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(Cyperaceae).—Part 1.

BY

S T. BLAKE, M.Sc.

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# MONOGRAPHIC STUDIES IN THE GENUS *FIMBRISTYLIS* (CYPERACEAE).—PART I.

By S. T. BLAKE, M.Sc.,

Walter and Eliza Hall Fellow in Economic Biology, University of Queensland.

THE genus *Fimbristylis* is represented by approximately eighty known species in Australia, principally in the coastal and sub-coastal districts within the tropics. They are to be found in a variety of situations, ranging from wet swampy places to stony hill-tops, and quite a considerable number mingle with the grasses of the open forest country, particularly on sandy soils, where they form an integral part of the natural pasture. The degree of endemism is apparently very high.

The present paper is intended to serve as an introduction to a revision of the genus by the presentation of descriptions of the majority of species hitherto undescribed. The actual types of all these are deposited in the Queensland Herbarium, Brisbane. Duplicates are in my own herbarium, and others are being distributed to various important herbaria.

The circumscription of species has been based on the study of populations rather than of isolated plants or specimens. The majority of Australian species have now been studied in this way, and species within the sections *Trichelostylis*, *Heleocharoides*, and *Abildgaardia* seem for the most part to be fairly well defined.

The section *Dichelostylis*, however, includes a most difficult series of intricately related forms, and the discrimination of species is a more than ordinarily difficult task. Before any degree of certainty as to the identity of the Australian forms can be reached, it will be necessary to study the types, hitherto inaccessible, of a number of species usually referred to *F. diphylla* (Retz.) Vahl, which is regarded as a very polymorphic species spread throughout the warmer parts of the world. As thus understood, this species in Australia includes several distinctive forms, of which the following are the chief:—

**A.** Rhizome very short; basal sheaths firm and more or less shining; culms smooth or scaberulous; leaf-laminae glabrous or nearly so; bracts (only 1–2 prominent) shorter than inflorescence; spikelets prominently pedicellate; nut obovate, not cuneate, rounded at apex.

Within this are two minor trends, the one chiefly tall plants with numerous spikelets, the other of small plants with a much reduced inflorescence of 5–1 spikelets. The first trend is widely spread in Australia, the second is as yet only known from the Moreton district of Queensland.

**B.** As above, but culms hispid with white hairs at least in upper part, and leaf-sheaths and laminae white-villous.—Only known from the Moreton District of Queensland.

**C.** Rhizome and leaf-sheaths as in *A*; culms usually stouter and distinctly compressed; leaves relatively broad and flat; bracts several usually exceeding the compound or decompound inflorescence; spikelets congested and very short-pedicelled, pedicels much shorter than the relatively small usually dark brown spikelets; bracteoles several and prominent; nut relatively larger than, but in form comparable with *A*.—A widely spread form. It is *F. diphylla* var. *polystachya* Domin. His forma *coarctata* is an epharmane (a form produced by variation in conditions of habitat) comprising smaller plants with short rays, so that the whole inflorescence is congested.

**D.** Rhizome horizontal but short, more or less knotted; culms in a more or less linear series, slender, swollen at the base; lower leaf-sheaths at length fibrous; leaves narrow; bracts rather short; inflorescence mostly lax and rather scanty; spikelets rather long-pedicelled; glumes thinner than in the previous forms, rather longer, rather more prominently keeled; nut broad, cuneate-obovate, rather truncate at apex.—There are two minor trends, the one with tuberculate nuts and usually bright chestnut spikelets, the other with non-tuberculate nuts and usually deeper brown spikelets.

This form is referred by Bentham and Domin to *F. diphylla* var. *gracilis* (R.Br.) Benth., but whether *F. gracilis* R.Br. represents this form or the next cannot be certainly known until Brown's type has been examined. The form has a fairly wide distribution in South-east Queensland and New South Wales. In strictly coastal regions it occurs chiefly on or near the crests of stony hills, and the specimens are usually of the first trend. The other trend is chiefly inland.

**E.** Rhizome, culms, leaf-sheaths and laminae, bracts and inflorescence very similar to *D*; glumes similar; nut much smaller, mostly 0.6–0.8 mm. long, rather narrowly obovate, apex rounded, base cuneate, more or less tuberculate.—Chiefly inland, or when coastal (in Queensland only) on stony ridges.

Very similar in habit to the preceding, but the nut is very different in size and form.

**F.** Rhizome as in *D* and *E*; basal leaf-sheaths split into straight fibres; leaves much as in *D* and *E*; inflorescence as in *D* and *E*, but spikelets shorter and less brightly coloured; glumes much smaller than in the other forms (rarely 2 mm. long); nut small, but of the same relative length (to glume) as in *A* and *B*, finally blackish (in all other forms white or pale brownish), cuneate-obovate, rather narrow, apex rounded.—Only known from two collections from the far North-west of Queensland.

**G.** Stoloniferous; culms solitary; leaves narrow; inflorescence simple or sub-compound; spikelets rather large; otherwise as in *A*.—Perhaps referable to the Indian *F. stolonifera* C. B. Clarke. Only known from two collections from a suburb of Brisbane.

*F. depauperata* R.Br. and *F. spirostachya* F. Muell. are considered by C. B. Clarke (Hook.f. Fl. Brit. Ind. vii. 637 (1894)) as varieties of *F. diphylla*.

Domin (Biblioth. Bot. xx. Heft 85, 457 (1915) so considers *F. spirostachya*, but keeps *F. depauperata* distinct. To my mind, both are extreme forms of one and the same species, distinct from *F. diphylla*, differing in the constantly annual habit, the softer and softly hairy leaves and bracts, the more or less hairy culms and rays, the glumes often minutely ciliolate at the upper edge, the cells composing the glumes less distinctly oblong in shape, and in the relatively shorter and broader style. Domin (l.c. 456) describes four varieties, but these seem merely epharmones. Certainly his vars. *typica*, *plurispiculata* and *polyphylla* may be found in a single population, and the differences appear to be due to differences in degree of development due sometimes to crowding, but more often to differences in the degree of permanence of available moisture. Domin also stresses the distinctiveness of *F. depauperata* from *F. annua* (All.) R. & S., but if the only specimens I have of the latter (*Ladurner in Kneucker Cyp. & Junc. exsicc.* 160, from South Tyrol) are typical, I cannot see that Domin's opinion is justified.

NOTE.—According to C. E. C. Fischer (Kew Bull. 1935, 149-150) the type of *Scirpus diphyllus* Retz. is identical with the type of *S. dichotomus* L., so that the species commonly known as *Fimbristylis diphylla* (Retz.) Vahl has to be called *F. dichotoma* (L.) Vahl. Whether any of the Australian forms is strictly comparable with the Linnean species is unknown, and to avoid ambiguity the generally accepted name has been employed. The Australian plant known as *F. dichotoma* (L.) Vahl has to be called *F. bisumbellata* (Forsk.) Bubani.

***Fimbristylis elegans* S. T. Blake**; species nova (sect. *Trichelostylis*) affinis *F. quinquangulari* Kunth, sed spiculae rhachilla subexalata, staminibus 2, stylo tenuiore glabro, nuce admodum fusciscente, tantum obscure trigona, basin versus distincte cuneata, apice abruptius obtusata, differt.

*Planta* annua, parva, fere glabra. *Culmi* fasciculati, erecti, gracillimi, usque ad 25 cm. alti, 5-anguli, laeves vel fere laeves vel superne  $\pm$  scabriduli, glabri, 0.4-0.8 mm. crassi. *Folia* graminea, tenuiter herbacea, usque ad 14 cm. longa, dimidio culmo breviora longiorave, 0.5-1.5 mm. lata, plana vel fere plana, apice subacuta, subtus 3-5-nervia, valde carinata, supra leviter reticulata enervia, marginibus incrassata, tantum apicem versus parce scaberula, glabra; vaginae antice hyalino-scariosae, nonnunquam glandulosae, ore obliquae et prope laminae basin minute ciliolatae; folia caulina 2-4, saepe brevia. *Anthela* vel composita vel simplex vel subdecomposita. *Bracteae* 2-3, foliis subsimiles, inaequales, semper evolutae sed breviusculae, infima anthelam raro adaequans; *bracteolae* setaceae, breves, vel subglumiformes. *Radix* plerumque 4-8, raro 2-3, inaequales, usque ad 2 cm. longi, gracillimi sed rigidi, subtriquetri, superne scabridi, e prophylo ore oblique secto nervis scabro-ciliato orti; *radioli* usque ad 5, usque ad 1 cm. longi, secundarii spiculis multo longiores vel nulli. *Spiculae* in apice radiorum radiolorumque singulatim dispositae, fusco-brunneae, ovoideae vel oblongae, obtusae, 2.5-4 mm. longae, 1.5-2 mm. latae, polygonae, multiflorae. *Rhachilla* profundius excavata, subexalata. *Glumae* undique imbricatae, spissae, appressae, late ovatae, obtusissimae, apiculatae vel superiores muticae, manifeste carinatae, carina 3-nervi in mucronem brevem leviter patulum saepe setulosum plerumque excurrente, lateribus tenuiter membranaceae enerves, marginibus anguste hyalinae solum apice minute ciliolatae, vel omnino glabrae, 1.1-1.4 mm. longae, cellulis elongatis. *Stamina* 2; antherae anguste oblongae, acutae vel breviter apiculatae, 0.3-0.4 mm. longae. *Stylus* sursum

tenuis triqueter, basin versus pyramidatus, omnino glaber, 0.5–0.7 mm. longus; stigmata 3, tenuissima, papillosa, sublongiora. *Nux* fusco-straminea, vitrea, turbinata, minute stipitata, apice fere rotundata minute umbonulata, obscure et subcompressa trigona, longitudinaliter striata (costulata), transversim trabeculata, leviter verrucosa, cellulis extimis transversim linearibus in seriebus 12–15 dispositis, 0.6–0.65 mm. longa, 0.45–0.5 mm. lata.

QUEENSLAND.—Cook District: Chillagoe, in wet shady places among limestone boulders near creek, 1,150 ft., March 29th, 1938, *Blake* 13534 (TYPE). Burke District: Undilla, approx. 19° 25' S., 138° 45' E., on a stream bank, April 22nd, 1935, *Blake* 8713.

Very close to *F. trachycarya* F. Muell., *F. microcarya* F. Muell., and *F. quinquangularis* Kunth. From *F. trachycarya* it is at once distinguished by the absence of a broad hyaline margin to the glume continued round its apex. It differs from *F. microcarya* in the broader obtuse spikelets, in the very obtuse glumes, and to some extent in foliage. The characters distinguishing it from *F. quinquangularis* are given above. It differs from all these species in the colour of the spikelet (apparently constant) and the number of stamens.

**F. phaeoleuca** *S. T. Blake*; species nova (sect. *Trichelostylis*), affinis *F. trachycaryae* F. Muell., sed glumis majoribus marginibus ciliatis, nuce majore cuneato-obovata fere turbinata, praecipue differt.

*Planta* annua, viridis, elatior usque ad 55 cm. alta. *Culmi* fasciculati, stricti, erecti, acute 5-anguli, angulis angustis elevatis scaberrimi (praecipue sursum), lateribus asperuli, 0.8–1.6 mm. crassi, prope basin foliati. *Folia* pauca, usque ad 40 cm. longa et culmum saepe superantia, caulina 2–3; vaginae glabrae laevesque, manifeste nervosae, ± manifeste carinatae, antice atque ore obliquissimo late albohyalinae; laminae angustissime lineares, sursum longissime acuteque attenuatae saepe autem flexuosae, subrigide herbaceae, planiusculae vel complicatae, subtus paucinerves manifeste acute carinatae, marginibus incrassatae, inter carinam et marginem nervis 1–2 prominulis notatae, supra enerves, omnino glabrae, sed marginibus saepe autem carina sursum scabrae, usque ad 2.9 mm. latae. *Inflorescentia* composita vel decomposita, laxa. *Bracteae* foliis subsimiles sed angustiores, infima anthela paullum longior vel plerumque paullum brevior, superiores gradatim breviores angustioresque, omnes marginibus basis dilatatae membranaceis ciliatae; *bracteolae* setaceae, anthelula breviores. *Radii* 7–11, oblique patentis, rigidi, 5-anguli, scaberrimi, e prophylo membranaceo nervoso piloso ore obliquo bicuspidato orti, inaequales, infimus usque ad 8 cm. longus, ceteri gradatim breviores; *radioli primarii* usque ad 6, usque ad 2.5 mm. longi; radioli ultimi (pedicelli) compressi, scabri, spicula subaequilongi. *Spiculae* in apice radiorum radiolorumque singulatim dispositae, brunneae, albo-variegatae, ovoideae vel oblongo-ovoidae, acutae vel acutiusculae, angulatae, 4.5–5 mm. longae, 2–2.3 mm. latae, subdensiflorae. *Rhachilla* pro ratione robusta, alata, cicatricibus suboblongis. *Glumae* brunneae vel castaneo-brunneae, late albo-marginatae, ovatae, apice erecto vel fere erecto acutiusculae (vel ob margines involutas quasi acutae), muticae vel inferiores mucronatae, dorso 3-nerves carinatae curvae, cellulis subquadratis, lateribus tenuiter membranaceis late albo-hyalinae, marginibus pilis crispis longiusculis albis dense ciliatae, 2.2–2.4 mm. longae. *Stamina* 3; antherae oblongo-lineares, prominule apiculatae, 0.45 mm. longae. *Stylus* glaber, sursum tenuis triqueter,

inferne valde dilatatus pyramidatus, 1.2–1.25 mm. longus; stigmata 3, breviora. *Nux* pallida vix nitida, obovata fere turbinata, apice obtusissima umbonulata, basin versus cuneata, prominule stipitata, omnino trigona, angulis anguste obtuseque costulata, lateribus convexa, inconspicue tessellata, parce tuberculata, cellulis extimis transversim oblongis seriatim dispositis, 0.9–0.95 mm. longa, 0.7–0.75 mm. lata.

QUEENSLAND.—Cook District: On Wrotham Park, ca. 50 miles north-west of Mungana, on heavy soils, both in forest and grassland, April 6th, 1938, *Blake* 13669; Mareeba, by roads in damp depression in *Eucalyptus* forest, ca. 1,300 ft., March 27th, 1938, *Blake* 13439; near Mareeba, in dried-out depressions in *Eucalyptus* forest, 1,700 ft., March 28th, 1938, *Blake* 13480 (TYPE). North Kennedy District: Cashmere, March 20th, 1875, *Armit* 163 in part (a single immature specimen).

Readily enough distinguished by the prominently keeled glumes with broadly white-hyaline margins ciliate at the edges and the cuneate nut. Among the many specimens in the type-collection occasional instances of geminate spikelets were seen, and in one inflorescence triads occur; this appears to be an abnormality.

**F. vagans** *S. T. Blake*; species nova (sect. *Trichelostylis*) admodum affinis *F. quinquangulari* Kunth, sed planta perenni stolonifera, foliis setaceis, spiculis linearibus, antheris cristulatis, nuce haud tuberculata, praecipue differt.

*Planta* perennis, rhizomatosa, viridis, glabra, fere omnino laevis, 40–65 cm. alta (quoad visa). *Rhizomata* primo gracilia stoloniformia, tandem indurata et usque ad 2.5 mm. crassa, squamis ovato-lanceolatis rigidis pallidis striatis mox in fibrillis dissolutis obtecta. *Culmi* solitarii, distantes, stricti, erecti, gracillimi, compressi, pluristriati, sursum  $\pm$  3-anguli, 0.8–1.3 mm. crassi, glabri laevesque, basi bulboso-incrassati. *Folia* plura, setacea, stricta, erecta,  $\frac{1}{3}$ – $\frac{2}{3}$  culmi longa; *vaginae* dorso profunde striatae vix vel haud carinatae, antice hyalinae  $\pm$  scariosae, omnino glabrae, exteriores gradatim breviores admodum rigidiores elaminiferae; *laminae* subrigidae, convolutae vel involutae, quasi-teretes, 0.5–0.7 mm. latae vel applanatae usque ad 1.3 mm. latae, subtus crebre et manifeste striatae, vix carinatae, supra  $\pm$  reticulatae, utrinque glabrae laevesque, marginibus incrassatae et pilis brevibus rigidis curvatis leviter tuberculatis distantibus antrorsim scabrae, apice obtusiusculae; *folium caulinum* plerumque unicum. *Anthela* composita vel decomposita, saepe angustior. *Bractee* 1–2 inferiores foliaceae sed breves, plerumque planae, infima usque ad 3.2 cm. longa, anthela multo brevior; *bracteolae* squamiformes. *Radii* 4–10 (plerumque, ut videtur, 7–8), suberecti vel leviter patentes, inaequales, usque ad 5.5 cm. longi, valde applanati saepe concavo-convexi, stricti vel admodum curvuli, glabri laevesque, e prophylo ore oblique secto vel leviter emarginato nervis parce scabro orti; *radioli* primarii usque ad 5, subaequales, usque ad 1.2 cm. longi; secundarii breviores. *Spiculae* in apice radiorum radiolorumque singulatim dispositae, castaneae, lineares, utrinque vel obtusiusculae vel subacutae, multiflorae, 8–15 vel (glumis inferioribus delapsis) usque ad 20 mm. longae, 1.3–2 mm. latae. *Rhachilla* alata, alis sanguineofuscis. *Glumae* appressae, densiusculae, facile deciduae, tenuiter membranaceae, ovatae, obtusae, mucronulatae, concavae, dorso castaneo 3-nerves sursum carinatae, carina ex apice in mucronem brevissimum acutum recurvum excurrente, lateribus late

hyalinae  $\pm$  castaneo-suffusae vel -lineolatae, omnino glabrae vel marginibus integris pilis perpaucis minutissimis praeditae, cellulis elongatis, 2.3–2.5 mm. longae. *Stamina* 3; antherae flavae vel aurantiaceae, anguste lineares, apiculatae cristulataeque (appendice setulosa), 1.1–1.3 mm. longae. *Stylus* triquetet, tenuis, basi incrassata pyramidatus, tantum prope divisionem longe sed parce ciliatus, vel omnino glaber, 1–1.5 mm. longus; stigmata 3, stylo subaequilonga, longe ciliata. *Nux* albida vel straminea, nitida vel micans, obovata, apice gradatim rotundata, basi saepe subcuneata, breviter stipitata, trigona sed admodum compressa, anguste tricostulata, lateribus convexa, longitudinaliter striata, transversim trabeculata, ceterum laevis, cellulis extimis anguste oblongis in seriebus 4–6 in omni facie dispositis, 0.8–0.9 mm. longa, 0.5–0.6 mm. lata.

QUEENSLAND.—Darling Downs District: Chinchilla, in wetter places in railway enclosure on sandy soil, ca. 985 ft., February 18th, 1935, *Blake* 7670.

Very distinct from other Australian species of the section in its stoloniferous habit. In this feature it resembles *F. Pierotii* Miq. from India and Japan, but appears to differ in most other characters. Stoloniform rhizomes are a very rare feature in *Fimbristylis*, and the only other Australian species possessing such belongs to the section *Dichelostylis* (see *G*, p. 2).

**F. micans** *S. T. Blake*; species nova (sect. *Trichelostylis*) affinis *F. clavatae* *S. T. Blake*, sed foliis diversis, spiculis angustioribus, earum rhachilla alulata, nucē latiore cellulis majoribus valde conspicuis, differt.

*Planta* annua, glaberrima, laevisima. *Culmi* fasciculati,  $\pm$  compressi, sub-3–4-anguli, striati, usque ad 3 dm. alti, ca. 1 mm. crassi. *Foliorum vaginae* laxiusculae, dorso herbaceae et striati, antice scariosae, subhyalinae, glandulosae; *laminae* coriaceae, fere planae, subtus leviter 3–5-nerves vix carinatae, supra reticulatae, apice acutae, marginibus incrassatae insuper  $\pm$  scabridae, usque ad 7 cm. longae, 0.9–1.1 mm. latae; *folia* caulina 1–2, laminae saepe brevissimae. *Anthela* subcomposita, laxiuscula. *Bractee* 2–3, anguste foliaceae, breves, saepe subaequales, usque ad 25 mm. longae vel glumiformes; *bracteolae* subglumiformes. *Radii* 4–6, inaequales, 5–30 mm. longi, subrobusti, complanati, striati, laeves; *radioli* 0–2, 3–8 mm. longi. *Spiculae* in apice radiorum radiolorumque singulatim dispositae, pallidae, ovoideae vel oblongae vel anguste oblongae, obtusae vel subacutae, subdensiflorae, polygonae, plerumque 5–12 sed usque ad 15 mm. longae, ca. 3 mm. latae. *Rhachilla* angulata, alulata. *Glumae* subdensae, undique imbricatae, oblongo-ovatae apice rotundatae, carinatae carina robusta 3–1-nervi sub apice in mucronem acutum subrecurvum brevem excurrente, lateribus scariosae hyalinae eglandulosae, cum marginibus glabrae, 2.7–3.5 mm. longae. *Stamina* 3; antherae lineares, basi breviter sagittatae, apice acuto breviter apiculatae, 1.3–1.7 mm. longae. *Stylus* tenuis triquetet, glaber vel fere glaber, basi incrassata pyramidatus, 1.5–1.6 mm. longus; stigmata 3, tenuissima, breviora. *Nux* nitide albida, obovoidea subturbinata, apice rotundata umbonulataque, basi acuta vel acuminata, breviter stipitata, obscure trigona et obscure tricostulata, prominule striata et trabeculata, cellulis extimis transversim breviter oblongis marginibus conspicuis in seriebus 15–18 dispositis, 0.9–1.0 mm. longa, 0.65–0.75 mm. lata.

QUEENSLAND.—Burke District: Normanton, on flood flats near sea-level, chiefly on patches of loose sand, August 9th, 1936, *Blake* 12519.



***F. clavata*** S. T. Blake; species nova (sect. *Trichelostylis*) affinis *F. solidifoliae* F. Muell., sed glumarum forma, stylo fere glabro, nuce haud tuberculata cellulis extimis breviter oblongis, differt.

*Planta* annua, usque ad 50 cm. alta. *Culmi* singuli vel fasciculati, stricti, erecti, pluristriati, compressi, 4-7-anguli vel striato-anguli, glabri, inferne laeves sursum scabridi, 0.5-1.5 mm. crassi, basi foliati. *Folia* disticha, caulina 1-2; vaginae laxae, ± flabellatae, compressae, carinatae, tenues, plurinerves, marginibus scarosae et glandulis parvis rotundis brunneis vel fuscis praeditae, omnino glabrae, caulinae ore obliquissimae; laminae coriaceae, paucinerves, dorso carinatae, marginibus haud incrassatae, plerumque planae, laeves vel fere laeves, usque ad 4 mm. latae, apicem obtusum versus gradatim angustatae. *Inflorescentia* diversa, vel anthela composita vel subdecomposita vel simplex vel ad spiculam unicam redacta. *Bracteae* squamiformes brevissimae, vel infima laminifera usque ad 5.5 cm. longa; *bracteolae* squamiformes. *Radii* usque ad 12, valde inaequales, usque ad 10 cm. longi (plerumque breviores), tenues, erecti vel patentes, striato-angulati, scabro-ciliolatae; *radioli* setacei, usque ad 4 cm. longi, scabri; ultimi (pedicelli) spiculis multo longiores. *Spiculae* in apice radiorum radiolorumque singulatim dispositae, brunneae, ovoideae, obtusae, haud angulatae (in sicco compressae), multi- et densi-florae, 5-8 mm. longae, 4.5-5 mm. latae. *Rhachilla* alulata, cicatricibus subquadratis. *Glumae* spissae, facile deciduae, ellipticae vel obovatae, obtusissimae, muticae, concavae, dorso 5-nerves sursum obtuse carinatae, ceterum rigide membranaceae, enerves, sursum aureo-brunneae, late hyalino-marginatae, marginibus integrae, omnino glaberrimae, 2.4-2.9 mm. longae, cellulis oblongis. *Stamina* 3; antherae lineares, minute apiculatae fere muticae, 1.25-1.5 mm. longae. *Stylus* tenuis, trigonus, parve et minute pilosulus, basi anguste breviterque pyramidatus glaber, 1.3-1.6 mm. longus; stigmata 3, laevia, multo longiora. *Nux* pallide straminea, nitida, anguste obovata, apice rotundata breviter umbonulata, inferne paullum attenuata, breviter stipitata, obscure trigona (subteres), longitudinaliter striata et transversim trabeculata, cellulis extimis parvis transversim breviter oblongis in ca. 18 seriebus verticalibus dispositis, 0.9-1.0 mm. longa, 0.55-0.6 mm. lata.

QUEENSLAND.—Cook District: About 40 miles north-west of Mungana, in *Melaleuca* forest on fine whitish sand, April 8th, 1938, Blake 13723.

Only one population was seen from which a large number of specimens was secured. These vary considerably between themselves as to width of stems and leaves, and particularly as to degree of development of inflorescence. A well-developed anthela appears to be the normal development, but slender culms with the inflorescence reduced to a very few or even one spikelet are common.

Externally the species closely resembles *F. solidifolia* F. Muell., a species known to me only from the type-specimen in Herb. Melbourne, but in which the glumes are rather ovate than obovate, and 3-nerved, and the nut, though of similar form, is tuberculate, and the external cells are transversely linear. Domin's specimens from near Chillagoe referred by him to *F. solidifolia* (Biblioth. Bot. xx. Heft 85, 460 (1915)) may belong to this new species.

***F. dolera*** S. T. Blake; species nova (sect. *Dichelostylis*) affinis *F. depauperatae* R.Br., sed planta omnino glabra, foliis diversis, bracteis squamiformibus, stylo glabro, nucis cellulis extimis brevibus saepe fere quadratis, differt.

*Planta* annua usque ad 50 cm. alta, glabra laevisque,  $\pm$  nigricantibus. *Culmi* fasciculati, stricti, erecti vel obliqui, compressi, striati, usque ad 2.5 mm. lati. *Folia* pauca; caulina ad vaginam unicum tenuem, ore obliquissimè sectam, late scariosam, brunnescentem, glabram sed brunneo-punctatam, mucronatam, redacta; basalia disticha, eorum vaginae acute carinatae, laminae elongatae, ut videtur culmos saepe superantes, compressibiles, paucinerves, marginibus haud incrassatae. *Anthela* laxa, simplex vel  $\pm$  composita, 3-6-radiata. *Bracteae* squamiformes vel infima foliifera usque ad 4.5 cm. longa; *bracteolae* squamiformes. *Radii* haud valde inaequales, compressi, sulcati, rigidi, glabri laevesque, e prophylo tubuloso glabro apice bilobo orti, usque ad 4 cm. longi; *radioli* usque ad 2, usque ad 2.5 cm. longi. *Spiculae* in apice radiorum radiolorumque singulatim dispositae, dilute fuscæ, ovoideae, obtusiusculae, leviter polygonae, 5-6 mm. longae vel glumis inferioribus delapsis longiores, 3-4 mm. latae, multiflorae. *Rhachilla* exalata. *Glumae* spissae, ellipticae, obtusae, mucronatae, tenuiter membranaceae, leviter concavae, dorso obtuse carinata 3-5-nerves, carina insuper incrassata nervis coalescentibus breviter excurrente, laterum cellulis subelongatis, marginibus integrae, omnino glabrae, 3.2-3.5 mm. longae. *Stamina* 3; antherae lineares, minute apiculatae, ca. 0.8 mm. longae. *Stylus* glaber, compressus, basi paullum dilatata subbulbosus, 1.4 mm. longus; stigmata 2, paullum longiora, fere glabra. *Nux* albida vel brunnescens, opaca vel subnitida, obovata, apice rotundata umbonulata, sub medio subeuneata leviter attenuata, vix stipitata, omnino biconvexa, crebre reticulata, verrucosa, cellulis extimis parvis conspicuis breviter transversim oblongis vel fere quadratis, marginibus  $\pm$  costulata, 1.1-1.25 mm. longa, 0.9-1 mm. lata.

QUEENSLAND.—Cook District: About 40 miles north-west of Mungana, in *Melaleuca* forest on fine whitish sand, April 8th, 1938, *Blake* 13724.

The rather broad, compressible, almost spongy stems and leaves distinguish this species from other members of the section. The tips of the leaves are missing from the specimens.

**F. stenostachya** *S. T. Blake*; species nova (sect. *Dichelostylis*) affinis *F. a* *i* (Retz.) Vahl, sed glabritate, foliis brevioribus paucioribus, bracteis brevissimis, spiculis longioribus, glumis muticis, nuce pyriformi manifeste reticulata, differt.

*Planta* annua, parva, 1-10 cm. alta, glabra laevisque. *Culmi* fasciculati, obliqui vel erecti, stricti vel curvuli, setacei, striati, compressi vel subtriquetri, glabri laevesque. *Folia* perpauca, omnino glabra laeviaque, caulina 2-1; *vaginae* dorso herbaceae, striatae, carinatae, antice scariosae, glandulosae, ore obliquae vel truncatae; laminae usque ad 2 cm. longae, 0.3-0.5 mm. latae, coriaceae, concavae vel leviter incurvae, apicem obtusiusculum versus subplanae, marginibus incrassatae, subtus 3-7-nerves vix vel haud carinatae, supra reticulatae. *Anthela* simplex, raro subcomposita, nonnunquam ad spiculam unicum redacta. *Bracteae* plerumque squamiformes, vel infima lamina foliacea usque ad 5 mm. longa praedita; bracteolae glumis subsimiles. *Radii* usque ad 6, subaequales, usque ad 10 mm. longi, complanati, striati, glabri laevesque, e prophylo brevi ore oblique secto vel leviter emarginato orti; *radioli* usque ad 2, usque ad 5 mm. longi. *Spiculae* 1-12, oblongo-lanceolatae vel lineares, subangulatae, obtusae vel obtusiusculae, pallide brunneae, multiflorae, 4-8 mm. longae, 1.2-1.5 mm. latae. *Rhachilla* exalata. *Glumae* densae, multispirae,

appressae, ovatae, obtusae, muticae, tenuiter membranaceae, 1-nerves, carinatae, lateribus hyalinae brunneo-suffusae, eglanulosae, glabrae, 1.4–1.5 mm. longae, cellulis elongatis. *Stamen* 1, anthera oblonga, apiculata, 0.35–0.45 mm. longa (appendice albida subulata subsetulosa 0.1–0.13 mm. longa inclusa). *Stylus* tenuis complanatus, marginibus minute ciliolatus, basi latiore incrassatus, 0.7–0.9 mm. longus; stigmata 2, breviora. *Nux* albida vel admodum grisea, nitida, pyriformis, apice abrupte rotundata fere truncata vix umbonulata, biconvexa sed utrinque compressa, marginibus obtusis vix costulatis pallidior, 0.6 mm. longa, 0.45–0.5 mm. lata, subtiliter striata vel reticulata, saepissime sparsim verrucosa, cellulis extimis transversim breviter oblongis vel fere isodiametricis in seriebus verticalibus 10–12 utrinque dispositis.

QUEENSLAND.—Burke District: Normanton, on low sandy flat on yellowish brown clay loam, May 18th, 1935, *Blake* 8983 (TYPE); Croydon, in depressions and on stream banks and beds on whitish sand, ca. 350 ft., May 22nd, 1935, *Blake* 9078.

A small slender species readily enough distinguished by the relatively long and narrow spikelets, and the strongly flattened sides of the relatively thick nut, which is distinctly pyriform in outline. The style is stout in proportion to the other floral parts.

**F. longifolia** *S. T. Blake*; species nova, inter sectiones *Heleocharoides* et *Dichelostylidem* ponenda, affinis *F. schoenoidi* (Retz.) Vahl sed planta annua laevi, culmis basi haud bulbosis, foliis pluribus longissimis tenuissimis, spiculis pallidioribus minoribus, glumis nucibusque multo minoribus differt.

*Planta* annua glaucescens. *Culmi* fasciculati, obliqui vel erecti, gracillimi, haud rigidi, angulato-costati,  $\pm$  compressi, glabri laevesque, basi haud incrassati, plerumque 25–35 cm. alti et 0.5–0.6 mm. lati. *Folia* multa, longa, didimium culmum superantia vel nonnunquam apicem attingentia; caulina 3–4, eorum vaginae arctae, antice late tenuiter membranaceae, crebre punctatae, ore oblique secto minutissime ciliatae; laminae angustissimae, tenuiter coriaceae, planae vel  $\pm$  involutae, apice angustato obtusae, subtus leviter carinatae et praeter carinam 4–6-nerves, supra 2-nerves vel enerves, marginibus incrassatae sursum scabrae, 0.6–0.8 mm. latae. *Inflorescentia* 1–2-spiculosa; bractea 1, subrecta, foliacea, basi subglumiformis, usque ad 4 cm. longa vel spicula brevior. *Spiculae* 1–2, prima sessilis, altera pedunculata pedunculo erecto usque ad 15 mm. longo compresso, pallide brunnescentes, ovoideae, acutae vel subacutae, haud angulatae sed siccio  $\pm$  compressae saepe sulcatae, pluriflorae, 5–6 mm. longae, 3–4 mm. latae. *Rhachilla* leviter excavata, alata. *Glumae* arcte imbricatae, glabrae, tenuiter cartilaginae, suborbiculares, obtusissimae, apiculatae, valde concavae, 11–17-nerves, leviter carinatae carina in mucronem brevissimum obtusum vel ea glumae infimae in laminam foliaceam brevem excurrente, nervis paucis nonnunquam evanescentibus, cellulis laterum (marginibus exceptis) subquadratis, 3.5–3.75 mm. longae. *Stamina* 3; antherae flavae, lineares vix apiculatae, 0.7–0.8 mm. longae; filamenta ligulata. *Stylus* tenuis, complanatus, basi dilatatus incrassatusque, sub divisione longe fimbriatus, 1.3–1.4 mm. longus; stigmata 2, breviora, manifeste fimbriata. *Nux* pallide straminea, nitidula, late obovata, suborbicularis, umbonulata, stipitata, biconvexa, marginibus acute costulata, lateribus reticulata cellulis extimis isodiametricis parvis regulariter dispositis, 1.7–1.8 mm. longa (toro cuneato 0.35 mm. longo incluso), 1.25–1.35 mm. lata.

QUEENSLAND.—Cook District: *Flecker* 1510. North Kennedy District: Between Townsville and Rollingsstone, on swampy flats, March 20th, 1933, *White* 8901; Townsville, on wet sand on edge of small open gully, ca. 15 ft., March 20th, 1938, *Blake* 13333 (TYPE); in open damp sandy places ca. 5 ft., June 7th, 1934, *Blake* 5974; on exposed lower slopes of Castle Hill in seepage, March 22nd, 1935, *Blake* 8174.

This species could be placed under either of the sections *Heleocharoides* or *Dichelostylis*. In spikelet structure it is most nearly allied to *F. schoenoides* (Retz.) Vahl, which is better placed in the latter section in spite of the fact that culms bearing only one spikelet are common. In general aspect, in the fact that the spikelets are often solitary and never more than two on the culm, and perhaps also in the nature of the glumes, the species approaches the *Heleocharoides* but is not closely allied to any species in this section, though it is rather similar to *F. pterygosperma* R.Br. in general appearance.

**Fimbristylis simplex** *S. T. Blake*; species nova (sect. *Heleocharoides*) affinis *F. semilevi* F. Muell. ex C. B. Clarke, sed planta glaberrima, fere efoliata, glumis glabris admodum crassioribus, staminibus 3, nucē grosse stipitata, basin versus cuneata haud constricta, manifeste reticulata, marginibus minus grosse costata, differt.

*Planta* perennis, caespites densos virides vel pallide virides efformans. *Culmi* pernumerosi, gracillimi, stricti, erecti vel obliqui, subtriquetri sed compressi, distincte striati, scaberuli, usque ad 25 cm. alti, 0.4–0.5 mm. lati, basi incrassata vaginis scariosis tandem in fibrillis ± dissolutis obtecti. *Folia basalia* in caespite quoque perpauca, cartilaginea, valde carinata, plerumque complicata vel involuta, usque ad 10 cm. longa, usque ad 0.7 mm. lata; *folia caulina* ad vaginam unicum anticē scariosam ore oblique sectam interdum lamina brevissima praeditam redacta. *Inflorescentia* unispiculata quasi ebractea. *Spicula* erecta, pallide brunnea, ovoidea vel ellipsoidea, ± acuta, haud angulata, 5–6 mm. longa, 3–4 mm. lata, multiflora. *Rhachilla* robusta, profunde excavata, alulata. *Glumae* spissae, oblongo-ovatae, apice rotundatae, tenuiter membranaceae, glabrae, concavae, obtuse carinatae, carina inferne 3–5-nervi sub apice evanescenti, lateribus nerves fulvescentes vel brunnescentes cellulis subelongatis haud quadris, marginibus (apice incluso) anguste hyalinae, 3.3–3.5 mm. longae, inferiores 6–7 vacuae, saepe admodum majores. *Stamina* 3; antherae lineares, breviter apiculatae, 1.5–1.8 mm. longae. *Stylus* triquetus, glaber, subrobustus, inferne valde incrassatus pyramidatus, 2 mm. longus; stigmata 3, subaequilonga. *Nux* albida, nitida, obovata, apice obtusissimo umbonulata, basin versus cuneata vel leviter attenuata atque manifeste stipitata, turgide subtrigona angulis indistincte costulata, tenuiter reticulata ob cellulas extimas parvulas isodiametricas admodum distinctas, tuberculata, 0.9 mm. longa (toro 0.1 mm. longo incluso), 0.6–0.65 mm. lata.

QUEENSLAND.—Cook District: North of Chillagoe, near Walsh River, in damp places in dwarf *Melaleuca* forest on sand, ca. 1,000 ft., April 2nd, 1938, *Blake* 13597; Chillagoe, in damp grassy places near granite boulders, 1,150 ft., April 4th, 1938, *Blake* 13624 (TYPE); Mareeba, in wet places in *Eucalyptus* forest on sandy soil, ca. 1,400 ft., March 25th, 1938, *Blake* 13399; Atherton, April, 1934, *Atherton*. Burke District: Normanton, *Gulliver*; Normanton, on sand in shallow channels and depressions on low barren ridge slopes, 0–50 ft.,

May 20th, 1935, *Blake* 9046; near source of Poison Creek, about 90 miles north of Hughenden, on sandy and gravelly stream banks and beds, 2,500 ft., April 10th, 1935, *Blake* 8523.

This species combines a number of common characters of the section without possessing any outstanding peculiarity, but can scarcely be confused with any other species. It can best be distinguished by the somewhat thickened bases of the culms covered with the more or less fibrous remains of leaf-sheaths, the almost complete absence of leaf-laminae, the ovoid or ellipsoid spikelet resembling that of *F. tetragona* R.Br., the glumes with rounded hyaline apices, and the cuneate-obovate tuberculate nut.

**F. modesta** *S. T. Blake*; species nova (sect. *Heleocharoides*) affinis *F. simplici* *S. T. Blake*, sed planta minore, spiculis minoribus angustioribusque, glumis minoribus admodum tenuioribus, stamine unico, nuce minore solum breviter stipitata, admodum compressa, anguste indistincteque costulata, differt.

*Planta* perennis, caespitosa, humilis, glauco-viridis. *Culmi* dense caespitosi, erecti vel obliqui, angulato-striati, inferne subcompressi, sub apice leviter incrassati, usque ad 11 cm. alti, 0.3–0.45 mm. crassi. *Folia basalia* perpauca, culmos raro subadaequantia, coriacea, subteretia, supra canaliculata marginibus involuta, apice subobtusa saepe obliqua, subtus plurinervia; *folia caulina* ad vaginas 1–2 ore ampliatio obliquissimè sectas, marginibus scariosas glabras, redacta. *Inflorescentia* unispiculata, quasi ebracteata. *Spicula* erecta, fuscobrunnea, ovoidea, apice acuta, basi subacuta, vix angulata, pluriflora, 4–5 mm. longa, 1.6–2.1 mm. lata. *Rhachilla* alata. *Glumae* subdense imbricatae, facile deciduae, elliptico-oblongae, obtusae, glabrae, dorso leviter obtuseque carinatae, carina 1-nervi haud excurrente saepissime sub apice evanescente, lateribus firme membranaceae, enerves, fusco-tinctae, cellulis plus minusve elongatis haud quadris, marginibus anguste hyalinae, glabrae, 2.1–2.4 mm. longae. *Stamen* 1; anthera lineari-oblonga, minutissime apiculata (fere acuta), 0.5–0.6 mm. longa. *Stylus* tenuis, triqueter, glaber, basi incrassatus, 1 mm. longus; stigmata 3, glabra, breviora. *Nux* albida, nitidula, obovata vel subturbinata, plerumque umbonulata, minute stipitata, turgide trigona sed admodum compressa, anguste tricostulata, reticulata, tuberculata, cellulis extimis isodiametricis regulariter dispositis, 0.6–0.7 mm. longa, 0.5 mm. lata.

QUEENSLAND.—Cook District: About 40 miles north-west of Mungana, in *Melaleuca* forest on fine whitish sand, April 8th, 1938, *Blake* 13720.

**F. densa** *S. T. Blake*; species nova (sect. *Heleocharoides*) affinis *F. xyridi* R.Br., sed habitu graciliore, foliis glabris, spiculis et glumis et nucibus multo minoribus differt.

*Planta* annua, pallide viridis in aetate pallide brunnea. *Culmi* solitarii vel fasciculati, erecti, stricti vel prope apicem leviter decurvati, gracillimi, tetraquetri, glabri, laeves vel sursum angulis spinuloso-scaberuli, usque ad 30 cm. alti, 0.3–0.45 mm. crassi, prope apicem incrassati usque ad 0.6 mm. diam., basi foliati. *Folia* angustissime lineares, prope apicem obtusiusculum leviter angustata, subtus 2-nervia, marginibus incrassata et sursum spinuloso-scabra, involuta vel  $\pm$  plana, saepe curvata, usque ad 5 cm. longa, 0.9–1.2 mm. lata; caulina 1–2, basalibus saepe breviora angustioraque, eorum vaginae arctae, antice tenuiter membranaceae, brunneo-striatae, ore oblique secto ciliatae.

*Inflorescentia* unispiculata; bractea erecta brevissima, basi glumiformis. *Spicula* fusca, horizontalis, primo globularis tandem ovoidea vel ovoideo-oblonga, utrinque obtusissima, haud angulata, densiflora, 4–9 mm. longa, 4–4.5 mm. lata. *Rhachilla* leviter excavata. *Glumae* facile deciduae, latissime obovatae vel suborbiculares, obtusissimae, rigide membranaceae cellulis elongatis, insuper leviter incrassatae coloratae, marginibus late hyalinae superioribus dense longeque ciliatae, valde concavae, haud carinatae, dorso 1-nerves nervi sub apice evanescenti, 2.3–2.5 mm. longae, 2–2.1 mm. latae. *Stamina* 3; antherae flavae, lineares, muticae vel brevissime apiculatae, ca. 1.5 mm. longae. *Stylus* glaber, sursum complanatus, basi manifeste bulboso-incrassatus, 1.5 mm. longus; stigmata 3, duplo longiora. *Nux* stramineo-albida, nitidula, subpyriformis, apice subtruncata subumbonulataque, fere medio abrupte angustata, vix stipitata, trigona tricostulataque, minute reticulata ob cellulas extimas parvas isodiametricas, 0.9–0.95 mm. longa, 0.75–0.8 mm. lata; pars superior oblata, turgida, subcompressa trigona sed trisulcata, in toto tuberculata; pars inferior etuberculata.

QUEENSLAND.—Cook District: North of Chillagoe, near Walsh River, in dwarf *Melaleuca* forest on sand, ca. 1,000 ft., April 2nd, 1938, *Blake* 13595 (TYPE in BRI.). Burke (or Cook ?) District: Between Norman and Gilbert Rivers, *Gulliver* 109 (MEL., BRI.).

Easily distinguished by its slender habit and horizontal, very obtuse, very dense-flowered spikelets. Among the other species with oblique or horizontal spikelets, it is distinguished from *F. nutans* (Retz.) Vahl and *F. humilis* S. T. Blake by the very obtuse spikelet, three stigmas, and trigonous not transversely rugose nut, from *F. xyridis* R.Br. by its slenderness and glabrousness, and from *F. costiglumis* Domin by its colour and thin 1-nerved glumes.

*F. distincta* S. T. Blake; species nova (sect. *Heleocharoides*) inter species distigmatosas sectionis glumis fuscis marginibus ciliatis, nuce turgidissima ambitu transversa fere orbiculari, bene distincta.

*Planta* annua, pallide viridis, humilis. *Culmi* fasciculati, erecti vel fere erecti, stricti, setacei, tetraquetri, glabri laevesque, usque ad 11 cm. alti, 0.3–0.4 mm. crassi. *Folia* culmis multo breviora, setacea, coriacea, plana vel marginibus incrassatis involuta, apice subobtusa, subtus 1–3-nervia, manifeste carinata, supra plus minusve reticulata, omnino glabra et laevia, plerumque 0.3–0.5 vel raro usque ad 0.7 mm. lata; *vaginae* dorso membranaceae vel tenuiter herbaceae, 5–7-nerves, lateribus late hyalinae, eglandulosae, marginibus superioribus saepissime ciliatae; *folia* caulina 1–2, laminae saepe ad mucronem herbaceum redactae, eorum *vaginae* ore ciliato subtruncatae. *Inflorescentia* unispiculata, gluma infima cuspidata bracteata. *Spicula* erecta, fusca vel nigricans, ovoidea vel oblonga, vix angulata, utrinque obtusa, multi- et densiflora, 3–6 mm. longa, 1.6–2.4 mm. lata. *Rhachilla* leviter excavata, exalata. *Glumae* arcte appressae, facile deciduae, infima breviter aristata sterilis, ceterae hermaphroditae, consimiles (vel secunda infimae subsimilis), tenuiter membranaceae, ovato-ellipticae, obtusissimae, 1-nerves, leviter carinatae, nervo subviridi et (glumis inferioribus paucis exceptis) sub apice evanescenti, lateribus omnino fuscae cellulis elongatis majusculis, marginibus superioribus breviter pilosae, 1.3–1.5 mm. longae, ca. 0.7 mm. latae. *Stamen* 1; anthera linearis, minutissime apiculata

vel fere acuta, 0.4 mm. longa. *Stylus* glaber, basi bulboso-incrassata, sursum tenuis complanatus, 0.5–0.6 mm. longus; stigmata 2, tenuis, subaequilonga. *Nux* fusca, nitidula, late obovoidea vel subglobularis, basi levissime attenuata, apice obtusissima, indistincte umbonulata, turgidissima, transversim secta fere orbicularis, leviter bicostulata, granulata, 0.6 mm. longa, 0.5 mm. lata, cellulis extimis minutis hexagono-rotundis vel breviter hexagono-oblongis maturitate inconspicuis.

QUEENSLAND.—Burke District: Undilla, approx. 19° 25' S., 138° 45' E., on a stream bank, April 22nd, 1935, *Blake* 8715.

A very distinct little species, at first sight resembling *Eleocharis atropurpurea* (Retz.) Kunth rather closely, but can be distinguished externally by the presence of leaves and the ciliate margins of the glumes and of the upper part and orifice of the leaf-sheaths. It does not seem to be closely allied to any other species of *Fimbristylis*.

***Fimbristylis odontocarpa*** S. T. *Blake*; species nova (sect. *Abildgaardia*) affinis *P. squarrosulae* F. Muell., quacum habitu congruit, sed glumis minoribus apice minus patulis longius aristulatis, nuce minore fere ad medium constricta, ejus parte superiore oblata haud obovata differt.

*Planta* perennis, dense caespitosa, viridis. *Culmi* graciles, obliqui vel erecti, stricti, sulcato-angulati, inferne plus minusve triquetri sursum compressi, scabridi, plerumque 30–50 cm. alti, 0.5–0.7 mm. crassi, basi subbulbosa vaginis veteris brunneis obtecti. *Folia* plura; laminae rigide coriaceae, plerumque strictae, dorso indistincte plurinerves, concavo-convexae vel marginibus leviter incrassatis incurvae raro planae, apice acutae plus minusve callosae, marginibus spinuloso-scaberulae ceterum glabrae laevesque, dimidium culmum plerumque adaequantur vel paullo superantes, 0.8–1.0 mm. latae; caulina 3–5, eorum vaginae arctae, glabrae, ore fere truncatae. *Inflorescentia* unispiculata, quasi ebracteata. *Spicula* erecta, pallide brunnea, lanceolata, acuta, 15–25 mm. longa, 4–6 mm. lata, multiflora. *Rhachilla* profunde excavata, grosse alata. *Glumae* laxiusculae, 4 inferiores vacuae distichae gradatim breviores, superiores fertiles laxae spiraliter imbricatae, ovatae vel ovato-lanceolatae, acutae, subpatule aristatae, 7–9-nerves, valde acuteque carinatae, carina angusta longiuscule excurrente, lateribus rigide membranaceae, pallide brunneae, rubro-striatae, marginibus hyalinae apicem versus minutissime ciliatae, ceterum glabrae (aristula 0.8–1 mm. longa inclusa), 8.6–10.7 mm. longae. *Stamina* 3; antherae anguste lineares prominule apiculatae, 3.5–4.5 mm. longae. *Stylus* triquetri, sursum attenuatus minute et parce ciliatus, basi incrassatus subpyramidatus, 9–10 mm. longus; stigmata 3, tenuissima, brevia. *Nux* nitida, tandem fusca vel nigra, attenuato-obovata et sub medio abrupte constricta, trigona, turgida, manifeste tricostata, tuberculata, minute reticulata ob cellulas minutas plus minusve isodiametricas vix conspicuas irregulariter dispositas, 2.5–2.6 mm. longa, 1.6–1.8 mm. lata; pars superior transversim suboblata, subtruncata sed leviter emarginata umbonataque; pars inferior angusta, admodum obpyramidata, etuberculata.

QUEENSLAND.—Cook District: Near Chillagoe in damper places in open forest on grey sandy soil, ca. 1,050 ft., April 2nd, 1938, *Blake* 13582.

At first sight this new species resembles *F. squarrulosa* F. Muell., but the glumes are shorter and prominently aristulate, while the shape of the nut is quite different. In *F. squarrulosa* the nut is shortly attenuate near the base, the upper part being obovate.

**F. pachyptera** S. T. Blake; species nova (sect. *Abildgaardia*) affinis *F. oxystachyae* F. Muell., sed nuce ambitu obcordata marginibus lateralibus late sed crasse alata praecipue differt.

*Planta* annua, juventute viridis, aetate pallide brunnea. *Culmi* fasciculati, obliqui vel interiores erecti, gracillimi, triquetri, lateribus striati, scaberuli, usque ad 30 cm. alti, 0.3–0.5 mm. crassi. *Folia* basalia plerumque multo breviora usque ad 12 cm. longa; laminae concavae vel incurvae, haud carinatae, subtus 5–7-nerves, supra reticulatae, nitidulae, marginibus incrassatae sursum  $\pm$  scabridae, apice planae subacutae, 0.5–0.7 mm. latae; vaginae laxae, lateribus albohyalinae, glabrae, nonnunquam glandulosae; caulinae 1–2, carinatae, ore lanceolatae, laminae breviusculae vel brevissimae. *Inflorescentia* unispiculata, quasi ebracteata. *Spicula* erecta vel suberecta, pallide brunnea, ovoideo-lanceolata vel lanceolata, apice acuta, basi acuta vel fere acuta, 7–15 vel (glumis inferioribus delapsis) usque ad 20 mm. longa, 3–4 mm. lata, multiflora. *Glumae* arctae appressae, 2–3 inferiores vacuae distichae, ceterae hermaphroditae, laxe spiraliter imbricatae, ovatae vel ovato-lanceolatae, acutae vel acute acuminatae, acute carinatae, carina basin versus leviter 5–7-nervi ex apice in mucrone brevi  $\pm$  recurvo excurrente, lateribus tenuiter membranaceae, subhyalinae, enerves, perfecte glabrae, glandulis rubro-brunneis dense praeditae, marginibus integerrimae, 6–7 mm. longae, inferioribus vacuis gradatim brevioribus, crassioribus, minus acutis, incurvis. *Stamina* 2; antherae flavae, anguste lineares, breviter cristatae, 2.2–2.5 mm. longae. *Stylus* tenuis, triquetus, angulis parce breviterque ciliolatus, basi anguste pyramidata incrassatus glandulosus glabrescens, 3.3–4.5 mm. longus; stigmata 3, tenuia, multo breviora. *Nux* tandem nigrescens, subnitida, ambitu obcordata, apice inter lobos umbonulata, basi saepe rotundata, compressae triquetra, dorso costata in parte inferiore abrupte subalata, per margines laterales late sed crasse quasi-alata, lateribus paullum convexa,  $\pm$  verruculosa, cellulis extimis minutis hexagonis, 2.8–3 mm. longa, 2.1–2.3 mm. lata.

QUEENSLAND.—Burke District: Normanton, on sand in shallow channels and depressions on low barren ridge slopes, 0–50 ft., May 20th, 1935, *Blake* 9045.

The remarkable nut with its lateral margins abruptly attenuated to a broad thick wing-like appendage is very characteristic. The dorsal angle usually bears a short appendage of similar nature at its base, but this may be occasionally absent.