



Blue Couch: A New Lawn Grass. (Digitaria didactyla, Willd.)
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retusa vel subtruncata leviterque sinuata, quam sepala interna duplo longiora (ad 1·8 cm. longa lataque) ; annulus staminifer plus minus pilosus, disco villoso a receptaculo separato. *Receptaculum* hemisphaericum, in fructu subglobosum, polycarpum, dense pilosum. *Carpella* oblongo-ovoidea, levia. *Stylus* subterminalis, basi brevi tractu leviter incrassatus, inde usque ad stigma dilatatum tenerrimus, carpello juvenili ad 6-plo (maturo duplo) longior. *Achenium* subauriforme, alatum, leve.—*P. fragiformis*, Fr. Schm., Reis. Amurl. Sachal. p. 127 ; Miyabe, Fl. Kuril. p. 231 : Matsudaira, in Tôkyô Bot. Mag. ix, p. 468, non Willd.—*P. grandiflora*, Maxim. in Bull. Acad. Imp. Sc. St. Petersb. xix, p. 167, pro parte.

NORTHERN JAPAN. Yezo : without locality, *Maries* ; Kompumoi, *K. Miyabe*, 1. vii. 1884 ; rocks on the sea coast near Nemuro, *Faurie*, 3745, 5070 ; Eramachi, Oshima, *Miyabe* and *Tokubuchi*, 21. vii. 1890 ; Tumoshiri, *H. Takeda*, vii. 1909 ; Samani, prov. Hidaka, *Nirei*, 25. vi. 1893. Kurile : isl. Eturup, near Rubetsu, *Miyabe*, viii. 1884, *Mayr*, viii. 1890 ; isl. Urup, Tomarigawa, *K. Jimbô*, 15. vi. 1891; Megane, *T. Kitahara*, viii. 1895 ; Otoima-moi-pet, *K. Uchida*, 16. vi. 1891 ; isl. Ketoi, *Kodama*, vi. 1893 ; isl. Shimoshiri, *Kodama*, vi. 1893 ; isl. Shimushu, *T. Ishikawa*, vi. 1894, *K. Yendô*, viii. 1903. Saghalien : without locality, *Fr. Schmidt* ; Cheppopo, *T. Miyake*, 8. vii. 1908.

Potentilla fragarioides, *L.* var. **stolonifera, *Maxim.*** forma **trifoliolata, *Takeda*** ; foliis radicalibus ternatis ; a *P. Freyniana*, petiolis pilis patentibus villosis, foliolis supra pilosis subtus praesertim ad nervos adpresse villosis ciliatis, stipulis caulinis paucidentatis, floribus majoribus, sepalis exterioribus interiora ante anthesin superantibus distinguitur.

CHINA. Hupeh, *Henry*, 7895.

XXXIII.—BLUE COUCH : A NEW LAWN GRASS.

(*Digitaria didactyla*, Willd.)

O. STAPF.

In the Agricultural Gazette of New South Wales of September 2, 1910, Mr. Maiden called attention to a grass, known at Sydney as "Blue Couch," the name referring to the blue-green hue the foliage assumes in summer. It seemed to have appeared first about 30 years ago, but without being much noticed until recently when it was also found in the Sydney Botanic Garden, the Federal Government House Grounds and in a private garden near Sydney. In every case it made its appearance in lawns, and although at first considered as an objectionable component it has now found some favour with experts as the following abstracts from the article referred to above will show.

Mr. T. G. Weston, head gardener, Federal Government House, states :

"It is a first-class grass for lawns, providing it be kept close mown and well watered during dry weather.

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"Little or no top dressing is needed for the grass on ordinary lawns. On tennis lawns, &c., a light surfacing of fine sandy loam will be needed to keep a really good surface.

"In competition with Couch grass* it always obtains the mastery. Especially is this noticeable on closely cropped lawns. The dense growth of the Blue Couch appears to smother the Couch.

"Weeds such as clover, Oxalis, Medicago, &c., are just as troublesome on lawns covered by Blue Couch as those laid on Couch. It succumbs to asphalt or drought quicker than Couch does, but recovers much more rapidly. Lawns that were to all appearance dead, and upon the surface of which one has been afraid to use a broom, have, after a soaking by rain or sprinklers, recovered in two or three days to such an extent that the lawn-mower has been needed. It forms a denser surface than the Couch, and its runners are only about the same thickness.

"It travels over the surface much more slowly than Couch, but in forming new lawns, if seed were used, this would be an advantage, as the dense surface, so much desired, would be more quickly obtained. Providing it be kept close mown, it is an easy grass for the lawn-mower. If, however, it is allowed to obtain a little headway, especially during its flowering period, it will give the machine a large amount of trouble to reduce to a smooth uniform surface, as its stems pass in numbers between the knives and cutting-plate, and remain unsevered, presenting a mangled appearance. If the lawn-mower is in first-rate condition this does not happen, but practice and experience demonstrate that lawn-mowers are seldom in this much-to-be-desired state. If allowed to grow at will, few grasses give the really good scythe men more difficulty to mow creditably than this.

"Conclusions:—After two and a half years' experience I should still give Couch grass the preference for fine lawn work. It stands wear and tear better. It withstands drought better. During dull and showery weather it dries more quickly. It gives less trouble to the mowing-machine. It is quickly and easily repaired. Its runners lie closer to the ground. Weeds are removed more easily from it."

Even more favourable is a report furnished by Mr. Ernest A. Bonney, of Longueville, near Sydney, a gentleman who has had very considerable experience in regard to bowling greens and croquet lawns. He says:

"After an experience of five or six years of this grass on my croquet lawn at Longueville, on the Lane Cove River, my opinion is that it is much more suitable for bowling greens and croquet lawns in the coastal districts of New South Wales, especially in loamy or sandy soil, than the Couch, which is so generally used around Sydney. . . . My own lawn was made about nine years ago in dark sandy soil, the surface of which contained a considerable quantity of decayed vegetable matter. . . . About a fourth part of the lawn was turfed, and the remainder planted with Couch. About three years afterwards I noticed the Blue Couch, but do not know where it came from, as I have not seen it about Longueville.

* This name stands here for *Cynodon Dactylon*. The objectionable Couch grass of England is *Triticum repens*.

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It gradually spread, and now covers an area of 300 square feet, and is continuing beyond the boundary of the playing area, where it has an opportunity of running to seed. . . .

"The advantages of this grass over Couch are as follow:—1. It is much less trouble to keep it in order, as the leaves being soft and succulent, and there being an absence of tough runners, and the growth less rapid, the mowing during the summer months takes about a quarter of the labour.

"2. The leaves being broader and the roots forming a thick fibrous mass, the surface is always well covered and stands more wear, as there are no bare places to be pitted into holes by the rain and wind. The leaves being of a softer texture it is unnecessary to grind the lip of a Green's lawn-mower, as much less resistance is offered to balls passing over it, and that resistance remains more even throughout the day.

"3. It eradicates all other grasses and weeds on my lawn. Wherever it appears the Couch disappears entirely, and at the present time (17th June), when what we call winter grass and many objectionable weeds are coming up in the Couch, the parts covered with Blue Couch are perfectly free from all other grasses.

"4. It stands the cold weather better; it is still green and growing whilst the Couch is looking brown and its growth has stopped. A severe frost turns it brown.

"5. It requires less top-dressing, and is better without any, if there are no subsidences in a lawn. Only sufficient to level the surface should be put on, as it does not require fresh soil to feed upon. A little fertiliser is quite sufficient.

"The only objections that I know of are:—Firstly, it dies off sooner during a long term of hot dry weather; but it recovers very quickly after rain, and as all lawns during such times have to be watered, it is only a matter of using a little more water, the cost of which is less than that of the extra labour required by Couch. Secondly, the colour of the grass, which is never a bright green, being a blue green in summer and yellow green in winter; but as it is all one colour, this is preferable to the numerous tints which are so often found in a Couch lawn—especially during the winter. . . . It spreads on the lawn, where it is rolled and mown frequently, slowly in all directions, and does not send out runners, although it appears to do so when it reaches loose soil."

As the discovery of a new grass suitable for lawn making in warm countries where usually *Cynodon Dactylon* has to be used for that purpose is of considerable value, it is important to inquire into the origin and the natural affinities of the grass. As to the former, Mr. Maiden says that the grass is supposed to be of American origin, and he refers it with some hesitation to "a variety (*brevispicatum*) of the common summer grass, *Panicum* (*Digitaria*) *sanguinale*." From a letter by Mr. Maiden it appears that the author of the varietal name is Vasey and also that no description of it was published. A specimen of the grass was received at Kew three years ago when it was identified with an unnamed specimen of a *Digitaria* from Tonkin. The investigation was not then carried further; but on the receipt of additional material in November last it was taken up again, resulting in the establishment

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of its status as a native of New South Wales. In fact it was collected as long ago as 1823 by that indefatigable collector Dr. Sieber at Port Jackson. He distributed it in his "Agrostotheca" under No. 72 and Nees named it *Panicum gracile* (in Sprengel, Syst. Veg. iv. ii. 33), but changed it subsequently to *Panicum subtile*, possibly because there was already a *Panicum gracile* in the field. He calls it (l. c.), *Panicum subtile*, R. Br., but how he came to connect it with Robert Brown is not clear, as there is no evidence of Brown having known it. Steudel on the other hand quotes it as *Panicum subtile*, Sieb. ex Nees [Syn. Pl. Gram., p. 41]. Curiously enough Sieber's specimen and the name escaped Bentham, so that they are not accounted for in the Flora Australiensis ; nor in fact has the plant been collected again in Australia until quite recently. The reason why the species dropped so completely out of the agrostological literature was no doubt that it was never described properly and soon became lost in synonymy. Steudel in the 2nd edition of his Nomenclator Botanicus [1842], identified it with *Panicum distachyum*, while in his Synopsis Plantarum Graminearum, p. 41 (1854), it appeared under *Panicum bicorne*, as *P. subtile*, Nees in Sieb. Agr. N. Holl. no. 72, with this note "non differt (i.e. a *P. bicorni*), nisi racemis magis laxifloris, cf. *P. didactylon*, Kunth." There is no justification for its identification with *Panicum distachyum*, L. On the other hand, it is indeed indistinguishable from *Panicum didactylon*, Kunth (1833) = *Digitaria didactyla*, Willd. (1809). This was described from a plant collected by Bory St. Vincent in Mauritius in 1801 or 1802, and it has since been repeatedly collected in that island as well as in Réunion and Madagascar. We thus know it from the Mascarenes, Tonkin and New South Wales, and the probability is that it is more widely distributed throughout this area than its occurrence in herbaria would suggest. It may have been overlooked because it was mistaken for one of the more common tropical species of *Digitaria*, or indeed it may hide under one of the species described by Büse from the Malay Archipelago and not represented at Kew. Sieber either received it from Mauritius from his collectors Hilsenberg and Bojer or collected it himself during his short stay in that island early in 1823 and distributed it subsequently in his "Herb. Fl. Maurit." under no. 42. This number does not seem to have been named until Steudel in his "Nomenclator" (1841) referred to it as "*Panicum bicorne*, Sieber (Hrbr. Maurit. no. 42 et ? Kunth, En. i. 83)," an unfortunate identification, as Kunth's *Panicum bicorne* is based on *Paspalum bicorne*, Lam., an Indian grass of clearly different affinity, and has in any case priority over "*Panicum bicorne*, Sieb." Bojer in his "Hortus Mauritianus" (1837) has no *Digitaria didactyla*, whilst Baker in his "Flora of Mauritius and the Seychelles" enumerates it as *Panicum didactylum*, Kunth, without further comment.

We have therefore accounted for the following synonymy for the Blue Couch Grass of New South Wales.

Digitaria didactyla, *Willd.* Enum. Hort. Berol. (1809), p. 91—*Panicum gracile*, Nees in Sprengel, Syst. Veg. vol. iv. pars. ii. (1827), p. 33, non R. Br. —*Panicum subtile*, Nees in Flora (1828), p. 300 (nomen) —*Panicum didactylum*, Kunth, Rev. Gram. (1839)

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I., p. 33—*Panicum bicorne*, Sieb. ex Steud., Synox. Pl. Gram. (1854), p. 41, non Kunth.

Hasskarl in Plantae Javanicae Rariores (1841), p. 12 also, refers to *Panicum didactylum*, Kunth, as a possible synonym of *P. bicorne*, Kunth, but his account of the plants referable or possibly referable to the species he is dealing with is so confused that no notice of his suggestion need be taken.

From the indication of the distribution of *Digitaria didactyla* in Sprengel's Systema Vegetabilium, vol. i. (1825), p. 270: "Ins. Mascaren. Nov. Holland," it might be inferred that the new Australian lawn grass was already then known and recognised; but there is no doubt that "Nov. Holland" was added owing to the supposed, but mistaken identity of *Digitaria didactyla* (Ins. Mascaren.) with *Cynodon tenellus* R. Br. (Nov. Holland), which latter is quoted l. c. as a possible synonym.

Dr. A. Zahlbruckner kindly informs me that in the herbarium of the Vienna Hofmuseum there are two sheets of Sieber's Agrostotheca no. 72 with labels in what appears to be Sieber's handwriting, one of them containing the indication "Nova Hollandia," the other "Port Jackson." Both had been named *Digitaria didactyla* by Hackel as well as by Mez. As no full description of *Digitaria didactyla* exists, it may be useful to add one in this place.

Digitaria didactyla, *Willd.* *A perennial grass*, growing in loose or dense tufts, 10–40 cm. high, when in flower, often throwing out long (up to 40 cm. and more) many-noded runners which root from the nodes and give rise to few or many intravaginal innovation-shoots and flowering culms, terminating finally in an ascending culm or fascicles of such culms. *Innovation shoots* often bulbously thickened at the base, at length branching from basal leaf-axils, thus forming new young tufts of culms. *Runners and culms* very slender, 0·5–1 mm. thick, more or less wiry, particularly the former, terete, glabrous; terminal and subterminal culms like the runners, usually many-noded, internodes with the exception of the upper ones, usually 1–2·5 cm. long or near the base shorter; culms arising farther back on the runners, much shorter and with fewer nodes, erect or suberect or, if shortly ascending, then often rooting from the lowest nodes, simple or sparingly branched below. *Sheaths* membranous, rounded on the back, tight, the lowest (usually two) of the innovation-shoots reduced to broad, apiculate, bladeless, villously hairy, whitish cataphylls, the following, like all the lower sheaths of the flowering culms and those of the runners short, more or less hairy, particularly at the nodes, at length withering away, the upper mostly elongated and glabrous, uppermost of flowering culms up to 6 cm. long, all the sheaths or most of them somewhat shorter than the full-grown co-ordinated internodes. *Ligules* hyaline, truncate, denticulate, up to over 1 mm. long. *Blades* narrow-linear, attenuate to a fine point, those of the runner and the culm-leaves under or not much over 1 cm. long, upper culm-leaves similar or much longer (up to 6 cm.), 1·5–2 mm., rarely to 3 mm., wide, flat, soft, glabrous, smooth, rarely hairy. *Peduncles* (uppermost culm-internode) at length long exserted from the uppermost sheath, from 6 to over 15 cm. long, filiform, erect. *Racemes*, usually 2, sometimes 3, rarely more, digitate, sessile or nearly so, 2–4·5 cm.

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long, suberect or more or less obliquely spreading, very slender, pale green; rhachis hardly wavy, under 1 mm. wide, green wings almost as wide as the whitish midrib, margins smooth or nearly so, internodes up to 1·5 (rarely 2) mm. long, pedicels paired, unequal, filiform, scaberulous, the primary one 1·5 to almost 2 mm. long, the other very short. *Spikelets* lanceolate, acute, 2 mm. long, pale green, adpressed to the rhachis. *Involucral glumes*: lower reduced to a very minute, rounded or ovate, nerveless, hyaline scale, upper oblong, obtuse or subacute, 1–1·5 mm. long, thin, 3-nerved, finely hairy; hairs in bands along the margin and between the nerves, with a short point. *Lower (empty) floret: Floral glume* (valve) lanceolate, acute, 2 mm. long, 7-nerved, in the dry state grooved between the nerves with the inner grooves hardly wider than the lateral, more or less finely hairy along the margins, hairs adpressed or spreading with short points. *Palea* an almost microscopic hyaline 2-lobed scale. *Upper (fertile) floret: Floral glume* (valve) lanceolate, acute, almost as long as that of the lower floret, thin-papery, often tinged with purplish-blue, delicately 5-nerved, at length somewhat firmer. *Palea* similar in shape and structure to the floral glume, but delicately 2-nerved. *Lodicules* subquadrate, 0·15 mm. long. *Stamens* 3, anthers linears, yellow, about 1·5 mm. long. *Ovary* lanceolate; styles capillary, up to 1·2 mm. long; stigmas exserted from the apex of the floret, purple 0·75 mm. long. *Grain* unknown.

Distribution and specimens examined :—

MASCARENES. Mauritius, *Bory de St. Vincent*, *Dupetit Thouars* (a specimen in the British Museum, from Willdenow's Herbarium), *Sieber*, Fl. Maurit. ii., 42, *Bouton*, *Ayres;* Réunion,* *Balfour*.

MADAGASCAR. Central Madagascar, *Baron*, 4253; South Madagascar, Fort Dauphin, "prostrate, matted, sandy dunes," *Scott Elliot*; without precise locality, *Gerrard*, 82.

TONKIN. Tankeuin, near Guang-yen, "croissant en touffes compactes . . . . . sur les rochers calcaires," *Balansa*, 460.

AUSTRALIA. New South Wales, "Port Jackson," *Sieber*, Agrostoth. 72; Sydney, *Maiden*.

The affinity of the grass lies evidently with *D. sanguinalis*, L., from which it differs, however, sufficiently in its perennial duration and peculiar mode of growth, the fine blades, the small number of racemes and their slender build, the smaller spikelets and the evenly grooved appearance of the glume of the lower floret, at least when dry. To this might be added as a secondary anatomical character the smaller size of the wavy-walled cells of the glume of the fertile floret and their smaller number of folds (3–4) against those of *D. sanguinalis* (6–7). Although I have examined all the specimens mentioned above for grains, I have not found a single one, even in racemes which had already shed most of their spikelets and were to all appearances perfectly mature.

* "Dans les champs incultes," Cordemoy, Flore de l'Ile de la Réunion, p. 117.

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