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THE GENUS AESCHYNANTHUS, WITH NOTES ON TWO UNUSUAL SPECIES

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DESCRIPTION. *Herbaceous perennial* growing from a corm. *Leaves* linear, up to 20 cm long, less than 2 mm broad, shallowly channelled along mid-vein and dark green above, lighter green beneath and keeled. *Scape* erect, ± terete, up to 30 cm tall. *Bracts* 2, lanceolate, up to 1.4 cm long, becoming scarious. *Umbel* with 6–8 flowers on terete pedicels 1–1.5 cm long. *Perianth* c. 9 mm long; tube c. 4 mm long; segments 6, in 2 distinct whorls c. 2 mm apart; each segment grey-green (sometimes tinged with purple outside), margins white and rolled inwards, tip emarginate; corona orange (HCC 169 B, greyed orange) shading to yellow, almost cylindric but becoming hexagonal in cross-section at mouth, c. 5 mm long and 2 mm across, with 6 apical lobes, each minutely and irregularly indented. *Anthers* 6, sessile, c. 1 mm long, in 2 whorls, upper whorl in corona-mouth but not exerted; pollen yellow. *Ovary* green, ovoid. *Style* terete, c. 0.2 mm long. *Stigma* capitate. *Fruit and seeds* not seen.

DISTRIBUTION. South Africa (Cape Province, Transvaal, Natal, Orange Free State), Lesotho, Swaziland, Zimbabwe.

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- (1983). Notes on *Tulbaghia*: 5. Scanning electron microscopy of seed-coat patterns in nineteen species. *Op. cit.* 49: 251–259.

THE GENUS *AESCHYNANTHUS*, WITH NOTES ON TWO UNUSUAL SPECIES

Patrick Woods

The Old World genus *Aeschynanthus* Jack in the Gesneriaceae comprises about 100 species distributed from the Himalaya east to Taiwan and the Philippines and south to Sri Lanka, and throughout South-eastern Asia to New Guinea and the Solomon Islands.

The genus belongs to the subfamily *Cyrtandroideae* whose members

share the important character of unequal cotyledons: at germination the cotyledons are at first equal but then one grows slightly but distinctly larger than the other. With the exception of a few related Australasian genera whose link is with the New World subfamily *Gesneroideae*, this anisocotylous feature is a character of most Old World members of the Gesneriaceae (Burt & Woods, 1958).

The species of *Aeschynanthus* are mostly epiphytic, a few are lithophytic and some are terrestrial. Most have brightly coloured flowers with reds in various hues predominating as in, for example, *A. hildebrandii* Hemsl. (*Curtis's Bot. Mag.* 120: t.7365,) and *A. parvifolius* R. Br. (figured as the synonymous *A. lobbianus* in *Curtis's Bot. Mag.* 72: t.4260,) both of which are occasionally offered for sale by florists and garden centres. The latter species is vulgarly known as the LIPSTICK PLANT, a horrible name coined to reflect the superficial similarity of the flower when in bud to a tube of lipstick. This is an interesting feature in itself for the tubular calyx of *A. parvifolius* (and other species in section *Aeschynanthus*) reaches maturity well in advance of the development of the corolla and often fills with water thus acting like a bath in which the flower-buds are protected from desiccation in times of drought (Burt & Woods, 1975). Exceptionally, yellow or greenish flowers occur and two such examples (one of them an undescribed species) are the subjects of this article.

The shape and colour of *Aeschynanthus* flowers and the presence of nectar, often in considerable quantity, is a combination of factors well suited to encourage visits by nectar-feeding birds. Indeed, the tubular, curved corollas of most species and the protandrous nature of the flowers, in which the downward-dehiscing anthers are held at the mouth of the corolla but are then replaced after several days by the receptive, downward-pointing stigma, are all features which strongly indicate that pollination is by birds. This is discussed more fully by B. L. Burt in *Curtis's Bot. Mag.* 162: t.9595 (1940) and by Burt & Woods (1975, p. 472).

A character of particular interest and taxonomic use is that the seeds of *Aeschynanthus* develop either a small appendage or a long single hair at one end and either an appendage, or a single hair, or a double hair, or a plume of hairs at the other end. David Don's older but obsolete name for the genus, *Trichosporum* (against which the name *Aeschynanthus* Jack is conserved), is based on these features, which have provided a useful aid for dividing the genus into sections, again more fully elaborated by Burt & Woods (1975).

CULTIVATION. The sprawling nature of the plants under discussion and the pendulous habit of many other species make them well-suited for growing in hanging pots or baskets. This method provides adequate scope both for the development of the stems as well as the efficient drainage that the plants require. Any well-drained compost with a high humus or peat-like content is suitable; established plants should be regularly fed. Direct sunlight should be avoided. As plants age there may be a tendency for the basal parts of the stems to deteriorate by which time it is advisable to propagate. Temperatures around 15°C to 18°C with a high humidity provide the best growing conditions.

All species of *Aeschynanthus* can be propagated readily from seed or cuttings but in order to obtain seed it is usually necessary to pollinate flowers by hand. As the ripening of the pollen normally precedes the ripening of the stigma by several days, it may be necessary to store the pollen beforehand unless flowers at both stages are present on the plant at the same time, as depicted in Plates 167 and 168. The seeds of *Aeschynanthus* are small (between 0.7 and 3 mm long) and, in the case of those with long attached hairs, may be difficult to sow evenly. Preferably they should be surface sown on to a peaty seed-compost topped with a 2–3 mm deep layer of finely sieved *Sphagnum* moss, the addition of which helps to minimize the risk of the surface of the compost drying out at a critical stage of germination when the seedlings are tiny. To reduce this risk further, the seed-pots can be covered with glass or plastic bell-jars or placed within a propagating case in indirect light.

Vegetative propagation is straightforward, ideally using apical portions of young shoots cut just below a node. Leaves of most species will root readily from the petiole when inserted in a rooting medium and placed in a propagating case. However, it may take many weeks before vegetative growth is produced and, apart from *A. hildebrandii* which may be bulked up rapidly from leaf-cuttings, this method of propagation can only be recommended as a last resort, but one worth using to save an ailing or valuable plant.

167. AESCHYNANTHUS CHRYSANTHUS

For almost two decades a very striking, unidentified, yellow-flowered *Aeschynanthus* has been grown at the Royal Botanic Gardens

at Kew and has been widely distributed elsewhere, particularly in the USA where it has become known as 'Sumatra Sunburst' or 'Sarasota Sunburst'. It was introduced by Andrew Paterson who, as a horticultural student, studied at Kew from 1970 to 1973; his visit to Java and Sumatra at the beginning of 1974 was the result of winning a Thornton-Smith Travel Scholarship.

Paterson's trip to west Sumatra was in the company of staff from the Bogor Botanic Garden and Herbarium including Mien Rifai and John Dransfield as well as Ed de Vogel from Leiden and Jim Comber, also an ex Kew student, who for many years had worked in South-East Asia. A full account of Paterson's excursions is written up by him in the *Journal of the Kew Guild* 9(79): 310–313 (1975). The *Aeschynanthus* was discovered growing between 700 and 1,000 metres in upper hill dipterocarp forest on a ridge near Air Sirah about 27 kilometres from Padang on the Padang to Solok road. Paterson recounts that this area contained. . . 'masses of epiphytes and a very dense undergrowth layer containing some good plants. I found my first *Nepenthes* sp. (AP 287) here, and also an outstanding yellow *Aeschynanthus* sp. (AP 291). We found this only once as a small plant growing in the locality'. Curiously Comber mentions in a letter (pers. comm.) that it was growing in fairly open disturbed forest – a puzzling discrepancy. Although his presence on the west Sumatra trip is not mentioned by Paterson, Comber was there also and has kindly made available a set of colour transparencies of the *Aeschynanthus* at Air Sirah in flower and these record the altitude for the plant as 3,000 ft (914 m).

Living material from the Sumatran expedition was received at Kew from Paterson on 2 April 1974 and amongst this was the yellow-flowered *Aeschynanthus* which was accessioned under the code 118.74.01350. Its subsequent, somewhat chequered, history is worth recording. In January 1976, cuttings of it and other species were acquired by Hans Wiehler for the Marie Selby Botanical Garden's gesneriad collection at Sarasota in Florida. A month later, on 27 February 1976, it flowered at Kew and a single flower was preserved for the Herbarium. During my visit in October 1978 to examine *Aeschynanthus* in the Kew Herbarium, David Field kindly drew my attention to the Paterson collection by showing me a colour transparency. As the attempt to identify it was unsuccessful, cuttings of the plant were requested and obtained for growing and further study at the Royal Botanic Garden, Edinburgh. In the meantime, on



Aeschynanthus chrysanthus

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a visit to the Marie Selby Garden in June 1980, I saw a fine plant in full flower growing in a hanging basket under the name 'Sumatra Sunburst' a most descriptive name for this extremely handsome golden-flowered species. Cuttings were also obtained for Edinburgh from Selby but it is the Kew material that has flowered for us and from which Plate 167 is painted.

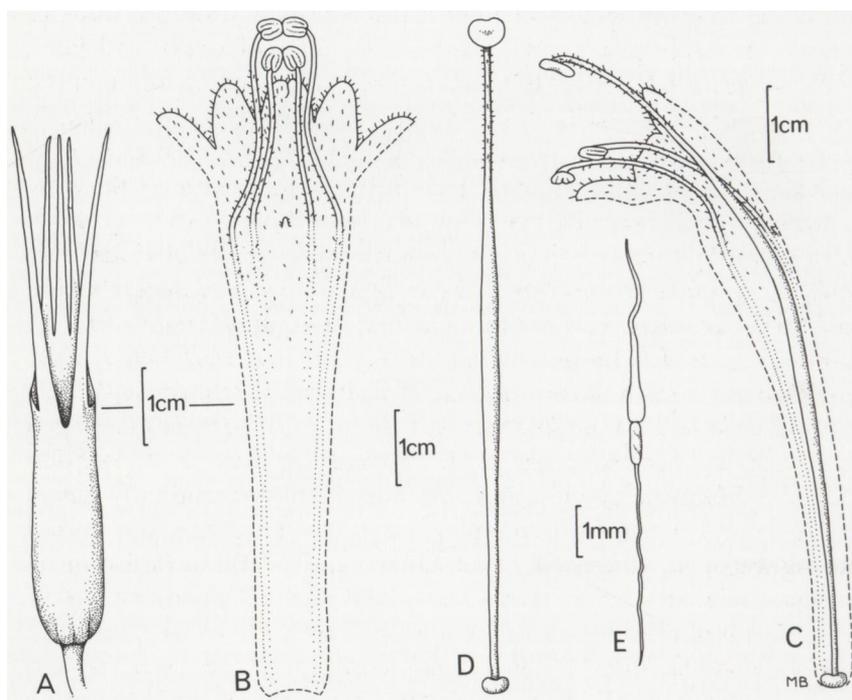
The sectional position of *A. chrysanthus* is problematic. The shape of the calyx and corolla and the presence of a single hair at either end of the seed, would seem to indicate that it might belong to section *Haplotrichium* Benth. (Burt & Woods, 1975, p. 475). However the base of one of the hairs has the distinctive cluster of bubble-like cells which are thought to be diagnostic of section *Aeschynanthus*. *Aeschynanthus chrysanthus* is neither typical of section *Haplotrichium*, the hairs of which are entirely filamentous, nor is it typical of section *Aeschynanthus* in which the calyx is always bluntly lobed and the base of the corolla-tube is always slightly swollen and then abruptly narrows before widening upwards. The seed-hair character and its implications quite clearly require further investigation.

***Aeschynanthus chrysanthus* P. Woods, sp. nov.** Species valde insignis, ab omnibus speciebus iam descriptis calycibus corollisque aureis distincta; ab *A. hosseusii* Pellegrin (species Thailandica) etiam caulibus foliisque puberulis (non glabris), calyce tenuiore dentibus duplo longioribus, corolla graciliore, parte tertia longiore, lobis 3 inferioribus corollae lineis 3–5 sanguineis (non macula una sagittata atropurpurea) notatis differt. Holotypus: West Sumatra, Paterson 291, cultivated as 'Sumatra Sunburst' at München-Nymphenburg Kultur-Nr. 3093/77 (E).

A. chrysanthus P. Woods, *nomen nudum* in Stearn, W. T., Flower Artists of Kew 42, pl. 2 (1990).

DESCRIPTION. *Sub-shrubby epiphyte.* Stems purplish brown, sprawling, sometimes branching, 75 cm or more long, 4–7 mm thick, at first puberulous, older stems glabrous, internodes up to 6 cm long. *Leaves* opposite and decussate, narrowly elliptic to lanceolate, slightly convex, dark green above, paler yellowish green below, 5.2–9.1 cm long, 1.8–3.7 cm wide, apex acuminate, the tips slightly curved downwards, the base rounded, sometimes obliquely so, margins entire, indistinctly ciliate, young leaves puberulous, later glabrescent, hairs indistinctly glandular; petiole 6–15 mm long. *Inflorescence* shortly pendunculate, produced towards the upper leaf-axils and bearing 2–6 flowers. *Bracts* linear, c. 9 mm long. *Bracteoles* triangular, ± equalling pedicels. *Pedicels* up to 1.5 cm. *Calyx* deep golden yellow, slightly darker than the corolla, glabrous, 7.1–8.2 cm long, obliquely bilabiate, basal part tubular, apical part distinctly 5-toothed; the tube measured from the base to the lowest sinus 2.8–2.9 cm long, 7–8 mm in

diameter at its widest part just above the base, then narrowing slightly upward; the 3 upper teeth 2.9–3.2 cm long, 2–3 mm wide, linear-acute, held close together and directed forward, the 2 lower teeth 4.1–4.35 cm long, 3.5–4.5 mm wide, linear-acute, spreading slightly but directed \pm forward and upward so that they lie with the upper teeth above or along the dorsal surface of the corolla. *Corolla* tubular, yellow with dark red lines or markings on lateral and lower lobes and on inside of throat, densely glandular-pubescent on upper 2.5–3 cm, becoming sparsely pubescent, then glabrous towards lower part, 8–9.5 cm long, 3–4 mm in diameter at narrow basal part then abruptly widening to 8 mm in diameter at about $\frac{3}{4}$ length of corolla and then dorsiventrally compressed behind the lower lobes; upper 2 lobes 4.5–5 mm long, 3 mm wide, rounded; lateral lobes 8 mm long, 7.5 mm wide, bluntly triangular, strongly reflexed; lower lobe 8.5–10 mm long, 6–7 mm wide, oblong-rounded, slightly reflexed, inside of lobes and upper part of tube shortly glandular-pubescent, becoming glabrescent downwards. *Stamens* 4, glandular-pubescent, glabrous near the anthers; superior pair 1.7–1.9 cm long, inferior pair 2.3–2.5 cm long; small staminode present; anthers *c.* 3 mm long. *Disc* annulate, *c.* 1.5 mm long. *Ovary* *c.* 6.5 cm long. *Style* *c.* 1.8 cm long, glandular-hairy. *Stigma* *c.* 3.5 mm



Aeschynanthus chrysanthus. A, calyx; B, corolla, opened out; C, corolla, longitudinal section; D, disc, ovary, style and stigma; E, seed. Drawn by Mary Bates.

in diameter, finely glandular-hairy on dorsal surface and margin. *Capsule* up to 30 cm long, with dried remains of old corolla often persisting. *Seeds* numerous, 0.7–0.8 mm long, spirally patterned, finely papillose, with a single hair 3–3.4 mm long at each end; one of the hairs with a cluster of bubble-like cells at its base.

DISTRIBUTION. West Sumatra, near Air Sirah about 27 kilometres from Padang on the Padang to Solok road, on a ridge in dipterocarp forest, between 700 and 1,000 m. Only known from the original collection.

168. AESCHYNANTHUS ANGUSTIFOLIUS

Living material of a distinctive narrow-leaved, greenish-flowered *Aeschynanthus* collected in Sabah, was introduced to Edinburgh by Tony Lamb and George Argent in 1984 and 1985, and a further gathering by Argent from northern Sumatra was added in 1988. Having access to living collections has the great advantage of making it possible to observe features which otherwise might not easily be seen on herbarium specimens: namely, in the case of this plant, the development at various stages of growth, of short, more or less ovate leaves produced on the lower parts of stems and long, linear leaves produced on the upper parts. These leaves are distinct: without the presence of both types on the same plant one could easily mistake each as a quite distinct species. Whether or not this is yet another example of a growth pattern linked to juvenile growth, some aspects of which were discussed by Burt & Woods (1975, p. 473), must await further investigation. Another feature not obvious from dried material is the presence of copious amounts of nectar which half-fill the corollas. It is not known what pollinates the flowers.

The Argent and Lamb collections were at first matched against two specimens from Sarawak in the Edinburgh Herbarium, though neither of these bore the smaller ovate leaves. One of them had been compared by its collector, J. W. Purseglove, with *A. stenophyllus* Ridley, a Malayan species, and this was the name originally given to the Sabah plants. Subsequently, investigation of the description and figure of *A. tetraquetrus* C. B. Clarke and of the description of *A. angustifolius* in Clarke's account of the genus (1883) and examination of a number of herbarium collections from Florence, Kew and Leiden (none of which showed the more or less ovate lower leaves), has indicated that all are one and the same species and should be called by the earliest name of *A. angustifolius*. Although none of the type descriptions seen mentions the character of shorter, broader

lower leaves, Ridley subsequently refers to it in the *Flora of the Malay Peninsula* 2: 498 (1923). The presence of a simple filiform hair at each end of the seed indicates that this species is a member of section *Haplotrichium*.

Backer & Bakhuizen v.d. Brink (1965, p. 524) record that plants are found often in groups on tree-trunks, rooting in ants' nests built of earth. This association has also been observed in *A. myrmecophilus* P. Woods (Burt & Woods, 1975, p.484).

Aeschynanthus angustifolius (Bl.) Steud., Nomencl. (edn. 2) 1: 32 (1840); C. B. Clarke in A. DC., Monogr. Phan. 5(1): 38 (1883); Backer & Bakh. fil., Fl. Java 2: 524 (1965). Type: cult. hort. Bogor (L?).

Bignonia angustifolia Bl., Cat. Hort. Bot. Bogor 82 (1823) & in Verh. Batav. Genootsch. 9: 194 (1825 – n.v.).

Trichosporum angustifolium (Bl.) Nees in Flora 8: 144 (1825); E. D. Merrill in J. Str. Br. Roy. As. Soc. (special number) 529 (1921).

Lysionotus angustifolius (Bl.) Bl., Bijdr. 14: 765 (1826).

Aeschynanthus tetraquetrus C. B. Clarke in A. DC., Monogr. Phan. 5(1): 38 (1883). Type: Sumatra, in monte Singalan, 1700 m, *Beccari* (holotype FI, isotype K).

Trichosporum tetraquetrum (C. B. Clarke) O. Kuntze, Rev. Gen. 2: 478 (1891).

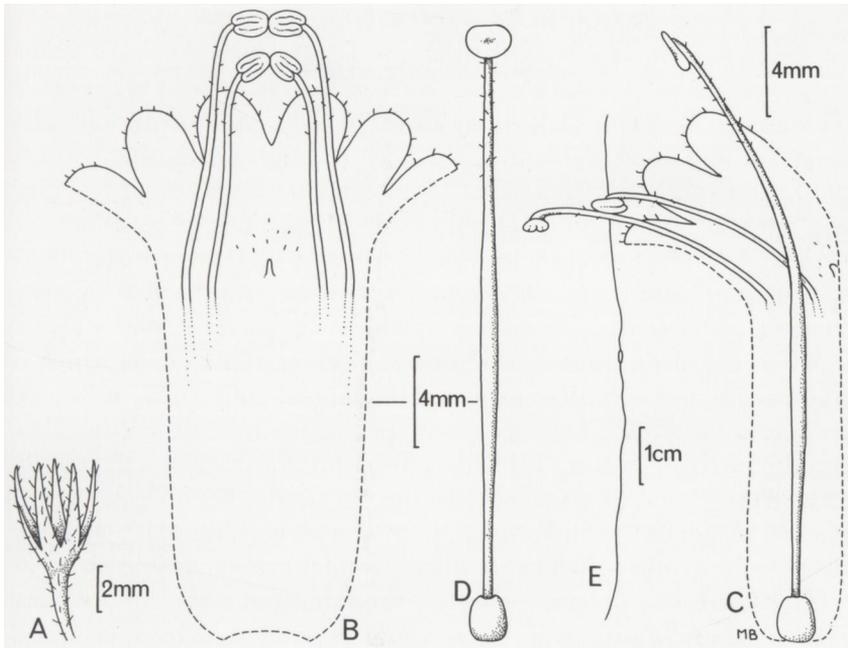
A. stenophyllus Ridl. in J. As. Soc. Beng. 74(2): 733 (1908). Type: Malaya, Perak at Goping Kinta, 500 to 800 ft, *King's collector* 4738 (K).

DESCRIPTION. *Small, epiphytic shrub. Stems* several, up to 1 m long, purplish, erect or spreading, internodes (1–)2–5 cm long. *Leaves* usually in whorls of 4, occasionally 6, sometimes paired, pale greyish green, paler beneath and sometimes flushed or blotched purplish; lower leaves often paired, shorter, broader and often more succulent than upper leaves, 1–2 cm long, 4–27 mm wide, narrowly obovate, oblanceolate, elliptic or ovate, margins usually crenulate with 3 or 4 pairs of teeth; upper leaves linear, linear-lanceolate or narrowly elliptic to narrowly oblanceolate, 2.7–7.5 cm long, 2–8 mm wide, apex acute or obtuse, base cuneate, margins slightly crenulate or emarginate with 3 or 4 pairs of purplish glands; petiole 1.5–4 mm long. *Flowers* 1 or 2, in leaf-axils. *Pedicels* 5–7 mm long, glabrous. *Calyx* sparsely pubescent, lobes linear, c. 4 mm long, 0.8 mm wide. *Corolla* narrowly tubular, straight then abruptly curved downward, pale lime-green or pale yellowish outside, pale yellowish inside, 1.5–2 cm long, c. 4 mm in diameter, narrowing a little upwards; lobes c. 4 mm long, 3 mm wide, glandular-hairy outside, glabrous inside, margins purplish and finely ciliate. *Stamens* 4, exerted c. 4 mm; filaments whitish, glandular-hairy; anthers c. 1.5 mm long. *Ovary* c. 1.8 cm long. *Style* c. 6 mm long, pale green, glandular-hairy. *Stigma* 2 mm in diameter, pale pink. *Capsule* up to 23 cm long. *Seeds* numerous, c. 1.2 mm long, with a single hair 1.9–5 cm long at each end.



Aeschynanthus angustifolius

MARY BATES



Aeschynanthus angustifolius. A, calyx; B, corolla, opened out; C, corolla, longitudinal section; D, disc, ovary, style and stigma; E, seed. Drawn by Mary Bates.

DISTRIBUTION. Malaysia (Peninsular Malaysia, Sabah, Sarawak), Indonesia (Java, Sumatra, Moluccas); altitude 150–1,700 m.

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