

# Two New Species (*Didissandra porphyrantha* and *Didymocarpus nitidus*) and a New Combination (*Didymocarpus breviflorus*), Gesneriaceae, from Selangor, Malaysia

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## Abstract

Two new species of Gesneriaceae, *Didissandra porphyrantha* (Section Speciosae) and *Didymocarpus nitidus* are described and illustrated. A new combination, *Didymocarpus breviflorus*, is made for a species previously included in *Didissandra*.

## Introduction

During the course of field work in Selangor, one of us (RK) located populations of several interesting species of Gesneriaceae. Two of these, on further investigation, were found to be new species, *Didissandra porphyrantha* and *Didymocarpus nitidus*, and another, *Didissandra breviflorus* Ridl., with the collection of flowering material, proved to be a species of *Didymocarpus*.

The new *Didissandra* species is particularly striking with large violet-purple flowers with an almost black limb, and so earns the epithet *porphyrantha*. It is a handsome plant worthy of cultivation. The new *Didymocarpus* species is notable for its shiny, rather fleshy leaves and is therefore called *D. nitidus*. Its flowers are white and are rather small. This species seems to flower rather rarely and is usually encountered sterile.

Both *Didissandra porphyrantha* and *Didymocarpus nitidus* are found in montane forest on a steep slope east of the summit of Gunung Bunga Buah where they grow in a richly developed herb layer, which includes other species of Gesneriaceae such as *Didymocarpus* cf. *albinus*, *D. malayanus* and *D. platypus* (a form with purplish corolla lobes illustrated by Kiew, 1982). *Didymocarpus nitidus* is as yet known only from this locality but *Didissandra porphyrantha* has been found lower down the Gombak valley. As yet *Didymocarpus breviflorus* is only known from Selangor from several places in the Gombak valley as well as from Genting Peras.

***Didissandra porphyrantha*** A. Weber & R. Kiew, *sp. nov.*

Fig. 1, 2.

Planta lignosa, 20–50 cm alta. Caulis simplex vel ramosus, in parte inferiore decumbens et radicans. Folia in apice caulis laxa aggregata, per internodia c. 2 cm longa et pilis rubro-brunneis obsita separata, opposita; petiolus 2–3 cm longus, e pilis rubro-brunneis villosus; lamina 10–20 x 3–6 cm, oblanceolata, partim subfalcata, apice acuminato, basi attenuata, margine grosse serrato-crenato (dentes 1.5 mm longi,

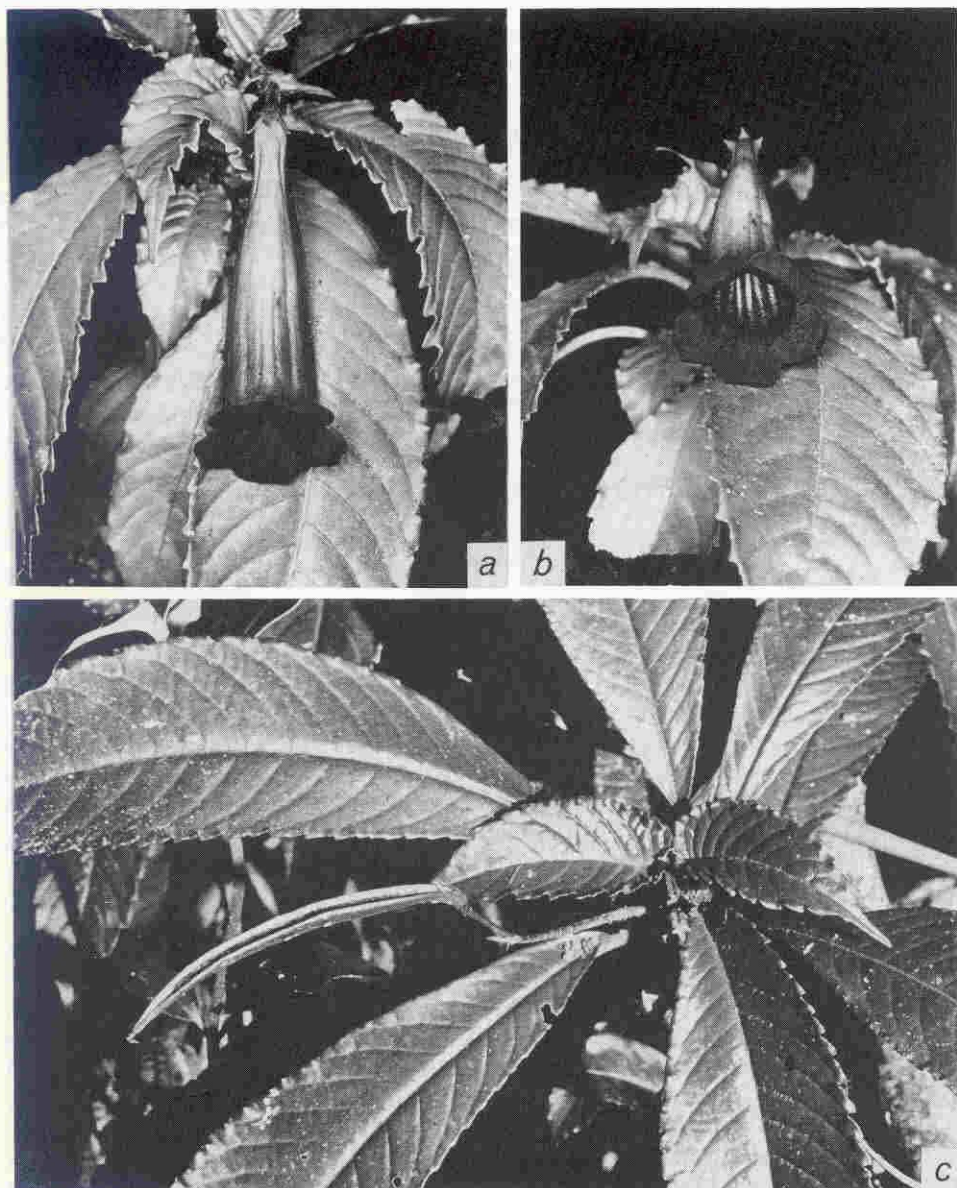


Fig. 1. *Didissandra porphyrantha*. a,b flower; c fruiting specimen. (Photo. A. Weber)

c. 1 cm distantes); pagina superior glabra (in foliis juvenilibus glandulis minutissimis 2-cellularibus obsita), pagina inferior in nervis laxè villosus. Pedunculi axillares, 5–8 cm longi, subglabri, 1–2 flori; bractee 2, lanceolatae; pedicellus 1–1.5 cm. Sepala 5, anguste triangularia, in dimidio inferiore connata, subglabra. Corolla c. 5 cm longa, infundibuliformis, basin versus anguste cylindrica; tubus extra glaber, violaceus, intus atro-violaceus, lineis albis longitudinalibus 8 ornatus; limbus atro-violaceus, fere ater. Stamina 4, didynamia, per paribus cohaerentes. Discus cylindricus, brevis, 5-lobatus. Ovarium cylindricum, basin versus angustatum; stylus brevis; stigma unilabiatum, planum, triangulare vel reverse cordatum. Fructus capsularis, elongato-linearis, carnosus-cartilagineus, 6–8 cm longus, leviter curvatus, in latere superiore rima longitudinali dehiscens. Semina numerosa, parva, atrobrunnea, elliptica vel late fusiformia, striata.

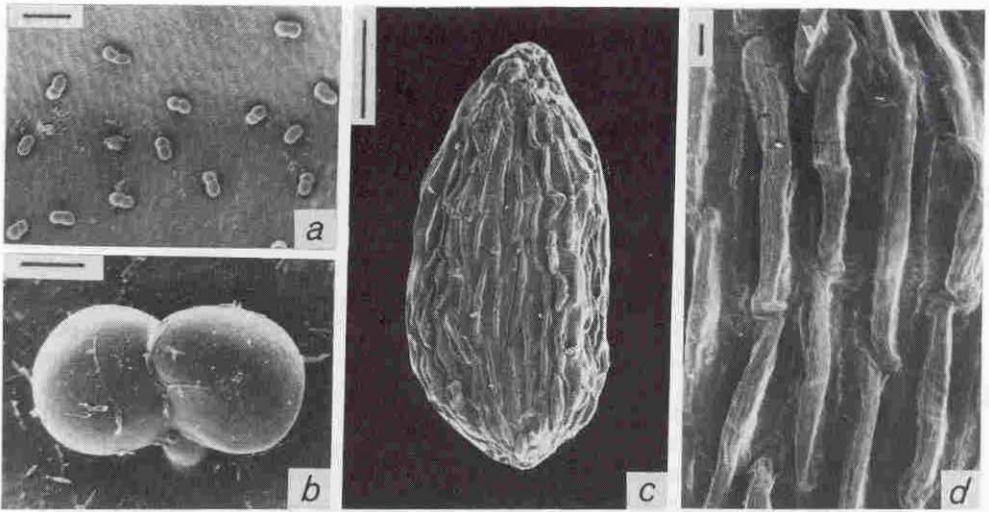


Fig. 2. *Didissandra porphyrantha*. a,b. glands on juvenile leaf; c. seed; d. testa surface enlarged. SEM-micrographs bar: a,c. 100 $\mu$ m; b,d. 10 $\mu$ m.

*Type*: Peninsular Malaysia, Selangor, Gunung Bunga Buah, on ridge east of summit, 1300–1400m, *Weber & Anthonsamy* 840711-1/3 (WU; iso E, K, KLU, L, WU, UPM).

Woody plant, 20–50 cm tall. Stem unbranched or branched, decumbent and rooting, the upper, erect leaf-bearing part villous with red-brown hairs. Leaves opposite, loosely tufted, internodes c. 2 cm. Petiole 2–3 cm, red-brown hairy. Lamina 10–20 by 3–6 cm, oblanceolate, partly subfalcate, tip acuminate, base narrowed, margin coarsely serrate-crenate (teeth c. 1.5 mm long, c. 1 cm distant), angles between teeth raised, giving the margin an undulate appearance, upper surface glabrous (young leaves with minute, 2-celled glands, which later collapse, scarcely visible with a lens), lower surface with veins sparsely hairy on the flanks.

Peduncles axillary, 5–8 mm long, glabrous or sparsely hairy, 1 to 2-flowered, bracts 2, lanceolate, sparsely hairy, pedicel 1–1.5 cm. Sepals 5, connate in the lower part, lobes narrowly triangular, tip blunt, (sub)glabrous. Corolla c. 5 cm long, broadly cylindrical, somewhat compressed, base narrow cylindrical, limb slightly bilabiate, lobes 5, rounded, tube glabrous outside, violet, limb dark violet, nearly black, throat with 8 white lines running from the mouth to the interior. Stamens 4, white, didynamous, cohering in pairs by the apex of the anthers at right angles to the filaments. Disc shortly cylindrical, shallowly 5-lobed. Ovary cylindrical, tapering towards the base, style short, stigma formed from the lower carpel alone, flat, broadly triangular to (reversely) heart-shaped. Capsule slender, 6–8 cm long, hard and thickly fleshy, slightly curved, tapering towards the base, splitting on the upper side by a longitudinal slit. Seeds small, numerous, blackish-brown, elliptic to broadly spindle-shaped, testa with longitudinal bars (thickenings).

*Other collections*: Selangor: Comp. 25, Ulu Gombak F. R., 1973, *Kochummen FRI 16722* (KEP); type locality *Anthonsamy* 1980 SA 337 (UPM), *R. Kiew* 6 June 1981 RK 1040 (UPM); Waterfall on Sungai Batu at 200m *Kiew B. H.* 2 Feb 1986 RK 2096 (UPM).

*Habitat*: Locally common, forming clumps in undisturbed forest, on slopes in shade and at lower altitudes (200m) in shaded forest in the same valley system.

*Notes:* *Didissandra porphyrantha* is a handsome plant with large, beautiful, dark purple flowers (Fig. 1). The floral tube is violet outside (paler towards the base), the limb is deep violet almost verging on black. Eight white lines in the throat run from the mouth to the base, contrasting sharply with alternating dark lines.

It belongs to Section *Speciosae*, which presently numbers 15 species in Peninsular Malaysia. It can be told apart from other species in this section by its coarsely serrate-crenate leaves, which are glabrous on the upper surface (though they are sparsely studded with two-celled glands when young, (Fig. 2a, b), the more or less glabrous sepals, which are connate in the lower part, and the glabrous corolla.

The large (5 cm long) deep purple flowers are not unique in the genus or section. Two species, *D. atrocyanea* and *D. atropurpurea*, share these features and their specific epithets reflect the striking colour of their flowers. The flower of *D. atrocyanea* is described by Ridley (1923) as "black purple, mouth nearly black" and must therefore be very similar to *D. porphyrantha*. *D. atrocyanea* is, however, easily distinguished by vegetative characters: its leaves are conspicuously hairy and appear punctate on the lower surface; the leaf margin is closely serrate with a hair on each tooth and the plant appears to be smaller with a more rosette-like habit. *D. atropurpurea* is distinguished by having more or less entire leaves (the margin is very obscurely crenate) and very short pedicels so that the bracts are placed close to the calyx.

Several other species are described by Ridley as having violet flowers (*D. hirta*, *D. longisepala*, *D. morgani*, *D. petiolata* and *D. violacea*) but their flowers are smaller (2.5 to 3.5 cm long) except for *D. longisepala* which has flowers 5 cm long. *D. longisepala*, however, differs from *D. porphyrantha* by having, according to Ridley, long petioles (7 cm long) and exceptionally long peduncles (10 cm long).

Nothing is known about the pollination of these peculiarly coloured flowers. One wonders which animal (probably largish insects) are attracted to the dark purple colour.

### **Didymocarpus nitidus** R. Kiew & A. Weber, *sp. nov.*

Fig. 3, 4a, b & c.

Planta lignosa, 30–40 cm alta. Caulis simplex, 40–70 cm longus, 0.5 cm in diametro; pars inferior decumbens et radicans. Folia opposita, in parte superiore caulis aggregata, internodiis 0.5–2 cm longis separata; petiolus 1.5–2.5 cm, pilis ± adpressis obsitus; lamina lanceolata, 10–15 x 2–3.5 cm, in apice et in basi attenuata, margine crenulata; pagina superior atrovirens, glabra, nitida; pagina inferior pallide viridis vel albidus, nervis perspicuis; nervi e pilis ± adpressis hirti; nervi laterales 15–10, oppositi vel suboppositi, arcuati. Pedunculi axillares, 6–10 cm, pubescentes, bracteis minutis linearibus 2 in parte superiore, 1-flori. Sepala 5, c. 2 mm, anguste triangularia, obtusa, e pilis brevibus hispida. Corolla 13–15 mm, alba; tubus et limbus extra e pilis minutis pubescentes; limbus bilabiatus, 5-partitus, lobis rotundatis. Stamina 2, antheris globularibus cohaerentes. Discus annularis. Ovarium cylindricum, c. 6 mm, pilis brevibus et glandulis minutis obsitum; stylus 3 mm; stigma inconspicue capitatum. Fructus capsularis, cylindricus, 4–4.5 cm, e pilis erectis nigris laxe strigosus, in latere superiore rima longitudinali dehiscens. *Type:* Peninsular Malaysia, Selangor. Gunung Bunga Buah, east of summit, 1300–1400 m, *Weber & Anthonyamy 840711-1/1* (WU; iso E, K, KLU, L, WU, UPM).

Woody, unbranched plant 30–40 cm tall. Stem 40–70 cm long, 0.5 cm thick, strongly woody, decumbent and rooting. Leaves paired, forming a loose tuft at the top of the stem, internodes 0.5–2 cm. Petiole 1.5–2.5 cm with short, ± appressed, brownish hairs. Lamina lanceolate, 10–15 by 2–3.5 cm, gradually narrowed at both ends, margin obscurely crenulate, upper surface *in vivo* deep-green and shiny, glabrous; lower surface pale green to whitish (copper-brown when dry), with prominent, hairy veins, veins 15–20 pairs, opposite or subopposite, arched.

Peduncles axillary, 6–10 cm, shortly hairy, with 2 minute, linear bracts on the upper part, single flowered. Sepals 5, c. 2 mm, narrow-triangular, blunt, shortly hispid.



Fig. 3. *Didymocarpus nitidus* in its natural habitat. (Photo. A. Weber).

Corolla 13–15 mm long, white, outside of tube and limb pubescent with short hairs, limb bilabiate, 5-partite, lobes rounded, lower lobe projecting straight forward. Stamens 2, anthers globose, cohering at the tips. Disc annular. Ovary cylindrical, c. 6 mm long with short hairs and minute glands, stigma inconspicuously capitate. Capsule 2–5 cm long, straight, sparsely strigose with black, erect hairs, opening by a longitudinal slit on the upper surface.

*Other collections:* Selangor, type locality: R. Kiew 22 Sept 1978 RK 666 (UPM), *Anthony* 1980 SA 338 (UPM), R. Kiew 16 May 1982 RK 1166 (UPM), R. Kiew 18 March 1984 RK 1285 (UPM).

*Habitat:* Common in one locality in undisturbed montane forest, on steep slopes near the top of a ridge, in shade.

*Notes:* *Didymocarpus nitidus* can be distinguished from other *Didymocarpus* species by the following combination of characters (for measurements see description): unbranched, woody stem with rather short internodes; leaves lanceolate, deep green, glabrous and shiny on the upper surface, pale green to whitish on the under side

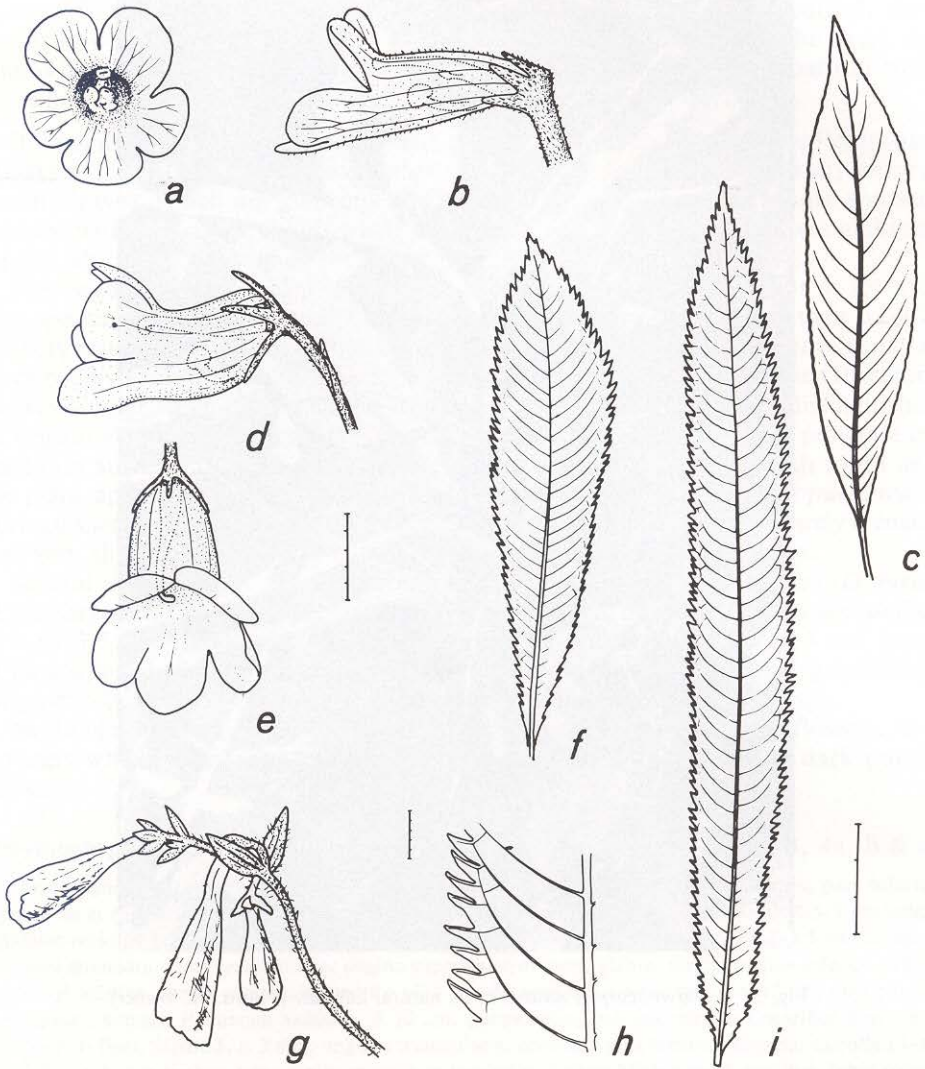


Fig. 4. a-c. *Didymocarpus nitidus*, flower and leaf. d-f. *Didymocarpus breviflorus*, flower and leaf. g-i. *Didymocarpus serratifolius*, inflorescence, portion of leaf, and leaf. Bar 5 mm flowers; and 3 cm leaves.

(Fig. 3); margin obscurely crenulate (Fig. 4c); peduncles half (or more than half) as long as the leaves, single flowered; flowers small with a rather broad, straight tube, pure white (Fig. 4a, b).

The shiny leaf surface may in part be attributed to a lack of non-glandular uniseriate hairs which are common in other species of *Didymocarpus* (Norana, 1982). (These non-glandular hairs are also absent from the upper surface of *Didissandra porphyrantha*). Both these species possess stalked glandular hairs, a common feature of both *Didissandra* and *Didymocarpus*.

*Didymocarpus nitidus* is unique among *Didymocarpus* species (Norana, 1982) in that these glandular hairs are completely sunken below the leaf surface which is flat

and these two features contribute to the leaf's gloss. Some species of *Didymocarpus* do not have a flat leaf surface but instead are mammillate, e.g. *D. platypus*, or have a papillose epidermis, e.g. *D. malayanus*.

***Didymocarpus breviflorus* (Ridl.) A. Weber & R. Kiew, *comb. nov.*** Fig. 5.

*Didissandra breviflora* Ridl. Kew Bull. 10 (1926) 474.

*Holotype*: Peninsular Malaysia, Selangor, Ulu Gombak, c. 1500 ft., 23 Sept 1921, *Hume 8437* (SING).

Stem erect, woody, usually unbranched. 10–25 cm tall and 3–6 mm thick, in the upper part densely covered by long, brown hairs (grey-brown when dry). Leaves obscurely decussate, crowded at the top of the stem and forming a tuft. Petiole 1–2.5 cm long, densely covered by long (grey-) brown hairs. Lamina oblanceolate (to lanceolate), partly subfalcate, 9–20 cm long by 2.5–5.5 cm wide, light green *in vivo*, margins strongly serrate, teeth c. 3 mm long and 1.5–2 mm wide at base, tip obtuse, with 14–19 teeth per 5 cm, *in vivo* the base of the tooth slightly raised (pouched) with the tooth directed downwards, lateral veins opposite or subopposite, forming a conspicuous succession 3–4 mm apart, parallel, slightly curved, each vein forking just below a marginal tooth, the strands of adjacent veins anastomosing and sending a short strand into the sinus between two teeth, upper surface glabrous, midrib sometimes with sparse, long hairs, lower surface whitish (grey-brown when dry), with loose long hairs on midrib and lateral veins.

Peduncle axillary, one to several (in a row) arising from a leaf axil, 8–10 cm long, purple, sparsely covered by long hairs, single flowered. Bract pair subopposite, green, c. 5–10 mm below the flower, linear-obtuse. Sepals 5, linear, obtuse, 3 mm long,

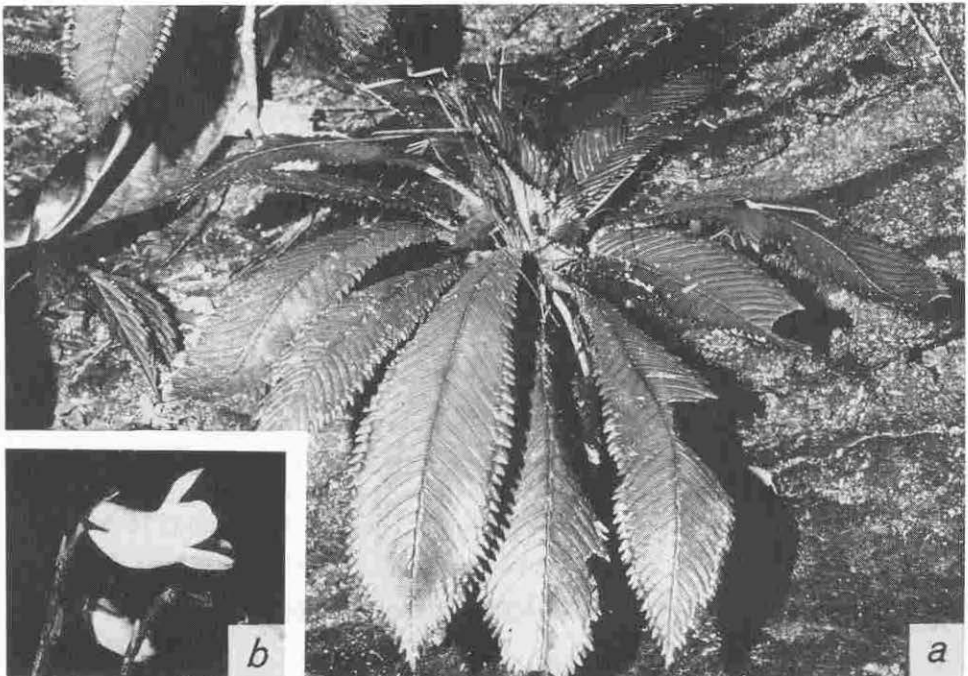


Fig. 5. *Didymocarpus breviflorus*. a. Fruiting plant in natural habitat. b. Flower of cultivated specimen. (Photo. A. Weber).

Table 1  
Diagnostic characters for *Didymocarpus breviflorus* and *D. serratifolius*.

	<i>D. breviflorus</i>	<i>D. serratifolius</i>
Hairs on stem	pale fawn, long, silky	ferruginous, hispid
Petiole length (cm)	1 - 2.5 (- 4 in lower leaves)	± decurrent (- 1.5 in lower leaves)
Leaf	oblanceolate (- lanceolate)	narrowly lanceolate
Leaf width (cm)	2.5 - 5.5	1.5 - 3
Leaf width: length	1 : 2-4	1 : 5-8
Indumentum on lower surface of midrib	pale fawn, short, dense	ferruginous, long
No. vein pairs	20 - 33	40 - 50
Marginal teeth length (mm) apex	3 - 5 rounded	2 - 3 jagged
No. flowers per peduncle	1	several (- 4)
Sepals	linear, tip blunt	ovate, tip acute
Corolla form	shortly and broadly tubular	trumpet-shaped, base narrowed
Corolla length (mm)	10 - 14	13 - 22
Fruit indumentum	none	shortly pubescent



purple, with sparse  $\pm$  appressed hairs. Corolla 10–14 mm long, tube broad-tubular, c. 4 mm in diameter, curved, lobes 5, rounded, nearly equal, pale violet to nearly white, very shortly hairy outside (scarcely visible in dry flower). Stamens 2, c. 3 mm long, anther c. 1.5 mm long, thecae widely divaricate. Disc shortly cylindrical, surrounding the ovary base. Ovary oblong with minute, stalked glands. Style strongly curved down in the upper part, stigma capitate. Capsule linear, glabrous, 3–5.5 cm long, opening by a longitudinal slit on the upper side, making an angle of 60–120° with the peduncle. Seeds numerous, minute, elliptic, testa reticulate, with fine pustules.

*Specimens examined:* Selangor — Genting Simpah 700 m, 29.10.1937 *Md. Nur SFN 34298* (E); Old Gombak Road, 17th milestone upwards to Genting Simpah 330–500 m, *Allen 3451* (SING); Waterfall on Old Gombak Road, 12.7.1984 *Weber & Anthonysamy 841207-1/1* (WU); 25.11.1984 *Kiew RK1551* (UPM); Genting Peras, 10.2.1985 *Kiew RK 1614* (UPM).

*Habitat:* Hill forest, on vertical rock faces or steep banks. (Ridley (1926) incorrectly quotes the altitude of the type specimen as 500 ft).

*Notes:* Ridley's description of *Didissandra breviflora* is not only brief but also does not include a description of the stamens which he was "unable to see" in the "one crushed flower" available to him. Here a comprehensive description is given based on a wider range of specimens, including fresh material.

As the stamen number is two (instead of four, which characterises *Didissandra*), the species is transferred to *Didymocarpus*. It fits neatly into Section *Pectinati* as its leaves are bunched in a tuft at the top of a woody stem and have a serrate margin (Fig. 5a) and it has short, tubular flowers (Fig. 5b).

*Didymocarpus breviflorus* most closely resembles *D. serratifolius* (Fig. 4g–i) in its venation and conspicuously serrate margin. It is distinguished from *D. serratifolius* by the characters listed in Table 1.

It occupies a distinct habitat. It grows on vertical rock faces or steep earth banks which are bare of other vegetation or leaf litter. In this habitat, it may be common but it is not found in other habitats in the vicinity. This suggests that its seedlings are intolerant to being covered by leaf litter.

### Acknowledgements

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