

272. BUCEPHALANDRA MOTLEYANA

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The island of Borneo has the richest aroid flora in South-east Asia, supporting several genera and many species occurring nowhere else in the world. The plant depicted here, *Bucephalandra motleyana* Schott, is one of these.

The genus *Bucephalandra* was described by Schott (1858) based on a plant collected by J. Motley in Kalimantan. However, in publishing the new taxon an error arose that resulted in taxonomic confusion for over 120 years. The illustration, which was prepared under Schott's direction, incorrectly shows a spadix with contiguous fertile male and female flower zones and an ovary with parietal placentation. In fact, in *Bucephalandra* there is a zone of prominent shield-like staminodes separating the fertile flower zones and the ovules are each attached to a basal placenta. Schott's misrepresentation of these features led Beccari (1879) to publish a new genus, *Microcasia*, to account for a Bornean plant with prominent shield-like staminodes and parietal placentation! The confusion was eventually resolved by Bogner (1980), who showed *Microcasia* to be a synonym of *Bucephalandra*.

In 1984, a second species of *Bucephalandra*, *B. gigantea* Bogner, was described (Bogner, 1984). It is known only from the Kiau River in central Kalimantan where it was collected by F.H. Endert in 1925; it has not been collected since. Elsewhere in this volume [see page 152] a third species, *B. catherineae*, which is also from Kalimantan, is described for the first time.

Bucephalandra motleyana is a rheophyte, occurring along banks and on rocks in jungle streams within the spray-wet zone where it is subject to frequent flooding. Rheophytic plants display several adaptations to this environment, possessing, for example, tough, wide-spreading roots, leathery leaves and a generally 'streamlined' appearance; all these features are present in *Bucephalandra*. *Bucephalandra motleyana* is quite variable in appearance; the leaves range from slender to rather broad with their margins varying from smooth to strongly undulate, and the plants also vary considerably in stature from one to eight centimetres in height. Previous authors have used this variation to distinguish several separate taxa (e.g. Hotta, 1965). Observation of plants in habitat shows that these variations occur throughout populations and are of no taxonomic significance.

CULTIVATION. Rheophytic aroids are not easy to cultivate since it is difficult to provide conditions which are similar to their natural habitat. However, *Bucephalandra* has been cultivated successfully at Munich and Kew. The Kew-grown plant illustrated here originated from Brunei where it was collected by Michael Marsh and David Simpson during an expedition in 1991.

Bucephalandra grows best in a relatively small pot of an open but moisture-retentive soil. It is imperative that the plant never suffers from dryness at the roots or from low atmospheric humidity. On the other hand, a stagnant wet compost will result in root loss and the swift deterioration of the plant. At Kew a mix of bark chips, coarse grit, coarse grade 'Hydroleca' and large pieces of coir has proved successful. The plants are kept at a minimum temperature of 20°C in a closed frame to maintain high humidity. Under these conditions *Bucephalandra* has increased well and flowers almost continuously. Propagation in cultivation is possible from seed and by division. Seeds are best sown on the surface of a potting medium similar to that used for mature plants and kept moist with regular spraying. Division can be carried out when repotting.

Bucephalandra motleyana Schott, Gen. Aroid.: t. 56 (1858); Schott, Prodr. Syst. Aroid.: 319 (1860); Engl. in A. & C. D.C., Monog. Phanerog. 2: 354 (1879); Engl. in Engl. & Prantl, Natürl. Pflanzenfam. 2, 3: 132 (1887); Engl., Das Pflanzenr. 55 (IV.23Da): 122, fig. 74, (1912). Type: Kalimantan, *Molley* 404 (holotype K!).

Microcasia pygmaea Becc. in Bull. Soc. Tosc. Ort. 4: 180, fig. 8 (1879); Engl. in Becc., Malesia 1: 290, t. 22, fig. 21–24 (1883); Engl., Das Pflanzenr. 55 (IV.23Da): 129, fig. 77A–D (1912). Type: Sarawak, Entabai, 8 Oct. 1867, *Beccari* P.B.3883 (holotype FI!).

M. elliptica Engl. in Bull. Soc. Tosc. Ort. 4: 299 (1879); Engl. in Becc., Malesia 1: 290, t. 25, fig. 2–8 (1883); Engl., Das Pflanzenr. 55 (IV.23Da): 130, fig. 77E–K (1912). Type: Sarawak, Nov. 1866, *Beccari* P.B.2817 (holotype FI!).

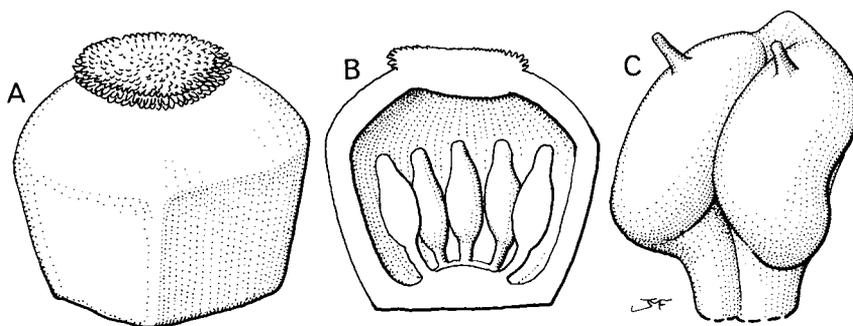
M. muluensis M. Hotta in Mem. Coll. Sci. Univ. Kyoto, ser. B (Biology) 32: 20, fig. 1A–F (1965). Type: Sarawak, 4th. Division, along Sungai Payau from Sungai Melinau Paku to Rubang Payau, foot of Gunung Mulu, 22 March 1964, *Hotta* 15329 (holotype KYO!).

M. oblanceolata M. Hotta in Mem. Coll. Sci. Univ. Kyoto, ser. B (Biology) 32: 21, fig. 1G–M (1965). Type: Brunei, Temburong District, Bukit Peradayan, vicinity of Labi, 25 Jan. 1964, *Hotta* 13586 (holotype KYO!).

DESCRIPTION. *Minute to small evergreen herb*, 1–8 cm tall. *Stem* 0.5–10 cm long, 2–8 mm diam. *Rhizome* creeping, naked, the apical portion leafy, erect, internodes congested. *Roots* 0.5–1 mm diam., stiff, produced along



Bucephalandra molleyana
ANN FARRER



Bucephalandra motleyana. A, ovary, $\times 40$; B, ovary, longitudinal section, $\times 40$; C, stamen, three quarter view, $\times 40$. Drawn by Mark Fothergill.

the entire length of the naked stem, often extremely extensive for the size of the plant. *Leaves* few to many, 0.7–8 cm long, 3–28 mm wide, elliptic, elliptic-oblong, oblanceolate or obovate, coriaceous, apex with a 0.5–2.5 mm tubule, base acute to sub-decurrent, margins plane to wavy or crispate; lamina shiny dark green adaxially, pale green, often reddish tinged, translucently dotted abaxially. *Petioles* 0.5–8 cm long, 1–4 mm diam., canaliculate above, rounded beneath, reddish, petiolar sheath 9–25 mm, reddish, most of length a free ligule, this soon drying and deciduous. *Inflorescences* solitary, several produced simultaneously by each plant; peduncle 1–4 cm long, 0.5–2 mm diam., terete, reddish. *Spathe* 0.7–3 cm long, 0.6–1.5 cm wide, not constricted, upper portion deciduous at anthesis, white, lower portion funnel-shaped, persistent into fruiting stage, pale green. *Spadix* 0.5–2.5 cm long, 1–5 mm wide; female flower zone 1–5 mm long, 1.5–3 mm diam., consisting of 2–5 rows of flowers; sterile flower zone consisting of c. 1–2 rows of flat, \pm trapeziform to obovate, shield-like staminodes, 1–2 mm long, 0.8–1.5 mm wide; male flower zone 2–4 mm long, 1–3 mm diam., consisting of 2–5 rows of flowers; appendix globular to ellipsoid, 2–10 mm long, 2–5 mm diam. *Flowers* unisexual, naked. *Stamens* c. 0.5–1 mm long, 1-androus, ovate; filament flat; thecae ellipsoid, horned, the horn 0.2–0.3 mm long, dehiscing apically; appendix staminodes 1.3–1.5 mm tall, 0.5–1 mm wide, obpyramidal to subcylindric, upper surface papillose, the uppermost staminodes \pm connate. *Gynoecium* 0.6–1 mm diam., depressed globular, 1-locular; ovules numerous on a basal placenta; stigma 0.3–0.5 mm diameter, sessile, disc-like, centre slightly depressed, papillose. *Infructescence* comprised of few to many berries in the base of the persistent cup-like spathe tube. *Berries* 1–1.8 mm long, 1–1.5 mm diam., depressed-globular to ellipsoid-oblong, many-seeded; seed 1–2 mm long, 0.25–0.3 mm wide, narrowly ellipsoid with a long, curving microphyllar outgrowth, testa very slightly longitudinally ribbed to scabrous.

DISTRIBUTION. Brunei, Kalimantan, Sabah, Sarawak.

HABITAT. Rheophyte on rocks and stream banks in primary lowland dipterocarp forest; 0–250 m.

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