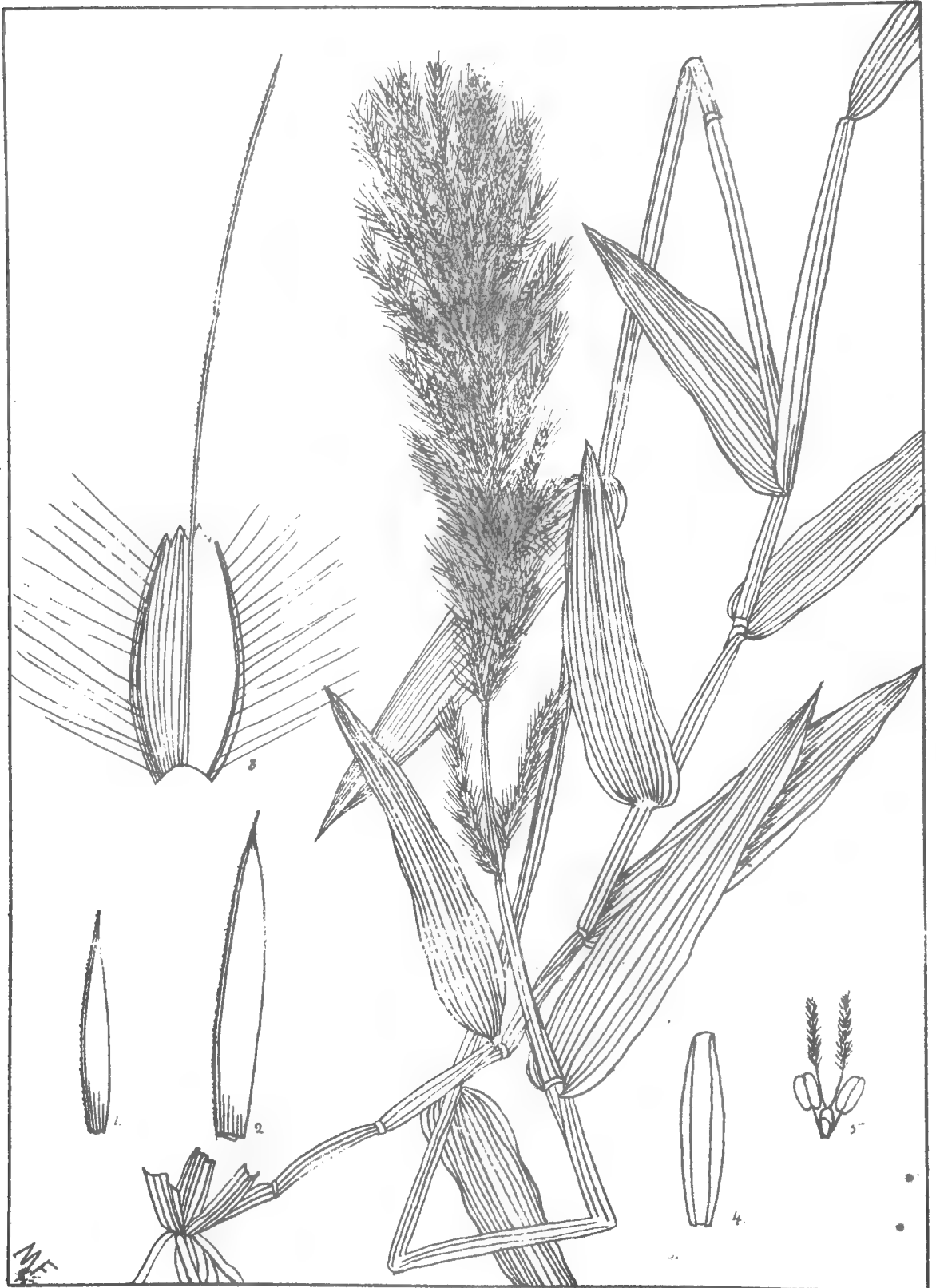
This is the grass so much used for lawns in the Colony. It will succeed under light shade, and in the coast districts keeps green all the winter, and is liked by stock. Native name, is-Inane.

In "Useful Plants of the Island of Guam," published by the United States National Herbarium, it is stated that this grass is "edible, but coarse and not much relished by horses."

Fig 1, A spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil, stamens and lodicules; 7, portion of leaf, highly magnified, showing tubercle-based hairs. *All enlarged.*



DACTYLOCTENIUM ÆGYPTIACUM WILD



LEPTOCARYDION VULPIASTRUM. STAFF.

LEPTOCARYDION, Hochst. ex Benth.

SPIKELETS 4 to 9-flowered, laterally compressed, sessile or subsessile, secund, biseriate, close, on a very slender rhachis; rhachilla disarticulating above the glumes and between the valves. Florets bisexual, the uppermost reduced.

GLUMES subequal, lanceolate, acuminate, 1-nerved, keeled. Valves oblong, truncate, minutely 4-toothed (teeth hyaline), thin, 3-nerved, margins inflexed, nerves ciliate, the middle nerve excurrent into a fine bristle, the side-nerves not excurrent; callus slender, acute bearded. Pales linear-oblong, slightly shorter than the valves, 2-keeled. Lodicules 2, cuneate, delicate. Stamens 3; anthers minute. Ovary glabrous; styles distinct, slender; stigmas laterally exerted, very slender, plumose. Grain linear, obtusely triquetrous, tightly embraced by the scarcely changed valve and pale, free; embryo less than $\frac{1}{2}$ the length of the grain; hilum basal, punctiform.

Species 3, in Africa. Allied to *Triraphis*, but differing in the non-excurrent side-nerves and the sessile unilateral spikelets.

ANNUAL—CULMS tufted, many-noded; blades linear to oblong-lanceolate, ligule hyaline, very short or obscure. Panicle spike-like, dense; branches erect, simple or with adpressed branchlets.

PLATE 442.

LEPTOCARYDION VULPIASTRUM, Stapf. (Fl. Cap., Vol. VII., p. 648).

Nat. Order Gramineæ.

CULMS erect or ascending, 2 to 4 feet long, simple or sometimes branched (branches intravaginal), many-noded, internodes shortly exerted, glabrous, smooth; sheaths tight, glabrous, smooth or somewhat rough, striate; ligule up to $\frac{1}{4}$ line long, truncate, ciliolate, soon evanescent; blades lanceolate-oblong from a rounded abruptly constricted base, acute, 1 to 3 inches, by 3 to 6 lines, flat or involute, smooth or finely scaberulous below, glaucescent, finely many-nerved, primary nerves about 7 on each side.

PANICLE spike-like, 2 to 8 inches by $\frac{1}{2}$ to $\frac{3}{4}$ inch, pallid or faintly purplish, very dense; branches up to 1 inch long, branched from the villous base; branchlets 5 to 1-spiculate, up to 3 lines long.

SPIKELETS crowded, adpressed, 5 to 9-flowered, up to 3 lines long; rhachilla very slender.

GLUMES reddish, subhyaline, the *lower* lanceolate, acuminate, mucronate, about $1\frac{1}{4}$ line long; the *upper* linear-oblong, about $1\frac{3}{4}$ line long. Valves $1\frac{1}{4}$ line long, pubescent below the middle, long and finely ciliate along the side-nerves. Anthers $\frac{1}{5}$ line long, ovate; grain linear, obtusely triquetrous, less than $\frac{1}{2}$ line by less than $\frac{1}{8}$ line.

Also in tropical East Africa as far north as Usambara.

Habitat: NATAL. Banks of Tugela and its tributaries, 600 to 1000 feet alt., *Buchanan* 187.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

CROSSOTROPIS, Stapf.

SPIKELETS laterally compressed, subsessile, more or less distinctly 2-ranked on the rigid simple branches of a panicle; rhachilla slender, disarticulating above the glumes and between the valves. Florets, 3 to 9, perfect or the uppermost more or less reduced, equalling the glumes or slightly exserted, or overtopped by the awn-like tips of the glumes.

GLUMES subequal or equal, narrow, membranous, strongly 1-nerved, keeled, persistent. Valves somewhat distant, linear-oblong in profile, shortly 2-lobed, mucronate or shortly awned from the sinus, membranous, 3-nerved, side-nerves sub-marginal, subpercurrent, rigidly ciliate, margins inflexed; callus small, hairy. Pales narrow, 2-keeled, slightly shorter than the valves. Lodicules 2, cuneate, small. Stamens 3. Ovary glabrous. Styles distinct, very slender; stigmas plumose, laterally exserted. Grain oblong, strongly compressed from the back, concave or flat, enclosed by the slightly altered valve and pale; embryo about $\frac{1}{2}$ the length of the grain; hilum basal, punctiform.

ANNUAL OR PERENNIAL; blades usually flat; ligules hyaline; panicle contracted and narrow, or open with the branches spreading at right angles; spikelets rather close to very distant, the uppermost terminal.

Species 3, in Africa and Arabia.

PLATE 443.

CROSSOTROPIS GRANDIGLUMIS, Rendle. (Fl. Cap., Vol. VII., p. 649).

Nat. Order Gramineæ.

PERENNIAL.—CULMS tufted, erect or geniculate, $\frac{1}{2}$ to $1\frac{1}{2}$ foot long, glabrous, smooth, terete or slightly compressed, 2-3-noded, upper internodes finally exserted.

LEAVES crowded near the base; sheaths glabrous, or very rarely with scattered fine long spreading hairs, rather firm, striate, the *upper* scabrid, the *lower* smooth; ligules truncate, up to $\frac{3}{4}$ line long; blades linear, shortly tapering to an acute (often subpungent) point, 1 to $2\frac{1}{2}$ inches, by $1\frac{1}{2}$ to $2\frac{1}{2}$ lines, flat or subulately convolute, glabrous, scabrid all over.

PANICLE 4 to 6 inches, by 4 to 9 lines when ripe, straight; rhachis angular, scabrid or hispidulous; branches simple, singly or 2-3 close together, straight, 2 to 5 inches long, at first erect, at length spreading at right angles, hispidulous, villous at the base.

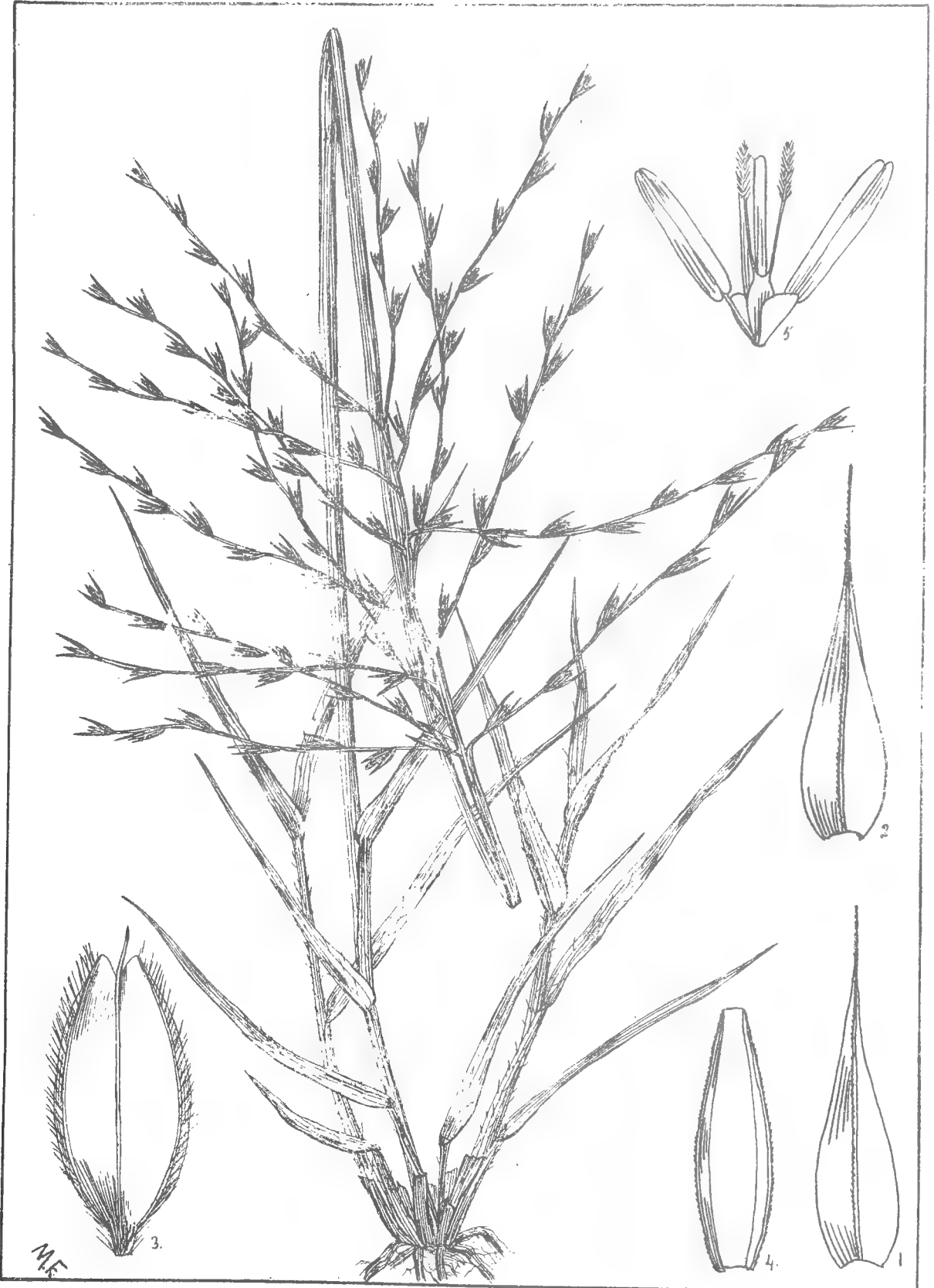
SPIKELETS 3 to 5-flowered, distant by more than their own length, adpressed, shortly pedicelled, $3\frac{1}{2}$ to 5 lines long; rhachilla minutely pilose.

GLUMES lanceolate, subulate-acuminate, scaberulous, $3\frac{1}{2}$ to 5 lines long. Valves oblong, shortly bilobed, mucronate, up to 2 lines long, side-nerves rigidly ciliate. Pales truncate, finely pubescent on the back, keels scabrid. Anthers up to $\frac{1}{2}$ line long. Grain narrowly oblong, flat, over 1 line long.

Habitat: NATAL. Sandy valley near Tugela, 1000 feet alt., *Buchanan* 279

This grass was formerly known as *Lasiochloa grandiglumis*, and it would seem to be more common in the uplands than in the coast districts, we have not met with it. The only specimen in the Herbarium is Buchanan's 279, and is a very poor one, but the Director of the Royal Gardens and Herbarium at Kew very kindly lent us a better one of Buchanan's same gathering for the purpose of completing the drawing.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ME

CROSSOTROPIS GRANDIGLUMIS. RENDLE.



POTAMOPHILA PREHENSILIS. *BTH.*

POTAMOPHILA, R. Br.

SPIKELETS laterally slightly compressed, on short or rather long pedicels, paniced; rhachilla jointed above the rudimentary basal glumes. Florets 3; lower 2 reduced to minute empty valves, uppermost hermaphrodite or unisexual with the organs of the other sex reduced.

GLUMES reduced to very minute rounded or truncate scales, or to an obscure, entire or bilobed hyaline rim. Empty valves very small, hyaline, nerveless, subulate or elliptic and rounded or lobed; fertile valve membranous, 5-nerved, awnless, nerves raised, sometimes slightly winged. Pale 3-nerved; otherwise similar to the fertile valve. Lodicules 2, finely nerved. Stamens 6. Styles distinct; stigmas feathery. Grain obovate, compressed, crowned by the thickened bases of the styles, enclosed by the unaltered glume and pale, free.

Rather tall aquatic grasses, blades flat; ligules membranous; panicle effuse or contracted.

Species 3, 1 in South Africa, 1 in Madagascar, and 1 in New South Wales.

PLATE 444.

POTAMOPHILA PREHENSILIS, Benth. (Fl. Cap., Vol. VII., p. 659).

Nat. Order Gramineæ.

STEMS several feet high, branched, many-noded, slightly compressed or terete, glabrous, smooth; internodes up to 4 inches long; branches spreading at a right angle or almost so; leaf-sheaths rather tight, shorter than or as long as the internodes, slightly compressed and more or less keeled, strongly striate, scabrid in the uppermost part of the keel, hairy near the mouth or glabrous, except the sometimes minutely villous nodes; ligule membranous, oblong or truncate, $\frac{1}{2}$ to 1 line long, pubescent; blades linear-lanceolate from a very short contracted base, acute, 3 to 5 inches by 3 to 6 lines, flat, flaccid, glaucous, sparingly hairy and minutely scabrid on both sides, margins and midrib very rough from minute reversed spines; primary nerves 3 to 4 on each side.

PANICLE terminal, 4 to 6 inches long, open, very lax, rigid; branches spreading, fine, up to 4 inches long, the lowest usually paired, sparingly branched, compressed and angular, scaberulous or smooth below, branchlets 2-3-spiculate; pedicels 1 to 7 lines long.

SPIKELETS lanceolate-oblong, acute, 3 to 4 lines long, slightly twisted, pallid.

GLUMES extremely minute truncate hyaline scales. Valves, empty one subulate, $\frac{1}{2}$ to $\frac{3}{4}$ line long, nerveless; fertile valve tightly clasping the similar pale with the inflexed margins, nerves raised, slightly winged, scaberulous. Lodicules ovate; anthers 3 lines long; styles $\frac{1}{2}$ line long; stigma exerted near the base of the valve, 1 to $1\frac{1}{2}$ line long. Grain unknown.

Habitat: NATAL. Near the mouth of the Umzimkulu River, in copses and woods, *Drège*; Umbilo waterfall, *Rehmann* 8156; Umpumulo, to 2000 feet, common in bush, *Buchanan* 288; Inanda, *Wood* 1305.

Drawn from Buchanan's 288.

Fig 1, A glume; 2 and 3, empty valves; 4, fertile valve; 5, pale; 6, pistil, stamens and lodicules. *All enlarged.*

LEERSIA, Sw.

SPIKELETS laterally compressed, very shortly pedicelled, paniced; rhachilla jointed above the rudimentary glumes. Floret 1, hermaphrodite.

GLUMES reduced to an obscure hyaline entire or 2-lobed rim. Valve 5-nerved, subcartilaginous, awnless, keels and margins rigidly ciliate. Pale narrow, 3-nerved, subcartilaginous except at the hyaline margins, grooved along the outer nerves and tightly clasped by the inflexed margins of the valve, keel rigidly ciliate. Lodicules 2, fleshy, finely nerved. Stamens 6, 3 or 1. Styles distinct; stigmas feathery. Grain ovate or oblong, compressed, embraced by the valve and the pale, free; embryo short.

PERENNIAL; leaves narrow; panicle usually flaccid with very slender branches.

Species 3-7, mostly in the tropics and the subtropical regions of both hemispheres.

PLATE 445.

LEERSIA HEXANDRA Sw. (Fl. Cap., Vol. VII. p. 659).

Nat. Order Gramineae.

PERENNIAL, rhizome creeping, stoloniferous; innovation buds ovoid, subacute, scales smooth, striate. Stems erect from a prostrate or ascending base, rooting from the lower nodes, 2 to 4 feet high, simple or very sparingly branched, usually slender and weak, many-noded, smooth, firmly striate; uppermost internode longest (up to $\frac{1}{2}$ foot, rarely to 1 foot long); sheaths rather tight or the lower loose and ultimately spreading, terete, usually shorter than the internodes, the uppermost longest, reaching to or almost to the panicle, glabrous, slightly scabrid or smooth, except the villous nodes; ligule short, obliquely truncate or bilobed, firmly membranous; blades narrowly linear, tapering to a fine point, 3 to 6 inches, by $1\frac{1}{2}$ to 4 lines, glaucous, usually subrigid, very slightly scabrid.

PANICLE 2 to 4 inches long, erect or more or less flaccid and nodding, narrow; branches suberect, simple, up to $1\frac{1}{2}$ inch long, filiform, flexuous, angular, slightly scabrid or smooth.

SPIKELETS often closely imbricate, subsecund and laterally concavo-convex, obliquely oblong, $1\frac{1}{2}$ to 2 lines long, sometimes purplish; sides of valve, scabrid or smooth. Stamens 6; anthers 1 to $1\frac{1}{4}$ line long.

Habitat: NATAL. Durban Flats, *Buchanan* 22, 75, 96; Berea, 100 feet alt., *Wood* 5944; Umlazi River, *Krauss* 9; by the Tugela River, 600 feet alt., and at Umpumulo, 2000 feet alt., *Buchanan* 281; *Gerrard* and *McKen* 25.

Widely spread through the tropical and subtropical regions.

Fig 1, Valve; 2, pale; 3, pistil, stamens and lodicules. *All enlarged.*



LEERSIA HEXANDRA, SW



EHRHARTA ERECTA. LAM.

Var. *Natalensis*, Stapf.

EHRHARTA, Thunb.

SPIKELETS laterally compressed, paniced or racemed, sometimes solitary, pedicelled; rhachilla disarticulating below the valves, more or less obscurely produced. Florets 3; lower 2 reduced to empty valves, uppermost hermaphrodite.

GLUMES persistent, membranous. Valves 3, heteromorphous; the *lower* 2 empty, usually exceeding the glumes, more or less cartilaginous, often bearded, and the *upper* with a callous appendage at the base, awnless or awned; the uppermost fertile, smaller, thinner, awnless, sometimes with a knob-like appendage at the base forming a hinge with the appendage of the upper empty valve. Pale narrow, keeled, finely 2-nerved, nerves very close. Lodicules 2. Stamens 6 or 3, very rarely 1. Styles distinct, short; stigmas plumose or brush-like, exerted above the base. Grain elliptic, much compressed; hilum a fine line almost as long as the grain; embryo about $\frac{1}{5}$ of the grain.

PERENNIALS OR ANNUALS of very varied habit, sometimes bulbous at the base or suffretescent; blades flat or convolute, sometimes much reduced or suppressed; ligules membranous, usually short or reduced to a narrow rim; panicle or racemes sometimes very scanty or even reduced to solitary spikelets.

Species 25 in South Africa, one of them also in a slightly different form in East Africa, tropical Arabia, the Mascarene Islands, and India (here probably introduced).

PLATE 446.

EHRHARTA ERECTA, Lam., var. natalensis, Stapf. (Fl. Cap., Vol. VII., p. 671).

Nat. Order Gramineæ.

PERENNIAL.—CULMS tufted, geniculate-ascending from a procumbent often copiously branched base, slender, weak or wiry below, up to 2 feet long, glabrous, very rarely reversedly pubescent below the nodes, smooth, 5 to 6-noded, sheaths tight, the lowest ultimately slipping from the culm, glabrous, rarely finely hairy, smooth; ligules obtuse or truncate, up to 3 lines long; blades linear from a clasping often fimbriate base, gradually tapering, 2 to 6 inches by $1\frac{1}{2}$ to 5 lines, flat, flaccid, glabrous, rarely hairy, smooth or subscaberulous, margins often wavy, scabrid or ciliate.

PANICLE erect or nodding, narrow, 2 to 8 inches long, loose, sometimes reduced to a raceme; branches distant, the lowest 2-3-nate, very unequal, the longest up to 1 to 3 inches, erect or spreading, simple or sparingly branched, filiform to almost capillary, flexuous, glabrous or scaberulous above; pedicels capillary, scaberulous to puberulous, up to 4 lines or more long.

SPIKELETS light green, oblong, $1\frac{1}{4}$ to 2 lines, very rarely $2\frac{1}{2}$ lines long.

GLUMES ovate, obtuse or apiculate, 5-nerved, the *lowest* $\frac{3}{8}$ to 1 line, the *upper* $1\frac{1}{4}$ line long; empty valves oblong, obtuse or truncate, smooth and shiny or scaberulous, transversely rugose, faintly 5-nerved, the *lower* $1\frac{1}{4}$ to $1\frac{1}{2}$ line, the *upper* longer by $\frac{1}{6}$ to $\frac{1}{4}$, with a pair of obscure beardless ridges at the base; fertile valve oblong, obtuse to subacute, $1\frac{1}{4}$ to $1\frac{3}{4}$ lines long, glabrous, smooth, obscurely 5 to 7-nerved; lodicules usually glabrous. Stamens 6; anthers $\frac{1}{2}$ to $\frac{5}{8}$ line long; stigmas brush-like; grain 1 line long.

Var. natalensis (Stapf). CULMS usually reversedly pubescent below the nodes; sheaths and blades pubescent; branches of the panicle and the pedicels often densely and minutely pubescent. Spikelets 2 to $2\frac{1}{2}$ lines long; empty valves scabrid and puberulous; fertile valve obscurely bearded at the base. Stamens 3 (always?).

Habitat: NATAL. Clairmont, 50 feet alt., Wood 7260; Drakensberg, near Newcastle, Buchanan 177; Umsinga and base of Biggarsberg, Buchanan 94; Rietvlei, Buchanan 287.

In a slightly different form also in tropical East Africa as far as Abyssinia, and (probably introduced) in tropical Arabia, the Mascarene Islands, and India.

In our specimens the glumes are 7-9-nerved, as shown in plate, not 5-nerved as stated, and there are always 4 stamens.

Fig 1, Lower glume; 2, upper glume; 3, 1st valve; 4, 2nd valve in profile; 5, fertile valve; 6, pale; 7, pistil, stamens and lodicules. All enlarged.

PLATE 447.

EHRHARTA CALYCINA, Sm. (Fl. Cap., Vol. VII., p. 674).

Nat. Order Gramineæ.

PERENNIAL, tufted, rarely stoloniferous — CULMS usually geniculate, slender, simple or scantily branched, 1 to 2 feet long, smooth, glabrous, very rarely minutely villous below, 4 to 6-noded; sheaths glabrous, rarely reversedly pubescent, rather tight; ligules very short, truncate, denticulate ciliate; blades linear from a clasping often denticulate and ciliate base, long and gradually tapering or shortly acute, rarely subobtuse, 1 to 4 inches, by 1 to 3 lines, flaccid or rigid, flat or involute to setaceous, glaucous, scaberulous, glabrous or hairy, margins sometimes wavy, scabrid.

PANICLE very narrow, nodding, 3 to 9 inches long, subsecund, rhachis flexuous, smooth; branches in distant semiwhorls, very unequal, the longest rarely more than 1 inch long, simple or scantily branched, spreading or erect, subcapillary, flexuous, smooth.

SPIKELETS pallid, rarely purplish, oblong, $2\frac{1}{2}$ to 3 lines long.

GLUMES subequal, narrow-oblong, acute or subobtuse, 7-nerved. Valves, empty ones unequal, loosely villous, *lower* very narrow, linear-oblong, acute, as long as the lower glume or shorter, sub-5-nerved, shortly bearded at the base in front, the *upper* oblong, obtuse, mucronate (mucro up to $\frac{3}{4}$ line long), as long as the upper glume or longer, 5-nerved, with 2 large semi-lunar appendages at the base, beardless; fertile valve oblong, obtuse; slightly shorter than the upper empty valve, glabrous or scantily hairy, obscurely 5 to 7-nerved; lodicules glabrous. Stamens 6, anthers $1\frac{1}{2}$ line long; stigmas brush-like; grain $1\frac{1}{2}$ line long.

Habitat: NATAL. Sand dunes near the mouth of the Umlazi River, *Krauss* 414; Clairmont, 50 feet alt., *Wood* 7261.

“A very polymorphic species, of which Nees distinguishes 6 varieties and several sub-varieties; but the characters used by him are so uncertain that I find it useless to retain his subdivisions.”

Fig 1, Lower glume; 2, upper glume; 3, 1st valve; 4, 2nd valve in profile; 5, fertile valve; 6, pale; 7, pistil, stamens and lodicules. *All enlarged.*



EHRHARTA CALYCINA. *SM.*



MF

PHALARIS MINOR. *RETZ.*

PHALARIS, Linn.

SPIKELETS laterally compressed, in contracted more or less spike-like panicles; rhachilla disarticulating above the glumes, not or obscurely produced beyond the terminal floret. Florets 3, the lower 2 minute, rudimentary, the uppermost hermaphrodite, enclosed by the glumes.

GLUMES subequal, boat-shaped, keeled, keel often winged. Empty valves very small, subulate to lanceolate, membranous, with a callous base, or 1 or both reduced to a minute callous scale; fertile valve thin, ultimately rigid, 5-nerved, awnless, ovate, acute. Pale almost as long as the valve, 2-nerved (sometimes obscurely). Lodicules 2, hyaline. Stamens 3. Styles long, distinct; stigmas plumose, exerted from the top of the spikelet. Grain much compressed, ovate, free, enclosed by the valve and pale; hilum oblong, short, embryo equalling $\frac{1}{4}$ the length of the grain.

ANNUALS OR PERENNIALS; leaves flat; panicle terminal, stiff, spike-like, subcapitate or interrupted and lobed; pedicels very short.

Species 10, mainly natives of the Mediterranean region, but widely dispersed as weeds; 1 species in the boreal region and in South Africa, and another from California to Chile.

PLATE 448.

PHALARIS MINOR, Retz. (Fl. Cap., Vol. VII., p. 682).

Nat. Order Gramineæ.

ANNUAL.—**CULMS** tufted, erect or ascending, geniculate, 1 to 3 feet long, glabrous, finely striate, 4 to 7-noded; internodes gradually longer from the base, up to 5 inches long; sheaths shorter than the internodes, the *lower* tight, the uppermost more or less inflated, striate; ligule scarious, white, obtuse, 1 to 3 lines long; blades linear, gradually tapering, 2 to 6 inches by $1\frac{1}{2}$ to 3 lines, flaccid, glabrous, smooth or almost so, margins slightly rough.

PANICLE spike-like, from subglobose to cylindrical, up to $2\frac{1}{2}$ inches long, compact; rhachis and branches glabrous

SPIKELETS obliquely elliptic, 2 to $2\frac{1}{2}$ lines long.

GLUMES subequal, 3-nerved, acute, glabrous, white, nerves green, keel serrulate, suddenly contracted below the apex; *lower* empty valve a minute callous scale; *upper* somewhat subulate, firmly membranous, hairy, with a callous base, up to $\frac{3}{4}$ line long; fertile valve scantily silky; pale ciliate on the back, obscurely 2-nerved or almost nerveless; anthers $\frac{1}{2}$ to $\frac{5}{8}$ line long; grain $\frac{7}{8}$ line long.

Habitat: NATAL. Exact locality unknown, *Gerrard* and *McKen*, in Natal Government Herbarium, 8915.

Baron F. v. Mueller says of this grass: "*P. Minor* is recommended by Dr. Curl for permanent pastures, as it supplies a large quantity of fine, sweet, fattening foliage, relished by stock. It keeps green far into the winter in the climate of New Zealand.

Fig 1, Spikelet; 2, glume; 3, upper rudimentary valve; 4, fertile valve; 5, pale; 6, pistil, stamens and lodicules. *All enlarged.*

PLATE 449.

PHALARIS ARUNDINACEA, Linn. (Fl. Cap., Vol. VII., p. 683).

Nat. Order Gramineae.

PERENNIAL.—RHIZOME short, præmorse, stoloniferous; stolons with firm, scariosus, sheathing scales.

CULMS erect from a creeping or ascending base, 2 to 4 feet long, rooting at the lower nodes, simple or very sparingly branched, firm, glabrous, finely striate, 5 to 7 or more noded, internodes gradually longer from the base, up to 1 foot long; sheaths glabrous, smooth, finely striate, *lower* tight, longer than the internodes, *upper* looser, shorter; ligule scariosus, white, obtuse, $1\frac{1}{2}$ to 3 lines long; blades linear to linear-lanceolate, long tapering, $\frac{1}{2}$ to 1 foot, by 3 to 8 lines, rigid, glaucous, glabrous, smooth, many nerved.

PANICLE erect, sometimes nodding, contracted, lobed or spike-like, up to 8 inches long; branches very short, adpressed to the rhachis, or longer (to $1\frac{1}{2}$ inch) and more or less spreading, copiously and densely branched, glabrous, smooth or scabrid.

SPIKELETS ovate-lanceolate, $2\frac{1}{2}$ to 3 lines long.

GLUMES sub-equal, whitish-green or purplish acute, 3-nerved, keel not or very obscurely winged, minutely serrulate, nerves raised. Empty valves sub-equal, lanceolate to subulate, obscurely 1-nerved or nerveless, hairy with a callous base, $\frac{3}{4}$ line long. Fertile valve scantily silky, $1\frac{1}{2}$ line long. Pale ciliate on the back. Lodicules obliquely ovate-lanceolate. Anthers $1\frac{1}{2}$ line long.

Habitat: NATAL. By the Mooi River, 4000 feet altitude, *Wood* 4097; Van Reenen's Pass, *Wood* 7215, partly.

Also in Europe.

Drawn from *Wood*'s 7215.

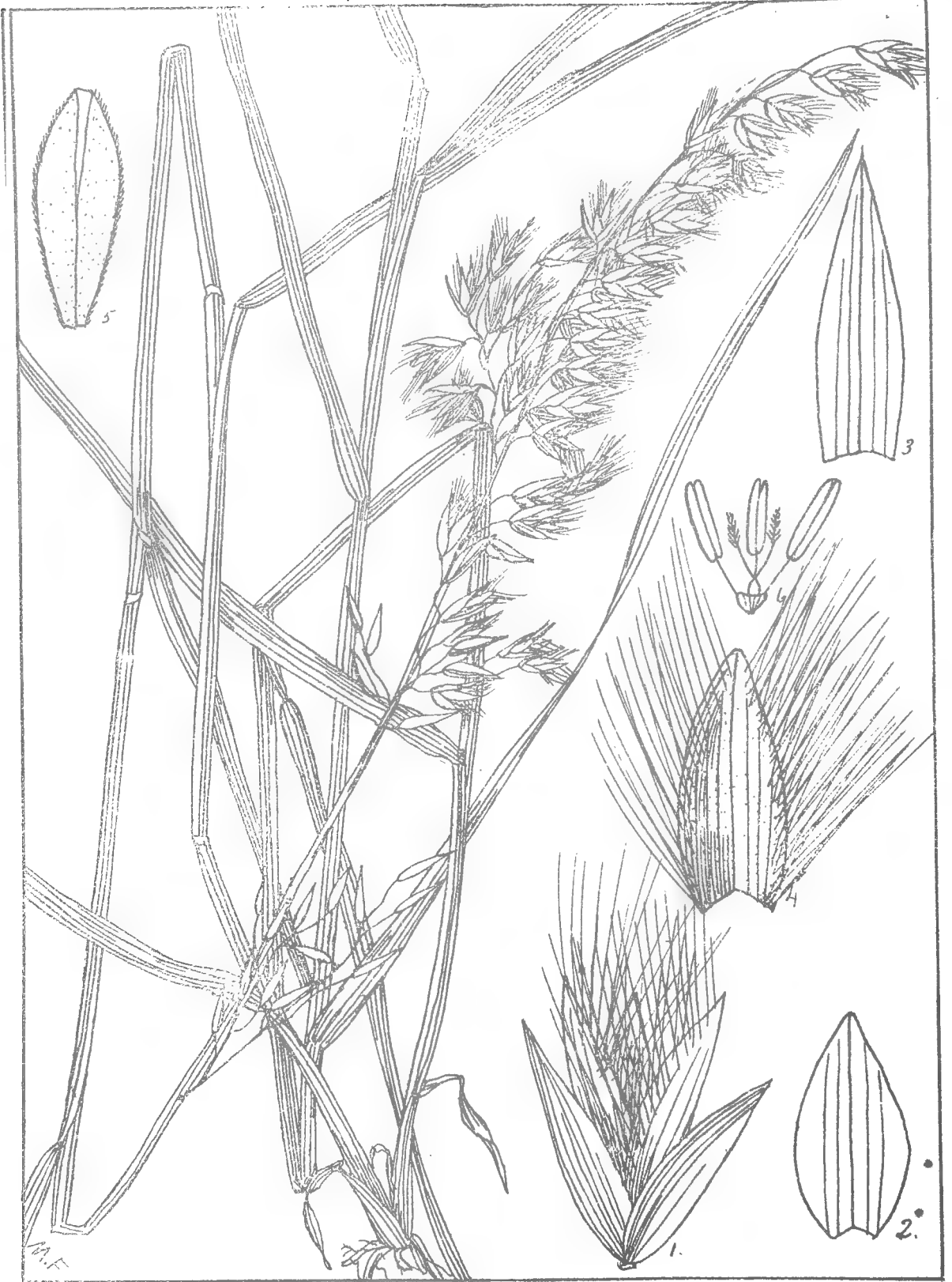
This grass is said to be indigenous in Norway, and Baron F. v. Mueller says of it:—"Not without some importance as a reedy grass of bulky yield on wet meadows or in swampy places. A variety with white-striped leaves is a favourite as a ribbon plant for garden plots." *P. canariensis*, the "Canary grass," belongs to this genus.

Fig 1, Spikelet; 2, glume; 3, rudimentary valve; 4, fertile valve; 5 pale; 6, pistil, stamens and lodicules. *All enlarged.*



M.F.
1886

PHALARIS ARUDINACEA. LINN.



MELICA RACEMOSA. THB

MELICA, Linn.

SPIKELETS in spike or raceme-like or open panicles, laterally or dorsally compressed, or subterete, jointed (sometimes imperfectly) on their pedicels or continuous with them; rachilla tardily disarticulating above the glumes, readily between the fertile valves, lower 1 or 2 (rarely 3) florets hermaphrodite, the following 2-3 barren, small, embracing each other and forming a clavate or oblong body.

GLUMES 2, membranous, hyaline or scarious obtuse or acute, 3 to 5-nerved, or the upper 7-nerved. Fertile valves firmly membranous except at the hyaline margins and tips, awnless, 7 to 9-nerved, nerves evanescent below the tips; callus minute, obtuse. Pales shorter than the valves, 2-keeled. Lodicules 2, small, truncate, quite connate. Stamens 3. Ovary glabrous; styles distinct, short; stigmas laterally exerted, finely plumose. Grain enclosed by the more or less hardened (chartaceous) valve and the pale, free, oblong, semiterete to subterete; hilum a fine line as long as the grain; embryo small.

PERENNIAL; blades flat or convolute; ligules hyaline. Panicles open, spike-like or almost reduced to a raceme, many to few-spiculate, often secund. Spikelets more or less scarious, often vividly coloured, nodding on capillary pedicels, the tips of which are usually strongly incurved.

About 40 species, mainly in the northern temperate zone, a few in the temperate regions of the southern hemisphere.

PLATE 450.

MELICA RACEMOSA, Thunb. (Fl. Cap., Vol. VII., p. 685.)

Nat. Order Gramineae.

CULMS ascending from a usually long very slender wiry sometimes procumbent base, simple or branched below, 2 to 3 feet long, glabrous, smooth or scabrid below the panicle, many-noded, internodes (except the uppermost) mostly enclosed.

LEAVES glabrous, scabrid, rather crowded above the base, the lowest more or less reduced; sheaths tight, striate; ligules up to 1 line long; blades linear, tapering to a fine point, 3 to 6 inches long, $\frac{1}{2}$ to $1\frac{1}{2}$ line wide when expanded, usually convolute, subglaucous.

PANICLE very narrow, 3 to 9 inches long, erect or nodding, more or less secund; branches mostly solitary, distant, erect or suberect, branched or more often simple, filiform capillary, flexuous, often much shorter than the internodes; pedicels $\frac{1}{2}$ to $1\frac{1}{2}$ line long, tips thickened, pubescent.

SPIKELETS pallid, rarely slightly purplish, 3 to 5 lines long, fertile flowers 2.

GLUMES unequal or subequal, 5-nerved, the lower hyaline, ovate acute, 3 to $3\frac{1}{2}$ lines long, the upper oblong, firmer, acuminate, nerves rather close and prominent, slightly scabrid, $3\frac{1}{2}$ to $4\frac{1}{2}$ lines long. Valves slightly exceeding or equalling the glumes, the fertile oblong, obtuse or minutely truncate or emarginate, 7 to 9-nerved, nerves rather prominent, scabrid, sides only hairy; hairs 2 lines long; body of barren valves clavate, glabrous, scaberulous. Anthers 1 line long. Grain 1 to $1\frac{1}{4}$ line long, semiterete.

Habitat: NATAL. Berea, near Durban, by the roadside, Wood 3926; Merebank, near Durban, Wood 7258; Vernon, Buchanan 155; Weenen County, 4000 feet alt., Wood 3590.

Very like the Mediterranean *M. ciliata*, but differing in the rough leaves, the less acuminate upper glume and the more obtuse valves.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil, stamens and lodicules. All enlarged.



M.F.

FINGERHUTHIA SESLERIÆFORMIS NEES

FINGERHUTHIA, Nees ex Lehm.

SPIKELETS strongly laterally compressed, in compact spike-like panicles, jointed on and deciduous from the pedicels; rhachilla tough. Florets 1, hermaphrodite, or if more then the uppermost male or rudimentary.

GLUMES 2 subequal, narrow, thin, complicate, 1-nerved, keeled, shortly awned or mucronate. Valves oblong to lanceolate, mucronate, rather firm, 7-5- (rarely 3) nerved, the upper smaller. Pales slightly shorter than the valves, ovate-oblong, 2-keeled, flaps broad. Lodicules 2, cuneate. Stamens 3. Ovary glabrous, slightly constricted below the apex (at least after fecundation); styles distinct, rather long; stigmas very slender, finely plumose, subterminally exerted. Grain unknown.

PERENNIAL, caespitose; innovation shoots intravaginal; blades narrowly linear; ligule a dense line of silky hairs.

PANICLE compact, spike-like; the lowest spikelets barren, consisting of a few empty glumes.

Species 2 in South Africa; 1 of which is also found on the Afghan-Indian frontier.

PLATE 451.

FINGERHUTHIA SESLERIÆFORMIS, Nees. (Fl. Cap., Vol. VII., p. 692).

Nat. Order Gramineæ.

CULMS very densely tufted on a short oblique rhizome, glabrous, rather robust, 1 to 2 feet long, erect, smooth, 2-noded, internodes long exerted; sheaths tight, smooth, the lower short, very firm, pallid; blades linear, tapering to a subsetaceous point, 4 to 8 inches long, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines wide when expanded, convolute, rarely flat, rigid, glaucous, smooth below, finely scaberulous above, margins rough.

PANICLE ellipsoid to cylindric, $\frac{1}{2}$ to $2\frac{1}{2}$ inches, by 5 to 6 lines, sometimes purplish.

SPIKELETS 2 to 4-flowered, $2\frac{1}{2}$ to 3 lines long.

GLUMES lanceolate in profile, mucronate-acuminate, $1\frac{3}{4}$ to 2 lines long, rigidly ciliolate along the keel. Valves oblong-lanceolate in profile, mucronate-acuminate, or the upper emucronate, about 2 lines long, rather firm except at the narrow hyaline margins, glabrous or scantily and minutely hairy below towards the margins, 5-3-nerved, side nerves rather close, more or less prominent (or the inner evanescent below the middle or quite suppressed), joining the middle nerve below the tip. Lodicules obliquely cuneate, $\frac{1}{4}$ line long. Anthers $1\frac{1}{4}$ line long; styles $\frac{1}{2}$ line long; stigmas $\frac{1}{2}$ line long.

Habitat: NATAL. Weenen County, South Downs, 4000 feet alt., December, Wood 4405.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve in profile; 5, valve, back view; 6, pale; 7, pistil, stamens, and lodicules. *All enlarged.*

STIBURUS, Stapf. (Triphlebia, Stapf.)

SPIKELETS laterally compressed, sessile or shortly pedicelled, in spike-like cylindrical panicles; rhachilla disarticulating above the glumes and between the valves. Florets 4-5, hermaphrodite, the uppermost reduced, shortly exerted from the glumes.

GLUMES equal or subequal, membranous, lanceolate, caudate-acuminate, 1-nerved. Valves very similar to the glumes, but 3-nerved; callus very minute. Pales shorter than the valves, 2-keeled. Lodicules 2, minute, hyaline, cuneate. Stamens 3. Ovary glabrous; styles short, distinct; stigmas plumose, laterally exerted. Grain enclosed by the hardly changed valve and pale, free, oblong, terete; embryo short; hilum, basal, punctiform.

PERENNIAL, tufted; blades very narrow, usually subsetaceous, long; ligule a ciliate rim.

PANICLE cylindrical, dense, usually dark purple, greyish-villous.

Species 1, in extra-tropical South Africa and in tropical Transvaal.

PLATE 452.

STIBURUS ALOPECUROIDES, Stapf. (Fl Cap., Vol. VII., p 397).

Nat. Order Gramineæ.

Densely caespitose.—CULMS erect, $\frac{1}{3}$ to $1\frac{1}{2}$ foot long, glabrous, simple, or branched at the base.

LEAVES all basal, with scattered fine spreading hairs all over to glabrous; sheaths crowded, rather firm, pallid, smooth, persistent; blades usually setaceous or filiform, very acute, 3 to more than 12 inches long, sometimes flat and then up to 1 line broad, rather rigid

PANICLE $\frac{3}{4}$ to 3 inches by 3 to $3\frac{1}{2}$ lines, sometimes interrupted at the base; branches solitary, adpressed to the rhachis; lowest $\frac{1}{3}$ to almost 1 inch long, divided from the base or nearly so, smooth; pedicels unequal, mostly very short.

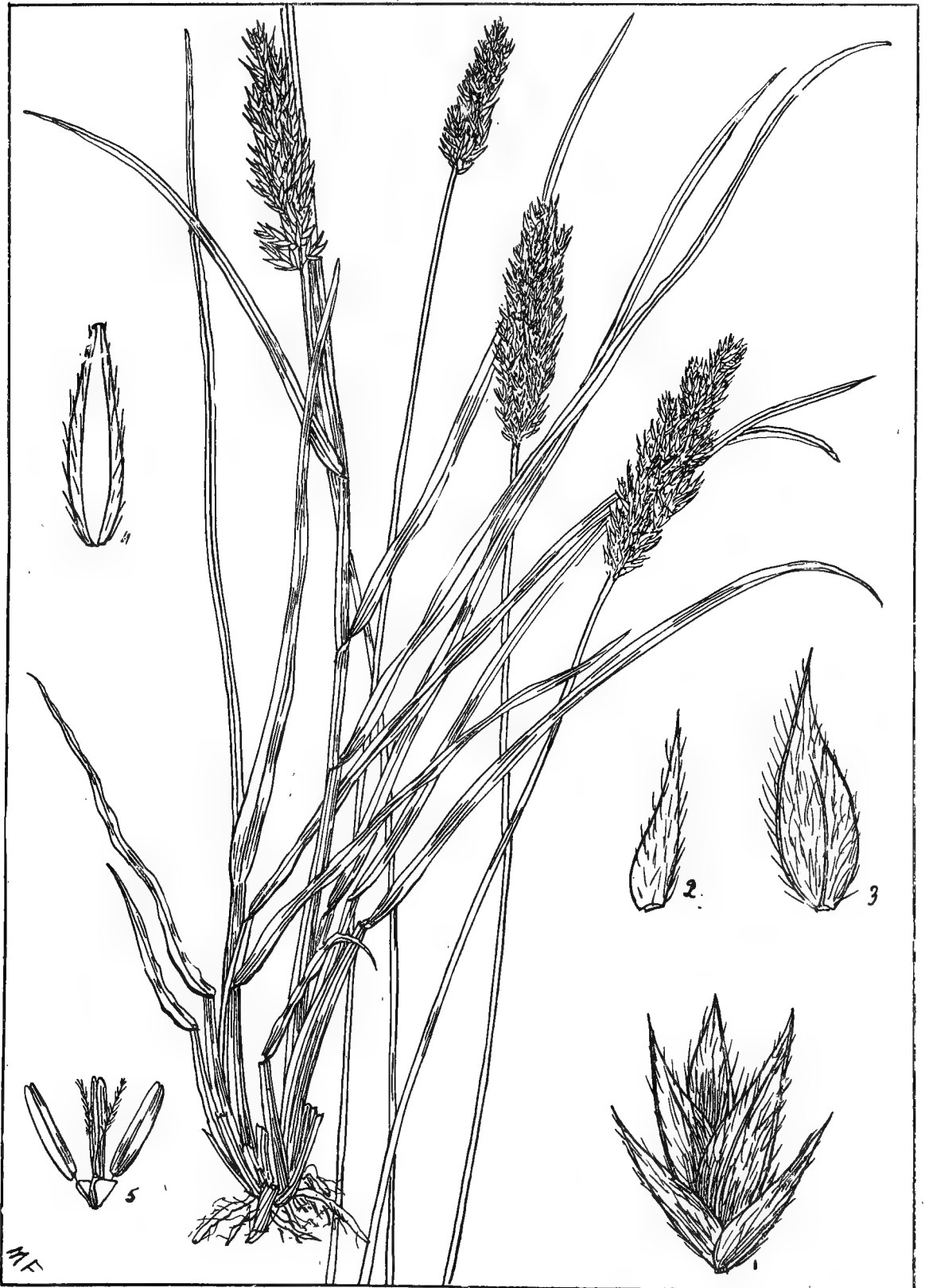
SPIKELETS about 2 lines long, densely crowded, usually dark purple.

GLUMES, valves and pales equally villous from fine greyish hairs. Glumes about $1\frac{1}{2}$ line long, tips firm, subulate. Valves very slightly shorter, often mucronulate. Anthers $\frac{2}{3}$ line long. Grain $\frac{7}{8}$ to 1 line long, reddish brown.

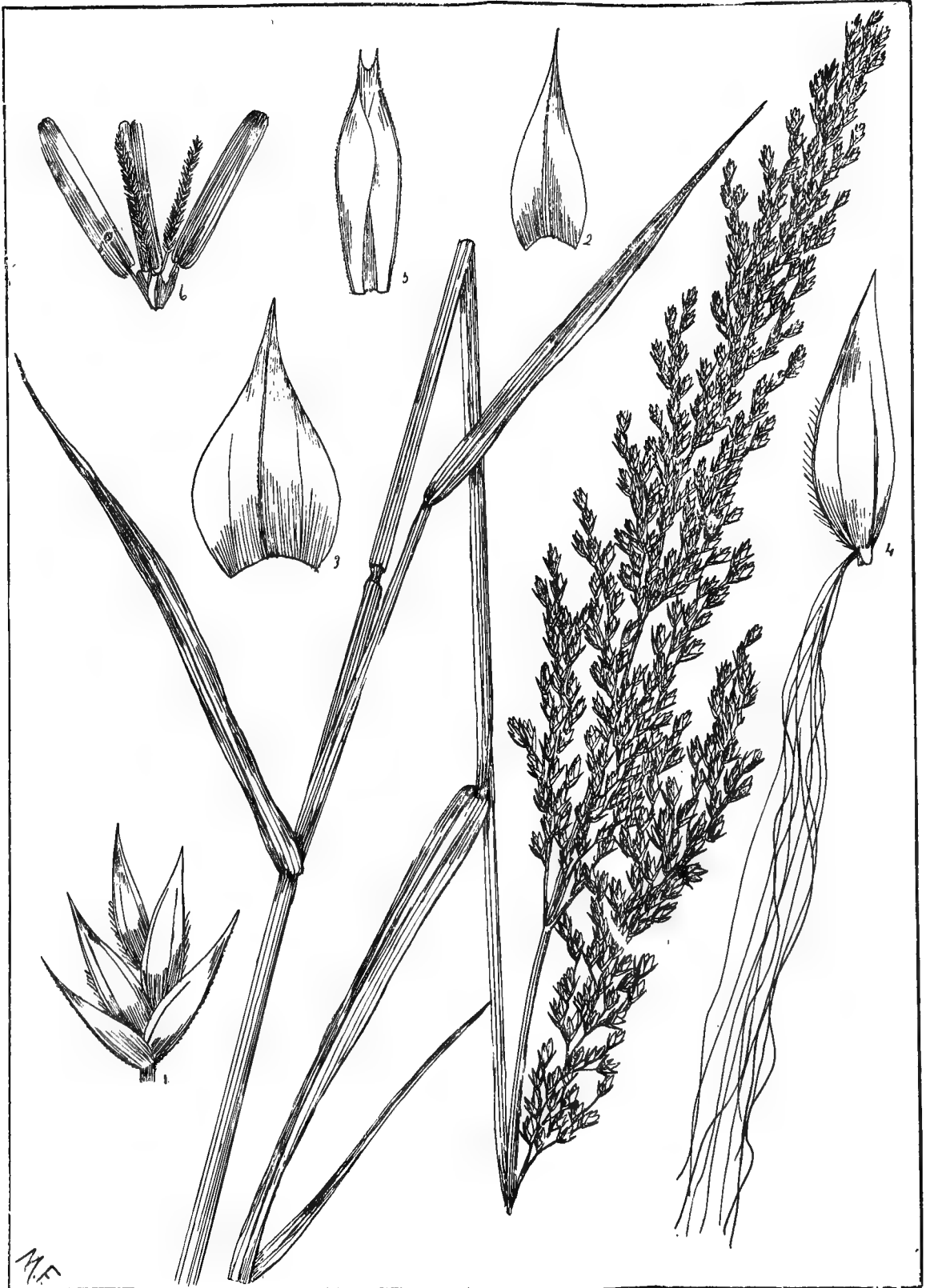
Habitat: NATAL. Near De Beer's Pass, *Wood* 5993; Noodsberg, *Wood* 884; Karkloof, *Rehmann* 7361; Umpumulo to Riet Vlei, *Buchanan* 166, 167; and without precise locality, *Buchanan* 32; *Gerrard* 474.

This is the grass which was formerly known in Natal as *Kæleria Gerrardii*, Munro, but which has now been transferred to the genus *Stiburus*, of which it is the only known representative. It is widely distributed in the Colony, but is not so far as known to us of much, if any, agricultural value.

Fig 1, Spikelet; 2, glume; 3, valve; 4, pale; 5, pistil, stamens, and lodicules, *All enlarged*.



STIBURUS ALOPECUROIDES STAPP



POA TRIVIALIS, LINN.

POA, Linn.

SPIKELETS mostly 2 to 6-flowered, in loose or close (rarely in spike-like) panicles; rhachilla disarticulating above the glumes and between the valves, glabrous or scantily and minutely hairy. Flowers hermaphrodite or the upper imperfect.

GLUMES thin, membranous, keeled, acute or obtuse, 1 to 3-nerved. Valves membranous, sometimes rather firm, obtuse or acute, 5 to 7-nerved; callus small, obtuse, often with a tuft of long wool. Pales shorter than the valves, 2-keeled. Lodicules 2, more or less 2-lobed. Stamens 3. Ovary glabrous. Styles short, free, stigmas plumose, laterally exerted. Grain ovoid, oblong or linear, often grooved, free or adherent to the pale; hilum punctiform, basal; embryo small.

ANNUAL OR PERENNIAL; blades flat and flaccid or convolute and more or less rigid; ligules hyaline. Panicles open, often effuse, rarely contracted, spike-like. Spikelets rather small, awnless.

Numerous species in the temperate regions, particularly of the northern hemisphere, few in the tropics.

PLATE 453.

POA TRIVIALIS, Linn. (Fl. Cap., Vol. VII., p. 714).

Nat. Order Gramineæ.

PERENNIAL, loosely tufted, glabrous.—CULMS geniculately ascending, usually from a short arched rooting base, $1\frac{1}{2}$ to 2 feet long, terete or subcompressed below, scabrid above, rarely smooth all along, about 3-noded; internodes exerted; sheaths somewhat loose, striate, smooth or rough, the lower thin; ligules ovate-oblong, 2 to 5 lines long; blades linear, acute, 2 to 5 inches by 1 to 3 lines, usually flat and flaccid, scaberulous.

PANICLE oblong to ovate or pyramidal when open, erect or slightly nodding, 3 to 7 inches long; rhachis usually smooth below; branches in distant semiwhorls of 4 to 6 (mostly of 5), unequal, filiform, scaberulous, the longest up to 3 inches long and undivided often for more than half their length, distantly or closely branched, ultimate branchlets closely 6 to 2-spiculate; lateral pedicels very short.

SPIKELETS green or purplish, ovate to oblong, acute, $\frac{1}{2}$ to 2 lines long, 3 to 4-flowered.

GLUMES subequal, rather firm, *lower* narrow, oblong, acute, $1\frac{1}{8}$ to $1\frac{1}{3}$ line long, 1-nerved, keel scaberulous, *upper* glume ovate and acuminate, $1\frac{1}{2}$ line long, 3-nerved; side-nerves prominent, keel very scabrid. Valves oblong, acute, rather firm, *lower* $1\frac{1}{2}$ line long, pubescent along the keel to the middle, otherwise glabrous, side-nerves rather prominent; callus with a small tuft of very long wool. Pales $1\frac{1}{4}$ line long, 2-toothed, keels finely and very densely scabrid. Anthers 1 line long. Grain $\frac{1}{2}$ line long, grooved.

Habitat: NATAL. Without precise locality, *Buchanan* 33.

Drawn from *Buchanan's* 33, which was very kindly lent for the purpose by the Director of the Herbarium at Kew; the plant is not in our collection.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve in profile; 5 pale; 6, pistil, stamens, and lodicules. *All enlarged.*

PLATE 454.

POA BINATA, Nees. (Fl. Cap., Vol. VII., p 714).

Nat. Order Gramineæ.

PERENNIAL, compactly caespitose, glabrous.—CULMS erect, $\frac{1}{2}$ to $1\frac{1}{2}$ foot high, rarely taller, more or less compressed below, usually 2-noded, internodes exserted.

LEAVES mostly near the base; sheaths tight, smooth, the *lower* more or less keeled, ultimately breaking up into persistent fibres; ligules ovate, $\frac{1}{2}$ to $1\frac{1}{2}$ line long; blades linear, acute, 2 to 6 inches, by 1 to $1\frac{1}{2}$ line, flat, with the tips often complicate and curved, smooth or finely scaberulous above.

PANICLE ovoid or pyramidal when open, $2\frac{1}{2}$ to 6 inches long, erect or nodding, lax; rhachis smooth, very slender; branches distant, geminate, finely filiform, flexuous or wavy, up to 2 inches long, undivided to the middle or beyond it, smooth or scaberulous above; branchlets contracted; lateral pedicels very short, scaberulous.

SPIKELETS crowded on the tips of the branches, ovate-oblong, 2 to $2\frac{1}{2}$ lines long, closely 3 to 5-flowered, pallid, rarely variegated with purple.

GLUMES rather unequal, *lower* ovate to oblong when expanded, acute, 1 to $1\frac{1}{2}$ line long, 1-nerved; keel scaberulous; *upper* ovate, acuminate, $1\frac{1}{4}$ to 2 lines long, 3-nerved, side-nerves usually very short. Valves oblong, subacute to acute, lower 2 lines long, glabrous or minutely pubescent below, along the keel and the outer nerves, not connected by wool; tips hyaline; nerves prominent. Pales $1\frac{3}{4}$ line long, keels scabrid. Anthers 1 to $1\frac{1}{4}$ line long.

Habitat: NATAL. On mountains about 100 miles inland, 4000 to 6000 feet alt., *Sutherland*; Riet Vlei, 4000 to 5000 feet alt., *Buchanan* 284; near the Mooi River, 3000-4000 feet alt., *Wood* 7326 (*Mason* 68); and without precise locality, *Buchanan* 285.

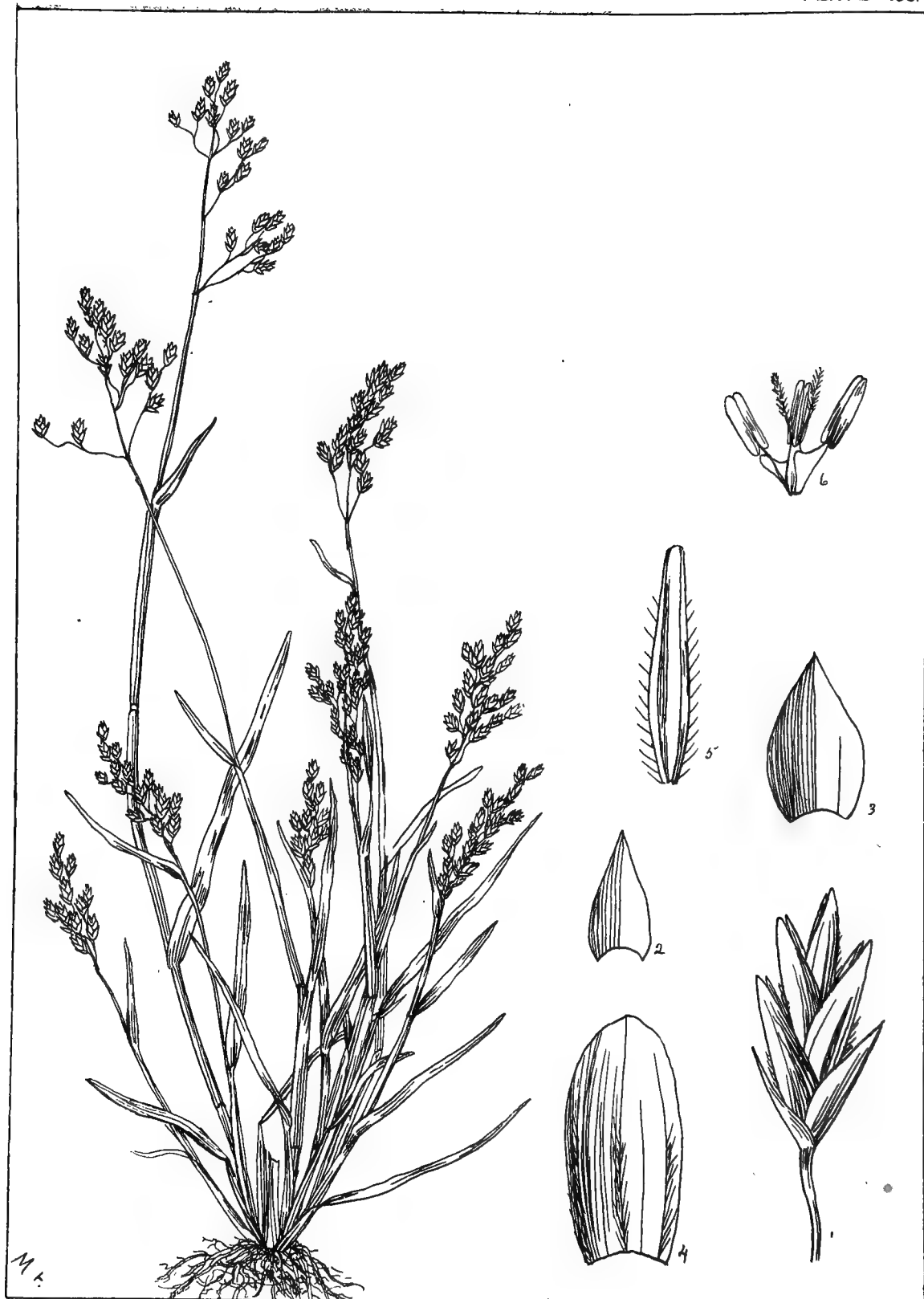
Very closely allied to the Abyssinian *P. sinensis*, Hochst, ex A. Rich, which differs mainly in having narrower, more acute, valves, and longer ligules. Both species belong to the group of *P. polycolea*, Stapf.

Drawn from *Wood's* 7326, which was collected near Mooi River by H. Mason.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, stamens, pistil, and lodicules, *All enlarged*.



POA BINATA. NEES.



M. F.

POA ANNUA. LINN

PLATE 455.

POA ANNUA, Linn. (Fl. Cap., Vol. VII., p. 715).

Nat. Order Gramineæ.

ANNUAL OR SUBPERENNIAL, tufted, glabrous.—CULMS erect from a geniculate and often rooting base, from a few inches to 1 foot long, slightly compressed below, smooth; internodes exerted or enclosed; sheaths rather loose, slightly compressed, smooth; ligules oblong to ovate, up to $1\frac{1}{2}$ line broad; blades linear, acute, $\frac{4}{5}$ to $1\frac{1}{2}$ inch (rarely longer), by 1 to $1\frac{1}{2}$ line, flat, flaccid; margins scaberulous.

PANICLE rather stiff, ovate, lax, up to $3\frac{1}{2}$ inches long, often subsecund; the lower branches 2- (rarely 3 to 5) nate or solitary, spreading, ultimately often deflexed, up to $1\frac{2}{3}$ inch long, branched from the middle, smooth.

SPIKELETS more or less crowded, oblong-ovate or ovate, green or sometimes purplish, 2 to $2\frac{1}{2}$ lines long, 3 to 7-flowered, *lower* glume lanceolate, acute, 1 to $1\frac{1}{4}$ line long, 1-nerved to sub-3-nerved, *upper* slightly longer, ovate when expanded, 3-nerved. Valves oblong, obtuse or subacute, $1\frac{1}{2}$ line long; margins and tips broadly hyaline; nerves slightly prominent, silkily ciliate below, along the keel and the outer side-nerves, rarely glabrescent, without connecting wool (in the type); pales slightly shorter than the valves, keels ciliate; anthers $\frac{3}{8}$ line long; grain oblong, $\frac{1}{2}$ -1 line long.

Habitat: NATAL. *Cooper* 3362.

Throughout Europe and temperate Asia, introduced into most other temperate regions, rare in the tropics.

Drawn from a specimen in the Government Herbarium, No. 10,133, which was sent to us without locality, and identified by Miss Franks.

This grass is common in England, but is not considered to be of much, if any, agricultural value.

Fig 1, A spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil, stamens, and lodicules. *All enlarged.*

FESTUCA, Linn.

SPIKELETS laterally compressed (at least after flowering) paniced, rhachilla disarticulating above the glumes and between the valves. Florets 2 to many, perfect (the uppermost usually reduced), distinctly exserted from the glumes. Glumes subequal, rarely conspicuously unequal, subherbaceous or subscarious, more or less keeled, 1-3- (rarely the upper 5) nerved. Valves lanceolate, mucous, mucronate or awned, herbaceous, rounded on the back or keeled towards the tip, 5-7-nerved; mucro or awn from the tip or very close to it, straight; callus small, glabrous or almost so. Pales 2-keeled, more or less 2-toothed. Lodicules 2, unequally 2-lobed or entire, hyaline. Stamens 3. Ovary glabrous or the top minutely hairy; styles distinct, very short, terminal or subterminal; stigmas plumose, laterally exserted. Grain tightly enclosed by the slightly hardened valve and pale, free or more or less adhering to the pale or to both, oblong, dorsally convex, grooved or concave in front; hilum linear, long; embryo small. Perennial, tufted; sheaths open or more or less closed; ligules scarious; blades flat, folded or convolute, often setaceous. Panicles more or less compound, contracted or open, sometimes effuse.

Numerous species, often very difficult to discriminate, in the temperate regions, particularly of the northern hemisphere, and a few in the high mountains of the tropics.

PLATE 456.

FESTUCA COSTATA, Nees. (Fl. Cap., Vol. VII., p. 721).

Nat. Order Gramineae.

PERENNIAL, densely tufted; innovation shoots intravaginal.

CULMS erect, robust, up to 3 feet long, smooth, about 2-noded, internodes exserted.

LEAVES glabrous; basal sheaths crowded, the outer coriaceous, brown, at length breaking up into fibres, persistent, *upper* somewhat lax, striate to sulcate, green, smooth, uppermost more than $\frac{1}{2}$ foot long, ligules ovate, obtuse, $1\frac{1}{2}$ to 2 lines long; blades convolute in bud, then flat, or involute when dry, much narrower than the sheath, linear, tapering to a very acute point, *lower* up to more than 1 foot by $1\frac{1}{2}$ to 3 lines, firm, smooth on both sides or scabrid above and along the margins, prominently ribbed on the upper side, with a continuous sclerenchymatous layer on the back.

PANICLE contracted or open, lax, angular, or ancipitous above; branches 2 or 3-nate, *lower* very remote, filiform, flexuous, erect or spreading, angular, or ancipitous, smooth or scabrid, lowest 4 to 6 inches long, usually undivided to the middle or beyond, then loosely divided; branchlets contracted, fine; pedicels very unequal, 1 to 6 lines long, often very flexuous.

SPIKELETS erect or nodding, elliptic, 6 to 8 lines long, green, tinged with purple or violet, very loosely 3 to 7-flowered; rhachilla very slender, joints up to 1 line long.

GLUMES subequal or *lower* distinctly shorter, $2\frac{1}{2}$ to 3 lines long, *upper* 3 to 4 lines long, both lanceolate, acute, 3-nerved, smooth. Valves lanceolate in profile, acute or minutely mucronate, 4 to $5\frac{1}{2}$ lines long, rather firm, scaberulous, distinctly 5-nerved; keels of pale scaberulous; lodicules lanceolate, over $\frac{3}{4}$ line long. Anthers 2 to 3 lines long; top of ovary pubescent.

Habitat: NATAL. Riet Vlei, 4000 to 5000 feet alt., *Buchanan* 234; Benvie, Karkloof, 3000-4000 feet alt., *Wood* 6005; and without precise locality, *Buchanan* 53.

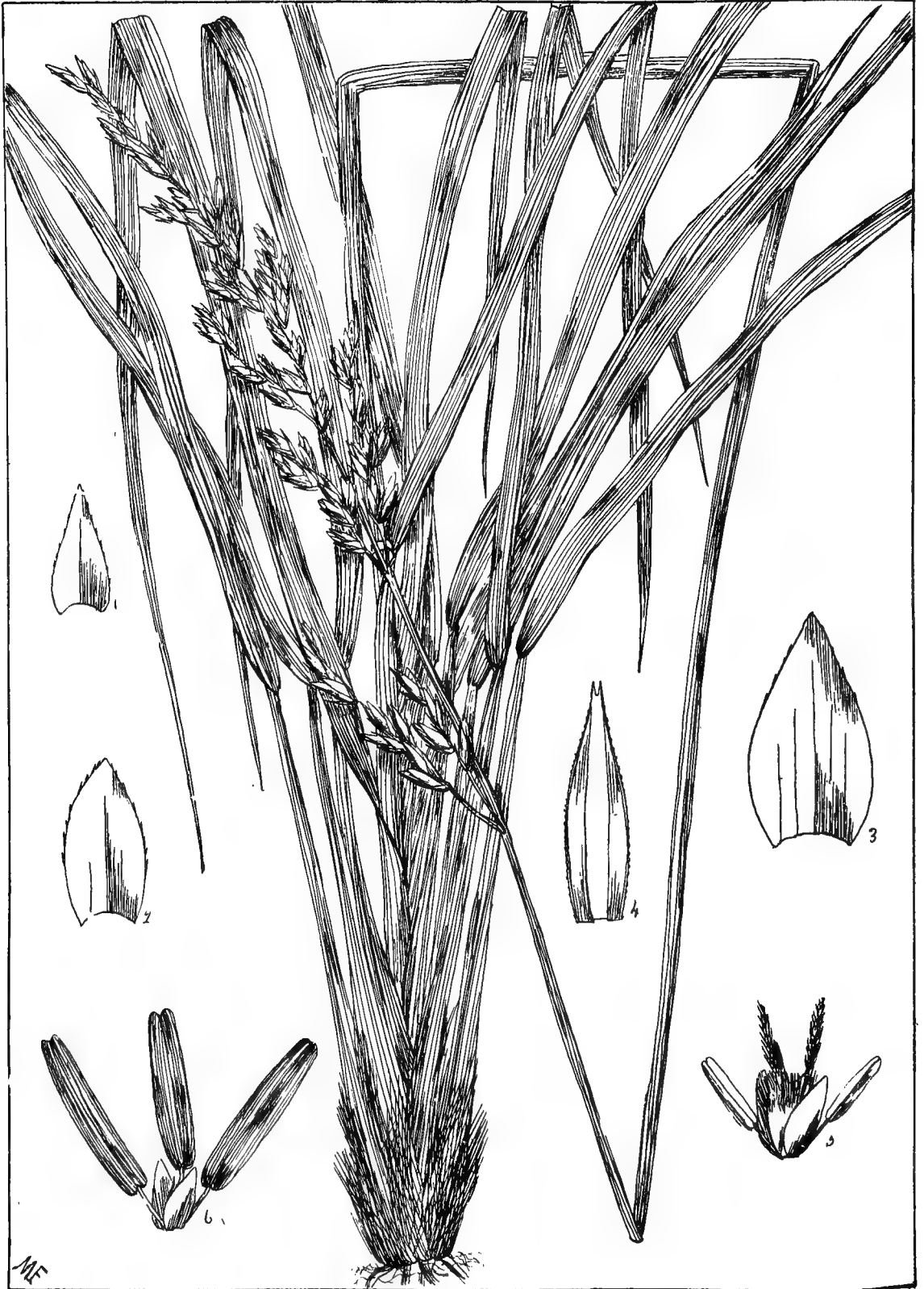
Also in Nyassaland.

Drawn from *Buchanan's* 234.

Fig 1, A spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil and lodicules; 7, grain, front view; 8, same, back view. *All enlarged.*



FESTUCA COSTATA, NEES.



ME

FESTUCA SCABRA, VAHL.

PLATE 457.

FESTUCA SCABRA, Vahl. (Fl. Cap., Vol. VII., p. 722).

Nat. Order Gramineæ.

DIOECIOUS, compactly caespitose; innovation shoots intravaginal.—CULMS erect, $\frac{1}{2}$ to 3 feet long, rather robust, smooth, very rarely scaberulous, 1-2-noded, uppermost internode long exerted.

LEAVES crowded at the base; basal sheaths broad, firm, open to the base, breaking up at length and forming dense tight coats of fibres, smooth; upper sheaths rather tight, gradually longer, striate, smooth, rarely scabrid to very scabrid; ligules ovate, obtuse, up to $1\frac{1}{2}$ line long; blades convolute in bud, then open or involute when dry, linear, acute, 3 to 8 inches by $1\frac{1}{2}$ to 3 lines, firm, usually rather rigid, 9 to 13-nerved, smooth below, scabrid above or rarely very scabrid all over, nerves prominent on the upper side.

PANICLE very narrow, dense, often spike-like, sometimes interrupted, straight or slightly nodding, 3 to 8 inches long; rachis terete, striate and smooth below, angular and scabrid to hispidulous above; branches 2-nate or solitary, sparingly to abundantly and very closely divided from the base or rarely undivided for a few lines; branchlets and pedicels very short, scabrid.

SPIKELETS densely crowded, oblong, 4-5 lines long, green, often tinged with purple, or glaucescent, closely 4 to 6-flowered; florets unisexual with the rudiments of the other sex.

GLUMES unequal to subequal, linear-lanceolate in profile, acute to subobtuse, firmly herbaceous except at the hyaline margins, smooth or scaberulous, *lower* usually shorter, $1\frac{1}{4}$ to $2\frac{1}{2}$ lines long, 1-nerved, *upper* $1\frac{3}{4}$ to 3 lines long, 3-nerved. Valves oblong, acute or subacute, sometimes mucronulate, $2\frac{3}{4}$ to $3\frac{1}{2}$ lines long, scaberulous at least in the upper part, distinctly 5-nerved. Pales minutely 2-toothed or entire, keels stout, scabrid; lodicules ovate, acute. Anthers $1\frac{1}{2}$ line long, on fine long filaments in the male, very minute and empty and on very short delicate filaments in the female. Ovary obovoid, very densely villous from the middle upwards, with rather short loosely plumose stigmas in the female, quite rudimentary in the male; grain oblong, dorsally compressed, subconcave in front, $2\frac{1}{2}$ lines long; embryo short; hilum filiform, $\frac{3}{4}$ to $\frac{4}{5}$ the length of the grain.

Habitat: NATAL. Near Newcastle, 4000 feet alt., *Buchanan* 185.

As no specimen of this grass was in our collection, the Director of Kew Gardens and Herbarium very kindly lent us two specimens, one being from Natal, the other a Cape specimen; as the Natal specimen was male only, from these two conjointly the drawing and dissections were made.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules from female plant; 6, same, from male plant. *All enlarged.*

BROMUS, Linn.

SPIKELETS laterally compressed, at least after flowering, variously paniced; rachilla disarticulating above the glumes and between the valves. Florets usually numerous, perfect, the uppermost reduced. Glumes more or less unequal, acute to acuminate, persistent, *lower* 1 to 7, *upper* 3 to 9-nerved, and sometimes mucronate or aristulate. Valves lanceolate or broadly oblong, rounded on the back or keeled, 5 to 13-nerved, usually awned, awn terminal (rarely 3 or 0) or somewhat distant from the often 2-toothed tip, straight or recurved and then often loosely twisted below, not kneed. Pales entire or bifid, keels usually rigidly ciliate or ciliolate. Lodicules 2, oblong or lanceolate, entire or lobed. Stamens 3, rarely 2. Ovary obovoid with an often large, villous, 3 or 2-lobed terminal appendage; styles short, lateral on the appendage; stigmas plumose, laterally exerted, or in the cleistogamous species permanently enclosed. Grain linear to linear-oblong, convexo-concave, and usually adherent to the valve and pale, or at least to the latter; hilum filiform, long; embryo small. ANNUAL OR PERENNIAL of very varying habit; blades linear, flat, often flaccid; ligules membranous, hyaline. Panicle contracted, often very dense, or open and even effuse, or reduced to a raceme. Spikelets rather large, erect or pendulous, from ovoid to linear-oblong or linear-cuneate; awns very long or short, sometimes reduced to a mucro, or 0.

Species rather numerous, mostly in the temperate regions of the northern hemisphere and of South America, several in the high mountains of the tropics.

PLATE 458.

BROMUS MAXIMUS, Desf. (Fl. Cap., Vol. VII., p. 731).

Nat. Order Gramineæ.

ANNUAL.—CULMS erect or subascending, geniculate, 1 to 2 feet high, glabrous or pubescent to finely villous in the upper part, 5 to 7-noded, leafy all along, upper internodes usually exerted.

LEAVES scantily to densely hairy all over or almost glabrous; sheaths tight, thin, strongly striate; ligules hyaline, delicate, 2 to $2\frac{1}{2}$ lines long, fimbriate-toothed. Blades linear, tapering to an acute point, 4 to 12 inches by 2 to 4 lines, flat, subflaccid, dark green, margins scaberulous.

PANICLES erect or slightly nodding, more or less contracted, 4 to 9 inches long (inclusive of the awns), axis terete, striate, scaberulous to hispidulous; branches 3 to 6-nate, unequal, 2-1- (rarely 3) spiculate, longest 2 to 3 inches long, filiform, flexuous, scabrid to minutely hispid or villous; lateral pedicels short, rather stout.

SPIKELETS cuneate (when open), $1\frac{1}{4}$ to $1\frac{3}{4}$ inch long, green, 5 to 7-flowered; rachilla slender, scabrid, joints 2 to 3 lines long.

GLUMES subulate to lanceolate-subulate in profile, finely acuminate, green along the nerves, otherwise scarius, *lower* 1 to sub-3-nerved, 7 to 10 lines long, *upper* broader, 3-nerved, 11 to 14 lines long, keels scabrid. Valves linear-lanceolate, acuminate, about 1 inch long, 7-nerved, scabrid, upper margins and the finely bifid tips hyaline, white; awn permanently straight, scabrid, 2 to $2\frac{1}{2}$ inches long, callus $\frac{1}{2}$ line long. Pales narrow, about 7 lines long, keels remotely rigidly ciliolate. Stamens 3 (in the South African specimens); or 2; anthers $\frac{3}{4}$ to $1\frac{1}{2}$ line long. Ovary pubescent just below the appendage. Grain linear, about 7 lines long, strongly convexo-concave.

A native of the Mediterranean countries and Western Europe.

Habitat: NATAL. *J. Schofield* (Government Herbarium 8937).

Drawn from the specimen sent by Mr. Schofield, the only one in the Herbarium, only 2 stamens were found; probably introduced.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules; 6, grain. *All enlarged.*



BROMUS MAXIMUS, DESF.



BROMUS LEPTOCLADOS, NEES.

PLATE 459.

BROMUS LEPTOCLADUS, Nees. (Fl. Cap. Vol. VII., p. 731).

Nat. Order Gramineae.

PERENNIAL.—CULMS erect or suberect from a short oblique rhizome, rather stout, to more than 2 feet high, glabrous or pubescent, particularly close to the nodes, about 4-noded, uppermost internode to more than 1 foot long, exserted.

LEAVES usually scantily and spreadingly hairy or almost glabrous; sheaths tight, striate or sulcate, lowest thin, subpersistent, not breaking up into fibres; ligules hyaline, 1 to 2 lines long. Blades linear, tapering to an acute point, 6 to 10 inches by 2 to 5 lines, flat, subflaccid, dull or sometimes subglaucous, strongly striate, scaberulous to scabrid or almost smooth below, margins scabrid, midrib prominent below, whitish.

PANICLE 6 to 9 inches long, erect, very lax; axis slender, striate; branches 3 to 2-nate, filiform, scabrid, very flexuous, up to 5 inches long, undivided to about the middle, then very scantily divided, branchlets 3 to 1-spiculate; pedicels very unequal, lateral often much shorter than the spikelets.

SPIKELETS linear-oblong, 8 to 15 lines long, light green, more or less erect, very loosely 5 to 10-flowered; rhachilla very slender, joints scabrid, up to $1\frac{3}{4}$ line long.

GLUMES unequal, lanceolate to oblong-lanceolate in profile, acute to subacute, subscarios, lower $2\frac{1}{2}$ to 4 lines long, 1-nerved, upper broader, $3\frac{1}{2}$ to $4\frac{1}{2}$ lines long, 3-nerved, nerves strong and scabrid. Valves oblong-linear in profile, $4\frac{1}{2}$ to 6 lines long, scaberulous or scabrid on the nerves, prominently 7-nerved, margins almost straight to or beyond the middle, then very gradually curved towards the short very minutely 2-fid tip, very narrow; awn very close to the tip, fine, straight, scaberulous, 2 to 3 lines long. Pales 4 to 5 lines long, keels rigidly ciliolate. Stamens 3; anthers about 1 to $1\frac{1}{2}$ line long. Ovary pubescent close below the appendage; grain when immature linear, strongly convexo-concave.

Habitat: NATAL. Riet Vlei, 5000 feet alt., *Buchanan* 236.

Closely allied to the European *B. asper*, *Murr.* and *B. scabridus*, *Hook*, from Cameroon Peak, and particularly to *B. cognatus*, *Steud*, from Abyssinia.

Drawn from *Buchanan's* specimen, which was without leaves, and no stamens or lodicules were to be found.

Fig 1, Lower glume; 2, upper glume; 3, valve; 4, pale; 5, grain. *All enlarged*,

PLATE 460.

BROMUS NATALENSIS, Stapf. (Fl. Cap., Vol. VII., p. 732).

Nat. Order Gramineæ.

PERENNIAL.—CULMS erect, slender above, 1 to 3 feet long, glabrous, smooth, about 4-noded, upper internodes very long, exserted; sheaths tight, glabrous or nearly so, striate; ligules hyaline, $\frac{1}{2}$ to $\frac{3}{4}$ line long; blades linear, over 4 inches, by $1\frac{1}{2}$ line, flat, firm, strongly striate, very scantily hairy or glabrous.

PANICLE erect, up to 7 inches long, sometimes very scanty; axis terete, smooth; branches 2 to 6-nate, filiform, 1-spiculate, purplish, smooth, or almost so, flexuous, longest up to 3 inches long.

SPIKELETS lanceolate-oblong, broad when quite open, glabrous, purplish, $1\frac{1}{4}$ to $1\frac{1}{2}$ inch long; rather loosely 7 to 9-flowered; rhachilla joints scabrid, $1\frac{1}{2}$ line long.

GLUMES slightly unequal, lanceolate in profile, long-acuminate, glabrous, lower 5 to $6\frac{1}{2}$ lines long, strongly 3-nerved, upper $6\frac{1}{2}$ to $7\frac{1}{2}$ lines long, strongly 5-nerved. Valves lanceolate-linear, acuminate, $7\frac{1}{2}$ to 9 lines long, firm, glabrous, smooth or very sparingly scabrid on the nerves, purplish, 7 to 9-nerved, outer side-nerves stout, margins gradually curved above, almost straight towards the base, narrow and membranous towards the slender tips; awn strictly terminal, 4 to 5 lines long, straight, scabrid; callus short, obtuse; pales 6 to 7 lines long, keels loosely and rigidly ciliolate. Anthers 3 lines long.

Var. lasiophilus, Stapf.—Culms slender, scarcely $1\frac{1}{2}$ foot high. Leaves shortly hairy all over; blades up to 3 inches, by 1 line. Panicle very scanty, about 6-spiculate, secund, axis and branchlets scabrid to hispidulous. Spikelets light green or tinged with purple; nerves of glumes and valves less prominent than in the type.

Habitat: NATAL. Without precise locality, *Buchanan* 58; *var. lasiophilus*; Weenen County, South Downs, 4000 feet alt., *Wood* 4406.

The plate was made from a drawing by Miss M. Smith, under the supervision of Dr. Stapf, and by the kind permission of the Director of Kew Gardens and Herbarium.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, valve and pale; 6, pale; 7, pistil, stamens and lodicules; 8, ovary; 9, upper portion of ovary; 10, lodicule; 11, pistil, stamens, and lodicules; 12, pistil and lodicules; 13, pistil; 14, lodicule. *All enlarged.*

Figs 1 to 10, from *Wood's* 4406; *var. lasiophilus*; figs 11 to 14, from *Buchanan's* 58 type. •



BROMUS NATALENSIS, STAPF.



BROMUS UNIOLOIDES, H.B.K.

PLATE 461.

BROMUS UNIOLOIDES, H.B.K. (Fl. Cap., Vol. VII., p. 734).

Nat. Order Gramineæ.

ANNUAL.—CULMS fasciated, erect or suberect, slender to stout, 1 to 2 feet long, glabrous, smooth, 2-3-noded, uppermost internodes long exerted; *lower* sheaths thin, pallid, finely tomentose to spreadingly villous, *upper* green, prominently striate, glabrescent or glabrous and smooth; ligules ovate, obtuse, 1 to 2 lines long. Blades linear, tapering to an acute point, 3 to 8 inches by 1 to 4 lines, flat, more or less flaccid, scaberulous or scabrid on both sides and along the margins, glabrous or softly hairy to villous.

PANICLE narrow, usually nodding, scantily divided or reduced to a raceme, from a few inches to almost 1 foot long; axis terete, striate, smooth below, angular and scaberulous above; lower branches remote, 2-3-nate, 2 to 4- (rarely 5) spiculate, or all 1-spiculate, filiform, angular, scabrid, longest 2 to 3 inches long; pedicels very unequal, lateral usually extremely short.

SPIKELETS erect or suberect, 8 to 15 lines long, lanceolate-oblong to oblong, strongly compressed, light green to glaucous, 4 to 10-flowered; rhachilla very fragile; joints stout, up to $1\frac{1}{4}$ line long, scaberulous on the outer side. Florets permanently closed, cleistogamous.

GLUMES lanceolate, acute or acuminate, firm except at the narrow white hyaline margins, glabrous, smooth except on the scaberulous keels, *lower* $4\frac{1}{2}$ to $3\frac{1}{2}$ lines long, 5 to 7-nerved, *upper* $5\frac{1}{2}$ -8 lines long, 7-9-nerved, nerves prominent. Valves lanceolate in profile, usually very minutely 2-toothed, mucronate or shortly awned, 6 to 8 lines long, acutely keeled, herbaceous-chartaceous, green, whitish below, scabrid, about 13-nerved, margins straight to about $\frac{1}{3}$ their length from the base, then hyaline, white, nerves prominent. Pales 3 to $5\frac{1}{2}$ lines long, folded between the crested rigidly ciliolate keels; filaments short, extremely delicate, clavate-tipped; anthers ellipsoid, usually about $\frac{1}{4}$ line long, permanently enclosed in the floret; ovary top with a large 3-lobed villous appendage; stigmas short, sessile, slender, loosely plumose; grain strongly compressed, linear-oblong, deeply grooved in front, tightly adhering to the valve and pale.

Habitat: NATAL. Hermansberg Station, 3000 feet alt., *Buchanan* 235.

Probably a native of South America, often grown for fodder.

Fig 1, Lower glume; 2, upper glume; 3, valve in profile; 4, pale; 5, 1 stil, stamens and lodicules; 6, grain. *All enlarged.*

BRACHYPODIUM, Beauv. (in part).

SPIKELETS at first cylindric, then laterally compressed, in a simple raceme or false spike with very short pedicels, with the flattened side to the axis; rhachilla glabrous, disarticulating above the glumes and between the valves. Florets 5 to many, perfect, the uppermost more or less reduced.

GLUMES more or less unequal, firm, strongly 3 to 7-nerved, lower often slightly asymmetric. Valves oblong to oblong-lanceolate, usually narrowed into a straight awn, or mucronate, rounded on the back, closely imbricate at first, then more or less diverging and rolling inwards, 7-nerved, nerves prominent in the upper part, faint below; callus very short, obtuse. Pales oblong, rather broad, very obtuse or truncate, slightly shorter than the valve, 2-keeled, keels rigidly ciliate. Lodicules 2, lanceolate, usually ciliolate. Stamens 3, rarely 2. Ovary with a villous appendage at the top; styles laterally inserted on the appendage, very short; stigmas plumose, laterally exerted. Grain linear or linear-oblong, convexo-concave, adhering more or less to the pale; embryo small; hilum filiform, long.

PERENNIAL OR ANNUAL; blades flat or setaceously involute; racemes terminal; joints of axis more or less hollowed out (at least the lower) on the side facing the spikelets; spikelets usually few (sometimes 1), erect or spreading, rather large.

Species about 15, often very difficult to discriminate, mainly in the temperate regions of the northern hemisphere.



BRACHYPODIUM FLEXUM, NEES
VAR. SIMPLEX, STAFF.

PLATE 462.

BRACHYPODIUM FLEXUM, Nees. (Fl. Cap., Vol. VII., p. 736).

Nat. Order Gramineæ.

PERENNIAL.—CULMS often abundantly branched below, ascending from a geniculate (often decumbent and rooting) base, very slender, $1\frac{1}{2}$ to more than 2 feet long, glabrous or scantily hairy just below the nodes, smooth, 5 to 7-noded, intermediate and upper internodes exerted, uppermost the longest; sheaths tight, striate, spreadingly hairy along the margins; otherwise very sparingly hairy or glabrous, excepting a finely tomentose line at the junction with the blade and the densely tomentose or villous (rarely finely pubescent) nodes, lowest sheaths finally thrown aside; ligules extremely short, up to $\frac{1}{2}$ line long, truncate, brownish. Blades linear, long tapering to a very fine point, 2 to 5 inches, by $1\frac{1}{2}$ to 3 lines, flat, glaucous, subrigid to almost flaccid, spreadingly hairy on the upper side, less so or glabrous and scabrid or scaberulous on the lower side; false spike erect or nodding, usually flexuous, 2-ranked, 9 to 1-spiculate, up to 4 inches long; rachis very slender, strongly compressed, striate, slightly rough or smooth except along the scabrid margins; pedicels very short, up to $\frac{3}{4}$ line long, finely puberulous to almost glabrous.

SPIKELETS usually more or less spreading, $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, glabrous, very rarely sparingly pubescent, 7 to 16-flowered.

GLUMES acute to acuminate, lower subulate to subulate-lanceolate, $1\frac{1}{2}$ to almost 3 lines long, 4-5- (rarely 3) nerved, upper lanceolate to oblong, $2\frac{1}{2}$ to more than $3\frac{1}{2}$ lines long, 7-nerved, nerves very prominent. Valves lanceolate, acuminate, gradually narrowed into the awn, 3 to 4 lines long, rather firm, finely scaberulous, rarely subpubescent above, 7-nerved; awn up to $3\frac{1}{2}$ lines long, shorter in the lower florets. Pales $3\frac{1}{2}$ to almost 4 lines long, rigidly ciliate in the upper part; anthers over $1\frac{1}{2}$ line long, linear.

Var. simplex (Stapf).—Culms simple, up to more than 2 feet high, erect, rough from minute reversed hairs to reversedly hirsute, rarely smooth towards the panicle. Panicle up to $\frac{1}{2}$ foot long, flexuous. Spikelets erect or spreading, up to $1\frac{3}{4}$ inch long, and to 18-flowered, glabrous, scaberulous. Glumes and valves by about $\frac{1}{4}$ to $\frac{1}{3}$ longer than in the type.

Habitat: NATAL. *Var. simplex*, Umsinga and base of Biggarsberg, *Buchanan* 104; on the Drakensberg, near Newcastle, *Buchanan* 198; without precise locality, *Buchanan* 60, 61; Van Reenen, 5500 feet alt., *Wood* 8885; Zululand, *Swanfield*. *Var. tenue*, Umpumulo, 2400 feet alt., *Buchanan* 233; without precise locality, *Buchanan* 79.

Drawn from *Wood's* 8885.

Fig 1, Lower glume upper; 2, glume; 3, valve and callus; 4, valve opened; 5, pale; 6, pistil, stamens and lodicules. *All enlarged.*

LOLIUM, Linn.

SPIKELETS usually more or less compressed, 2-ranked, alternate, sessile in the hollows of the rhachis of a simple spike; rhachilla glabrous, disarticulating above the glumes and between the valves. Florets 3 to 11, or sometimes more, perfect or the uppermost reduced.

GLUMES of terminal spikelets equal and similar, *lower* suppressed in the lateral spikelets, *upper* linear to oblong obtuse to acute, flat or slightly rounded, coriaceous prominently 7 to 9-nerved. Valves oblong, rounded on the back, subobtuse, minutely 2-toothed (or acute in profile), more or less chartaceous except at the short hyaline tips, glabrous, 5-nerved, muticous or awned; awn a straight bristle from close to the tip. Pales equalling the valves or nearly so, 2-keeled, keels more or less crested. Stamens 3. Lodicules 2, lanceolate with a lateral tooth. Ovary glabrous, truncate; styles distinct, very short; stigmas laterally exerted, plumose. Grain elliptic-oblong to linear-oblong, tightly enclosed by the valve and pale, adhering to both; embryo short; hilum linear almost as long as the grain.

ANNUAL OR PERENNIAL —Blades linear, flat; ligules hyaline; spikes terminal; spikelets more or less erect, 2-ranked, with the (upper) glume opposite the hollow of the rhachis.

Species 6-8 in the temperate regions of Europe, Asia, and North Africa; elsewhere introduced.

PLATE 463.

LOLIUM TEMULENTUM, Linn. (Fl. Cap., Vol. VII., p. 738).

Nat. Order Gramineæ.

ANNUAL.—CULMS fasciated or solitary, erect, rather stout, straight, 1 to 1½ foot long, glabrous, rough, at least in the upper part, 2 to 4-noded, uppermost internode usually long exerted.

LEAVES glabrous; sheaths rather tight, strongly striate; ligules very short, truncate; blades linear, acute, ½ to 1 foot by 2 to 3 lines, flat, rough all over or only on the upper side and along the margins. Spikes erect, ¼ to 1 foot long, of rather numerous (10 to 20) spikelets; axis rather stout, slightly rough or smooth on the back.

SPIKELETS about the length of the internodes, or the *lower* shorter and more distant, the *upper* more approximate, laterally compressed, 5 to 9 lines long, 5 to 9-flowered. Florets turgid.

GLUMES, *upper* oblong, equalling or somewhat exceeding the uppermost floret, subobtuse to acute, very rigid, flat, glabrous, smooth, 7 to 9-nerved. Valves elliptic-oblong, obtuse or subobtuse, muticous or usually awned, 3 to 3½ lines long, rounded on the back, herbaceous-chartaceous, smooth, 5-nerved, tips rather broad, hyaline, obscurely 2-toothed; awn subterminal, straight, rather stout at the base, scaberulous, up to 8 lines long. Pales broad, keels green, stout. Anthers over 1 line long. Grain elliptic-oblong, semiterete, grooved in front, slightly shorter than the pale.

Habitat: NATAL. *Buchanan* 50.

An imported noxious weed, commonly known as "Darnel." The fodder is useless, and the seeds are undoubtedly poisonous to cattle, and also to human beings; they are said to be more poisonous in wet than in dry seasons.

Fig 1, Glume; 2, valve; 3, pale; 4, pistil, stamens, and lodicules. *All enlarged.*



M.F.

LOLIUM TEMULENTUM, *Mill.*

OLYRA, Linn.

SPIKELETS unisequal, heteromorphous, both sexes in the same panicle or sometimes in different panicles of the same or very rarely of different individuals ; rhachilla disarticulating below the valve. Male spikelets smaller than the female, in mixed panicles below them and much more numerous, 1-flowered.

GLUMES suppressed, indicated by a minute, sometimes obscurely 2-lobed, rim just below the articulation of the rhachilla. Valve lanceolate to almost subulate in profile, acuminate or caudate-awned, membranous, 3-nerved. Pale shorter than the valve, 2-nerved. Lodicules 3 or 0 (?) Stamens 3. Ovary 0. Female spikelets terminal, or terminal and lateral on the branches or branchlets of the panicle, above the male, 1-flowered. Glumes subequal and similar, ovate to lanceolate, acuminate or caudate-awned (particularly the lower), papery or membranous, 3 to 9-nerved, transversely veined, persistent. Valve elliptic to lanceolate, awnless, subcoriaceous to hard, cartilaginous, 5-nerved (or apparently nerveless). Pale similar to the valve in shape and substance, 2-nerved. Lodicules 3, truncate-cuneate. Stamens 0. Ovary glabrous, acuminate ; style simple below or beyond the middle ; stigmas plumose, terminally exerted. Grain tightly enclosed by the hardened valve and pale, biconvex ; embryo short ; hilum linear, almost as long as the grain.

Branched, tall or dwarf perennials ; blades convolute in bud, then flat, often broad and asymmetric, shortly petioled, transversely veined ; ligules papery, very short ; panicles terminal, sometimes with 1 or few axillary additional ones, rarely all axillary, often decompound.

Species about 20, in tropical America, one of them extending to tropical Africa, the Mascarene Islands and Zululand.

PLATE 464.

OLYRA LATIFOLIA, Linn. (Fl. Cap., Vol. VII., p. 746).

Nat. Order Gramineæ.

PERENNIAL.—CULMS erect, branched, 3 to 8 feet high, glabrous, very smooth, rarely more or less hairy near the nodes, many-noded, sheathed all along or the upper internodes shortly exerted; sheaths tight, firm, striate, keeled in the upper part, glabrous except at the ciliate upper margins, or hairy; ligules very short, truncate, broader than the short hairy petioles. Blades lanceolate-oblong or ovate-oblong, asymmetric, particularly at the rounded base, conspicuously acuminate, 4 to 7 inches, by 1 to $2\frac{3}{4}$ inches, flat, glaucous, glabrous except quite at the base, rarely sparingly hairy, slightly rough with about 11 to 19 primary nerves and a prominent whitish midrib.

PANICLE erect, terminal, or with a lateral one from the uppermost leaf axil, 3 to 6 inches long, rather contracted or subpyramidal; axis slender, angular, pubescent; branches solitary or sometimes fascicled, subflexuous or straight, angular, pubescent; pedicels adpressed, of the male spikelets filiform, of the female clavate.

Male spikelets lateral, linear-lanceolate, acuminate, awned from the valve, glabrous.

GLUMES quite rudimentary, forming an inconspicuous slightly 2-lobed puberulous rim at the tip of the pedicels. Valve herbaceous-membranous, gradually passing into an awn of about equal length, $1\frac{3}{4}$ to 2 lines long, 3-nerved; lodicules 3, cuneate, thin. Anthers over 1 line long.

Female spikelets solitary and terminal on the tips of the branches, or 2-3, rarely more, below the terminal spikelet, oblong-ovoid, turgid, awned from the lower glume.

GLUMES ovate, elliptic, membranous, strongly nerved and veined, *upper* acuminate or shortly caudate-acuminate, about 4 lines long, 5 to 7-nerved, *lower* produced into a flexuous scabrid awn of equal or greater length, 7 to 9-nerved. Valve ovate-elliptic, obtuse, 2 to 3 lines long, white or greyish, cartilaginous, very hard, shining; styles connate beyond the middle; grain oblong.

Habitat: NATAL. Ungoya Forest, Wood 3856; same locality, Gerrard and McKen 2014.

Fig 1, Portion of panicle, showing male and female spikelets; *Female Spikelet*—2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil and lodicules; *Male Spikelet*—7, valve; 8, pale; 9, stamens and lodicules; 10, portion of sheath, showing ligule and petiole. *All enlarged.*



OLYRA LATIFOLIA, LINN



ANDROPOGON DISTACHYUS, LINN.

PLATE 465.

ANDROPOGON DISTACHYUS, Linn. (Fl. Cap., Vol. VII., p. 343).

Nat. Order Gramineae.

PERENNIAL, tufted.—CULMS erect, slender, 1 to $2\frac{1}{2}$ feet long, glabrous, terete about 3-noded, simple or branched below ; sheaths terete, tight, glabrous or particularly the lower, hairy, lowest reduced to villous scales ; ligules membranous, about $\frac{1}{2}$ to $\frac{3}{4}$ line long, ciliolate, blades linear, tapering to a long and sometimes very fine point, 2 to 8 inches by $\frac{3}{4}$ to $1\frac{1}{2}$ line, flat, subrigid to flaccid, more or less hairy to villous or subglabrous, margins rough. Racemes 2-nate, very rarely 3 to 5-nate, distant from the uppermost sheath, 2 to 4 inches long, rather stout, strict or curved ; joints cuneate, 2 to $2\frac{1}{2}$ lines long, stout, translucent along the middle, finely pubescent on the back, ciliate along the outer margin, tips denticulate, pedicels similar, slightly longer, firmer and less translucent, tips produced into a denticulate lobe facing the upper glume.

Sessile spikelets 5 to $5\frac{1}{2}$ lines long, pale green, tips often purplish, callus short, obtuse, bearded.

GLUMES, *lower* subherbaceous, broadly lanceolate, dorsally flattened, glabrous or puberulous, rarely villous. Keels broadly winged above, wings membranous, whitish or purplish, intracarinal nerves about 7 to 11, partly evanescent below ; upper glume distinctly shorter than the lower, rigidly membranous, boat-shaped, 3-nerved, softly ciliate, tips minutely 2-toothed with an interposed bristle, about as long as the glume. Valves equal, 3 lines long ; *lower* 2-nerved, ciliate ; *upper* oblong, 2-fid to $\frac{2}{3}$, firmer below, 3-nerved, lobes lanceolate, glabrous, awn slender, about 1 inch long, kneed much below the middle, scaberulous below the knee ; pale minute or obsolete. Anthers $1\frac{1}{2}$ line long. Grain oblong, 1 line long.

Pedicelled spikelets male, similar to the sessile, about 4 lines long, but narrower.

GLUMES, *lower* less acuminate and less distinctly winged, with a short terminal bristle ; *upper* thinly membranous. Valves delicately hyaline, *upper* shortly bifid, muticous.

Habitat: NATAL. Newcastle, *Buchanan* 179 ; and without precise locality, *Buchanan* 15.

“Common in the Mediterranean countries, also in Abyssinia and on Cameroon Peak.”

Drawn from *Buchanan's* 179, which was kindly lent for the purpose by the Director of the Royal Gardens and Herbarium at Kew.

Fig 1, Spikelets. *Sessile spikelet*—Fig 2, lower glume ; 3, upper glume ; 4, lower valve ; 5, upper valve ; 6, pistil, stamens and lodicules. *Pedicelled spikelet*—7, lower glume ; 8, upper glume ; 9, lower valve ; 10, upper valve ; 11, floret. All enlarged.

PLATE 466.

ANDROPOGON PERTUSUS, Willd. (Fl. Cap., Vol. VII., p. 345).

Nat. Order Gramineæ.

PERENNIAL.—CULMS erect or ascending from the branched often prostrate base, simple above, 1 to $2\frac{1}{2}$ feet long, glabrous, 5-6-noded; sheaths rather terete, except the compressed lower ones, usually bearded at the nodes; ligules truncate, up to $\frac{1}{2}$ line long, often with hairs from behind. Blades linear, tapering to a fine point, 2 to 6 inches by 1 to 2 lines, flat, glabrous or more or less hairy, scabrid. Racemes digitate, rarely more distant on a common rhachis not longer than the lowest raceme, about 2 inches long; peduncles usually glabrous except their bearded axils, short, joints and pedicels equalling half the spikelet or slightly longer, ciliate, upper cilia as long as the joint.

Sessile spikelets about 2 lines long, lanceolate-oblong, pale, callus bearded.

GLUMES, *lower* subchartaceous, minutely truncate, villous near the base, faintly 5 to 9-nerved, pitted on the back, keels spinulously ciliate above; *upper* acute, sparsely ciliate or glabrous, 3-nerved. Valves, *lower* oblong, obtuse; *upper* almost reduced to a kneed awn, 6 to 10 lines long.

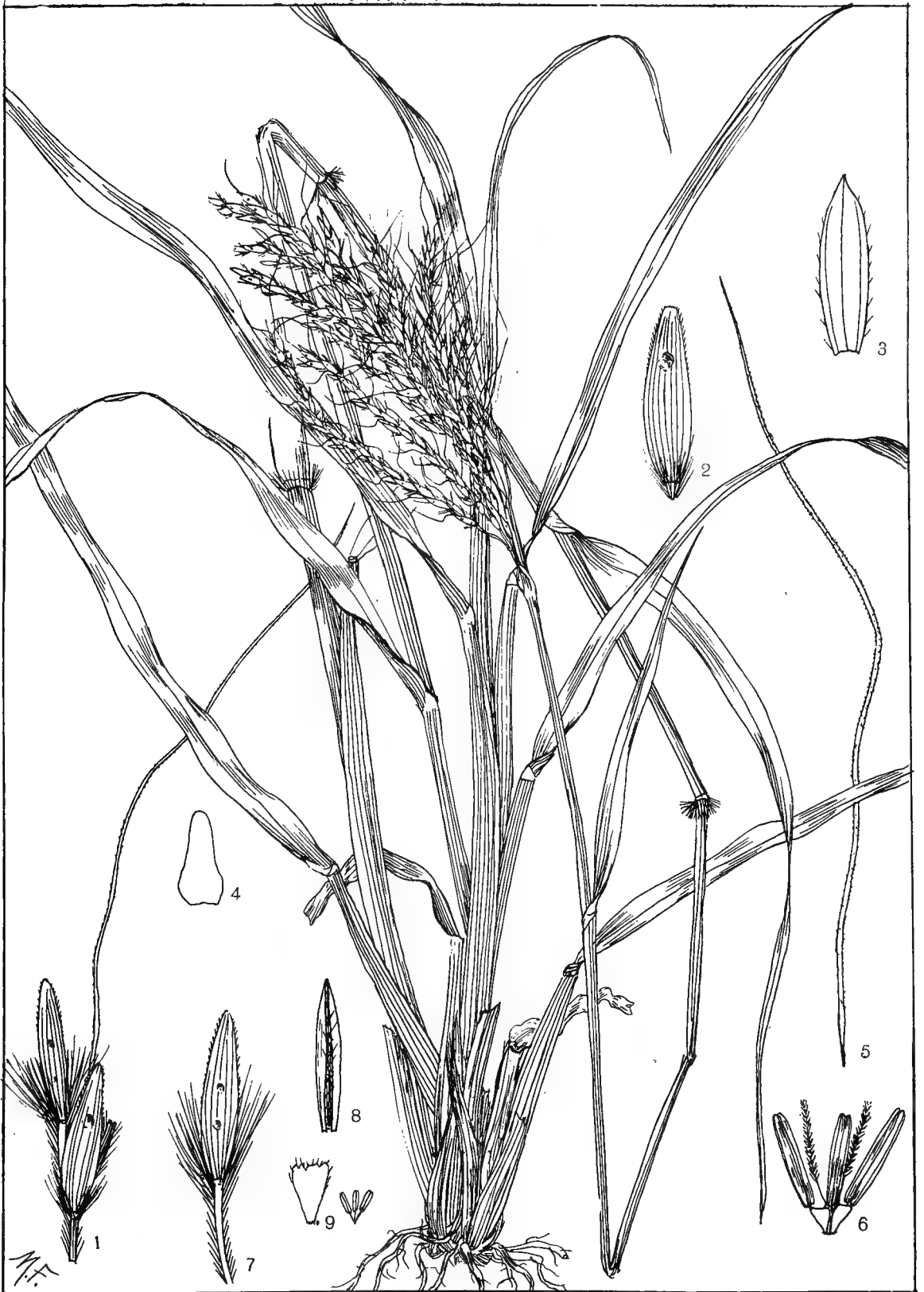
Pedicelled spikelets usually male, not or shallowly pitted, purplish.

Var. capensis, Hack.—CULMS up to 4 feet long; blades 4 to 12 inches, by 2 to $3\frac{1}{2}$ lines; racemes few to 20; lower glume of sessile spikelets rather firm, glabrous or very scantily hairy, pale, shining, 2 to $2\frac{1}{4}$ lines long; pedicelled spikelets usually 2-3-pitted.

Habitat: NATAL. Without precise locality, *Gerrard* 692; *var. capensis*, foot of Table Mountain, near Maritzburg, *Krauss* 29; Umpumulo, *Buchanan* 190, 295, partly; without precise locality, *Buchanan* 201; near Maritzburg, *T. J. St. George* 6 (*Wood* 7246).

Drawn from the specimen collected by St. George.

Fig 1, Portion of raceme, showing sessile and pedicelled spikelets. *Sessile spikelet*—Fig 2, lower glume; 3, upper glume; 4, lower valve; 5, upper valve; 6, pistil, stamens and lodicules. *Pedicelled spikelet*—7, lower glume; 8, upper glume; 9, valve and stamens. *All enlarged.*



ANDROPOGON PERTUSUS, WILLD.
VAR. CAPENSIS, HACK



ANDROPOGON SCHIMPERI, HOCHST.

PLATE 467.

ANDROPOGON SCHIMPERI, Hochst. (Fl. Cap., Vol. VII., p. 357).

Nat. Order Gramineae.

PERENNIAL (always ?)—CULMS erect, sometimes geniculate, stout, up to 5 feet long, glabrous, up to 7-noded; sheaths quite glabrous or the uppermost more or less hairy, those of the innovation shoots compressed, the others terete or slightly keeled in the upper part, the lowest whitish, almost scarious; ligules obtuse, scarious, up to 2 lines long; blades linear, tapering to a long fine point, $\frac{1}{2}$ to $1\frac{1}{2}$ foot by 3 to 7 lines, subrigid to almost flaccid, flat, glabrous, rarely scantily hirsute near the base, scabrid, at least upwards, margins scabrid to subspinulous.

PANICLE large, oblong to ovate, lax, decompound up to $1\frac{1}{2}$ foot long. Spathes lanceolate, acuminate, narrow or broad, 1 to $1\frac{1}{2}$ inch long, scarious, reddish; common peduncles filiform, glabrous except the curved tips, which are beset with long, yellowish tubercle-based hairs and enclosed in the spathe or shortly and usually laterally exerted. Racemes $\frac{1}{2}$ to 1 inch long, dense, scarcely spreading, very shortly and unequally peduncled; joints 5 to many, filiform, obliquely truncate, up to 1 line long, shortly whitish ciliate, pedicels very similar; spikelets of the lost pair of the sessile raceme alike, male, the sessile of all the other pairs perfect, the pedicelled male.

Perfect spikelets linear-oblong, 2 to $2\frac{1}{2}$ lines long; pale.

GLUMES, *lower* subchartaceous to almost membranous, minutely truncate, dorsally flattened, glabrous or more or less villous, intracarpinal nerves 5, some at least evanescent below, keels spinulose ciliate above, callous bearded; *upper* membranous, obtuse, 3-nerved, nerves scabrid near the tip. Valves, *lower* oblong, obtuse, faintly 2-3-nerved, ciliate, *upper* shortly 2-fid, 1-nerved, lobes oblong, obtuse, subglabrous, awn about 10 to 15 lines (rarely 2 to $2\frac{1}{2}$ inches) long, pubescent and kneed below the middle; pale 0. Anthers 1 line long.

Pedicelled spikelets lanceolate, usually pale, $2\frac{1}{2}$ to 4 lines long, glabrous or hairy.

GLUMES, *lower* subherbaceous, acutely acuminate, 9 to 11-nerved, often with a terminal bristle (up to $2\frac{1}{2}$ lines long), keels spinulose ciliate; *upper* cuspidate, 3-nerved, ciliate. Valves, *lower* linear-oblong, obtuse, equalling the glumes, 1-3-nerved; *upper* narrow, linear-cuneate, 1 to 3 lines long, 1-nerved. Anthers $1\frac{1}{2}$ to 2 lines long.

Habitat: NATAL. Without precise locality, *Gerrard* 691.

“A rather variable plant, extending throughout East Africa to Abyssinia. *Gerrard*'s specimen represents a robust state, with hairy spikelets, like those of *Schimper*'s No. 897 (coll. 1853) and 1052 (coll. 1863-8), and with long-aristulate male spikelets, as in *Schimper*'s No. 1052 (coll. 1838).”

Drawn from *Gerrard*'s specimen, which was kindly loaned for the purpose by the Director of Kew Gardens and Royal Herbarium.

Sessile spikelet—Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, upper valve; 5, pistil, stamens and lodicules. *Pedicelled spikelet*, Fig 6, lower glume; 7, upper glume; 8, lower valve; 9, upper valve. *All enlarged.*

PLATE 468.

ANDROPOGON BUCHANANI, Stapf. (Fl. Cap., Vol. VII., p. 362).

Nat. Order Gramineæ.

PERENNIAL?—CULMS erect, slender, over 2 feet long, glabrous, sheaths (of the upper leaves, which alone are known) terete, strongly striate, glabrous; ligules membranous, up to $1\frac{1}{2}$ line long, glabrous; blades linear, acute, up to 8 inches by 1 line, flat, rather rigid, glabrous or hairy at the very base, smooth or scaberulous. Flowering branches remote, up to 1 foot long, erect, strict, scantily branched from the axils of perfect leaves; spathes very narrow, linear-lanceolate, acuminate, 2 to $2\frac{1}{2}$ inches long, glabrous or very scantily hairy; common peduncles filiform, quite enclosed in the spathe, strict, finely puberulous, 4 to 5 lines long. Racemes contiguous, slender, 6 to 12 lines long, peduncled; peduncles connate below whence one raceme subsessile, glabrous, up to 2 lines long; joints 4 to 6, filiform, *lower* short, glabrous or subglabrous, obliquely truncate, the *upper* like the pedicels, much finer and densely whitish ciliate; lowest 2 sessile spikelets (or lowest one in the subsessile raceme) male, similar to the barren pedicelled spikelets, all the other sessile spikelets perfect.

Perfect spikelets, oblong-linear, 2 to $2\frac{1}{2}$ lines long, callus acute, $\frac{1}{2}$ to $\frac{3}{4}$ line long, beard dense, white.

GLUMES *lower* subchartaceous, truncate, densely hairy, particularly in the upper part, hairs rigid, reddish, up to 1 line long, intracarinial nerves about 5-7, evanescent below; *upper* membranous, truncate, 3-nerved, reversely ciliate. Valves, *lower* linear-oblong, $1\frac{1}{2}$ to $1\frac{3}{4}$ line long, ciliate, faintly 2-nerved, *upper* linear, shortly bifid, awn about $1\frac{1}{2}$ inch long, bent above the middle, rufous-hairy below the bend, scabrid above; pale 0; anthers 1 line long.

Male sessile spikelets, linear-lanceolate, subacute, 3 lines long, rufous-hairy.

GLUMES, *lower* subherbaceous, intracarinial nerves about 5, percurrent, keels spinulose ciliate above; *upper* acute, 3-nerved, reversely ciliate. Valves, *lower* oblong, obtuse, $2\frac{1}{2}$ lines long, faintly 3-nerved, reversedly ciliate; *upper* ovate-oblong, about $1\frac{1}{2}$ line long, 1-nerved, ciliate; anthers 1 line long or smaller and barren; *barren pedicelled spikelets* similar to the male, but narrower and smaller; upper valve minute or 0; anthers 0 or rudimentary.

Habitat: NATAL. Umpumulo, 2000 to 2500 feet alt., *Buchanan*.

Drawn from a specimen kindly sent from Kew. Sutton's collector, 7.

Sessile spikelet—Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, upper valve; 5, pistil, stamens and lodicules. *Pedicelled spikelet*—6, Lower glume; 7, upper glume; 8, lower valve; 9, upper valve; 10, stamens. *All enlarged.*



ANDROPOGON BUCHANANI, STAPP.



DIGITARIA DEBILIS, WILLD.

PLATE 469.

DIGITARIA DEBILIS, Willd. (Fl. Cap., Vol. VII., p. 377).

Nat. Order Gramineæ.

ANNUAL.—CULMS ascending from a geniculate base, scantily branched below, 1 to 2 feet long, glabrous, 5 or more noded, upper node by far the longest.

LEAVES glabrous or hairy ; sheaths rather thin, striate ; ligules rounded, $1\frac{1}{2}$ to 2 lines long ; blades linear from a subcordate base, tapering to a fine point, 3 to 5 inches by $1\frac{1}{2}$ to $2\frac{1}{2}$ lines, flat, flaccid, margins scabrid. Racemes 3 to 10, subdigitate or on a scabrid angular common axis (1 to 2 inches long), singly or the lower subverticillate, erect or spreading, very slender, strict, 4 to 8 inches long ; rhachis filiform, angular, very scabrid, internodes up to 2 lines long ; pedicels 2-nate, one very short, the other up to 1 line long, fine, angular scabrid.

SPIKELETS lanceolate, about $1\frac{1}{2}$ line long.

GLUMES, *lower* very minute, rounded, hyaline, *upper* linear-lanceolate, long acuminate, exceeding the lower valve by $\frac{1}{3}$, strongly 7-nerved, finely and adpressedly silky between the outer nerves and along the margins. Valves, *lower* oblong, shortly acuminate, rather over 1 line long, strongly 7-nerved, finely and adpressedly silky between the outer nerves and along the margins ; *upper* subchartaceous, slightly shorter than the lower, pale. Anthers $\frac{3}{8}$ line long ; grain $\frac{1}{2}$ line long.

Habitat: NATAL. Umpumulo, *Buchanan* 202 ; and without precise locality, *Gerrard* 693.

Also in tropical Africa, Madagascar, and the Mediterranean countries, from Algeria and South Italy to Portugal.

Drawn from *Gerrard's* 693, kindly lent for the purpose by the Director of the Royal Gardens and Herbarium at Kew.

Fig 1, Upper glume ; 2, lower valve ; 3, upper valve ; 4, pale ; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 470.

DIGITARIA FLACCIDA, Stapf. (Fl. Cap., Vol. VII. p. 382).

Nat. Order Gramineæ.

CULMS very slender, over 1 foot long ; uppermost sheath long, narrow, with a rudimentary blade, glabrous. Racemes simple or compound below, silky villous, 3 to 7 lines long, on the slender branches of a narrow, flaccid, scantily branched panicle, 2 to 3 inches long ; rhachis finely filiform, triquetrous, smooth, internodes $\frac{3}{4}$ to $1\frac{1}{2}$ line long.

SPIKELETS 2-nate or the lowest on 3-4 spiculate short branchlets, oblong, subacute, 2 to $1\frac{1}{2}$ line long, unequally pedicelled, pedicels finely filiform, smooth and glabrous or with very few rigid hairs near the discoid tips.

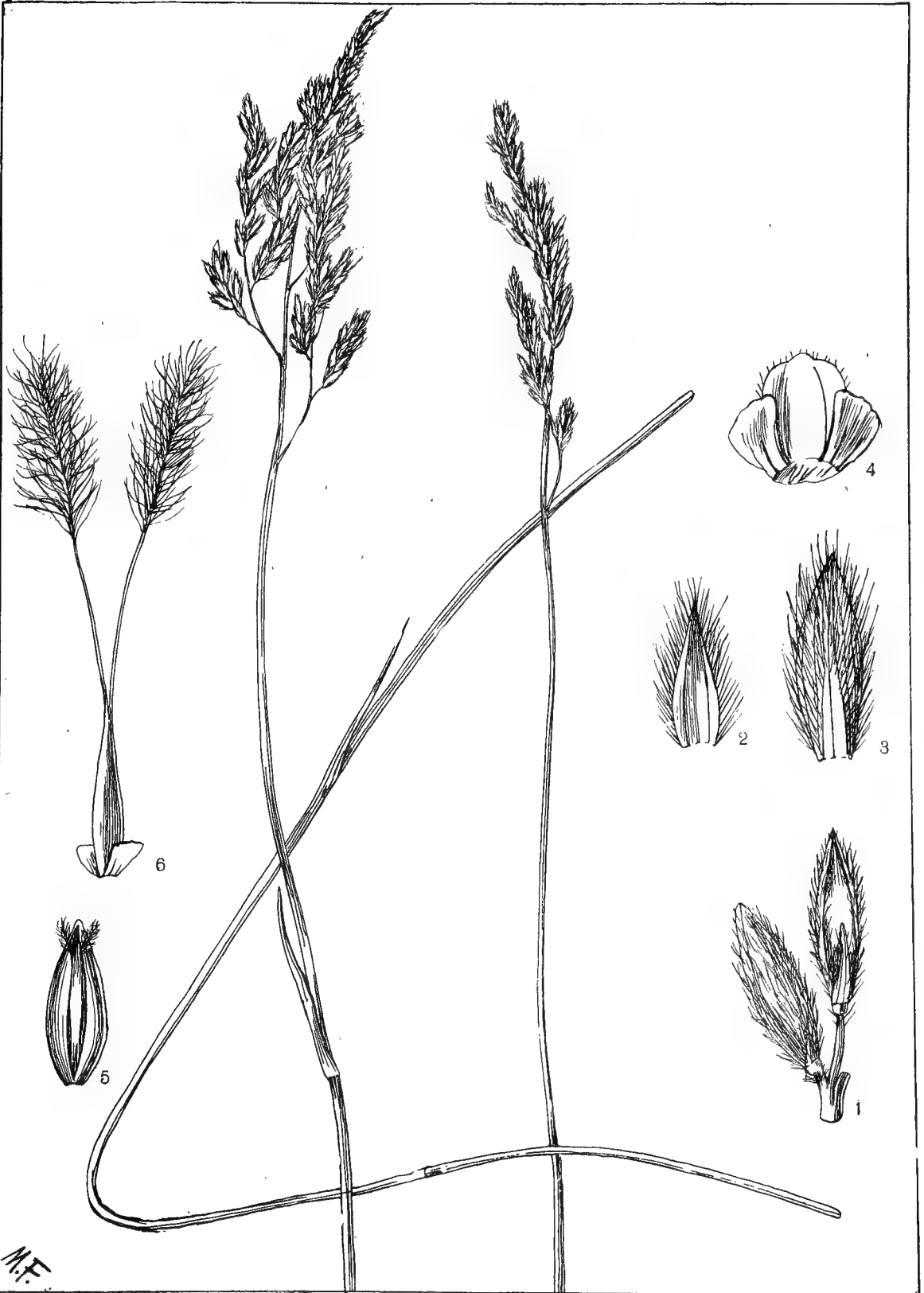
GLUMES, *lower* delicately hyaline, ovate, obtuse, up to $\frac{1}{4}$ line long, nerveless, glabrous or scantily hairy ; *upper* lanceolate-oblong, subacute, 1 line long, 3-nerved, densely and long villous, margins delicately hyaline, rather broad. Valves, *lower* oblong, subacute, $1\frac{1}{2}$ to almost 2 lines long, 7-nerved, glabrous along the middle nerve, densely villous on the sides, particularly along the upper edge of the inflexed margins, hairs acute, somewhat rigid, often purplish, exceeding the valve ; *upper* subchartaceous, oblong, acuminate, up to $1\frac{1}{2}$ line long.

Habitat : NATAL. Umsinga and base of Biggarsberg, *Buchanan* 88.

This species is remarkable for having two short, nerved, cuneate lodicules in the lower floret, although the pale itself is extremely reduced and scarcely exceeds them. I do not know any other similar case in the genus.—(Note by Dr. Stapf).

No specimen of this grass was in our Herbarium, but the Director of the Royal Gardens at Kew kindly allowed a drawing of it to be made by Miss Smith, which our artist, Miss Franks, has copied.

Fig 1, Rhachis and spikelets ; 2, upper glume ; 3, lower valve ; 4, pale and lodicules ; 5, upper glume and pale ; 6, pistil and lodicules, *All enlarged.*



DIGITARIA FLACCIDA, STAPP



PANICUM ARRECTUM, HACK.

PLATE 471.

PANICUM ARRECTUM, Hack. (Fl. Cap., Vol. VII., p. 393).

Nat. Order Gramineæ.

PERENNIAL, quite glabrous.—CULMS ascending from a prostrate rooting base, $1\frac{1}{2}$ to 2 feet long, compressed below, terete in the upper part, glabrous, many-noded, scantily branched; sheaths somewhat loose, striate, smooth, the lower withering; ligule a dense fringe of hairs; blades linear, acute, $2\frac{1}{2}$ to 4 inches, $1\frac{1}{2}$ to 2 lines, usually more or less convolute, rigid, green, smooth except the scabrid margins. False spikes 2 to 4, distant on a triquetrous smooth axis up to 3 inches long, secund, 2-ranked, 1 to $1\frac{1}{2}$ inch long; rhachis linear, $\frac{1}{3}$ to $\frac{1}{2}$ line broad, flat on the back, with a very prominent wavy midrib in front, smooth; pedicels solitary, very short, stout, tips subdiscoid, with 1-2 spreading hairs.

SPIKELETS contiguous, oblong, subacute, $1\frac{1}{2}$ to $1\frac{3}{4}$ line long, green or tipped with purple.

GLUMES, *lower* facing the rhachis, thinly membranous, elliptic to rotundate-ovate, obtuse, $\frac{1}{2}$ to $\frac{3}{4}$ line long, sub-7-nerved; *upper* membranous, oblong, conspicuously 7 to 9-nerved, nerves green, lower floret male; valve like the upper glume, but narrower, 7-nerved; pale equal, obtuse, anthers over 1 line long. Perfect floret broadly elliptic, obtuse, $1\frac{1}{4}$ to $1\frac{1}{2}$ line long; valve 7-nerved, transversely wrinkled.

Habitat: NATAL. Without precise locality, *Gerrard* 686.

The plate copied from a drawing made by Miss Smith at Kew, by kind permission of the Director.

Fig 1, Part of rhachis and two spikelets; 2, lower glume; 3, upper glume; 4, lower valve; 5, pale; 6, upper valve; 7, pale; 8, pistil and lodicules. *All enlarged*,

PLATE 472.

PANICUM PYRAMIDALE, Lam. (Fl. Cap., Vol. VII., p. 395).

Nat. Order Gramineæ.

PERENNIAL.—CULMS erect from a geniculate or prostrate base, or floating, terete, up to 15 feet high, in tall specimens very robust, as thick below as the middle finger or thicker, often with whorls of long roots from the submerged nodes, sheathed all along or some of the internodes at length exerted, many-noded; sheaths striate, smooth, glabrous, rarely hispid, terete; ligule a fringe of hairs. Blades linear from a rather broad and rounded, or from a slightly attenuate and decurrent base, long tapering to a fine point, 1 to 2 feet by 3 to 12 lines, flat, firm, glabrous, often more or less glaucous, smooth above, scabrid below in the upper part, margins cartilaginous, spinulose or scabrid or smooth below, midrib usually broad, whitish.

PANICLE erect, rarely nodding, usually linear-oblong, dense, $\frac{1}{2}$ to 1 foot long, facing all sides or sometimes subsecund; axis stout, 3 to 4 angular, sulcate, hispidulous or glabrous and smooth except the scabrid angles, usually with a fringe of hairs at the nodes; branches very many, some solitary, others 2-nate or fascicled, the lowest distant, the others rather close, suberect, strict or flexuous, rarely nodding, 1 to 3 inches long, forming moderately dense simple or subsimple spikes; rhachis slender, triquetrous, hispidulous or glabrous; pedicels fascicled, very short, tips discoid.

SPIKELETS ovoid, cuspidate, $1\frac{1}{2}$ to 2 lines long, greenish or variegated with purple.

GLUMES herbaceous-membranous; *lower* broadly ovate, clasping at the base, acute, about half the length of the spikelet, 5-nerved, margins scabrid or ciliate; *upper* glume ovate to ovate-oblong, shortly acuminate, very concave, scarcely shorter than the spikelet, 5 to 7-nerved, minutely and rigidly pubescent or subglabrous between the scabrid or spinulose nerves. Florets, *lower* male, valve similar to the upper glume, flat on the back, pale oblong, subacuminate, keels scabrid. Anthers $\frac{1}{2}$ to 1 line long. Perfect floret usually elliptic, rarely oblong, cuspidate, $1\frac{1}{2}$ to 2 lines long, straw-coloured, smooth, valve coriaceous, 5-nerved.

The typical form is common throughout tropical Africa, sometimes covering large areas in and near stagnant water.

Habitat: NATAL. Valley of the Umgeni River, *Drège* 4242; near Verulam, 200-300 feet alt., *Wood* 8877.

Drawn from Wood's specimen.

Fig 1, Rhachis and spikelets; 2, lower glume; 3, upper glume; 4, lower valve; 5, pale; 6, stamens and lodicules; 7, upper glume; 8, pale; 9, pistil, stamens, and lodicules. *All enlarged.*



PANICUM PYRAMIDALE, LAM.



PANICUM CRUS-GALLI, LINN.

PLATE 473.

PANICUM CRUS-GALLI, Linn. (Fl. Cap., Vol. VII., p. 397).

Nat. Order Gramineæ.

ANNUAL.—CULMS geniculate ascending, compressed below, 1 to 3 feet high, glabrous, smooth, 3 to 5-noded, sheathed all along or the internodes at length more or less exerted, often branched below; sheaths striate, smooth, the lower often strongly compressed, whitish, glabrous except the lowest, which are pubescent at the very base; ligules 0, junction of blade and sheath glabrous inside. Blades linear from a scarcely narrowed base, tapering to an acute point, 3 to 8 inches by 3 to 6 lines, flat, subflaccid, glabrous, more or less glaucous, smooth above, scaberulous below, particularly towards the tip, margins finely cartilaginous, scabrid to almost smooth, midrib narrow.

PANICLE erect, strict, or flexuous, 3 to 8 inches long; axis triquetrous, 3 to 5-angled, scabrid; branches few to about 15, solitary or 2-nate, suberect or spreading, distant except the uppermost, the lower 1 to $2\frac{1}{2}$ inches long, forming rather stout, dense, simple or subsimple, subsecund, sessile false spikes; rhachis triquetrous, scabrid, coarsely bristly, particularly near the nodes. Pedicels fascicled or 2-nate, very short, up to $\frac{1}{2}$ line long, scabrid, bristly at the base, tips obscurely discoid.

SPIKELETS crowded, ovoid-ellipsoid, cuspidate, $1\frac{1}{4}$ to $1\frac{1}{2}$ line long, greenish or tinged with purple.

GLUMES, *lower* membranous, very broadly ovate, clasping at the base, obtuse to subcuspidate, $\frac{1}{2}$ line long, 5-nerved, scaberulous; *upper* herbaceous-membranous, very broadly ovate-oblong, concave, acute or cuspidate, $1\frac{1}{2}$ line long, 5- (or near the tips) 7-nerved, rigidly pubescent between the scabrid and spinulous nerves. Florets, *lower* barren; valve similar to the upper glume, but flat or depressed on the back; cuspidate or produced into a scabrid, often long awn, 7-nerved throughout or only towards the tips; pale elliptic, shorter by $\frac{1}{4}$ than the valve, keels scaberulous above; perfect floret elliptic-ovate, cuspidate, over 1 line long, whitish or yellowish, smooth; valve subcoriaceous, 5-nerved. Anthers oblong, scarcely $\frac{3}{8}$ line long; grain broadly elliptic, $\frac{3}{4}$ line long.

Habitat: NATAL. Near Durban, *Williamson*; *Buchanan* 3; Berea, *Wood* 8883.

Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, pale; 5, upper valve and pale; 6, pale; 7, pistil, stamens and lodicules. *All enlarged.*

PLATE 474.

PANICUM MILIARE, Lam. (Fl. Cap., Vol. VII., p. 408).

Nat. Order Gramineæ.

ANNUAL.—CULMS erect or geniculate, 1 to 3 feet long, glabrous, 3 to 5-noded, usually with flowering branches from some of the nodes.

LEAVES glabrous, very rarely more or less hirsute with tubercle-based hairs; sheaths loose, strongly striate, smooth, longer or shorter than the internodes; ligules very short, truncate, ciliolate; blades linear from a usually broader and rounded base, tapering to an acute point, $\frac{1}{2}$ to almost 2 feet, by 2 to 7 lines, flat, flaccid.

PANICLE erect or nodding, contracted, narrow, decomposed, lax or dense, $\frac{1}{2}$ to 1 foot long; axis slender, striate, smooth; branches alternate, 2 or 3-nate, the lower rather distant, filiform, angular, scaberulous, the longest $2\frac{1}{2}$ to more than 6 inches long, undivided for $\frac{1}{2}$ to $2\frac{1}{2}$ inches, often nodding, branchlets and pedicels contracted, the latter very unequal, very short or up to $\frac{1}{2}$ inch long, scabrid, tips slightly thickened.

SPIKELETS subturgid, ellipsoid or oblong, more or less acute, $1\frac{1}{4}$ to $1\frac{3}{4}$ line long, glabrous, green or purplish.

GLUMES, *lower* very broadly ovate, clasping, acute or subacuminate, $\frac{1}{3}$ to almost $\frac{1}{2}$ the length of the spikelet, about 3-nerved; *upper* oblong, subacuminate, very concave; $1\frac{1}{4}$ to $1\frac{3}{4}$ line long, 11 to 13-nerved. *Lower floret barren*, valve like the upper glume, but 9-nerved; pale subequal, narrow, 2-keeled. *Perfect florets* oblong, acute, 1 line long, smooth, shining, pallid or brownish; valve coriaceous, 7-nerved, anthers $\frac{1}{2}$ line long.

Habitat: NATAL. Between Umzimkulu and Umkomanzi Rivers, Drège.

Commonly cultivated all over India, and possibly originated from *P. psilopodium*, Trin., an equally common Indian grass.

Drawn from a specimen kindly lent by the Director of the Royal Gardens at Kew. The specimen was gathered in South Concan by Mr. Law.

Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, pale; 5, fertile valve; 6, pale; 7, pistil, stamens and lodicules. *All enlarged*,



PANICUM MILIARE, LAM



PANICUM CURVATUM, LINN.

PLATE 475.

PANICUM CURVATUM, Linn. (Fl. Cap., Vol. VII., p. 414).

Nat. Order Gramineæ.

PERENNIAL.—CULMS ascending from a decumbent or rambling base, very slender, many-noded, glabrous, internodes exerted; sheaths tight, striate, ciliate along the margins, otherwise glabrous or sparsely hairy; ligule a very narrow, minutely ciliolate rim; blades more or less spreading, linear to linear-lanceolate from a strongly and suddenly constricted base, tapering to an acute point, 2 to 4 inches by 2 to 3 lines, flat, thin, glabrous or sparsely hairy towards the base, smooth, margins scaberulous.

PANICLE erect, contracted and linear or open and ovate, 1 to 3 inches long; axis slender, smooth; branches spirally arranged, rather distant, not very numerous, the lower up to $1\frac{1}{2}$ inch long, loosely divided almost from the base, subcapillary, smooth; lateral pedicels very short and fine, tips discoid.

SPIKELETS curved, semi-ovate to suboblong, acute or obtuse, 1 to $1\frac{1}{4}$ line long, green, strongly nerved.

GLUMES, *lower* very minute, broadly ovate to orbicular, nerveless; *upper* equalling the spikelet, very concave, gibbous below, strongly curved, acute or obtuse, membranous, 9-ribbed. Florets, *lower* barren; valve oblong or ovate-oblong, obtuse, straight, equalling the lower glume, herbaceous on the sides and at tip, 7-nerved; perfect floret elliptic-oblong, acute, $\frac{3}{4}$ line long, strongly convex; valve chartaceous, very obscurely 5-nerved; anthers $\frac{1}{2}$ line long.

Habitat: NATAL. Between Umzimkulu River and Umkomanzi River, *Drège*, 4252; coastland, *Sutherland*; near Durban, *Williamson*, 30; and without precise locality, *Gerrard* 479.

Also in the Mascarene Islands and in South India.

Drawn from *Gerrard's* specimen, which was kindly lent for the purpose from Kew.

Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, pale; 5, upper valve; 6, pale; 7, pistil, stamens and lodicules. *All enlarged.*



PANICUM HYMENIOCHILUM, NEES.

M.F.

PLATE 476.

PANICUM HYMENIOCHILUM, Nees. (Fl. Cap., Vol. VII., p. 399).

Nat. Order Gramineæ.

CULMS decumbent, very slender and weak, 1 to $1\frac{1}{2}$ foot long, more or less finely hairy or glabrescent, many-noded, branched from some or most of the nodes, internodes exserted.

LEAVES finely hairy; sheaths thin, rather tight, at length often loose and thrown aside, strongly striate, tubercled between the nerves; ligule an obscure ciliate rim; blades lanceolate to linear-lanceolate, tapering almost from the broad clasping base to a fine point, 1 to 3 inches, by $1\frac{1}{2}$ to 3 lines, flat, flaccid, margins scabrid, sometimes callously serrulate, and often with a few bristles towards the base.

PANICLES very scanty, flaccid, 1 to $1\frac{1}{2}$ inch long, consisting of few 5-2-spiculate short branches, up to $\frac{1}{2}$ inch long; axis, branches and pedicels filiform, angular, finely hairy or glabrescent, sub-scaberulous, lateral pedicels very short.

SPIKELETS oblong, subobtuse, $1\frac{1}{4}$ line long, greenish, glabrous, finely but prominently nerved.

GLUMES, *lower* lanceolate to subulate from a broader base, 1-nerved, hyaline, equalling $\frac{1}{2}$ of the spikelet; *upper* one thinly herbaceous, oblong, subobtuse, 1 line long, 7 to 9-nerved. Florets, *lower* male; valve like the upper glume, $1\frac{1}{4}$ line long, 7 to 9-nerved; pale slightly shorter, keels scabrid above, evanescent below the hyaline tip; perfect floret oblong, subobtuse, 1 line long, smooth, whitish; valve thinly chartaceous, 5-nerved; anthers $\frac{3}{8}$ line long.

Var. glandulosum, Nees.—More robust; blades up to 3 inches by 3 lines, more densely hairy to villous; panicle oblong to ovate, up to 3 inches long, much more divided; axis, branches and branchlets with scattered gland-tipped hairs, branches suberect or spreading, up to more than 1 inch long; pedicels longer; spikelets more scattered.

Habitat: NATAL. Between the Umzinkulu River and the Umkomanzi River, *Drège* 4247; *var. glandulosum*, near the Umlazi River, below 200 feet, *Drège* 4292; on the Flats near Durban, *Drège* 4248; coastland, *Sutherland*.

Our drawing was copied from one made by Miss M. Smith at Kew, and kindly sent to us by the Director.

Fig 1, Whole plant (*Drège* 4247); 2, inflorescence (*Drège* 4292); 3, branchlets; 4, two spikelets; 5, lower glume; 6, upper glume; 7, valve of male floret; 8, pale of male floret; 9, valve of perfect floret; 10, pale; 11, pistil, stamens and lodicules. *Figs 1 and 2 natural size, remainder enlarged.*

PLATE 477.

PANICUM PERLAXUM, Stapf. (Fl. Cap, Vol. VII., p. 400).

Nat. Order Gramineæ.

PERENNIAL, rhizome slender.

CULMS suberect or ascending, very slender, 1 to 2 feet long, more or less branched, 5 to many-noded, glabrous, internodes mostly exserted.

LEAVES glabrous or hairy; sheaths thin, striate; ligule an obscure minutely ciliate rim; blades linear to linear-lanceolate from a suddenly contracted, subauriculate base, tapering to an acute point, 2 inches, by $1\frac{1}{2}$ to 3 lines, flat, thin, margins scabrid.

PANICLE very lax and often very scanty, erect, 5 to 8 inches long; axis filiform, smooth; branches 3 to 5, usually solitary, remote, at length spreading, the longer 3 to 6 inches long, simple, 4-1-spiculate, or remotely and sparingly divided, with long 2-3-spiculate branchlets, finely filiform to capillary, flexuous, smooth; lateral pedicels $\frac{1}{2}$ to 1 inch long, tips cupular.

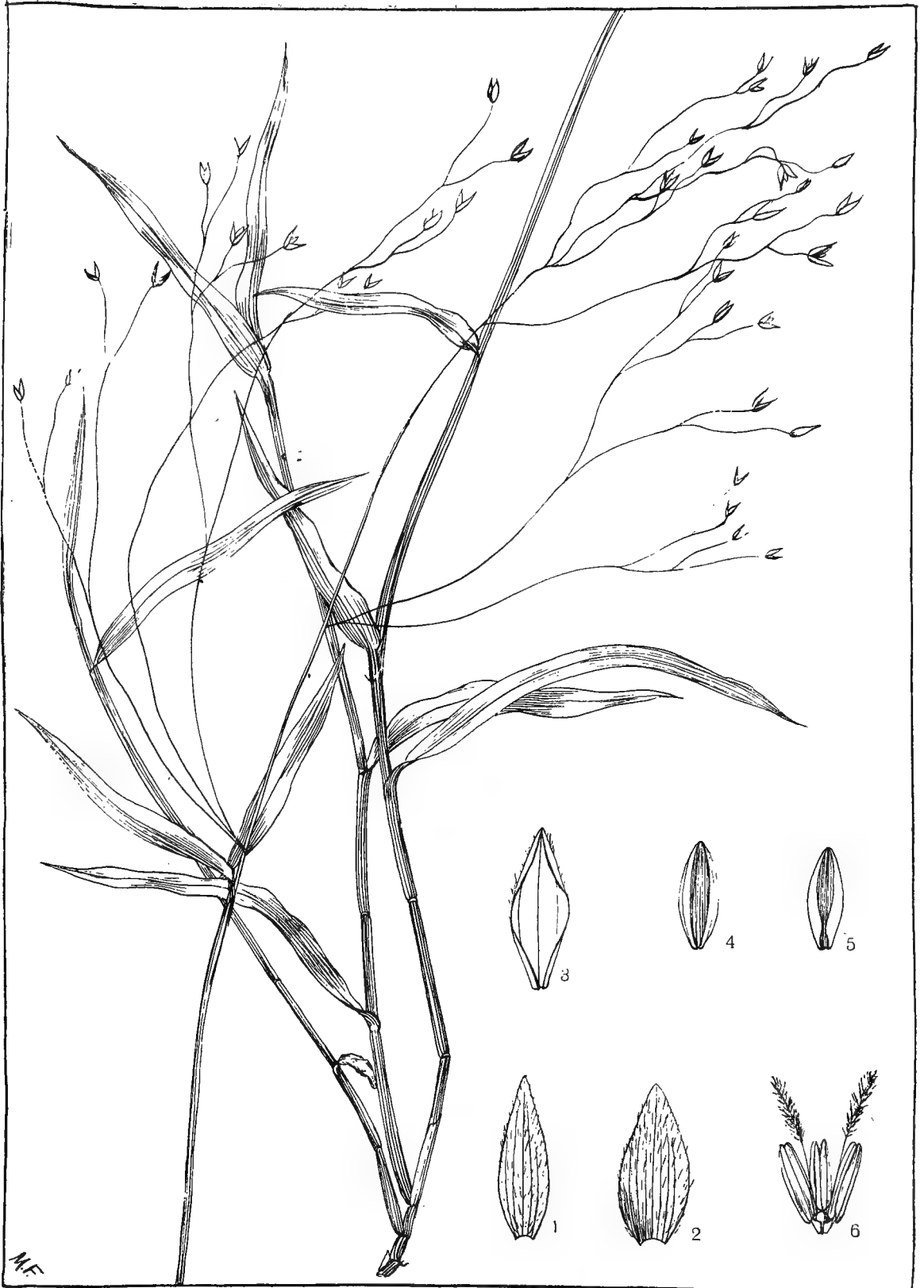
SPIKELETS oblong, acute to subacuminate, $1\frac{1}{2}$ to 2 lines long, greenish, glabrous or pubescent, prominently nerved.

GLUMES thinly herbaceous, equal, $1\frac{1}{2}$ to 2 lines long, the *lower* narrow, oblong, acute or subacute, 7 to 5-nerved; *upper* ovate-oblong, acute, very concave, 7 to sub-9-nerved. Florets *lower* barren; valve similar to the upper glume, but slightly shorter and 5-nerved or 7-nerved near the tip, subhyaline along the middle; pale $\frac{1}{2}$ the length of the valve or more; perfect floret oblong, acute or subacuminate, equalling the lower or a very little shorter, yellowish; valve coriaceous, smooth, 5-nerved; anthers $\frac{3}{4}$ line long.

Habitat: NATAL. Coastlands, *Sutherland*; apparently more plentiful in Cape Colony than in Natal.

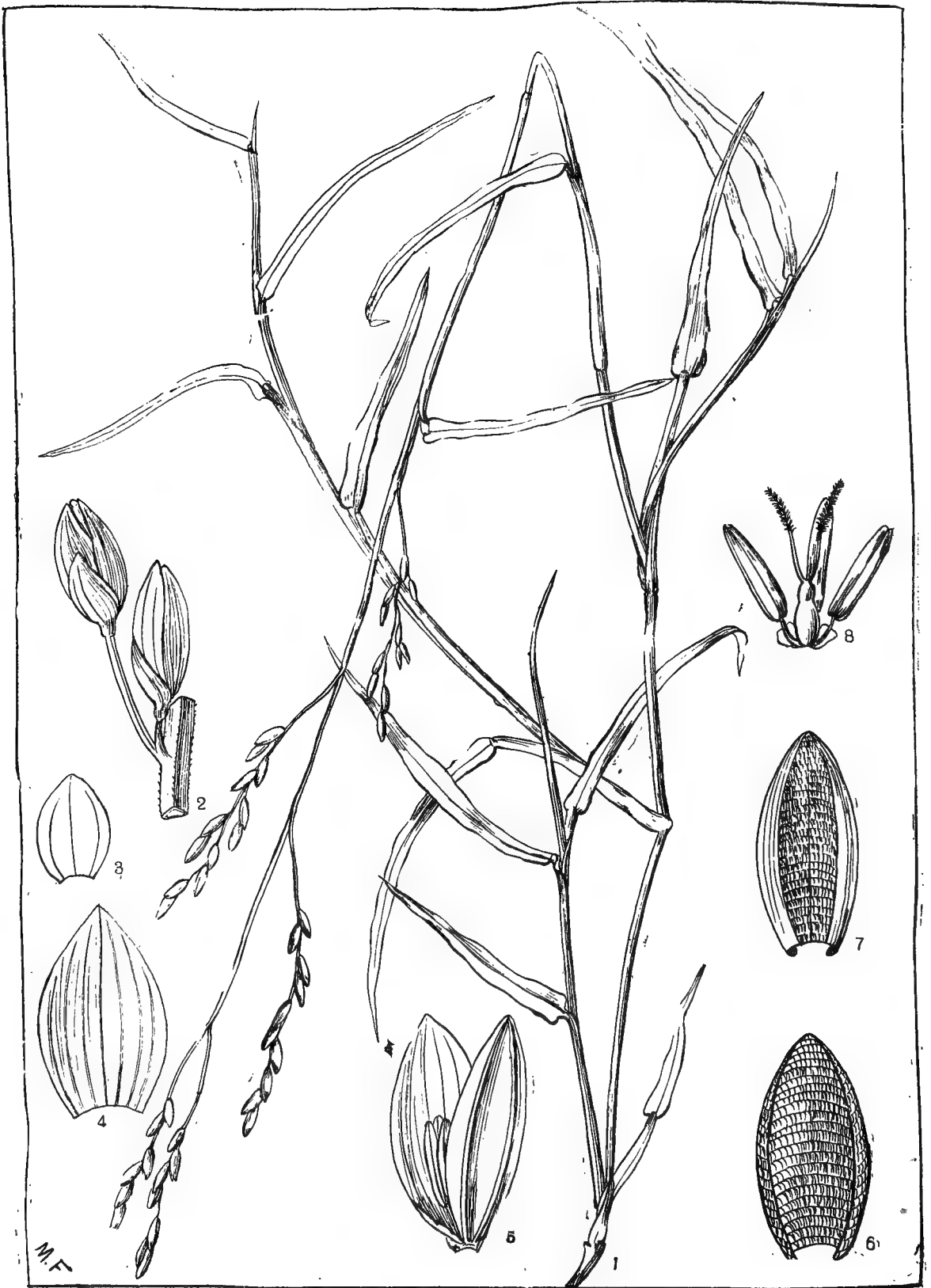
Drawn from a specimen which was lent for the purpose by Dr. S. Schonland, F.L.S., the Director of the Albany Museum, Grahamstown, Cape Colony, as we have no specimen in our Herbarium.

Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, upper valve; 5, pale; 6, pistil and lodicules. *All enlarged.*



M.F.

PANICUM PERLAXUM, STAFF.



PANICUM CHUSQUEOIDES, STAPP

PLATE 478.

PANICUM CHUSQUEOIDES, Hack. (Fl. Cap., Vol. VII., p. 400).

Nat. Order Gramineæ.

PERENNIAL.—CULMS divaricately branched, rambling, very slender, 2 feet long, glabrous, many-noded, internodes exserted; sheaths very tight, terete, glabrous or ciliate along the margins, sometimes scantily dotted with tubercles; ligules very short, truncate, obscurely ciliate; blades spreading, linear-lanceolate from a broad rounded and suddenly contracted subpetiolate base, 2 to 3 inches by 2 to 4 lines, flat, thin, very finely nerved, glabrous, smooth, margins scabrid.

PANICLE up to 5 inches long, consisting of 3 to 5 distant, suberect or spreading, glabrous, filiform angular branches, which are up to 2 inches long, and bear spikelets from 1 to 3 lines above the base; pedicels solitary or 2-nate, unequal, one very short, the other up to $1\frac{1}{2}$ line long, angular, smooth.

SPIKELETS oblong, acute, $1\frac{1}{2}$ to $1\frac{3}{4}$ line long, greenish, glabrous.

GLUMES, *lower* hyaline above, herbaceous below, rotundate-ovate, very obtuse, equalling $\frac{1}{3}$ to $\frac{1}{2}$ of the spikelet, 3-nerved; *upper* glume thinly herbaceous, oblong, subapiculate, $1\frac{1}{2}$ to $1\frac{3}{4}$ line long, 7 to sub-9-nerved. Florets, *lower* barren; valve equal and very similar to the upper glume, but 5-nerved; pale subequal; perfect floret oblong, subapiculate, slightly shorter than the lower; valve coriaceous, transversely wrinkled, 5-nerved, light green or yellowish; anthers $\frac{3}{4}$ line long.

Habitat: NATAL. Near Durban, *Rehmann* 8648; *Williamson* 11.

Our drawing was copied from one made by Miss M. Smith at Kew, and kindly lent to us for the purpose by the Director. It was made from Williamson's specimen.

Fig 1, Plant, natural size; 2 spikelets: 3, lower glume; 4, upper glume; 5, valve and pale of male floret; 6, valve of perfect floret; 7, pale; 8, lodicules, stamens and pistil. Except fig 1, all enlarged.

PLATE 479.

SETARIA AUREA, A. Braun. (Fl. Cap, Vol. VII., p. 426).

Nat. Order Gramineæ.

PERENNIAL OR ANNUAL or at least flowering the first year. Rhizome short, oblique, covered with the remains of old scales and sheaths, sometimes with subglobose innovation buds.

CULMS suberect or ascending, often geniculate, 2 to 6 feet long, usually strongly compressed or even ancipitous below, strongly striate and scabrid or puberulous below the panicle, otherwise glabrous and smooth, 3 to 7-noded; internodes exerted except the lowest, uppermost usually very long and slender; sheaths striate, glabrous or softly hirsute, lower compressed, keeled, bases often persistent and breaking up into fibres; ligule a shortly and densely ciliate rim; blades linear, long tapering to an acute point, $\frac{1}{2}$ to $1\frac{1}{2}$ foot by $1\frac{1}{2}$ to 4 lines, or rarely 6 lines, flat, rather firm, sometimes rather rigid and more or less involute, glabrous or scantily hairy towards the base, scaberulous or almost smooth.

PANICLE erect, straight or subflexuous, cylindric, 2 inches to more than 1 foot long, $2\frac{1}{2}$ to 3 lines thick (exclusive of the bristles), very dense, very bristly, usually orange-coloured or reddish; axis slender, minutely villous or puberulous; branches reduced to a sessile one-sided involucre, consisting of 6 to 10 slender scabrid bristles, 2 to 7 lines long, yellowish to bright orange or reddish, and subtending usually 1 perfect and 1-2 arrested spikelets.

SPIKELETS obliquely ovate to ovate-oblong, subapiculate or obtuse, $1\frac{1}{4}$ to $1\frac{1}{2}$ line long, pallid or purplish at the tips, glabrous.

GLUMES very thin, membranous, ovate, acute or subacute, whitish or purplish, lower one 3-nerved, $\frac{1}{3}$ as long as the spikelet; upper 5-nerved, $\frac{1}{2}$ as long as the spikelet, nerves faint. Florets, lower male. Valve equal or subequal to the spikelet, flat or depressed along the middle, similar to the upper glume; pale subequal to the valve. Perfect floret equalling or slightly exceeding the male, plano-convex, oblong, usually minutely apiculate, pallid or purplish upwards. Valve coriaceous, transversely wrinkled, 5-nerved. Anthers $\frac{1}{2}$ to 1 line long. Grain depressed ellipsoid, $\frac{3}{4}$ line long.

Habitat: NATAL. Impunzane, *Sutherland*; Nottingham, *Buchanan* 70; Um-pumulo, *Buchanan* 170; without precise locality, *Gerrard* 473, *Buchanan* 169; Berea, *Wood* 5935; near Maritzburg, *St. George* 5 (*Wood* 7241); Shirley, Mooi River, *W. T. Woods*.

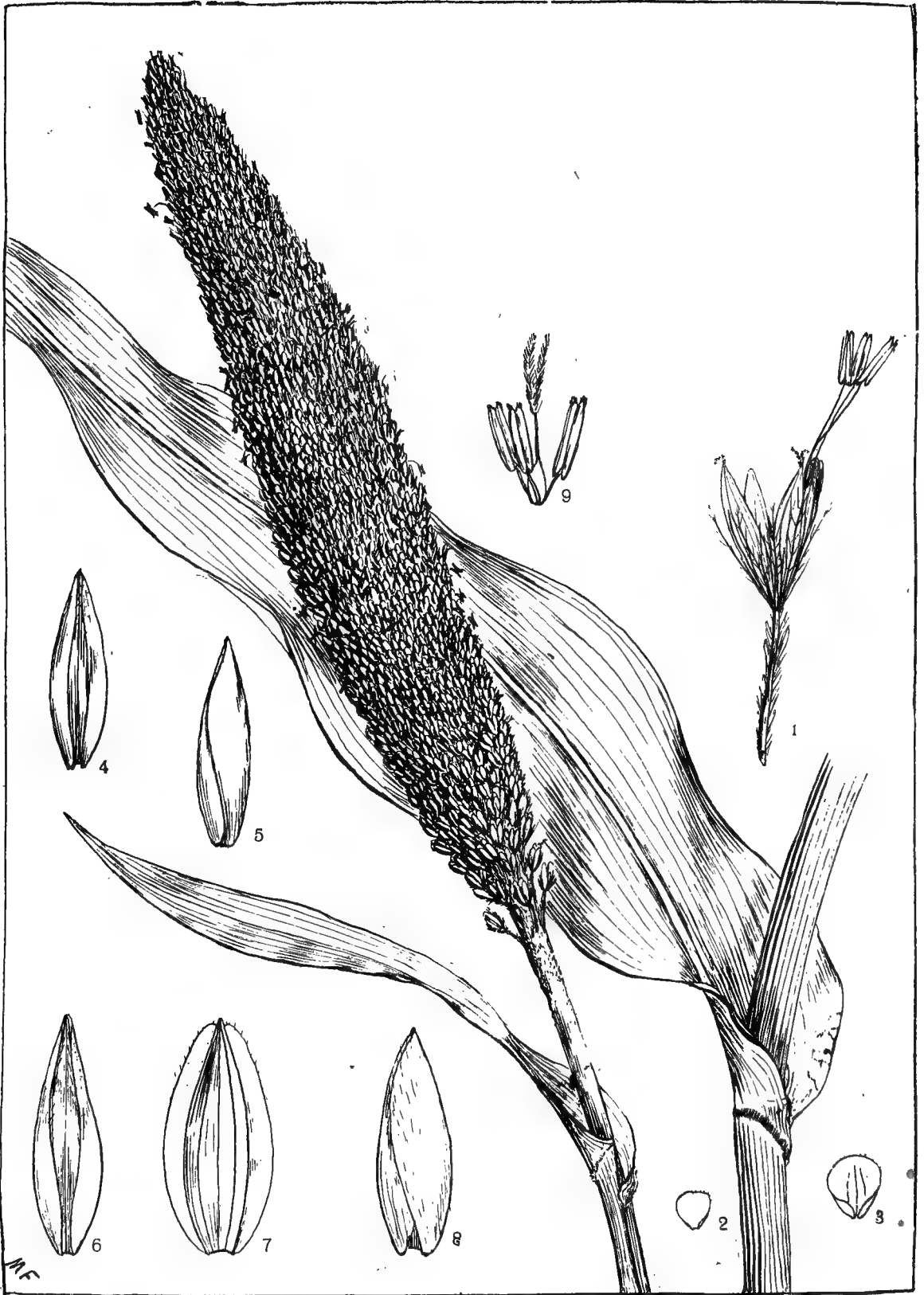
“Not relished by cattle when green, when ripe they like it. Cattle prefer it to ordinary veldt. Makes a good weighty hay.”—*W. T. Woods*.

Fig 1, Spikelet with involucre; 2, lower glume; 3, upper glume; 4, lower valve; 5, pale; 6, stamens and lodicules; 7, upper valve; 8, pale; 9, pistil, stamens and lodicules. *All enlarged.*



M.F.

SETARIA AUREA 4 BRAUN



PENNISETUM TYPHOIDEUM, RICH.^d

PLATE 480.

PENNISETUM TYPHOIDEUM, Rich. (Fl. Cap., Vol. VII., p. 432).

Nat. Order Gramineæ.

ANNUAL.—CULMS erect, stout, 1 to several feet high, usually terete and simple, 5- or more noded, hairy to villous below the panicle, otherwise usually glabrous; sheaths terete, glabrous except the bearded nodes and the often villous junction with the blade, rarely hirsute, usually slightly rough, rather shorter than the internodes; ligule a narrow long and densely ciliate rim; blades linear to linear-lanceolate from a rounded base, acute, $\frac{1}{2}$ to 2 feet by $\frac{1}{8}$ to $1\frac{1}{2}$ inch, flat, more or less rough, glabrous, rarely hirsute.

PANICLE spike-like, cylindric, very dense, 4 to 8 inches by 5 to 9 lines (in the South African specimens) or longer and thicker, often purplish, rachis stout, villous; branchlets reduced to a peduncled involucrate cluster of 3-1 spikelets; peduncles villous, straight, 1 to $2\frac{1}{2}$ lines long, often horizontally spreading or partly deflexed; involucre of very numerous ciliate often purplish bristles about as long as the spikelets.

SPIKELETS sessile or shortly pedicelled within the involucre, readily deciduous when ripe, oblong, 2 to $2\frac{1}{2}$ lines long, pale or purplish upwards.

GLUMES broadly ovate, obtuse, minute, hyaline, nerveless, ciliate, or larger (the *upper* to $\frac{1}{2}$ the length of the spikelet), firmer and 3-nerved; florets similar, subequal, *lower* male or reduced to a minute empty hyaline valve. Valves broadly oblong, cuspidate or mucronate, 5 to 7-nerved, glabrous, ciliate or pubescent towards the margins or at the tips. Pales broad, oblong, truncate, glabrous, ciliate, or the flaps pubescent below. Lodicules 0. Anthers 1 to $1\frac{1}{4}$ line long, tips bearded; styles connate; grain ellipsoid to subglobose, equalling the gaping chartaceous very smooth valve and pale.

Habitat: NATAL. - Near Durban, *Drège*; and without precise locality, *Cooper* 3338; Nels Rust (cultivated), Government Herbarium, 9090.

Drawn from specimens grown in Botanic Gardens, Durban, Feb., 1907.

“The ‘Pearl Millet.’—An annual requiring only about three months to ripen its crop. The stems reach to 6 to 10 feet in height, several being produced from one root, and each again forming lateral branches. Together with Sorghum, this is the principal cereal except rice grown in India by the native races; it requires a rich soil, and on such will yield a hundred fold. It furnishes hay of good quality, though not very easily dried, and is also valuable as green fodder. It is cultivated in the United States of America, and it matures as far north as Christiana, in Norway. Farm stock eat it greedily. One plant of ‘Pearl Millet’ is worth three of maize for fodder.”—Baron F. v. Mueller.

Fig 1, Spikelets, showing involucre; 2, lower glume; 3, upper glume; 4, lower valve; 5, pale; 6, upper valve; 7, same opened; 8, pale; 9, pistil and stamens. *All enlarged.*

HOLCUS, Linn.

SPIKELETS in rather dense, oblong or interrupted panicles, laterally compressed, disarticulating from the tips of the pedicels; rhachilla slightly produced beyond the upper floret, disarticulating more or less readily below the valves; joints slender, lower curved and often appendaged. Florets 2, *lower* perfect, *upper* usually male, sometimes perfect or barren.

GLUMES 2, membranous, keeled, acute or acuminate, *lower* 1-nerved, *upper* 3-nerved, sometimes awned. Valves shorter than the glumes, chartaceous, very obscurely 5-3-nerved, *lower* awnless, *upper* awned. Pales narrow, 2-keeled. Lodicules 2, delicate. Stamens 3. Ovary glabrous; styles distinct; stigmas plumose, laterally exerted. Grain laterally compressed, enclosed by the valve and pale and often adhering to the latter, soft; hilum short; embryo small.

ANNUAL OR PERENNIAL.—Blades flat or convolute when dry; panicle usually more or less contracted, sometimes almost spike-like; spikelets deciduous, pallid.

Species about 6; 2 common in Europe, but naturalised in many temperate countries; 1 in South Africa, the rest Mediterranean.

PLATE 481.

HOLCUS LANATUS, Linn. (Fl. Cap., Vol. VII., p. 465).

Nat. Order Gramineæ.

PERENNIAL, tufted, 2-3 feet high. **CULMS** 3 to 4-noded, softly hairy, at least below the panicle, rarely quite glabrous; leaf-sheaths reversedly and softly hairy, rarely glabrous, villous at the nodes, the uppermost inflated; ligule membranous, oblong, pubescent, 1 line long; blades linear to linear-lanceolate, up to 6 inches, by 2 to 3½ lines, the uppermost very short, flat, softly hairy.

PANICLE erect, oblong, 2 to 6 inches long, usually contracted; rhachis, branches, branchlets and pedicels hairy.

SPIKELETS oblong, 2¼ to 2½ lines long, whitish or purplish.

GLUMES almost equally long, mucronate, scabrid, keels pectinate-ciliate, the *lower* narrower, the *upper* broader with prominent side-nerves; *lower* floret perfect, *upper* male; *lower* valve obliquely lanceolate-oblong, rather more than one line long, with a few hairs on the keel, very obscurely 5-nerved; callus with a few long hairs; *upper* valve smaller and thinner, awn shorter than the valve, at length recurved, rather stout; pales as long as their valves. Anthers ¾ to 1 line long.

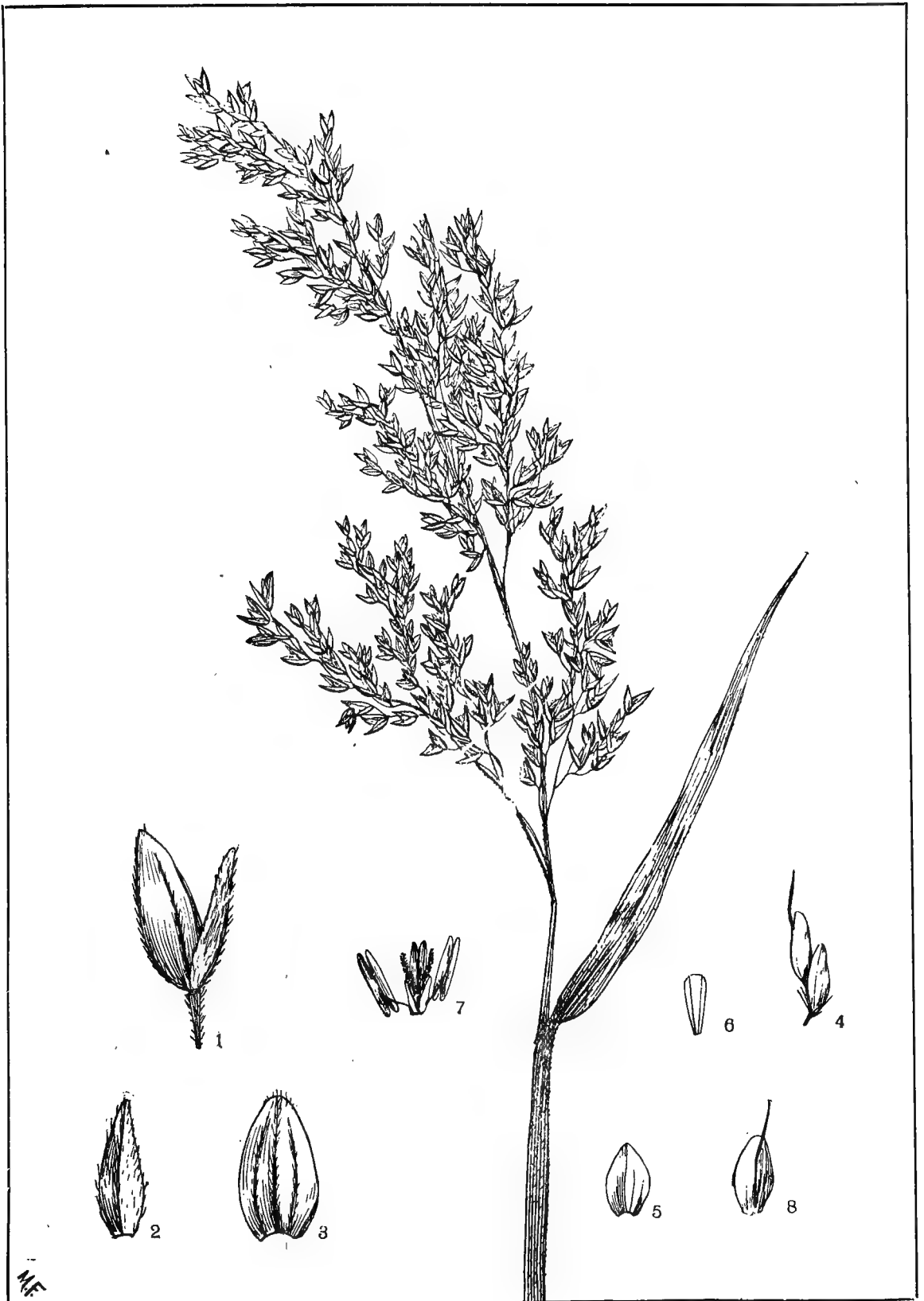
Habitat: NATAL. The Dargle, 3400 feet alt., *Woodhouse* in Government Herbarium, 9177.

Drawn from the Dargle specimen, the only one in our Herbarium. Introduced.

Native of Europe, Siberia and North Africa, introduced into most temperate regions of both hemispheres.

“A well known perennial pasture grass of considerable fattening property. For rich soil better grasses can be chosen, but for moist, moory or sandy lands, and also for forests, it is one of the most eligible pasture-grasses, yielding an abundant and early crop; it is, however, rather disliked by cattle and horses. Bears continued grazing off extremely well”—Baron F. v. Mueller.

Fig 1. A spikelet; 2, lower glume; 3, upper glume; 4, florets; 5, lower valve; 6, pale; 7, pistil, stamens and lodicules; 8, upper valve. *All enlarged.*



HOLCUS LANATUS, LINN.

M.F.

CALAMAGROSTIS, Roth.

SPIKELETS very narrow, lanceolate, acuminate, in contracted much divided panicles ; rhachilla disarticulating above the glumes, not or very shortly continued beyond the floret. Floret 1, perfect, much shorter than the glumes.

GLUMES equal or subequal, very narrow, linear-lanceolate, acuminate, membranous, keeled, *lower* 1-, *upper* 3-nerved. Valve narrow, lanceolate in profile, membranous, glabrous, more or less shortly bifid, 5-3-nerved with a fine short dorsal, rarely subterminal awn ; callus small, long hairy, hairs usually much exceeding the valve. Pale 2-nerved, as long as the valve or somewhat shorter. Lodicules 2, hyaline. Anthers 3. Ovary glabrous, styles distinct, short ; stigmas plumose, laterally exserted. Grain enclosed by the hardly changed valve and pale, free, subterete ; hilum basal, small ; embryo small.

PERENNIAL, usually rather robust ; blades long, linear, flat ; ligules scarious.

PANICLE more or less contracted, narrow, rather dense, with much divided branches and short branchlets and pedicels. Florets surrounded by long, fine hairs.

Species few, in the temperate regions of the northern hemisphere, 2 also in South Africa.

PLATE 482.

CALAMAGROSTIS HUTTONIÆ, Hack. (Records of the Albany Museum, Vol. I., No. 5).

Nat. Order Gramineæ.

CULMS in the upper part (which only is present in our specimens) terete, very glabrous, shortly exposed at apex; sheath of the uppermost leaf rather loose, scabrid; ligule oblong, obtuse, cleft, about 3 lines long; blade linear, acute, about $4\frac{3}{4}$ inches long, $1\frac{1}{2}$ line broad, very scabrid, nerves rather thick, excurrent.

PANICLE linear-oblong, wide-spreading, rather dense, suberect, 7 to $9\frac{1}{2}$ inches long, by 14 to 19 lines broad, rhachis scabrid, branches 6 to 8, semiverticillate, slender, filiform, or sub-capillary, erect, broad-spreading, very scabrid, undivided in lower half, then bearing many to very many-spiculate secondary branches.

SPIKELETS equally disposed on the branches, rather close together, shortly pedicelled, pedicels clavate at apex, very scabrid. Spikelets lanceolate, $1\frac{1}{2}$ line long, pale green.

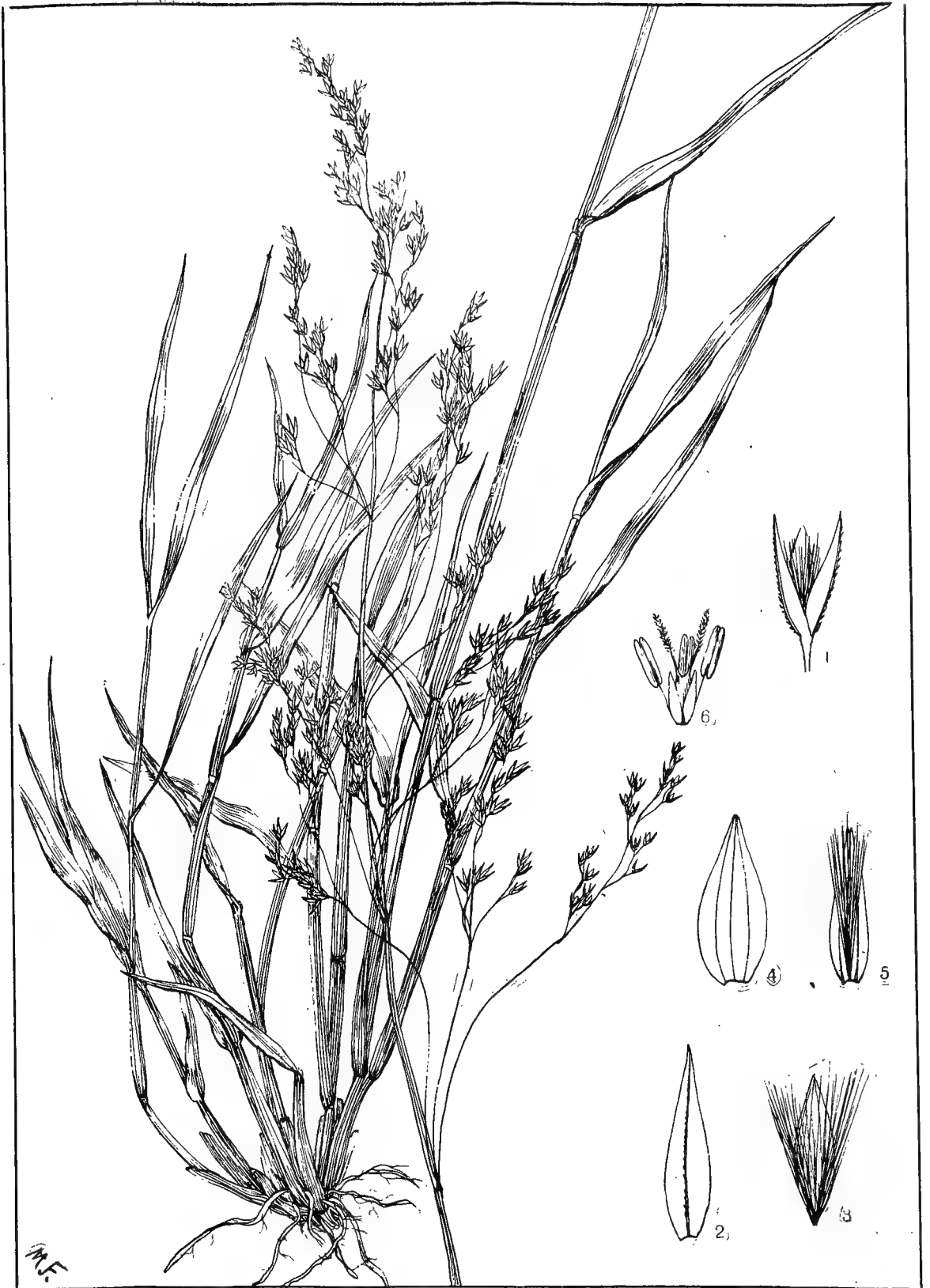
GLUMES subequal (lower a very little larger), lanceolate, $1\frac{1}{2}$ line long, expanding to about $\frac{1}{2}$ line broad, very acute, 1-nerved, keel very aculeato-scabrid. Valve a little shorter than the glume (about 1 line long), oblong, obtuse, minutely 4-fid at apex, thin-membranous, 3-nerved, back very glabrous, covered with the long, dense hairs of the callus, mucicous (or rarely in upper third producing an erect aristula scarcely exceeding itself); pale subequal to the glume, oblong, rather obtuse, bidentate, 2-keeled, very glabrous. Anthers almost $\frac{1}{2}$ line long. Appendage of rhachilla about $\frac{1}{80}$ inch long, densely bearded with hairs 1 line long.

Habitat: NATAL. Shafton, Howick, Mrs. H. Hutton 384.

In a note Professor Hackel says: "With the specimen there was a single complete flowering stalk, which represents *Agrostis lachnantha*, Nees, slightly differing from the type. Both grasses therefore grow at the same place, and it is remarkable to notice that almost all characters (leaves, spikelets, relative sizes, form and nervation of the glumes and valves) agree in both, the only difference is in the indument, for *Agrostis lachnantha* has at the base of the valve only short hairs, and just such hairs at the sides, and on the back; it is entirely without the prolongation of the axis."

The drawing so far as the panicle is concerned was made from the specimen kindly lent for the purpose by Dr. S. Schonland, and after its arrival it was noticed by the artist that our specimens, Buchanan 286, Mason 44, and Mason (Wood 7323, partly), all classed as *Agrostis lachnantha* were also mixed with the *Calamagrostis*, so that the lower portion of the plant was drawn from Mason's 44. The artist, Miss Franks adds the following description which is wanting in Professor Hackel's description: "Culms erect, 2 to 3 feet high, 3 to 5-noded, branched from the lower nodes. Sheaths striate, scabrid, glabrous."

Fig 1, A spikelet; 2, glume; 3, valve and callus; 4, valve opened; 5, pale and rhachilla appendage; 6, pistil, stamens and lodicules. All enlarged.



GALAMACROSTIS HUTTONÆ, HACK.



ARISTIDA BIPARTITA. RUPR. & "KIN"

PLATE 483.

ARISTIDA BIPARTITA, Rupr. & Trin. (Fl. Cap., Vol. VII., p. 558).

Nat. Order Gramineæ.

PERENNIAL, light green to glaucous. Rhizome short, oblique with compact tufts of short barren shoots and culms, these erect or ascending, 1 to 2 feet long, simple, terete or compressed below, smooth, glabrous, rarely puberulous below the nodes, about 3-noded; basal sheaths short, compressed, firm, persistent, whitish, the upper widened and loose in the upper part, at length open, smooth or bearded at the mouth; blades very narrow, linear, acute, 1 to 4 inches by 1 line, rigid, curved, folded, more rarely flat, smooth below, scabrid above.

PANICLE effuse, 5 to 6 inches by 3 to 5 inches, very lax; rhachis straight or flexuous; branches solitary, distant, spreading, the lower 3 to 4 inches long, 2- (rarely 3 to 4) partite close to the base, very scantily and remotely branched; branchlets divaricate, 1 to 3 spiculate at the tips, filiform, straight or flexuous, scabrid; lateral pedicels very short.

SPIKELETS 3 to 4 lines long, sometimes purplish.

GLUMES subequal, linear-lanceolate, abruptly and shortly mucronate or the upper emarginate. Valve linear, not or obscurely beaked, as long as the glumes or slightly shorter, smooth or finely scaberulous above, purplish; callus $\frac{1}{4}$ line long; awns continuous with the valve, subequal, divaricate, 4 lines long; pale $\frac{1}{2}$ line long, shortly 2-nerved, lodicules up to $\frac{3}{4}$ line long, 3-nerved; anthers 1 to 2 lines long.

Habitat: NATAL. Biggarsberg, *Rehmann* 7102; near Dundee, 4000-5000 feet alt., *W. E. Green* (*Wood* 7358).

Fig 1, Spikelet; 2, glume; 3, valve; 4, pistil and stamens; 5, pale; 6, a lodicule. *All enlarged.*

PLATE 484.

ARISTIDA CONGESTA, Roem & Schult. (Fl. Cap., Vol. VII., p. 558).

Nat. Order Gramineæ.

PERENNIAL, tufted, light green or glaucous, glabrous.

CULMS slender, rather wiry, erect or geniculately ascending, compressed below, $\frac{1}{4}$ to 2 feet long, simple or branched from some of the lower nodes, 3 to 4-noded; sheaths tight, smooth; blades usually very narrow, linear, acute, 1 to 6 inches by 1 line, rarely larger, usually folded or convolute, rigid, curved, rarely flat, smooth below, scabrid to hispidulous above.

PANICLE spike-like, often interrupted, with 1 to 2 shortly peduncled, more or less spreading lateral, pseudo-spikes, 2 to 6 inches long; pedicels very short.

SPIKELETS densely crowded, $3\frac{1}{2}$ to 4 lines, rarely up to 5 lines long.

GLUMES keeled, keels smooth or almost so, the *lower* lanceolate, gradually passing into a long mucro, 3 lines long, the *upper* linear, emarginate, long mucronate, 3 to 5 lines long. Valve linear, produced into a short twisted beak, usually slightly shorter than the upper glume, minutely scaberulous above; callus $\frac{1}{2}$ line long; awns jointed with the valves, but not disarticulating, diverging, fine, 5 to 7 lines long; pale not quite $\frac{1}{2}$ line long, nerveless or almost so; lodicules $\frac{1}{2}$ to $\frac{5}{8}$ line long, 5 to 6-nerved. Anthers $\frac{3}{8}$ line long; grain up to $1\frac{3}{4}$ line long, deeply grooved.

Habitat: NATAL. *Buchanan* 124.

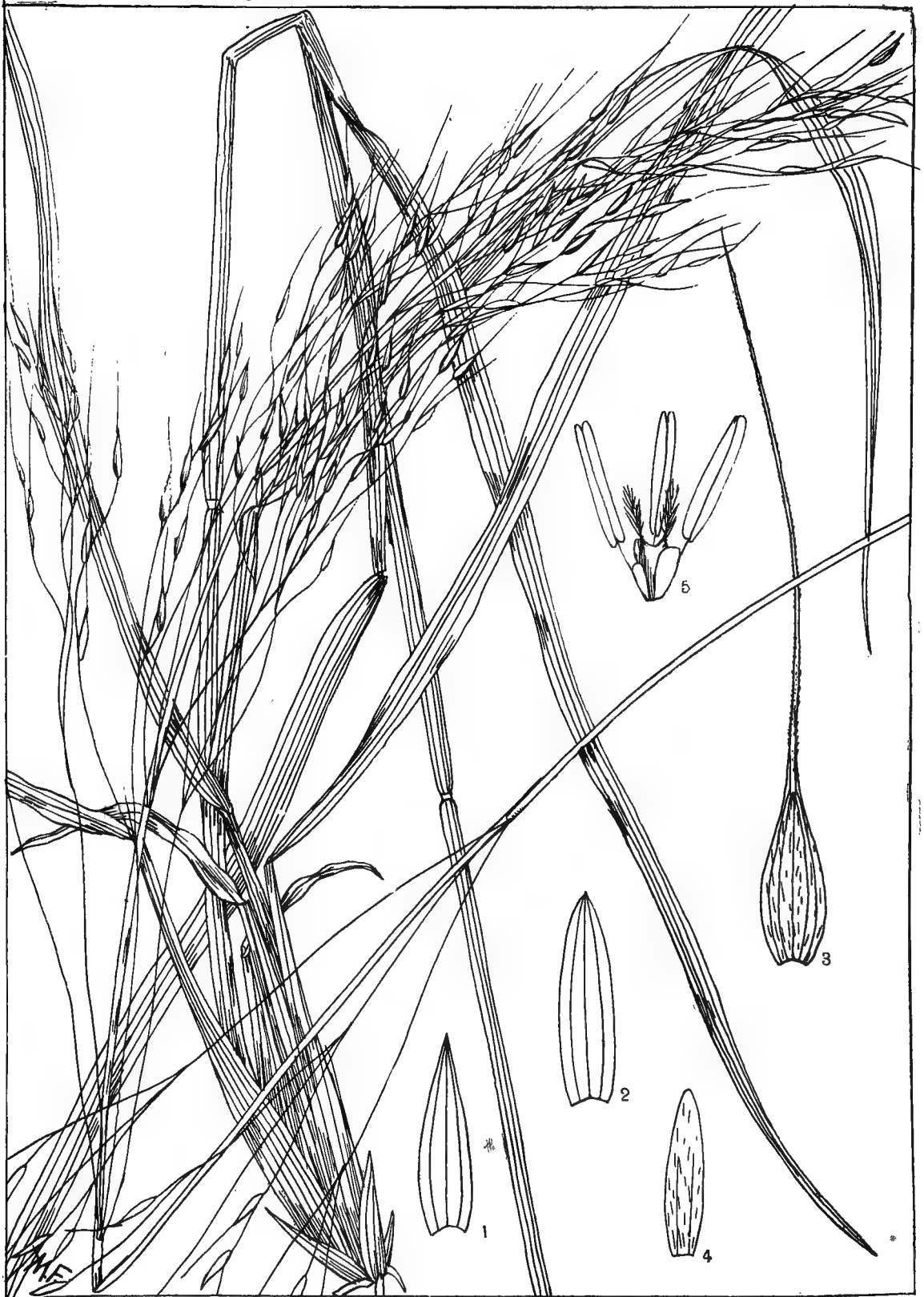
Also in Cape Colony and Basutoland.

Drawn from Buchanan's 124, kindly lent for the purpose by the Director of the Royal Gardens and Herbarium at Kew.

Fig 1, Lower glume; 2, upper glume; 3, valve, front view; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*



ARISTIDA CONCESTA R & S



STIPA DREGEANA. STEUD

STIPA, Linn.

SPIKELETS 1-flowered, narrow, paniculate ; rhachilla disarticulating above the glumes, not produced.

GLUMES usually persistent, narrow, 1 to 3-nerved, muticous or mucronate. Valves convolute, cylindrical or oblong-cylindrical, 5 to 7- (rarely 3) nerved, rather rigid, tip gradually tapering, or minutely 2-lobed ; callus more or less bearded, usually pungent ; awn simple, continuous with or jointed on the valve, bent or geniculate, twisted below, plumose or naked above the knee. Pale 2-keeled or 2-nerved, almost as long as the valve or much shorter. Lodicules usually 3, the posterior smaller or suppressed ; Stamens 3, rarely fewer. Ovary glabrous ; styles distinct, short ; stigmas plumose. Grain slender, cylindrical or oblong-cylindrical, terete or subterete, sometimes grooved, tightly embraced by the hardened valve and the pale ; hilum linear, almost as long as the grain ; embryo rather small.

PERENNIAL, rarely annual ; leaves often convolute, rarely flat ; ligules membranous.

PANICLE from spike-like to effuse.

Numerous species, principally in the drier and warm regions of both hemispheres.

PLATE 485.

STIPA DREGEANA, Steud. (Fl. Cap., Vol. VII., p. 572).

Nat. Order Gramineæ.

PERENNIAL, glabrous. CULMS fascicled from a short præmorse rhizome, erect, 2 to 4 feet high, 3-noded, smooth, internodes enclosed or more or less exserted ; lowest sheaths much reduced, firm, scale-like, the following very tight, long, the uppermost sometimes tumid, slightly rough, striate ; ligules obtuse, erose, up to 2 lines long ; blades linear from a broad or slightly narrowed base, tapering to a very long fine point, up to 1½ foot to 3 to 5 lines, flat, rather firm, smooth below, slightly rough above, closely and very finely many-nerved.

PANICLE erect or slightly nodding, oblong, contracted, rarely open and pyramidal, ½ to 1 foot long, branches fascicled or 3-2-nate, very unequal, the longest ½ to 1 foot long, undivided to ⅓ of their length or more, filiform, smooth ; pedicels scabrid, the lateral shorter than the spikelets, the latter light green, 2½ to 3½ lines long.

GLUMES subequal, 3-nerved, subhyaline above, glabrous, the *lower* lanceolate-acuminate, the *upper* lanceolate-oblong, acute or sub-acuminate. Valves oblong-cylindrical, convolute, obscurely bi-lobed, 2 to 2½ lines long, shortly hairy all over, 5-nerved ; callus minute, obtuse, minutely hairy ; awn not disarticulating, 5 to 6 lines long, scabrid, slightly twisted below, bent 1 to 2 lines above the base. Pale almost as long as the valve, obtuse, hairy on the back ; lodicules 3, oblong, obtuse, the posterior smaller. Anthers 1½ line long, naked. Grain oblong, cylindrical, 1½ line long.

Habitat : NATAL. Riet Vlei, in bush, 5000 feet alt., *Buchanan* 239.

Drawn from *Buchanan's* specimens, kindly lent for the purpose by the Director of the Royal Gardens and Herbarium at Kew.

The above described species is the only one of the genus *Stipa* that has yet been found in Natal.

Fig 1, Lower glume ; 2, upper glume ; 3, valve ; 4, pale ; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 486.

SPOROBOLUS FIMBRIATUS, Nees. (Fl. Cap., Vol. VII., p. 585).

Nat. Order Gramineæ.

PERENNIAL, densely tufted. CULMS usually geniculate, 2 to 3 feet long, smooth, glabrous, 2 to 4-noded; sheaths glabrous except the sometimes ciliate or fimbriate margins, smooth, firm, the lowest pallid, more or less compressed and subcarinate; ligule a ciliate rim; blades linear, tapering to a long setaceous point, 5 to 10 inches by 1 to 2 lines, flat or folded with the margins rolled in, glabrous, rarely with long fine spreading hairs near the base, smooth or scaberulous.

PANICLE erect, subflexuous or nodding, 8 to 12 inches by 1 to 2 inches (when open); branches solitary, irregularly crowded, 1 to 3 inches long, flat, at length more or less spreading, filiform, repeatedly branched from the base, lower secondary branchlets up to 9 lines long, smooth or almost so; lateral pedicels very short.

SPIKELETS greyish-green, $\frac{7}{8}$ to 1 line long, crowded or rather lax.

GLUMES unequal, lanceolate, acute or acuminate, the *lower* hyaline, equalling about $\frac{1}{2}$ the length of the spikelet, the *upper* as long as the valve or slightly longer, 1-nerved; valve ovate-lanceolate, acute or acuminate, 1 nerved. Stamens 3; anthers $\frac{1}{2}$ line long. Grain obovoid, truncate, quadrangular, very slightly compressed, $\frac{3}{8}$ line long; pericarp delicate.

Habitat: NATAL. Near Durban, below 500 feet alt., *Drège*; and without precise locality, *Gerrard* 602.

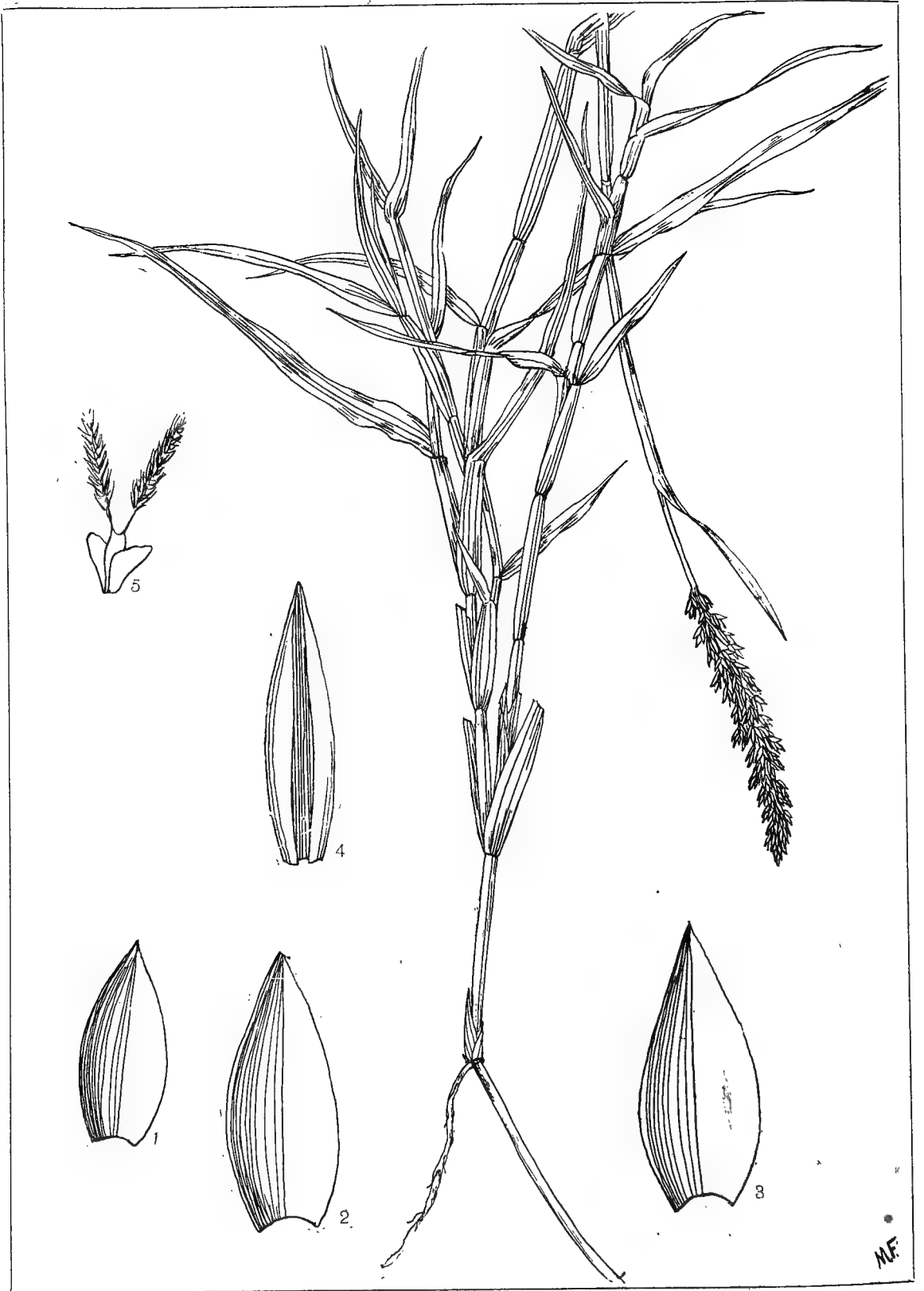
As we had no specimen of this grass in the Herbarium the drawing was made from a specimen kindly lent from the collection of Dr. H. Bolus, Capetown. The specimen was gathered on a stony hillside near Graaff-Reinet in April, 1867, and is Bolus 555.

Fig 1, Spikelets; 2, Lower glume; 3, upper glume; 4, valve; 5, pale; 6, stamens; 7, lodicules and pistil. *All enlarged.*



M.F.

SPOROBOLUS FIMBRIATUS, NEES.



SPOROBOLUS PUNGENS, KTH.

PLATE 487.

SPOROBOLUS PUNGENS, Kunth. (Fl. Cap., Vol. VII., p. 587).

Nat. Order Gramineae.

PERENNIAL ; rhizome often long creeping, stoloniferous, stolons emitting fascicled or solitary ascending culms, these 2 to 12 inches long, glabrous, very many-noded, sheathed nearly all along, internodes alternately very short and long, hence the leaves appear opposite ; culm-sheaths rather tight, slightly compressed, glabrous or sometimes ciliate along the margins and bearded at the mouth, smooth ; ligule a ciliate rim ; blades subulate-involute, often pungent, rarely flat towards the base, from $\frac{1}{3}$ to 4 inches long, rigid, firm, closely and strongly nerved, glabrous or scantily long-hairy above, margins scaberulous.

PANICLE spike-like, cylindric, compact, rarely somewhat loosened, $\frac{1}{2}$ to 3 inches long ; branches short, branched from the base, scaberulous ; pedicels very short.

SPIKELETS light to dark olive-green, 1 to $1\frac{1}{2}$ line long.

GLUMES lanceolate, acute or acuminate, keels acute, scaberulous above, the *lower* equalling $\frac{1}{2}$ to $\frac{4}{5}$ of the upper, the latter as long as the valve or slightly longer and like it 1-nerved ; pale slightly shorter. Stamens 3 ; anthers $\frac{3}{4}$ to 1 line long. Grain ellipsoid, $\frac{2}{5}$ line long, light brown, pericarp thin.

Habitat : NATAL. At the mouth of the Umzimkulu River, *Drège* ; sand dunes around Durban Bay, *Krauss* 67.

Drawn from *Krauss*'s specimen, kindly lent for the purpose by the Director of the Royal Gardens and Herbarium at Kew.

“ A very variable littoral plant of most warm countries. The specimens from Bathurst Division and from Natal are rather different in habit from the Western, approaching the form common in the Mediterranean region, which originally was understood under *S. pungens*.”

Fig 1, Lower glume ; 2, upper glume ; 3, valve ; 4, pale ; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 488.

SPOROBOLUS SUBTILIS, Kunth. (Fl. Cap., Vol. VII., p. 588).

Nat. Order Gramineæ.

PERENNIAL, densely cæspitose, sometimes stoloniferous, erect, 1 to 1½ foot long, smooth, glabrous, about 4-noded, internodes enclosed or shortly exerted.

LEAVES glabrous, smooth; sheaths very tight, more or less bearded at the mouth; ligule a minutely ciliolate rim; blades very narrow, setaceously convolute, acute, 2 to 5 inches long, striate.

PANICLE embraced at the base by the uppermost sheath, ovoid to oblong, open, very lax, 2 to 4 inches long, much branched; branches and branchlets capillary, with very long and fine hairs from the axils; pedicels very variable in length (from ½ to 1½ line long in the Natal, up to 5 lines long in the Madagascar specimens).

SPIKELETS lanceolate, acute, $\frac{3}{4}$ line long; rhachilla produced into a fine bristle half as long to almost as long as the floret.

GLUMES subequal, lanceolate in profile, acute, $\frac{1}{2}$ to $\frac{5}{8}$ line long, *lower* 1, *upper* 1 to 3-nerved. Valve ovate-lanceolate in profile, $\frac{3}{4}$ line long, 3-nerved, lateral nerves evanescent above the middle. Pale as long as the valve or very slightly longer; keels very fine, percurrent or evanescent below the subciliolate tips. Anthers $\frac{3}{8}$ to $\frac{1}{2}$ line long. Grain oblong, $\frac{2}{3}$ line by $\frac{1}{8}$ - $\frac{1}{5}$ line, subterete, finely striate; pericarp adnate to the seed, indistinct; embryo not quite $\frac{1}{5}$ the length of the grain.

Habitat: NATAL. Grassy flats between Umlazi River and Durban Bay, *Krauss*, 212. Also in Madagascar.

The Natal plant differs from the Madagascar specimens which I have seen (Hildebrandt 4906; Baron 672 and 4092) in the much shorter ramifications of the panicle. The presence of a bristle-like continuation of the rhachilla is unique in the genus; as the structure of the spikelet is, however, otherwise essentially that of *Sporobolus* it does not seem expedient to separate this species from that genus (Dr. O. Stapf).

Our drawing was made from a drawing made by Miss Smith at Kew, and kindly sent to us for the purpose by the Director.

Fig 1, Plant with inflorescence, natural size; 2, plant in leaf only, natural size; 3, spikelets; 4, lower glume; 5, upper glume; 6, valve and pale with termination of rhachis; 7, valve; 8, pale; 9, lodicules, stamens and pistil. *Except Figs 1 and 2, all enlarged.*



SPOROBOLUS SUBTILIS, KTH.



DIPLACHNE ELEUSINE, NEES.

PLATE 489.

DIPLACHNE ELEUSINE, Nees. (Fl. Cap., Vol. VII., p. 591).

Nat. Order Gramineæ.

PERENNIAL, glabrous. CULMS tufted, 1 to 2 feet long, geniculately ascending, terete, smooth, simple or branched below, 3-noded, internodes exerted; sheaths rather tight and firm, smooth, the lower keeled; ligules membranous, very short, truncate, denticulate, ciliate; blades linear, tapering to a fine point, 4 to 9 inches, by 1 to 2 lines, more or less flaccid, scabrid on both sides or rather smooth below.

PANICLE narrow, consisting of 2 to 8 erect, distant spikes or spike-like racemes; rhachis angular, finely scaberulous or almost smooth; branches 1 to 4 inches long, flexuous.

SPIKELETS unilateral, imbricate or 2-seriate, subsessile, 2 to 3-lines long, 5 to 8-flowered, light green.

GLUMES lanceolate in profile, obtuse or subacute, $1\frac{1}{4}$ and $1\frac{1}{2}$ line long respectively, whitish, keel green. Valves oblong, very obtuse, entire, up to $\frac{1}{2}$ line long, tips broad, hyaline, side-nerves finely silky, evanescent below the tips. Pales obtuse. Anthers not quite $\frac{1}{2}$ line long; grain elliptic, flat, $\frac{3}{4}$ to $\frac{7}{8}$ line by $\frac{1}{2}$ line.

Habitat: NATAL. Banks of Tugela River, 700 feet alt. *Buchanan* 207.

Drawn from Buchanan's specimen, the only one in the Herbarium.

VALVES $1\frac{1}{2}$ line long, not $\frac{1}{2}$ line as quoted in the *Flora Capensis*.

Fig 1, lower glume; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules; 6, spikelet. *All enlarged.*

PLATE 490.

ERAGROSTIS HETEROMERA, Stapf (Fl. Cap., Vol. VII., p. 610).

Nat. Order Gramineæ.

PERENNIAL.—CULMS geniculate-ascending, stout, simple, over 2 feet long, glabrous, smooth, 3-noded, internodes (except the lowest) exerted; sheaths quite glabrous except at the usually bearded mouth, smooth, more or less coarsely striate, the lower not compressed, often purplish; ligule a dense fringe of minute hairs; blades linear, tapering to a long, fine point, 6 to 8 inches, by $1\frac{1}{2}$ to 2 lines long, flat or more or less involute, rather soft, glabrous, smooth on the lower, scaberulous on the upper side, midrib rather stout below, primary side-nerves 4-5, prominent.

PANICLE oblong, nodding, 10 to 12 inches long; axis angular, striate or sulcate, glabrous; branches somewhat irregularly arranged, in false whorls or 2-4-nate or solitary, sub-erect, flexuous to flaccid, unequal, divided from near the base or undivided for 1 inch or more, capillary, scaberulous, the longest 4 to 6 inches long; branchlets somewhat distant, short, contracted, 3-1 spiculate, very fine; lateral pedicels very short.

SPIKELETS linear, acute, 2 to 4 lines, by $\frac{2}{3}$ to $\frac{3}{4}$ line, olive-green, loosely 4 to 12-flowered; rhachilla subsistent, sparingly scaberulous.

GLUMES very unequal, *lower* a minute scale or quite suppressed, rarely over $\frac{1}{3}$ line long, *upper* lanceolate to oblong, subacute, $\frac{1}{2}$ to 1 line long, hyaline, 1-nerved. Valves obliquely oblong, obtuse, $\frac{3}{4}$ to 1 line long, keel scabrid and prominent like the side nerves, rigid, almost straight; pales equal to the valves, keels curved and scabrid; anthers $\frac{2}{3}$ to $\frac{3}{4}$ line long.

Habitat: NATAL. Near Durban, *Drège*, by the Umlazi River and near Maritzburg; *Krauss*, 43, by the Tugela River, 600 to 1,000 feet; *Buchanan*, 241; 245a.

Drawn from Buchanan's 241; 245a.

Fig 1, upper glume; 2, valve; 3, pale; 4, pistil, stamens and lodicules. *All enlarged.*



ERAGROSTIS HETEROMERA, STAFF.



TRIRAPHIS REHMANNI, HACK.

TRIRAPHIS, R. Br. (partly).

SPIKELETS 5 to 15-flowered, laterally compressed, pedicelled, panicled; rhachilla disarticulating above the glumes and between the valves. Florets perfect, the uppermost gradually reduced.

GLUMES subequal, lanceolate to linear-lanceolate, acuminate or truncate, or minutely 2-toothed and aristulate, 1-nerved, keeled, thin. Valves oblong, 3-lobed, thin, 3-nerved, 3-awned, the middle lobe more or less bifid, awned from the sinus, the side lobes shorter, entire, asymmetric, awned from the inner side, margins inflexed, nerves ciliate, particularly the lateral; awns fine, scabrid, often longer than the valves; callus slender, acute, bearded. Pales linear or linear-oblong, somewhat shorter than the valves. Lodicules 2, cuneate, delicate, minute. Stamens 3. Ovary glabrous, styles distinct, slender; stigmas laterally exerted, very slender, plumose. Grain tightly embraced by the scarcely changed valve and pale, linear, terete or obtusely triquetrous; embryo short; hilum basal, punctiform.

ANNUAL OR PERENNIAL; blades narrow, linear; ligule a ciliate membranous rim; panicle contracted, spike-like, or open, much branched; spikelets distinctly pedicelled.

Species: 8 in Africa, 1 in Australia, in Natal 1 only.

PLATE 491.

TRIRAPHIS REHMANNI, Hack. (Fl. Cap., Vol. VII., p. 651).

Nat. Order Gramineæ.

PERENNIAL, compactly cæspitose, glabrous; rhizome short, oblique.

CULMS erect or geniculate, 2 feet long, very firm, terete, striate, smooth, about 3-noded, internodes exerted; sheaths tight, firm, smooth, striate, the basal reddish or purplish-brown, persistent, the lowest reduced to short acute bladeless scales; blades linear, narrow, tapering to a setaceous point, usually tightly convolute, 4 to 8 inches, by 1 to 1½ line (when expanded), firm, smooth, coarsely striate.

PANICLE 2 to 12 inches long, contracted or open, and then 2 to 4 inches broad, erect or slightly nodding; rhachis smooth, branches solitary or fascicled, closely or loosely branched from the base or almost so, smooth, filiform, straight or flexuous; pedicels ½ to 1½ line long.

SPIKELETS subsecund, crowded, 4 to 8-flowered, 3 to 5 lines long; rhachilla glabrous.

GLUMES linear-oblong, erose, minutely mucronate, the *lower* 1 to 2 lines, the *upper* 1½ to 2¼ lines long, often with a fine lateral nerve on one or both sides. Valves oblong (when expanded), not quite 2 lines long; awns stiff, middle awn ½ to 1½ line long, side-awns up to 1 line long, or mere mucros; pale glabrous or the flaps hairy, keels scaberulous; anthers ¾ line long; grain linear, terete, ⅞ line, by ⅙ line.

Habitat: NATAL. Near Dundee, 4000 feet, *W. E. Green* 95b (*Wood* 7452), March.

Fig 1, Spikelet; 2, glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 492.

PANICUM STAGNINUM, Kœnig. (Fl. Cap., Vol. VII., p. 394).

Nat. Order Gramineæ.

ANNUAL OR PERENNIAL.—CULMS erect from a geniculate or prostrate base, terete or subterete, up to 6 feet high, in tall specimens to more than 3 lines thick below, often rooting from the lower nodes, sheathed all along or some of the nodes at length exerted, often branched in the lower part; sheaths finely striate, smooth, terete or subcarinate above, quite glabrous, rarely pubescent at the lowest nodes; ligule a fringe of rather long stiff hairs, or sometimes 0 in the uppermost leaves; blades linear from a scarcely narrowed usually not decurrent base, long-tapering to a fine point, $\frac{1}{2}$ to more than $1\frac{1}{2}$ foot by $2\frac{1}{2}$ to 7 lines, flat, rigid or flaccid, glabrous, light green or glaucous, smooth above, scabrid below, particularly in the upper part, margins cartilaginous, scabrid to spinulous.

PANICLE erect or nodding, 4 to 10 inches long, secund; axis slender, more or less flexuous, convex or flat on the back, usually hispidulous with scattered bristles, rarely glabrous except on the scabrid angles; branches few to many, distant or rather crowded, alternate, suberect or nodding, 1 to 2 inches long, forming often stout dense 2-4-ranked simple secund sessile false spikes; rhachis like the axis, but more slender; pedicels 4-2-nate, extremely short, tips discoid.

SPIKELETS crowded, ovate-oblong to lanceolate-ovate, 2-3 lines long, rarely less, pallid, hispid.

GLUMES, *lower* ovate, thin, acuminate or mucronate, about half the length of the spikelet, 3 to sub-5-nerved; *upper* oblong, thin, equalling the spikelet, concave, cordate-acuminate or produced into a short, scabrid compressed awn, 5-nerved or 7-nerved at the tips, pubescent between the hispidulous nerves. Florets, *lower* male or sometimes barren; valve similar to the upper glume, but flat or depressed on the back, subhyaline except the herbaceous sides, awn 2 to 12 lines long; pale oblong, keels scabrid. Anthers when present 1 line long; perfect floret oblong to lanceolate-oblong, mucronate-acuminate, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines long, excluding the scabrid mucro, straw-coloured, smooth, shining; valve 5-nerved.

Habitat: NATAL. Near Newcastle, 3000-4000 feet, March, *W. Sutherland* (*Wood* 10,007).

“Through Tropical Africa, from the Senegal to Abyssinia, in Madagascar and India.”

Drawn from the specimen collected by *W. Sutherland*, the only one in the Colonial Herbarium.

Fig 1. A spikelet; 2, lower glume; 3, upper glume; 4, lower valve; 5, pale; 6, upper valve; 7, pale; 8, pistil, stamens and lodicules. *All enlarged.*



M.F.

PANICUM STAGNINUM, KOEN.



VULPIA MYUROS, GMEL.

VULPIA, Gmel.

SPIKELETS laterally compressed after flowering, on short clavate pedicels in usually more or less secund and spike- or raceme-like panicles; rhachilla slender, disarticulating above the glumes and between the fertile valves. Florets 5 to 7, long exerted from the glumes, perfect, except the reduced upper ones, or the lowest perfect and the rest reduced to empty valves. **GLUMES** very unequal, *lower* very minute or obsolete, or like the upper subulate to subulate-lanceolate, but much shorter, 1- (or the upper 3-) nerved. Valves subulate-lanceolate, passing into an awn, rounded on the back, faintly 5-nerved; awn straight, often long; callus small, obtusely glabrous. Pales 2-keeled, entire or minutely 2-toothed. Lodicules 2, hyaline, unequally lobed. Stamens 1-3, filaments very short; anthers usually enclosed in the floret during flowering or permanently. Ovary glabrous (in the South African species) or minutely hispid at the top; stigmas sessile, plumose, permanently enclosed in the floret, or shortly exerted at the base. Grain linear, strongly compressed from the back, concave in front, more or less adhering to the pale or also to the valve; embryo small; hilum filiform, long.

ANNUAL OR PERENNIAL, slender grasses; blades linear, very narrow, usually convolute or involute, at least when dry; panicles contracted, narrow, usually more or less secund, with short clavate pedicels. **SPIKELETS** subcylindric and acuminate when young, then opening out, laterally compressed and broader upwards; flowers often cleistogamous. Species about 20, mostly in the Mediterranean region and the adjacent countries. The two species found in South Africa have been introduced into many parts of the world.

PLATE 493.

VULPIA MYUROS, Gmel. (Fl. Cap., Vol. VII., p. 724).

Nat. Order Gramineæ.

ANNUAL, tufted.—**CULMS** slender, geniculate, ascending or suberect, $\frac{1}{2}$ to $1\frac{1}{2}$ foot high, glabrous, smooth, 2- (sometimes 3-) noded, uppermost internode $2\frac{1}{2}$ to 6 inches long, usually wholly enclosed in the uppermost sheath; sheaths (particularly the upper) rather loose, smooth, glabrous; ligules very short, often obtusely auricled; blades linear, tapering to a very acute point, 1 to 6 inches by $\frac{1}{2}$ to 1 line, flat or involute when dry, or setaceous, flaccid to subrigid, finely and prominently few-nerved, puberulous or scabrid on the upper surface, otherwise glabrous and smooth.

PANICLE spike-like, erect or nodding and flexuous, narrow, subsecund or secund or facing all sides, 2 to 10 inches long; rhachis filiform, acutely triquetrous, like the branches scabrid along the angles or smooth below; branches fascicled or 2-nate and very unequal, or solitary (lowest often very remote), racemose from the base or the upper reduced to a solitary spikelet, adpressed or lowest slightly nodding; lateral pedicels about $\frac{1}{2}$ line long, smooth.

SPIKELETS rather close or the lowest of the lower branches remote, $3\frac{1}{2}$ to 5 lines long (exclusive of the awns), loosely 3 to 6-flowered; rhachilla joints up to $\frac{3}{4}$ line long.

GLUMES, *lower* reduced to a minute scale (particularly in the lateral spikelets) or like the upper subulate, but much shorter (up to $\frac{3}{4}$ line long), nerveless or 1-nerved, *upper* $1\frac{1}{2}$ to $2\frac{1}{2}$ lines long, acute, setaceously acuminate, 1-nerved. Valves linear-lanceolate, acuminate in profile, 2 to $3\frac{1}{2}$ lines long, faintly 5-nerved, scabrid, sometimes ciliate in the upper part; awn 3 to 10 lines long, fine, scabrid. Stamen 1; anther $\frac{1}{6}$ to $\frac{2}{5}$ line long. Grain $1\frac{1}{2}$ to 2 lines long.

Habitat: NATAL. Ixopo, J. Schofield, in Government Herbarium, 8938; 10,489.

Drawn from Schofield's specimens.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, valve; 5, pale; 6, pistil, stamen and lodicules. *All enlarged.*

BRIZA, Linn.

SPIKELETS many flowered, laterally compressed, paniced ; rhachilla disarticulating above the glumes and between the valves ; florets hermaphrodite, the upper gradually reduced. Glumes scarious or firmly membranous, keeled or boat-shaped or saccate with the back rounded, persistent, 3- to sub-7-nerved, subequal. Valves close, firmly membranous with scarious margins or almost wholly scarious, keeled or boat-shaped or saccate with the back rounded, obtuse, acute, subacuminate or subaristate, 7-9-nerved, outer 3, or all the side-nerves spreading from a common base, rarely 5-nerved with the side-nerves distant at the base. Pales broad, shorter than the valves, 2-keeled, keels often winged. Lodicules 2, obliquely ovate, hyaline, fleshy at the base. Stamens 3. Ovary glabrous ; styles short, distinct ; stigmas very slender, loosely plumose, laterally exerted. Grain tightly embraced by the hardened back of the valve and the pale, usually adherent to the latter, concavo-convex to plano-convex, usually dorsally compressed ; hilum basal, small, elliptic oblong or linear ; embryo small.

ANNUAL OR PERENNIAL ; blades flat and rather broad or convolute and narrow, ligules hyaline. Panicle effuse with capillary branchlets and pedicels and nodding spikelets, sometimes reduced to a raceme or straight, contracted or almost spiciform.

Species about 11 ; four mainly in the Mediterranean region, of which two have been introduced into various temperate countries, one all over temperate Europe and Asia, the rest in South America.

PLATE 494.

BRIZA MINOR, Linn. (Fl. Cap., Vol. VII., p. 709).

Nat. Order Gramineæ.

ANNUAL, glabrous.—CULMS tufted, geniculate, $\frac{1}{2}$ to 2 feet long, smooth or somewhat rough above, 2 to 3-noded ; internodes exerted, at least ultimately ; sheaths loose, smooth, the lower thin, striate ; ligules oblong, 2-3 lines long ; blades linear to lanceolate-linear, acute, 2 to 8 inches, by $1\frac{1}{2}$ to $4\frac{1}{2}$ lines, flat, flaccid, more or less scabrid or almost smooth.

PANICLE broadly obovate, 2 to 4 inches long and almost as broad, erect, lax, rather divaricate ; rhachis slender, straight ; branches geminate, distantly and repeatedly tri- or di-chotomously branched, scabrid, filiform to capillary, the lowest up to 3 inches long ; pedicels 6-2 lines long, finely capillary, smooth above.

SPIKELETS triangular to ovate, very obtuse, often broader than long, $1\frac{1}{2}$ to 2 lines long, 4 to 7-flowered, nodding, green, rarely purplish below.

GLUMES thinly scarious, horizontally spreading, subequal, obtuse or subacute, 3-nerved, 1 to $1\frac{1}{4}$ line long. Valves very close, very broadly cordate-ovate, very obtuse with the tips often inflexed, very gibbous below, 1 to $1\frac{1}{4}$ line long, glabrous, 7-nerved, the side-nerves joining at the base, hyaline margins very broad ; pales elliptic, scarcely $\frac{3}{4}$ line long, finely winged, wings very minutely ciliolate ; lodicules up to $\frac{1}{4}$ line long ; anthers almost $\frac{1}{4}$ line long in the lower florets, much smaller in the upper ; grain shortly oblong, truncate, convexo-concave or subtriquetrous, broadly grooved, $\frac{3}{8}$ line long.

Mediterranean regions ; introduced into many parts of the world.

Habitat : NATAL. Near Durban, *Wood*, in Government Herbarium, 10,450.

Fig 1, Lower glume ; 2, upper glume ; 3, valve in profile ; 4, same, front view ; 5, pale ; 6, pistil, stamens and lodicules. *All enlarged.*



BRIZA MINOR, LINN.



LOLIUM MULTIFLORUM, LAM.

M.F.

PLATE 495.

LOLIUM MULTIFLORUM, Lam. (Fl. Cap., Vol. VII., p. 739).

Nat. Order Gramineæ.

ANNUAL.—CULMS fascicled, geniculate ascending or erect, $1\frac{1}{2}$ to 3 feet long, glabrous, smooth or slightly rough in the upper part, 4-5-noded, internodes at length more or less exserted, simple or branched below.

LEAVES glabrous; sheaths striate, smooth, lower sometimes purplish; ligule very short, truncate from an auricled base; blades linear, long tapering to a very slender point, 4 to 8 inches, by 1 to $2\frac{1}{2}$ lines, flat, somewhat rigid, scabrid on the upper side and along the margins; spikes erect, $\frac{1}{2}$ to 1 foot long, of numerous (12 to 30) spikelets; axis rather slender, smooth except at the scabrid margins; internodes (except the lowest) distinctly shorter than the spikelets.

SPIKELETS strongly compressed from the side, elliptic-oblong, 6 to 8 lines long, obliquely erect, 9 to 11 flowered, uppermost floret long exserted from the glume.

GLUMES, *upper* narrow, oblong, subobtuse, somewhat rounded on the back, equalling the contiguous floret or nearly so, strongly 7-nerved. Valves awned or mucous, oblong, $2\frac{1}{2}$ to 3 lines long, subherbaceous-chartaceous, light green or tinged with purple above, 5-nerved, smooth; awn (when present) straight, very fine, $2\frac{1}{2}$ to 4 lines long, close to the short hyaline minutely 2-toothed tip; keels of pales green, crested, scabrid; anthers $1\frac{1}{2}$ to 2 lines long; grain linear-oblong, semiterete, $1\frac{1}{2}$ line long, deeply channelled in front, adhering to valve and pale.

Habitat: NATAL. Polela, *M. S. Evans*, October, 1905; Government Herbarium, 10,772; also without precise locality, mixed with *Buchanan's* No. 50, in Government Herbarium, No. 10,773.

Also in Cape Colony. A native of Central Europe and the Mediterranean countries. Introduced in Natal and Cape Colony.

Fig 1, A spikelet; 2, upper glume; 3, valve; 4, pale; 5, pistil, stamens and lodicules. *All enlarged.*

PLATE 496.

ANDROPOGON TRANSVAALENSIS, Stapf. (Fl. Cap., Vol. VII., p. 363).

Nat. Order Gramineæ.

PERENNIAL, tufted.—CULMS erect, subgeniculate, simple, slender, over 3 feet long, terete, glabrous, 5-noded below the panicle; sheaths tight, glabrous, the *lower* firm, short, persistent, keeled above, fugaciously and adpressedly hairy, the *upper* much shorter than the internodes; ligules membranous, rounded, up to 1 line long; blades narrow, linear, tapering to a long setaceous point, up to 1 foot, by $1\frac{1}{2}$ line, flat or convolute above, rigid, glabrous, scabrid in the upper part.

PANICLE consisting of about 12 erect 2-3-nate simple, long filiform branches from long narrow spathiform sheaths bearing filiform or setaceous blades; spathes finely linear, acute, 2 to $2\frac{1}{2}$ inches long, glabrous, reddish; common peduncles filiform, exerted near the tip of the spathe, the exerted part flexuous, $\frac{1}{4}$ to 1 inch long, pubescent and bearded with long tubercle-based hairs, dark purple. Racemes contiguous, 6 to 8 lines long, one sessile, the other on a fugaciously hairy purple peduncle, joints filiform, obliquely truncate, $1\frac{1}{2}$ line long, dark purple, densely ciliate with rigid white hairs; pedicel very similar, usually produced into a fine subulate membranous appendage, facing the upper glume.

SPIKELETS, sessile ones 2 to 4 in each raceme, perfect with the exception of the lowest, which is male like the pedicelled; perfect spikelets linear-oblong, $2\frac{1}{2}$ lines long, purple, hairy, callus acute, bearded, up to $\frac{1}{2}$ line long.

GLUMES, *lower* subchartaceous, truncate, dorsally flattened, sometimes shallowly pitted, intracarinular nerves 5, prominent above almost throughout or evanescent below, hairs scattered all over or mainly near upper margins; *upper* obtuse, 3-nerved, hairy above; *lower* valve almost equalling the glumes, linear, obtuse, sub-2-nerved, scantily ciliate; *upper* shortly 2-lobed, ciliate, 3-nerved near the base, awn about 1 inch long, slender, pubescent and kneed below the middle; pale 0; male spikelets narrowly lanceolate, up to $3-3\frac{1}{2}$ lines long, muticous, hairy or lowest glabrous, 7-9-nerved, keels scantily and rigidly ciliate above; *upper* acute, hairy or glabrous, long ciliate; valves almost equalling the glumes, ciliate, *lower* 3, *upper* 1-nerved.

Intermediate between *A. Dregeanus* and *A. filipendulus*.

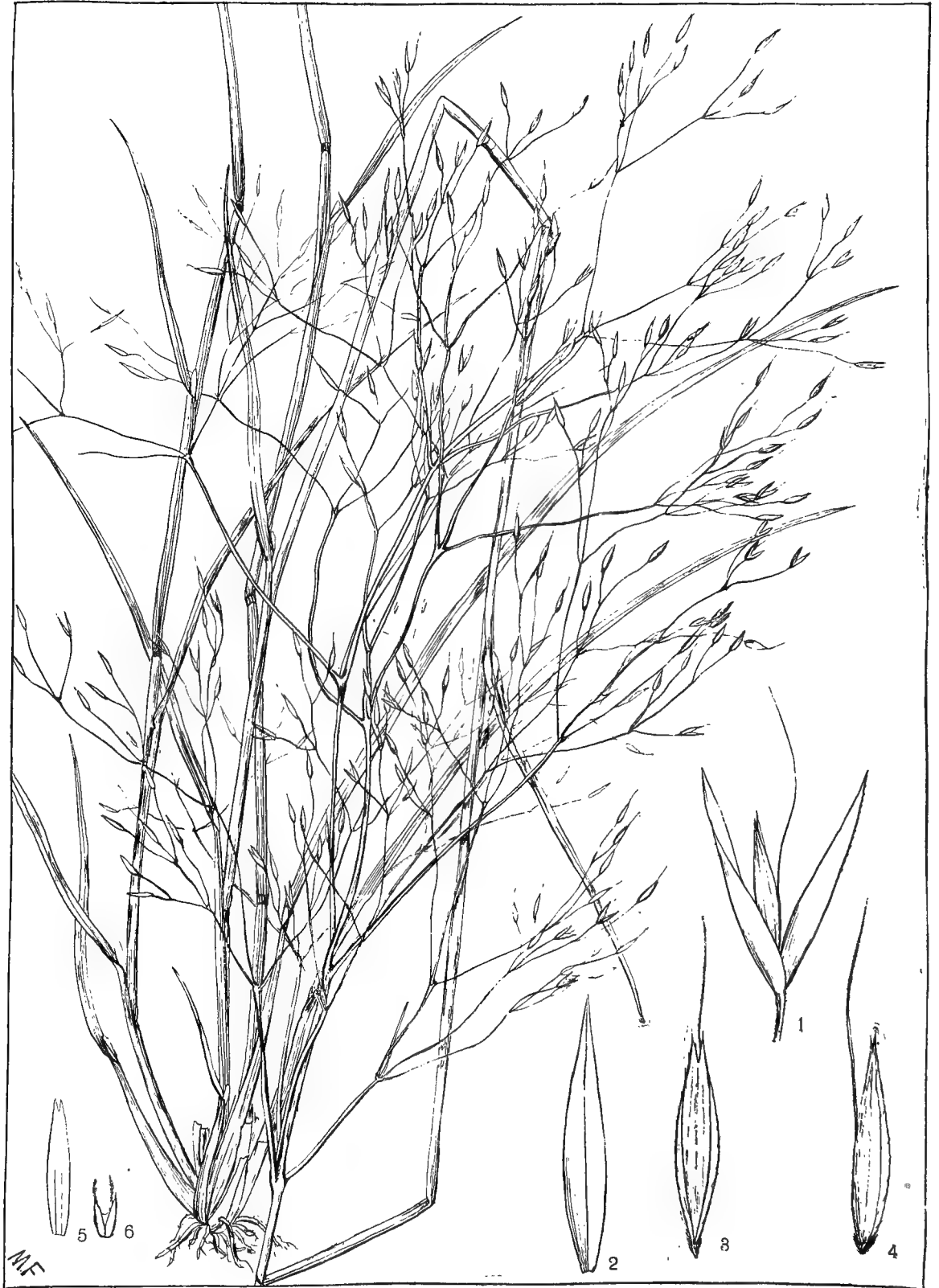
Habitat: NATAL. Dundee, *W. E. Green* 88, March, 1899, 4000-5000 feet alt. (Government Herbarium 8107); same locality, *Green* 50, December, 1898 (Government Herbarium 8120).

Fig 1, Spikelets. *Sessile spikelets*—2, Lower glume; 3, upper glume; 4, lower valve; 5, pale; 6, ovary and lodicules; 7, upper valve with base of awn. *Pedicelled spikelets*—8, Lower glume; 9, upper glume; 10, lower valve; 11, upper valve. *All enlarged*.



M.F.

ANDROPOGON TRANSVAALENSIS, STAFF.



AGROSTIS SUAVIS, STAPP.

PLATE 497.

AGROSTIS SUAVIS, Stapf. (Kew Bulletin, 1908, ined).

Nat. Order Gramineæ.

PERENNIAL, laxly caespitose, innovation shoots extravaginal, suddenly ascending or stoloniferous.

CULMS erect about 2 feet long to base of panicle, 3 to 5-noded, glabrous, simple, internodes exerted, produced before flowering to 3 to 5 inches beyond the mouth of the sheath. Sheaths very lax above, glabrous, smooth, the lowest purple, ligules hyaline, oblong, $2\frac{1}{2}$ lines long; blades narrow-linear, shortly acute, plaited in dried specimens, up to 6 inches long (upper ones 14 to 18 lines long), spreading to 1 line wide, very green, glabrous, scaberulous towards the apex, very narrowly sulcate on the face to near the middle between the primary nerves, primary nerves on each side usually 4.

PANICLE divaricate, lax, obovate or oblong, more than 11 inches long, 6 to 8 inches wide, *lower* branches semiverticillate, 4-5-nate, *upper* 2-nate, mostly undivided for 10 to 14 lines (some for $2\frac{1}{3}$ inches) then twice or three times or four times divided into branchlets, the longer $4\frac{3}{4}$ inches long, filiform, smooth below, scaberulous above, pedicels capillary, terminal up to 9 lines long, lateral ones $1\frac{1}{2}$ line long.

SPIKELETS 2 to $2\frac{1}{2}$ lines long, straw often suffused with purple. Rhachilla reduced to a fascicle of hairs scarcely $\frac{1}{2}$ line long.

GLUMES equal, lanceolate, acute, 1-nerved, scarious. Valves seen from the side narrowly lanceolate, ovate lanceolate when expanded, $1\frac{1}{2}$ line long, shortly bifid, 5-nerved, lateral nerves excurrent in mucros, laxly clothed with fine hairs on the back, awn setiform, straight, inserted a little below the middle; pales hyaline, 2-nerved, truncate, a little shorter than the valves, glabrous. Anthers not seen, grain linear-oblong, $\frac{3}{4}$ line long.

Habitat: NATAL. Van Reenen, 5500 feet alt., January, Wood 8913.

Dr. Stapf says of this grass:—"Closely related to *A. eriantha*, Hack., but distinguished by the divaricate effuse panicle, distant from the top of the leaf, with 4-5-nate semiverticillate branches." He also says:—"This differs from *A. eriantha*, Hack., a native of the Transvaal, solely in the form of the panicle. Mature specimens of *A. eriantha*, communicated by Messrs. Sutton, have the same narrow contracted panicle as Schlechter's younger flowering type samples, and the branches of their panicles are throughout geminate. On the other hand, all of Wood's specimens at Kew (4 sheets) exhibit the form described above."

Fig 1, Floret; 2, glume; 3, valve, inner view; 4, same in profile; 5, pale; 6, pistil and lodicules. *All enlarged.*

PLATE 498.

PANICUM CAPILLARE, Linn. (Fl. Cap., Vol. VII., p. 407).

Nat. Order Gramineæ.

ANNUAL.—CULMS fascicled, erect, or ascending, 1 to 2 feet high, robust, about 5-noded with flowering branches from some or most of the nodes, sheathed all along, glabrous or hairy below the panicle or nodes.

LEAVES more or less (often very copiously) hirsute or villous, rarely subglabrous; sheaths lax; ligules membranous up to $\frac{1}{2}$ line long, ciliate; blades linear to linear-lanceolate, long tapering to a fine point, subrigid to flaccid, margins scabrid.

PANICLE often very large, decomposed, lax, contracted, then opening out from the top downwards, up to 1 foot or more by $\frac{3}{4}$ foot; rhachis angular, often sparsely hairy, smooth below, scabrid above; branches solitary, subopposite or 3-nate, or irregularly approximate, filiform, angular, scabrid, undivided for $\frac{1}{4}$ to 1 inch from the base, then repeatedly and very laxly divided, the longest up to 1 foot long; branchlets long, finely filiform to capillary at length divaricate, scabrid; pedicels very unequal, from $\frac{1}{2}$ line to more than $\frac{1}{2}$ inch long, capillary, very scabrid, tips subclavate.

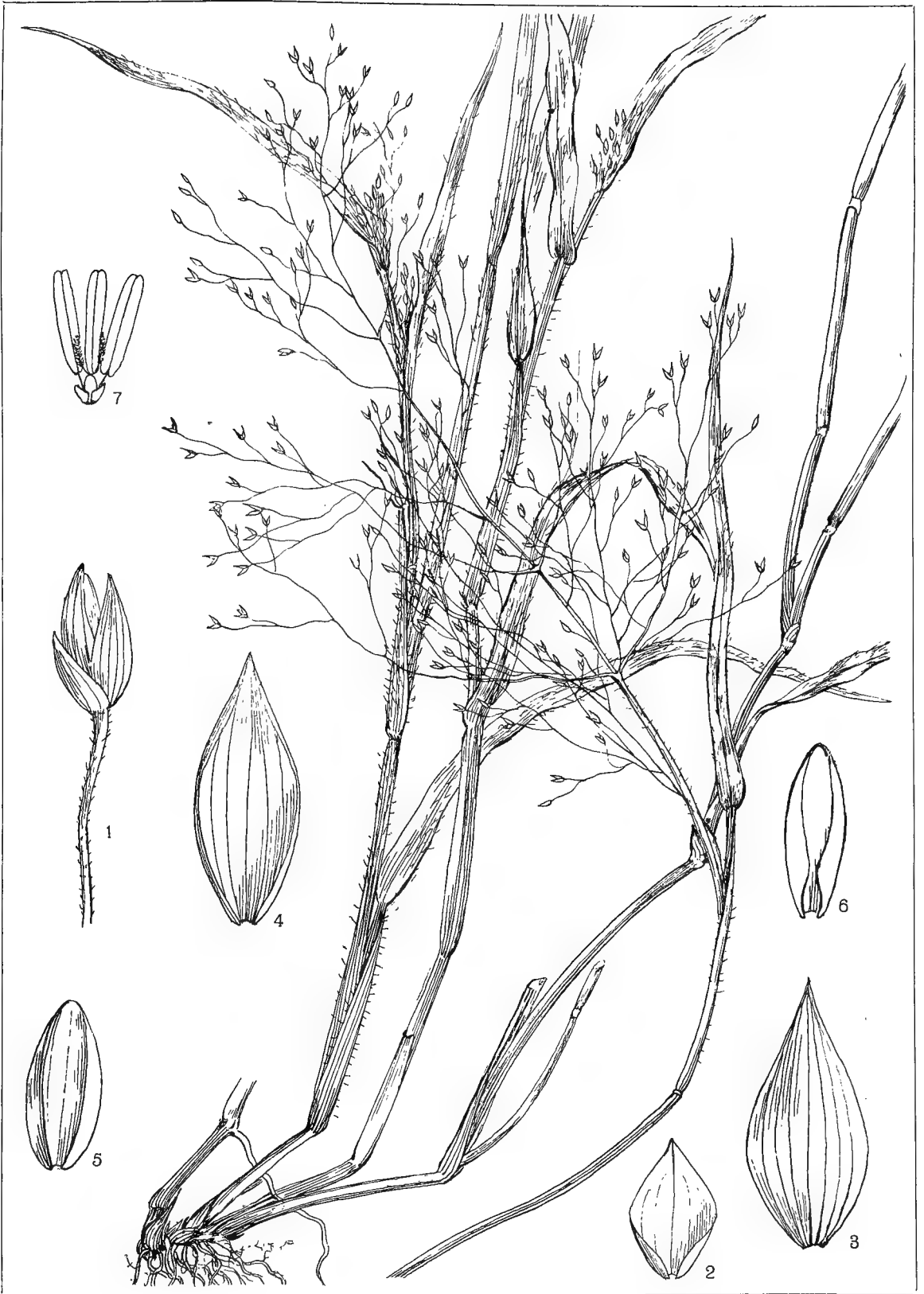
SPIKELETS oblong to lanceolate-oblong, acuminate, from less than 1 to $1\frac{1}{4}$ line long, greenish or purplish, glabrous.

GLUMES, *lower* broadly ovate, acute, equalling about half of the spikelet, 3 to sub-5-nerved; *upper* oblong, acuminate, from less than 1 to $1\frac{1}{4}$ line long, 5- to 7-nerved; lower floret reduced to the valve, which very much resembles the upper glume. Perfect floret oblong, subacute, $\frac{3}{4}$ to $\frac{7}{8}$ line long, very smooth, shining, yellowish; valve faintly 7-nerved; anthers $\frac{1}{3}$ line long.

A native of North America, introduced elsewhere.

Habitat: NATAL. Near Maritzburg, *St. George* (Wood 8880), December 1898.

Fig 1, Spikelet; 2, lower glume; 3, upper glume; 4, lower valve; 5, upper valve; 6, pale; 7, pistil, stamens and lodicules. *All enlarged.*



PANICUM CAPILLARE, LINN.



ANDROPOGON SCHLECHTERI, HACKEL.

PLATE 499.

ANDROPOGON SCHLECHTERI, Hackel. (Bull., Herb., Boissier, No. 9, 1906).

Nat. Order Gramineæ.

PERENNIAL, innovation shoots intravaginal. CULMS erect, slender, about 12 inches high, subcompressed, 3 to 4-noded, branching from the 2 or 3 upper nodes, branches solitary or in pairs, very slender, *lower* elongate, *upper* short, all floriferous. Sheaths much shorter than the internodes of the culm, subcompressed, rather lax and glabrous at the nodes, the *upper* or two upper spathiform, 9 to 14 lines long, leafless, becoming rufous, the *lower* 6 or 8 densely crowded at the base of the culm, equitant below, above flabellate, subcompressed, glabrous, rigid, becoming fuscous with age; ligule very short, membranaceous, arcuate; blade linear from an equal base, acute, plane or those of the innovation shoots subconvolute, the lowest elongate (to 8 inches long), the upper much shorter, all erect, rigid, green or becoming bluish purple, the basal pilose above, the others glabrous, finely nerved. Racemes solitary at the ends of the culms and branches, the base of the slender glabrous peduncle included in the sheath, subtended by and often overtopping (rarely shorter than) the spathe, erect, 5 to 9 lines long, $1\frac{1}{2}$ to 2 lines broad, densely flowered; rhachilla joints straight, more than twice shorter than the spikelets, slender, glabrous, subcupulate at apex.

Sessile spikelets linear-lanceolate, 2 to $2\frac{1}{4}$ line long, turning violet blue, glabrous. *Lower* glume chartaceous-membranaceous, linear-lanceolate, acute, subentire or minutely bi-denticulate, margins inflexed, 2-nerved, 2-keeled, smooth, plane; callus very short, obtuse, glabrous; *upper* glume subequalling the lower, lanceolate, acuminate, mucronulate 1-nerved, keeled, glabrous. *Lower* valve a little shorter than lower glume, linear-oblong, obtuse or acute, hyaline, nerveless, glabrous; *upper* valve a quarter shorter than the upper glume, linear-lanceolate, acute, mucicous, hyaline, nerveless, glabrous; pale 0. Lodicules cuneate. Anthers very minute without pollen. Stigma shortly plumose.

Pedicelled spikelet male, pedicel shorter than the joint, lanceolate, $2-2\frac{1}{4}$ lines long, glabrous. *Lower* glume lanceolate, acute, 9-nerved, *upper* glume equalling the lower, acuminate, 5-nerved; *lower* and *upper* valves subequalling the lower glume, lanceolate, acute, 1-nerved, hyaline; anthers 1 line long.

Habitat: NATAL. In damp places, Clairmont, 20 feet alt., *Schlechter* 3143; Krantzklouf, *Schlechter* 3209; Clairmont, 20 feet alt., *Wood* 8543, September.

Fig 1, Raceme. *Sessile spikelet*—2, Lower glume; 3, upper glume; 4, lower valve; 5, upper valve; 6, pistil, stamens and lodicules. *Pedicelled spikelet*—7, Lower glume; 8, upper glume; 9, lower valve; 10, upper valve; 11, stamens and lodicules. *All enlarged.*

PLATE 500.

ISCHÆMUM FRANKSÆ, J. M. Wood. (Kew Bulletin, 1908, ined.)

Nat. Order Gramineæ.

Compactly cæspitose, intravaginal innovation shoots and flowering culms closely congested, covered at the base after fires with the old persistent hardened sheaths.

CULMS slender, 8 inches high, 1 to 3-noded, glabrous except the upper internode which is pilose below the inflorescence with white or grey hairs. Lower sheaths of the leaves laterally compressed, keeled, hard, pilose, at length glabrescent, those of the culms rather more lax, upper narrower, becoming purple, pubescent, often longer than the internodes; ligules reduced to a ring of hairs; blade setaceous filiform, acute, laterally compressed, in transverse section semi-oblong, plane on the face, or those of the culms subchannelled, those of the innovation shoots 8 inches (or more) long, $\frac{1}{4}$ line broad (i.e., as compressed), bright green, smooth, glabrous, or near the base pilose. Racemes becoming purple, 2-3, erect, 10 lines to $2\frac{1}{2}$ inches long, shortly peduncled, peduncles ashy grey, pilose, bearded at the base, sometimes supported by subulate bracts, up to 5 lines or more long; joints clavate, triquetrous, white pilose on the outer side, 2 to 3 lines long.

Sessile spikelets oblong-lanceolate, acute, 3 to 4 lines long; lower glume white bearded at base, chartaceous, dorsally flattened, mostly rough tuberculate on the keels and intracarinial nerves, the tubercles on the keels bearing 1-2 white, short, rigid hairs, nerves seen from the front green, 8-9, including the keels; upper glume boat-shaped, equalling the lower one, membranaceous, 5-nerved, the boat-shaped keel rigidly ciliate, margins ciliate; lower floret male, valve oblong-lanceolate, $2\frac{1}{2}$ to 3 lines long, hyaline, becoming purple, 3-nerved, minutely scabrous on the back, ciliate, pale 2-nerved, hyaline, subequalling the valve; upper floret perfect, valve at apex minutely tridentate, the middle tooth mucronulate, otherwise similar to the lower floret. Anther 2 lines long.

Pedicelled spikelet on clavate outwardly pilose pedicels 3 lines long, supported by the sessile, similar except that the glumes have but 3 intracarinial nerves, and the valve of the upper floret which is male or hermaphrodite is scarcely tridentate.

Habitat: NATAL. Tabamhlope, 6000-8000 feet alt., J. Wylie (in Herbarium, Wood 10,540), October, 1907.

Of this grass we have but few specimens, and all of the one gathering; they had been growing amongst grass which had recently been burned off, so the length of leaves and culms must for the present remain doubtful. This grass has been named after Miss Franks, Assistant in the Government Herbarium, who dissected it, and has made all the drawings and dissections in Vol. V. of "Natal Plants," which volume includes grasses only. Dr. O. Stapf says of this grass:--"A very distinct species, differing from all others by the very narrow leaves, by the spikelets of the pairs being almost alike, the lower glumes without wings flattened dorsally, tuberculate on the keels and intracarinial nerves." He also says: "Mr. Wood's description has been amplified from the excellent material which he was good enough to communicate to Kew. Technically this striking species would come under the section *Evischæmum*, but I have not been able to make out its exact affinities."

Fig 1, Lower glume; 2, upper glume; 3, lower valve; 4, pale; 5, stamens and lodicules; 6, upper valve; 7, pale; 8, pistil, stamens and lodicules. All enlarged.



ISCHÆMUM FRANKSÆ, J. M. WOOD.

NATAL PLANTS.

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GRASSES.

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