STUDIES IN THE GESNERIACEAE OF THE OLD WORLD XXXIX: TOWARDS A REVISION OF AESCHYNANTHUS

B. L. BURTT & P. J. B. WOODS

ABSTRACT. General notes on the genus *Aeschynanthus* are followed by a key to, and enumeration of, the five sections. Sect. *Polytrichium* is revised with a key to its nine species, which include *A. fecundus* P. Woods nom. nov., *A. asclepioides* (Elm.) Burtt & Woods comb. nov., *A. myrmecophilus* P. Woods sp. nov. and *A. hartleyi* P. Woods sp. nov., the first representative of the section from New Guinea. The range of sect. *Microtrichium*, hitherto only recorded from New Guinea, is extended by the inclusion of ten species from western Malesia, including *A. irigaensis* (Merrill) Burtt & Woods comb. nov., *A. miniaceus* Burtt & Woods nom. nov., and *A. vinaceus* P. Woods sp. nov.; two new species with tubular calyces are described from New Guinea, *A. guttatus* P. Woods and *A musaensis* P. Woods.

CONTENTS

1. AESCHYNANTHUS AND ITS SECTIONS

Aeschynanthus belongs to the tribe *Trichosporeae*. In an earlier paper (Burtt 1963, p. 208) this tribal name was attributed to K. Fritsch (1894), the earlier use by G. Don (1838) having been at subtribal level. It has now been found that the tribe was first established by Nees (1825) under the family name Cyrtandraceae. Nees united the genera *Trichosporum* D. Don, published in 1822, and *Aeschynanthus* Jack, published a year later, under the earlier name, which was correctly used by some authors (e.g. Merrill) up to 1934. *Aeschynanthus* was then conserved against *Trichosporum*; but the tribal name *Trichosporeae* Nees still stands.

Aeschynanthus consists of some 80 species divided (see below) into 5 sections and distributed from Ceylon, the Western Ghats of S India and Nepal eastwards through S China, Taiwan, Philippines and Malesia to the Solomon Islands.

The seedlings of *Aeschynanthus* show the anisocotyly characteristic of Gesneriaceae subfam. Cyrtandroideae (Burtt & Woods, 1958). When adult most species are epiphytic, but some species may germinate on the ground and then climb some slender sapling, eventually becoming established as epiphytes. As is usual in such a group, species that are normally epiphytic may grow on rocks or cliffs when conditions are suitable (e.g. *A. ceylanica* in Ceylon, *A. longicaulis* in Perlis, Malaysia). The epiphytes usually root superficially in moss on branches and in debris accumulated in crotches, fern roots etc. *A. hildebrandii*, as it grows on Doi Sutep, near Chiengmai N Thailand, proved an interesting exception. No superficial roots were found at all: the whole of the root system spreads underneath the bark and the plant looks just like a loranthaceous parasite. It was not possible to make

a proper investigation but clearly this needs doing and experimental studies should be made to find the sources of the plant's water and nutrient supplies. *A. hildebrandii* on Doi Sutep was in no way host-specific: it was growing on most suitable small trees in rather open woodland that did not seem wet enough to support an extensive epiphytic flora. Possibly the fact that the roots spread under the bark provides a measure of protection from desiccation.

The flowers of *Aeschynanthus* mostly have the syndrome of characters associated with bird pollination (Porsch, 1924): arcuate corolla tube, exserted anthers shedding pollen downwards, strong protandry and copious nectar; the slender streamlined ovary is often associated with a distinct gynophore, an arrangement meeting the requirements suggested by Verne Grant (1950) for protection of the ovules from damage by the bird's beak. Withal it must be admitted that there are as yet no adequate field observations to prove that birds are the main, or even effective, pollen-vectors. In the greenhouse most species set little fruit unless hand-pollinated. One species is an exception; this is *A. fecundus* P. Woods (infra p. 482) of sect. *Polytrichium* which has the smallest flowers of the genus and seems to be naturally self-pollinated. In the species that have been pollinated by hand no evidence has been found of self-incompatibility.

The protandry of the flower is so strongly marked that more than one author has suggested that the flowers are dimorphic. In cultivation, towards the end of the flowering season, we have noticed flowers of *A. evrardii* in which the female organs seem to be arrested at an early stage and never elongate. There is, however, no evidence for heterostyly in wild plants: the differences observed are the successive stages of development of a remarkably dichogamous flower. The degree of dichogamy varies. Tirunarayana Iyengar (1924) has illustrated a very extreme case in *A. hookeri* (sect. *Diplotrichium*): the gynoecium was only c. 7 mm long when the flowers first opened, but elongated to c. 50 mm in 7 days so that eventually the stigma replaced positionally the withered stamens. As yet we do not know enough to say whether variation takes place within a species or whether careful observations would demonstrate specific differences.

The flowers of *Aeschynanthus* are, for the most part, vividly coloured; some of the less brilliant species, such as *A. longicaulis*, may have attractively mottled foliage. It is thus a group with a very definite horticultural interest. For study in cultivation it has some important advantages: it is easily grown from seed, but even more easily propagated from cuttings. For the field collector this latter feature is a great boon because it enables him to send home for further study the many plants found without flower or fruit; ripe seed is, in any case, hard to find as it is quickly dispersed.

The seeds of *Aeschynanthus* develop an appendage at each end, and it is the details of these that have been used to sub-divide the genus. Bentham (1876) was the first to propose sections and he recognized four: *Polytrichium*, seed with many hairs at one end and a single hair at the other; *Diplotrichium*, seed with two hairs at one end and a single hair at the other; *Haplotrichium*, seed with one hair at each end and the calyx deeply divided; *Holocalyx* (i.e. *Aeschynanthus*), seed also with one hair at each end but the calyx only shallowly lobed.

Clarke (1883) maintained these sections, but improved Bentham's definition of *Holocalyx* by drawing attention to the distinctive bubble-like cells at the base of the hair at the hilar end of the seed; thus hair characters do, alone, differentiate these sections. Clarke was able to add a fifth section, *Microtrichium*, for a new species from New Guinea which has seeds with a relatively short flat appendage at each end, contrasting with the filiform hairs of the other sections.

In 1923 Schlechter added a further section, *Anisocalyx*, for a single species from New Guinea, but the inequality in the calyx divisions, which gives the section its name, and chief character, is by no means confined to it and we reduce this section to *Microtrichium*.

These five sections based on seed appendages are still in use and give a very natural sub-division of the genus. It is not, however, easy to put other sectional characters into words; reliance on seeds, when seeds are often not available, has meant that not a little guessing has taken place and some of it proves to have been sadly inaccurate. For instance Clarke placed at least two species of sect. *Polytrichium* in sect. *Haplotrichium*, and he also included there five New Guinea species which are all now recognized as belonging to sect. *Microtrichium*. In fact sect. *Haplotrichium* is not yet known to occur in New Guinea although Schlechter (1923) placed in it no less than nine species. Although certainty of sectional position is not possible if seeds are absent, nevertheless there are various features which do give some help in assigning flowering specimens, and the sections do have a certain amount of geographical distinctiveness. These are considered in more detail under each sectional heading below.

No full analysis of growth patterns in *Aeschynanthus* has been undertaken; however we reported previously on the features of seedling development and of the juvenile leaves in *A. maculatus* Lindl. (Burtt & Woods, 1958). The juvenile leaves were hairy in a species with characteristically glabrous adult foliage: furthermore juvenile growth was flexuous though the adult plant has stiffish twiggy growth. One of the features of most species of sect. *Aeschynanthus* and of some species of sect. *Haplotrichium* (e.g. *A. gracilis* C.B.Cl.) and sect. *Microtrichium* [e.g. *A. nummularius* (Burkill & S. Moore) K. Schum.] is that there is an association of smallish leaves, hairiness and flexuous stems. It may be suggested that these plants show a persistence of juvenile vegetative features through to the flowering stage. In *A. pachyanthus* from New Guinea the plant is at first a climber showing these juvenile characteristics but then produces stiff spreading bushy branches on which the flowers are borne.

Those species with an adult bushy and twiggy habit of growth often show some periodicity in development of the leaves. This, and its possible relation to flowering, is not fully understood; 2-3 pairs of well-developed foliage leaves may be succeeded by 2-3 pairs of scale leaves. This condition is not found where the "juvenile" characters of flexuous stems and small leaves also characterise the adult state.

One feature of floral development deserves mention. This is the markedly early maturation of the calyx, which is far in advance of that of the corolla. The dissociation of development between these two organs may have two consequences. One is functional: the early development of calyx in some species of sect. *Aeschynanthus* (= sect *Holocalyx*) allows it to act as a kind of

water-calyx. That is to say it fills with water and the development of the corolla takes place in this miniature bath. Water-calyces are known in a number of plants and of course the tanks of Bromeliaceae act in the same way for the whole inflorescence. These devices probably provide an effective protection against desiccation of the flower buds during those short-term periods of drought which occur even in tropical rain forest and to which epiphytes are no doubt especially susceptible. *Aeschynanthus* is also adapted to meet these conditions by the possession of a well-marked water-storing hypodermis in the leaves.

The other consequence of the dissociated growth of calyx and corolla is taxonomic. The relative lengths of calyx and corolla are found to be somewhat variable. Anything causing premature cessation of growth and early opening of the corolla may not affect the length of the calyx: alternatively drought might curtail calyx development but have disappeared by the time the corolla was elongating.

Two genera proposed by Schlechter (1923), *Euthamnus* and *Oxychlamys*, were discussed in a previous paper on the generic limits in the tribe Trichosporeae (Burtt, 1968). *Euthamnus* was reduced to a synonym of *Aeschynanthus*, but in the absence of new material the status of *Oxychlamys* was left open. *Oxychlamys* is distinguished only by its spathaceous calyx, but differences involving spathaceous, bilabiate and equally lobed calyces are known between closely related species in another genus of the family, *Cyrtandra*, and are not necessarily of fundamental importance. There does seem to be sufficient affinity between *Oxychlamys* and *Aeschynanthus pachyanthus* Schltr. to justify the reduction, although a question mark is retained against it.

The general picture of *Aeschynanthus* that can be put together at present is that of a large genus ranging from India to the Solomon Islands and divisible into 5 sections on the basis of seed characters. These sections are, however, by no means equivalent and in particular sect. *Microtrichium* shows in New Guinea a range of diversity in habit, calyx form and corolla which is greater than that of any of the other sections; furthermore its geographical distribution is now known to extend westwards to Java, Borneo, the Philippine Islands and the Malay Peninsula (see p. 486).

The sections of *Aeschynanthus* seem not to be separated by sterility barriers. *A. x splendidus* T. Moore is an old garden hybrid between *A. parasiticus* (= *A. grandiflorus*, sect. *Diplotrichium*) and *A. speciosus* (Sect. *Haplotrichium*) raised by Messrs. Lucombe Pince & Co. of Exeter (Moore, 1851). It is still in cultivation, often identified as one of the parents, and C. B. Clarke considered it to be no more than a variety of *A. speciosus*; but that species is distinguished by having its leaves constantly in whorls of three, in the calyx being free to the base, and in the longer corolla with the lobes much more distinctly marked.

The same two sections, *Diplotrichium* and *Haplotrichium*, figure in a cross made in Edinburgh in 1961, the species being *A. sikkimensis* and *A. evrardii*. The earlier hybrid *A. x splendidus* was further crossed to *A. longicaulis* (sect. *Polytrichium*) at Edinburgh in 1960 and about the same time in the United States where it gave rise to the cultivar 'Black Pagoda'. Interfertility between sect. *Aeschynanthus* and sect. *Microtrichium* was demonstrated when *A. pulcher* was crossed with *A. ellipticus* at Edinburgh in 1965, and the same

hybrid was made in the United States by W. R. Saylor. Saylor (1973) reports that the seeds of this hybrid are intermediate in type.

Aeschynanthus Jack in Trans. Linn. Soc. London 14:42 (1823) *nomen conservandum*; Benth. in Benth. & Hook. fil., Gen. Pl. 2: 1013 (1876); C. B. Clarke in DC., Mon. Phan. 5:18 (1883); Burtt in Notes R.B.G. Edinb. 28:219 (1968).
Type: *Aeschynanthus volubilis* Jack.
Syn.: *Trichosporum* D. Don in Edinburgh New Phil. Journ. 7:84 (1822). Syntypes: *T. grandiflorum* D. Don [= *Aeschynanthus parasiticus* (Roxb.) Wall.] and *T. parviflorum* D. Don [= *Aeschynanthus parviflorus* (D. Don) G. Don].
Euthamnus Schlechter in Bot. Jahrb. 58:283 (1923). Type: *E. papuanus* Schltr. [= *Aeschynanthus papuanus* (Schltr.) B. L. Burtt].
? *Oxychlamys* Schlechter in Bot. Jahrb. 58:286 (1923) et in Nova Guinea 14, 2:310 (1927). Type: *O. pullei* Schltr. (non *Aeschynanthus pullei* Schltr.)

Key to Sections of Aeschynanthus

1 Seed with a flat appendage, tapering from the full width of the seed, at either end . . . . . Sect. 5, *Microtrichium*
+ Seed with one or more filiform hairs at either end, the base of at least one hair narrow, not gradually broadened to seed-width . 2
2 Seed with one hair at each end 3
+ Seed with a single hair at one end and more than one at the other 4
3 Hair at one end with podium of bubble-like cells; calyx shallowly and bluntly lobed . . . . . Sect. 1, *Aeschynanthus*
+ Hairs without bubble-like cells at base; calyx usually divided to near the base, if with a distinct tube then lobes acute . . Sect. 2, *Haplotrichium*
4 Seed with 2 hairs at one end . . . Sect. 3, *Diplotrichium*
+ Seed with many hairs at one end . . . Sect. 4, *Polytrichium*

Sect. 1, Aeschynanthus
Type: *A. volubilis* Jack
Syn.: *Aeschynanthus* sect. *Holocalyx* Benth. in Benth. & Hook. f., Gen. Pl. 2:1013 (1876); C.B.Cl. in DC., Mon. Phan. 5:40 (1883) et in Hook. f., Fl. Brit. Ind. 4: 342 (1884).

The mature seeds of this section have a long filiform hair at each end, but the one at the hilar end is distinguished by a cluster of bubble-like cells at its base. These cells, evidently air-filled in the ripe seed, are diagnostic of sect. *Aeschynanthus* and do not occur in sect. *Haplotrichium*.

The stems are always flexuous, appressed to trunk or branch (and then rooting at the nodes) or hanging free. The calyx is tubular, closely appressed to the corolla or flared at the top, or much shorter and saucer-shaped; it is always bluntly lobed. When the calyx is tubular the long corolla tube is swollen at the base, then sharply narrowed before gradually expanding upwards: when saucer-shaped the much shorter corolla-tube tapers evenly

to the base. The corolla is either red on the outside or variously marked on the lobes or striped on the tube with darker red or black; the inside of the throat is often a creamy-yellow.

Sect. *Aeschynanthus* has its centre of development in western Malesia (Malay Peninsula, Sumatra, Java, Borneo and Philippines), its westernmost species being in Thailand, the easternmost not reaching as far as New Guinea.

Sect. 2, Haplotrichium Benth. in Benth. & Hook. f., Gen. Pl. 2:1014 (1876); C.B.Cl. in DC., Mon. Phan. 5:25 (1883), et in Hook. f., Fl. Brit. Ind. 4:339 (1884).
Lectotype: *A. bracteatus* [Wall. ex] DC.

In this section there is a simple filiform hair at each end of the seed. The cluster of bubble-like cells found at the hilar end in sect. *Aeschynanthus* is absent in sect *Haplotrichium*.

The calyx has always been described as deeply divided, in contrast to the shallowly lobed calyx of sect. *Aeschynanthus*; but this character may need some revision. It seems likely that the tube may be as long as the segments, but that these are always acute in sect. *Haplotrichium*, bluntly rounded in sect. *Aeschynanthus*. Acute lobes are found in *A. fulgens* and *A. superbus*, if they are correctly placed here. Certainly fruits which appear (on leaf size etc.) to belong to these species have the seeds of Sect. *Haplotrichium*, but there are not yet any specimens showing flowers and fruits of the same plant.

Some species of this section (e.g. *A. bracteatus*) have markedly pedunculate inflorescences, a rather unusual condition in *Aeschynanthus* and one found outside this section only in *A. papuanus* from New Guinea (see under sect. *Microtrichium*).

The bushy habit with spreading twiggy branches is found in most species, but *A. hildebrandii* is a very compact bushy plant and *A. gracilis* and a few closely allied Burmese species have small leaves, flexuous stems and are rather hairy. Flower colour ranges from orange-yellow to red with various markings.

Sect. *Haplotrichium* provides the westernmost limits for the genus in the Western Ghats of southern India and ranges eastward from there to Ceylon and from Sikkim to Taiwan and Western Malesia (Philippines, Borneo, Java). It is not yet known with certainty from New Guinea; all those species allocated to it from that area whose seeds have become available have proved referable to sect. *Microtrichium*.

Sect. 3, Diplotrichium Benth. in Benth. & Hook. f., Gen. Pl. 2: 1014 (1876); C.B.Cl. in DC., Mon. Phan. 5:21 (1883), et in Hook. f., Fl. Brit. Ind. 4:338 (1884).
Lectotype: *A. parasiticus* (Roxb.) Wall. [*A. grandiflorus* (D. Don) Spreng.]

The characteristic feature of this section is that the seeds have a single apical hair and two hairs at the hilar end. The plants are bushy epiphytes, more or less glabrous when adult. The calyx is divided nearly to the base and the corolla is smoothly narrowed downwards; it is red or orange with darker markings on the lobes.

This is a rather small section and has the most restricted range. It is found in India, SW China, Burma and Thailand, but does not extend south-eastwards into the Malay Peninsula.

Sect. 4, Polytrichium Benth. in Benth. & Hook. f., Gen. Pl. 2:1014 (1876); C.B.Cl. in DC., Mon. Phan. 5:19 (1883), et in Hook. f., Fl. Brit. Ind. 4:337 (1884).
Type: *A. longicaulis* [Wall. ex] R. Br.

In this section the seed develops a single apical hair and a coma of hairs at the hilar end. The number, and the length, of the hairs in this tuft have proved helpful in discriminating between the species.

The habit is always bushy with sprawling twiggy branches. The calyx is deeply divided and where the corolla is short it may be overtopped by the calyx segments. The corolla is variable in colour but either with a rather distinctive dull green and purple patterning or orange-yellow with red markings on the lobes. Within the corolla tube, at about the level where the stamens arise, there are usually distinct patches of coarse hairs, but these are represented by papillae in a few species and may then be distributed in a broad band. Similar patches of hairs are found in a few species of sect. *Microtrichium*.

The leaves of this section are often distinctively marked with purple or red patches on the lower surface, or on the midrib or margins only. The upper surface may show patches of lighter green along the veins.

This section consists of only nine species, but it is now known to range from Burma eastwards to New Guinea. Two of the species (*A. albidus* and *A. longicaulis*) are rather widely distributed in the western part of the range, the remainder are more local. The section is revised below (p. 478).

Sect. 5, Microtrichium C.B.Cl. in DC., Mon. Phan. 5:51 (1883); Schlechter in Bot. Jahrb, 58:265, 267 (1923).
Type: *A. microtrichus* C.B.Cl.
Syn.: *Aeschynanthus* sect. *Anisocalyx* Schlechter in Bot. Jahrb. 58:265, 282 (1923). Type: *A. pachyanthus* Schlechter.

Sect. *Microtrichium* is diagnosed by appendages that are as broad as the seed at the base, and then taper rapidly to a point: they are more or less flat and never filiform or hairlike. It was established by C. B. Clarke for the one species, *A. microtrichus* C.B.Cl., from New Guinea; but other species from New Guinea that he referred to sect. *Haplotrichium* also belong here. The section can now be seen to have a far greater range of variation than any of the others, especially if, as seems likely, all the New Guinea species of *Aeschynanthus* (with the solitary exception of *A. hartleyi* in sect. *Polytrichium*) belong to it.

In habit most species are twiggy epiphytes with glabrous leaves (at least when adult), but some have the flexuous stems and small often hairy leaves discussed above (p. 473) as possibly juvenile features. Seed of *A. papuanus* is not yet known, but if it belongs to this section it introduces a pedunculate,

bracteate inflorescence such as is found elsewhere only in sect. *Haplotrichium*.

Most species of sect. *Microtrichium* have a deeply cut calyx, but in *A. papuanus* it is tubular and only shallowly lobed as it also is in the Bornean *A. magnificus* Stapf, which has *Microtrichium*-type seeds and must be included in the section. Other western Malesian species to be placed in this section are listed elsewhere (see p. 486). The New Guinea *A. pachyanthus* has a tubular calyx which is unequally lobed; if *Oxychlamys* is included then a spathaceous calyx is added to the variation range. Flower colour is also highly variable from plain red (light to dark, sometimes a purplish wine-colour) to greenish with purple-spotted throat. The corolla-tube most often tapers evenly to the base, but *A. ellipticus* and *A. nummularius* are two species which have a distinctly bulbous swelling at the base though not (as in sect. *Aeschynanthus*) hidden within a tubular calyx. There is often a ring of short downward pointing hairs inside the lower part of the corolla-tube.

The section has a distribution ranging from the Malay Peninsula to the Solomon Islands, with a majority of the species in New Guinea.

2. AESCHYNANTHUS SECT. POLYTRICHIUM

The five patches of hairs at the base of the corolla tube, that were at one time thought to be characteristic of this section, are well developed in *A. albidus*, *A. asclepioides*, *A. longicaulis* and *A. poilanei*. In *A. fecundus* and in *A. hartleyi* they are represented by patches of papillae, and in *A. myrmecophilus* and *A. viridiflorus* (e descr.) the papillae are arranged not in patches but in a continuous zone.

The length and number of hairs in the seed coma seem to afford useful key characters (see table 1) and the pattern of affinities shown merits further study when more copious materials become available.

TABLE 1

Number and size of seed hairs
in *Aeschynanthus* sect. *Polytrichium*

	Herbarium specimen number	*Number of coma hairs*	*Length (in mm) of coma hairs*	*Length (in mm) of single hairs*
A. albidus	*S.* 8278	(40–)55(–61)	(13–)15(–16)	(19–)23(–26)
	S. 27448	(36–)49(–60)	(12–)16(–20)	(20–)23(–28)
	B. 2201	(35–)43(–48)	(14–)15(–17)	(20–)23(–24)
	B. 2352	(31–)33(–36)	(12–)13(–15)	(12–)16(–19)
A. asclepioides	*Elmer* 10492		20 (*ex descr.*)	40 (*ex descr.*)
	Ramos 1484			
	29496	57–60		
A. fecundus	*C.* 5838	(11–)18(–20)	(10–)15(–19)	(17–)22(–30)
	Ridley 13599	(17–)18(–21)	(14–)17(–18)	29
	P. 1958/995	19	12	24
A. hartleyi	*Carr* 12809	(49–)52(–55)	(12–)13(–15)	
	Hartley 10344	60	10–12	22
A. longicaulis	*C.* 4590	(21–)27(–31)	10	15-17
	C. 7247	(31–)33(–35)	(9–)12(–13)	(16–)19(–21)
A. myrmeco-phylus	*C.* 7401	(4–)6(–7)	(2–)6(–11)	(16–)20(–25)
A. poilanei	*Poilane* 10389	(21–)37(–54)	14	12–18

Most species of *Aeschynanthus* set very little seed in the greenhouse unless pollinated by hand. *A. fecundus* is an exception: almost every flower produces a fertile fruit. The fact that it probably has the smallest and least conspicuous flowers in the genus suggests that this species is normally self-pollinated.

Diploid chromosome numbers of 28, 30, 32 and 64 have been recorded in this section (Ratter, 1975).

Key to the species of sect. Polytrichium

1a Calyx with a short distinct tube at least 2 mm long . . 1. *A. albidus*
1b Calyx without a tube 2
2a Leaves ± elliptic to lanceolate, at least twice as long as broad . 3
2b Leaves ovate, less than twice as long as broad . . . 7
3a Calyx 1·5–4 cm or if shorter corolla exceeding 3 cm . . 4
3b Calyx up to 1·3 cm long, if longer corolla not more than 2 cm . 5
4a Calyx exceeding 2 cm, as long or longer than corolla, number of seed hairs more than 40 (Philippines) . . . 2. *A. asclepioides*
4b Calyx at most 2 cm, ½ to ⅔ length of corolla, number of seed hairs less than 40 (Burma, Malay Peninsula) . . . 3. *A. longicaulis*
5a Inside of corolla-tube verruculose-papillose above base (e descr.) 4. *A. viridiflorus*
5b Inside of corolla-tube with ring or patches of hairs above corolla base, these sometimes rather reduced 6
6a Corolla glandular outside, 1·2–1·8 cm long, capsule 6–10 cm long, number of seed hairs up to 20 . . . . 5. *A. fecundus*
6b Corolla pilose or pubescent outside, 1·3–2·1 cm long, capsule 10–20 cm long, number of seed hairs more than 20 . . . 8
7a Leaves up to 6 cm long, capsule 12 cm long (Vietnam) 7. *A. poilanei*
7b Leaves much longer, capsule 15–20 cm long (New Guinea) . 9. *A. hartleyi*
8a Leaves up to 10 cm long . . . . . 8. *A. trichocalyx*
8b Leaves up to 3·5 cm long . . . . 6. *A. myrmecophilus*

1. Aeschynanthus albidus (Bl.) Steud., Nomencl. ed. 2, 33 (1840); A.DC., Prodr. 9:262 (1845); Backer & Bakh. f., Fl. Java, 2:523 (1965).
Type: cult. hort. Bogor (L?).
Syn.: *Bignonia albida* Bl., Cat. Hort. Bot. Bogor. 81 (1823) et in Verh. Batav. Genootsch. 9:195 (1825—n.v.).
Trichosporum albidum (Bl.) Nees in Flora 8:144 (1825).
Lysionotus albidus (Bl.) Bl., Bijdr. 765 (1826).
Aeschynanthus purpurascens Hassk., Cat. Hort. Bot. Bogor. ed. 2, 154 (1844); Hook. in Bot. Mag. t. 4236 (1846); C.B.Cl. in DC., Monogr. Phan. 5, 1:37 (1883); Ridley, Fl. Mal. Penins. 2: 497 (1923). Type as for *A. albidus*.
? A. atropurpureus Van Houtte, Hortus Van Houtteanus fasc. 2:42 (n.v.); Walp., Rep. 6:521 (1847).
A. discolor T. Moore in Paxt. Fl. Gard. 3:55 (1852–3).
A. motleyi C.B.Cl. in DC., Mon. Phan. 5, 1:20 (1883). Type. Kalimantan: Bandjarmasin, 1857–8, *Motley* 916 (holo. K).

Trichosporum motleyi (C.B.Cl.) O. Kuntze, Rev. Gen. 477 (1891); Merrill, Bibl. Enum. Born. Pl. 531 (1921).

Aeschynanthus fraserianus Kraenzlin in Journ. Linn. Soc. Bot. 37:284 (1906). Type. Kalimantan: near Marisinsing, iv 1885, *Fraser* 268 (holo K).

Trichosporum fraserianum (Kraenzl.) Merrill, Bibl. Enum. Born. Pl. 530 (1921).

KALIMANTAN. Western part: near Nanga Kruab, 9 xi 1924, *Winkler* 47 (HBG); Singghi, 11 xii 1892, *Haviland* 2323; Sei Kenepai, *Hallier* 1980 (K). SABAH. Dallas, 900 m, 26 ix 1931, *Clemens* 26606 (K); Tenompak, 1500 m, 22 iv 1932, *Clemens* 29366 (K); near Sungei Api, 1965, *Giles & Woolliams PB.* 214, cult. in hort. bot. reg. Edinb., *C.* 5475 (E). SARAWAK. First Division: Bukit Bis-an, Padawan, 38 miles from Kuching, limestone ridge, 270 m, 3 m above ground on small trees, 3 iii 1969, *Erwin & Paul, S.* 27448 (E). Third Division: SE Hose Mts., above Ulu Melinau falls, 1967, *Burtt & Martin* 5058A, cult. in hort. bot. reg. Edinb., *C.* 7442 (E). Fourth Division: Bintulu district, Ulu Sungei Kakus, from Sungei Mubong to Sungei Latai, 12 xi 1963, *Hirano & Hotta* 1125 (KYO), 1143 (E, KYO); Sungei Melinau c. 4° 5′ N, 114° 50′ E, epiphyte on tree overhanging river, 20 vi 1962, *Burtt & Woods, B.* 2201, Batu Bungan, 29 vi 1962, *Burtt & Woods, B.* 2352 (E); Baram district, Marudi Forest Reserve, epiphyte in primary lowland forest, 7 ii 1961, *Yacup, S.* 8278 (E). MALAYA. Johore: Lenggor Forest Reserve, *Jong* KLA. 9017 (KLA). Kelantan: Kuala Aring, *Yapp* 161 (K—sterile). JAVA. Bantam, Gunong Kantjana, 9 vi 1912, *Koorders* 41393. SUMATRA. Western Part, Prov. Padang, Ayer Mancior, 360 m, viii 1878, *Beccari* 823 (K—var. *sumatrensis* C.B.Cl.); Scolak Drar, Korinchi, 900 m, 16 iii 1914, *Kloss & Robinson* (K).

A. albidus shows considerable variation in the dimensions of the leaf: from 6·5 to 15, with an average of 9·6 cm long, by 2·2 to 4·9, with an average of 2·9 cm wide—the longer measurements are recorded from plants in cultivation. Clarke (1883, p. 20) under *A. motleyi* included two varieties: *ceramensis* (which we have not seen) and *sumatrensis*; neither seems particularly distinctive when related to range of leaf size. Plants raised from Burtt seed collection under *B.* 5058A have produced mostly broadly ovate leaves, on average 6·6 × 3·6 cm; the flowers are consistently smaller than in other collections.

2. Aeschynanthus asclepioides (Elm.) Burtt & Woods, **comb. nov.**

Syn.: *Trichosporum asclepioides* Elmer, Leafl. Philipp. Bot. 3:952 (1910); Merrill, Enum. Philipp. Fl. Pl. 3:449 (1923).

Aeschynanthus stenocalyx Kraenzl. in Philipp. Jour. Sc. 8:166 (1913).

PHILIPPINES. Leyte: iii 1914, *Wenzel* 631. Luzon: Laguna, ii 1913, *Ramos* 1484 (BM, NY); Rizal Prov., Mt. Susong-Dalaya, *Ramos* 78867 (BH, NY); San Antonia, *Ramos* 21991 (BM, K). Mindanao: Davas distr., Todaya (Mt. Apo), v 1909, *Elmer* 10492 (iso. BM, E, K); Prov. Agusan, Cabadbaran (Mt. Urdaneta), x 1912, *Elmer* 14049 (BM, E, NY); Minodo, *Ramos* 39496 (BM), *Ramos* 30767 (BM, NY).

Ramos 1484 is represented in herbaria under the name *Aeschynanthus* (*Trichosporum dolichosepalum*). *Ramos* 39496 has been referred by Merrill to *A.* (*T. brachysepalum*). Seeds of that species are unknown but the isotype at Kew shows that the calyx is ± undivided and, as the Ramos specimen has well developed seed which clearly belong to sect. *Polytrichium*, there seems no obvious reason to call *Ramos* 39496 *A. brachysepalum* rather than *A. asclepioides*.

A. asclepioides is very close to *A. albidus* from which it differs by its completely divided calyx; from *A. longicaulis* it differs by its longer calyx (25–40 mm), which is as long as or longer than the corolla (15–25 mm), and by its less purple leaf-undersurface.

3. Aeschynanthus longicaulis [Wall. Cat. no. 888 (1829) nomen] R. Br. in Benn., Pl. Jav. Rar. 116 (1840); C.B.Cl. in DC., Mon. Phan. 5, 1:19 (1883); Pellegrin in Lecomte, Fl. Gén. Indo-Chine 4:492 (1930).

Type. Burma: Tenasserim, Chappedong, *Wallich* 888 (holo. K).

Syn.: *A. marmoratus* T. Moore in Paxt., Fl. Gard. 3:56 (1852–3); N.E. Br. in Gard. Chron. 18:787 (1882); C.B.Cl. in DC., Mon. Phan. 5, 1:38 (1883); Ridley, Fl. Mal. Penins. 2:498 (1923); H. E. Moore, African violets, gloxinias etc., 258, 270 (1957).

A. zebrinus Van Houtte, Cat. (1851) *nomen*.

BURMA. Mergui: *Griffith* 606 (Kew distrib. no. 3809), *Griffith* ex herb. Wight; Chaungnaukpyan, hanging epiphyte, 12 xii 1924, *Parker* 2347 (K); Paungdaw power station, 240 m, growing on bamboo, plentiful elsewhere, 24 iii 1961, *Keenan, Aung & Rule* 1290; *Keenan & Rule* 5703, cult. in hort. bot. reg. Edinb., *C.* 5476 (E).

VIETNAM. Dinh prope Baria, vii 1877, *Pierre* 4539 (K).

THAILAND. Kwae Noi River Basin Expedition, 1946, near Wangka along Ran Ti river, 150 m, 29 iv 1946, *Bloembergen* 29 (P), 38 (K, L); *Kostermans* 58 (K); Tapli, "W coast and islands" *Kloss* 6740; Manioh (?) "coast and islands" *Kloss* 6722; Khaoluang, 850 m, Nakawn Sri Tammarat, i 1966, *Hansen & Smitinand* s.n., cult. in hort. bot. reg. Edinb., *C.* 7443 (E); without locality *Larsen* s.n., cult. in hort. bot. reg. Edinb., *C.* 7247.

MALAYA. Perlis: limestone hills to west of Kaki Bukit, trailing on limestone rock, 25 iv 1962, *Burtt & Woods*, *B.* 1724, cult. in hort. bot. reg. Edinb., *C.* 4877; Bukit Bintang forest reserve, on limestone, 26 iv 1962, *Burtt & Woods*, *B.* 1739, cult. in hort. bot. reg. Edinb., *C.* 4590 and *C.* 5128 (E).

Origins unknown. Cult. in Bailey Hort., vi 1959, *Moore* 6834 bis, 3 x 1968, *Stone* 171, (BH, E); ex hort. bot. Amst., 1949, cult. in hort. bot. reg. Edinb., x 1956, *C.* 1675 (E).

The attractive markings on the upper and lower leaf surfaces have for long made this a popular foliage plant: the intensity of leaf markings varies and is particularly marked in the dark violet-purple undersurface of the Thai living collection (*C.* 7247).

Calyx and corolla length is also variable: calyx 9 to 20 mm long, corolla 18 to 35 mm long. The ratio of calyx length to corolla, ½ to ⅔, is fairly constant. Indumentum on calyx and corolla is usually sparsely glandular—or

eglandular-pubescent but either the calyx or the corolla may be completely glabrous.

The differences between *A. longicaulis* and *A. asclepioides* are discussed under the latter species.

4. Aeschynanthus viridiflorus Teijsmann & Binnendijk in Pl. Hort. Bogor. 20 (1863) et Bot. Nat. Tijdschr. 27:20 (1864); C.B.Cl. in DC., Mon. Phan. 5, 1:37 (1883).

At least two species of sect. *Polytrichium* were mistakenly placed by C. B. Clarke in sect. *Haplotrichium*: *A. marmoratus* (= *A. longicaulis*) and *A. purpurascens* (= *A. albidus*). A third, *A. viridiflorus*, we also place within the section in the absence of better evidence to suggest otherwise. Certainly Teijsmann and Binnendijk's description of a plant with 5-partite calyx and green flowers within which the tube is verruculose-papillose above the base, would seem to suggest an affinity with sect. *Polytrichium* rather than sect. *Haplotrichium* and, until we can examine good material, we place the affinity with *A. longicaulis*.

5. Aeschynanthus fecundus P. Woods, **nom. nov.**

Type: Malaya, Pahang, Telom, November 1900, *Ridley* 13599 (holo SING, iso BM, K).

Syn.: *A. parviflorus* Ridl. in Journ. Fed. Mal. St. Mus. 4:48 (1909), non Spreng. Type as above.

A. breviflorus Ridl., Fl. Mal. Pen. 2:497 (1933)—non (S. Moore) K. Schum. Type as above.

THAILAND. Sine loc., *Sørensen, Larsen & Hansen*, 1958, *P.* 1958/995 (C); sine loc., *Larsen* 103, cult. in hort. bot. reg. Edinb., *C.* 5838 (E).

Stems spreading. *Petiole* 2–3 mm. *Lamina* lanceolate, oblanceolate or elliptic-lanceolate 4–8·5(–9) × 1–2·7(–3) cm, margins with scattered, usually purple glands, upper surface dark shining green the lateral veins yellowish, lower surface paler dull green. *Inflorescence* axillary, 1 to 3-flowered, flowers frequently cleistogamous, often produced along with developing fruits. *Pedicels* 5–12 mm lengthening after anthesis, indistinctly glandular. *Calyx* at first glandular, yellowish-green, sepals free to the base, subulate 1–1·8 cm × 1 mm. *Corolla* cylindric, initially glandular, slightly downward curved, greenish-yellow (Ridley), or yellowish the upper third scarlet (Thai material), 1·2–1·8 cm × c. 3 mm diameter at the mouth, lobes subequal, rotund, c.2 × 2·5 mm, glandular-ciliate; inside of tube with five clusters of scattered tuberculate hairs in a ring c. 2 mm from the base and extending as papillae along the floor to the middle of the lower lobe. *Stamens* 4; not exceeding the corolla at any stage in their development; filaments sparsely glandular, the superior pair glabrous, apical part of the inferior pair glandular puberulous; anthers c. 1 mm long. *Disc* annulate 1 mm long. *Ovary* glandular 6–7 mm long; style c. 10 mm long, glandular pubescent; stigma ovate, c. 1·5 mm diameter, not or only slightly exserted. *Capsule* 4·5–10·5 cm × 2 mm. *Seeds* numerous, 2–2·5 × 0·25 mm, with a single hair 1·8–3·3 cm long at one end and 11–21 hairs in a tuft 1–1·9 cm long at the other.

Material collected by Sørensen et al. during the 1958 Danish expedition to Thailand was at first thought to be a new species having affinities with *A. longicaulis*. Growing material of *Larsen* 103, obtained from Copenhagen in 1967, showed that the leaves were very similar to, though smaller than, those of *A. longicaulis*, having the distinctive marbling or veining, dark green and yellowish-green, on the upper surface but lacking the purplish markings of the underside. In cultivation the flowers do not always open, yet consistently produce fruit: the cleistogamous state does not appear to occur at any particular time of year.

In attempting the initial identification Ridley's description of *A. breviflorus* was at first disregarded as the sepals were said to be as long as the corolla, the leaves (we give the metric equivalent of Ridley's measurements) 7·6 cm and the capsule 10·2–12·7 cm long. In Sørensen's specimen the sepals are barely half the length of the corolla, the leaves are 5·6 cm long and the longest capsule only 8·6 cm. However the living material shows a more satisfactory range of measurement within those given by Ridley and we have no hesitation in uniting the three collections under the one species.

Ridley's second epithet *breviflorus* was already predated by K. Schumann's transfer of the Philippine *Trichosporum breviflorum* S. Moore to *Aeschynanthus*; the fact that all the collections set fruit so freely is reflected in the new epithet *fecundus*.

6. Aeschynanthus myrmecophilus P. Woods, **species nova** adhuc pro *A. hildebrandii* Hemsl. habita sed foliis glabris ovatis, floribus minoribus, et praecipue seminibus sectionis *Polytrichii* propriis toto caelo diversa. Fortasse *A. fecundo* P. Woods maxime accedit, sed foliis ovatis, calycis segmentis lanceolatis (nec linearibus) brevioribus, corolla distincte latiore facile distinguitur.

Suffrutex epiphyticus; caules primum repentes demum rigidi patentes vel penduli; internodia plerumque foliis duplo- vel triplo-longiora. *Petioli* c. 3 mm longi. *Lamina* crassa, ovata vel ovato-orbicularis, 1·8(–3·5) × 1(–1·8) cm, apice obtuse et breviter acuminata, basi rotundata interdum cuneata, margine denticulis 9–11 (hydathodeis) parcis ornata. *Flores* solitarii, axillares praecipue ad apices ramorum; pedicelli 4–8 mm longi, glanduloso-puberuli. *Calyx* ad basin divisus, extra glanduloso-puberulus; segmenta 0·5 × 0·1 cm lineari-acuminata, pallide viridia. *Corolla* 2·3 cm longa; tubus in triente superiore decurvus, extra tenuiter glanduloso-pubescens, luteo-aurantiacus, intus infra stamina zona manfeste papillata praeditus, 7 mm supra basin dorso-ventraliter compressus et ventraliter in parte superiore complanata et concava; lobi indistincte glanduloso-ciliati, extra pallide rubro-suffusi intus rubro-notati, duo superiores porrecti, oblongi, rotundati, c. 4 × 3 mm, tres inferiores vix patentes, oblongi, plus minusve truncati vel vix rotundati interdum leviter apiculati, laterales 4·5–5 × 4 mm, medius 5 mm latus. *Stamina* 4; filamenta parte adnata partem liberam c. 7 mm longam aequante, lutea ad apices kermesina, posteriora inferne glabra superne glanduloso-puberula, anteriora glanduloso-puberula; antherae 1 × 1 mm, purpureae, apicibus per paria connatae. *Discus* 1 mm altus, cupulatus, leviter 5-lobus, luteo-viridis. *Gynoecium* ad 8 mm longum; ovarium glabrum; stylus glanduloso-puberulus; stigma transverse ellipticum. *Capsula* ad 9.5 cm longa,

2 mm diametro. *Semina* numerosa, 1·5 mm longa, basi pilo solitario 1·6–2 cm longo, apice coma e pilis (4–)5(–7) 0·4–1·8 cm longis ornata.
Syn.: *A. hildebrandii* auctt. non Hemsl.; Ridley in Journ. Linn. Soc. Bot. 32:502 (1895) et Fl. Mal. Penins. 2:499 (1923).
MALAYA. Perak: Taiping Hill, 1220 m, 14 ii 1917, *M. Haniff & M. Nur* SFN 2469 (K). Pahang: Main path, Cameron Highlands, 14 x 1929, *Symington* 20938 (KEP): Robinson's Falls, near Tanah Rata, Cameron Highlands, c. 1500 m, on tree at edge of path above falls, 16 iv 1968, *Woods* 616 (holo E), et. cult. in hort. bot. reg. Edinb., *C.* 7401 (E); Gunong Jasar, west of Tanah Rata, 17 iv 1968, *Woods* 634, et cult. in hort. bot. reg. Edinb., *C.* 7423 (E); summit Pine Tree Hill, Fraser's Hill, *Ridley* (K).

On each occasion that plants were observed in the field they were growing with a small red-flowered species of *Dischidia* and, as is usually the case, there was a colony of ants in association with the *Dischidia*. Whether there is a direct association between the *Aeschynanthus* and the ants is not known, but the epithet *myrmecophilus* will at least act as a reminder that further observations are needed.

Conditions of growth apparently have a distinct effect on leaf form. Plants growing in exposed situations may have small, orbicular, extremely thick leaves with both surfaces convex. On transfer to greenhouse cultivation the plants produced shoots with the leaves larger, less thick, the surfaces flat, the shape more ovate and the margins distinctly dentate.

Two corolla forms have also been noted in the cultivated material: a slender-tubed form in which the sepals are appressed to the narrow base, and a broad-tubed form with the tube dorso-ventrally compressed and its broad base forcing the sepals outward. The narrow-tubed form is found on the wild material from Gunong Jasar, the broad form on that from Robinson's Falls. However one plant in cultivation has produced flowers of both types: whether there is a functional sex-difference is not known.

A. hildebrandii Hemsl., with which Ridley identified this plant, is an entirely different species belonging to section *Haplotrichium*. It is common as an epiphyte of open woodland on Doi Sutep above Chiengmai, N Thailand, and elsewhere in that area.

7. Aeschynanthus poilanei Pellegrin in Bull. Soc. Bot. France 72:822 (1925), et in Lecomte, Fl. Gén. Indo-Chine 4:492, fig. 55, 1–5 (1930).
Type. Vietnam, Dent du Tigre, près Quang Tri, forêt, 800 m, 8 vii 1924, *Poilane* 10389 (P).
VIETNAM. Dent du Tigre, près Quang Tri, forêt, 1200 m, 7 v 1924, *Poilane* 10303 (P)—fruiting specimen; another fruiting specimen collected by Poilane is without locality and has been given the Herb. Mus. Paris no. 7137, received, 16 ii 1934 (P); Mt. Bani, half-way huts, c. 25 km from Tourane, 17 viii 1927, *J. & M. S. Clemens* 4178 (P)—this specimen also bears the note, "not common and inflorescence too old"; Pellegrin queries it as *A. poilanei*, but the few leaves on the specimen and the origin of the material are probably sufficient to confirm its identity.

Two observations require mention here. Pellegrin's illustration in Flore Générale de l'Indo-Chine (loc. cit.) shows the hairs inside near the base of

the corolla tube as an unbroken ring and in the original description he describes them thus: "longae annulatim pilosa". However in comparing his species to *A. longicaulis*, he does state "un anneau de poils longs et touffus": examination of Pellegrin's dissection shows that the hairs are arranged in five clusters and this is indeed what we have come to expect in those species of the section where the annular hairs inside the tube are well developed. Pellegrin's illustration also shows a sepal as a narrowly ovate segment, but again, examination of the material reveals that the sepals are lanceolate and, in fact, in his original description Pellegrin described them as lanceolate.

One further comment is perhaps worth mentioning. From Poilane's specimen 10303, Pellegrin observes in the *Flora*, that a drink is made from the plant and taken by women after child-birth: this is one of the few records of a member of the Gesneriaceae having a medicinal use (Pellegrin also notes that the roots of *Rhynchotechum latifolium* = *R. obovatum* (Griffith) B. L. Burtt are made into a drink and administered for the same purpose). Three other species of *Aeschynanthus*, including *A. longicaulis*, are listed by I. H. Burkill (Dictionary of Economic Products Malay Peninsula 2:2180, 1935) as being used in poultices for various complaints. There is no record of the efficacy of such simples.

8. Aeschynanthus trichocalyx Kraenzl. in Mitt. Inst. Allg. Bot. Hamburg 7:82 (1927).

Type. Kalimantan, Bukit Obat, [1° 20′ N, 113° 15′ E], c. 150 m, 29 i 1925, *Hans Winkler* 1322 (HBG).

The specimen is without fruit or seed and is placed by Kränzlin under sect. *Haplotrichium*: in this he may well be correct, but his reason for doing so was presumably that he gave his species an affinity with *A. horsfieldii* R.Br.—a species misplaced by C. B. Clarke in sect. *Haplotrichium* and belonging to sect. *Microtrichium*. There must still be some doubt as to whether or not *A. trichocalyx* is correctly included in sect. *Polytrichium*, for the flower colour—tube bright purple-red, lobes green, the three upper with a black spot—is scarcely consistent with the more normal greenish or yellow colouring of species in this section. However we feel that there is an overall resemblance between this species and others in the section and that we are justified in mentioning it here. Further collections will, in time, prove whether our placement is correct.

9. Aeschynanthus hartleyi P. Woods, **species nova** *A. poilanei* Pellegr., speciei vietnamensi, affinis sed foliis longioribus, corolla tenuiter puberula intus ad basin annulo pilorum minus evoluto, pilis comae seminum paucioribus recedit.

Planta epiphytica, caulibus 5 mm usque crassis, internodiis 4–8(–13) cm longis. *Folia* petiolis 1·3 cm longis; lamina crassa, elliptica vel lanceolata, 8–10 cm longa, c. 2–3·5 cm lata, apice acuminata, basi cuneata. *Flores* in axillis foliorum solitarii (vel 3 usque in cyma abbreviata), pedicellis 8 mm usque longis glabris in sicco angulatis. *Calyx* glabrescens, pilis minutis parcis, 6 mm longus, ad basin in segmenta subulata acuminata basi 1 mm lata divisus. *Corolla* pallide aurantiaca (teste Hartley); tubus leviter arcuatus,

17–19 mm longus, superne ampliatus ore, 5–10 mm latus, extra tenuiter glanduloso-puberulus, intus glaber annulo pilorum 3 mm supra basin excepto; lobi 5 × 4 mm, glanduloso-ciliati, intus fusco-notati (?). *Stamina* 4; filamenta 17 mm longa parte quarta basali ad corollam adnata glanduloso-pubescentia; antherae 1 × 0·5 mm, per paria apicibus connata. *Ovarium* 8 mm longum; stylus 14 mm longus, superne glanduloso-pubescens. *Capsula* 21 cm usque longa, 4 mm lata. *Semina* numerosa, 3 mm longa, minute rugulosa, pilo solitario 2·2 cm longo, pilis comae c. 60, 1 cm longis.

NEW GUINEA. Morobe District, 147° 10′ E, 7° 50′ S, above village of Sopa, c. 1100 m, mountain slope, liana, climbing in trees in secondary growth bush, flowers pale orange, 19 vii 1962, *Hartley* 10344 (holo. A; iso. CANB); Central District, Koitaki 460 m, forest, on trees, fruit green, 18 vii 1935, *Carr* 12809 (BM, E, K, SING),

This is the first record of section *Polytrichium* from New Guinea.

Carr's material is in fruit only, but the capsules are well developed and the characteristic seed hairs quite obvious. Hartley's specimen is in flower and fruit and the capsules sufficiently mature to show the seed hairs. Hartley has been in the Koitaki area and points out that it consists of rather similar bush to the Sopa locality.

3. ADDITIONS TO SECT. MICROTRICHIUM

Ridley (1896, p. 500) correctly noted that the seeds of the Malayan species he named *A. rhododendron* were of the *Microtrichium*-type; nevertheless the shortly lobed tubular calyx, and, no doubt, the geographical distribution, induced him to refer it to sect. *Haplotrichium*. It is now known that tubular calyces also occur in section *Microtrichium* in New Guinea. The following is a list of western Malesian species that should now be referred to this section.

A. cardinalis (Merrill) Schlechter—Philippines.

A. crassifolius (Elmer) Schlechter—Philippines.

A. horsfieldii R. Br.—Java.

A. irigaensis (Merrill) Burtt & Woods, **comb. nov.**—Philippines.

Syn.: *Trichosporum irigaense* Merrill in Phil. Journ. Sci. Bot. 10:84 (1910).

A. longicalyx Ridl.—Malay Peninsula.

A. magnificus Stapf—Borneo.

A. miniaceus Burtt & Woods, **nom. nov.**—Philippines.

Syn.: *Trichosporum miniatum* Elmer, Leafl. Phil. Bot. 7:2668 (1915)—non *Aeschynanthus miniatus* Lindl.

A. nervosus (Elmer) Schlechter—Philippines.

A. philippinensis C.B.Cl.—Philippines.

A. vinaceus P. Woods—Borneo (see below).

Aeschynanthus guttatus P. Woods, **species nova** *A. musaensi* P. Woods affinis, sed calyce corollaque breviore et corolla flavo-viridi kermesino-notata differt.

Planta epiphytica, primo reptans foliis parvis ovato-orbicularibus 0·6–2·5 × 0·6–1·9 cm parce pubescentibus glabrescentibus; caules demum patentes et penduli, 4 mm diametro, internodiis ad 6 cm longis. *Folia* petiolis 3(–10)

mm longis; lamina supra griseo-viridis, subtus pallide viridis, late elliptica ovato-lanceolata vel lanceolata, 5–6(–8) × 2·3–3·7 cm, ad basin late cuneata, ad apicem obtusa, foliis longioribus ad basin cuneata ad apicem acuminata. *Flores* singuli, axillares; pedicelli 7–8 mm longi (sub fructu ad 1·3 cm). *Calyx* viridis, tubularis, ad 5–8(–10) mm longus, ore 5–6 mm diametro, lobis 1·5 × 2·5 mm longis acutis, sinubus obtusis. *Corolla* arcuata pallide flavo-viridis sordide kermesino-lineata; tubus basi 5 mm diametro, sursum sensim ampliatus, leviter arcuatus, 4·3–5·5 cm longus, extra intusque glaber fasciculis 5 pilorum densorum 5 mm supra basin tubi exceptis; lobi oblongo-rotundati, 5 × 7 mm, laterales latiores obtusi, intus vivide kermesino-maculati, maculis lineatis in tubum percurrentibus. *Stamina* 4; filamenta ad 40 mm longa, parce glanduloso-pubescentia; antherae 2 × 1 mm, per paria apicibus cohaerentes. *Discus* 1·5 mm. *Ovarium* c. 28 mm longum, glabrum; stylus 4 mm longus, glanduloso-pubescens; stigma ellipticum, umbilicatum, 2 mm latum. *Capsula* (12–)23·5(–29) cm longa, 3 mm lata. *Semina* 0·75 mm longa, ad aliam extremitatem papillosa, appendicibus 1–3 mm longis.

NEW GUINEA. Central district: Musa mts., central Owen Stanley range, above Doma, 31 x 1962, *Woods* 215 (holo. E; iso. LAE); *ibid.*, cult. in hort. bot. reg. Edinb., *C.* 4600 (E). Milne Bay district: Modeni, 800 m, on *Ficus* in secondary open forest, 28 vi 1959, *Cruttwell* 1006 (E, K), *ibid.*, track to Birat, 9 vii 1968 *Cruttwell & Woods, W.* 2212 (E); Mt. Wayat, vii 1968, *Cruttwell & Woods, W.* 2545 (E).

The greyish-green leaves, short green tubular calyx and the unusual colour of the flower—pale yellowish-green, sometimes almost brownish-green with bright crimson markings on the inside of lobes and tube—make this species unique in the genus.

Aeschynanthus musaensis P. Woods, **species nova** ob calycem brevilobatum *A. guttato* P. Woods affinis sed calyce et corolla longiore et corolla vinacea haud intus maculata facile distinguitur. Aspectu *A. pulchri* (Bl.) G. Don ex sectione *Aeschynantho* sed corolla ima basi attenuata, haud bulboso-ampliata, et seminum appendicibus haud filiformibus longe distat.

Suffrutex epiphyticus; caules elongati, primo reptantes, demum ad 1 m vel ultra penduli, brunneo-rubri, 6 mm diametro, internodiis 3–8 cm longis. *Folia* petiolis 1–2 cm longis 2 mm diametro saepe violaceo-purpureis; lamina crassa, supra fusco-viridis nitida, inferne fulvo-viridis, late elliptica, ovata-lanceolata, interdum lanceolata vel oblonga et tum grandis, 3·5–9·3 × 1·5–5 cm, apice acuminata, ad basin late cuneata vel rotundata. *Flores* singuli vel bini in axillis foliorum terminalium; pedicelli 10 × 0·5 mm (sub fructu ad 20 × 1·25 mm); bracteae lanceolatae vel ovatae, 10 × 5 mm, pallide virides, brunneo-rubro-marginatae. *Calyx* glaber, c. 20 mm longus, ore 7 mm diametro, tubularis, pallide viridis, lobis late triangularibus 4 mm longis basi 5 mm latis obtusis purpureo-marginatis. *Corolla* c. 7 cm longa, extra intusque glabra, vinaceo-purpurea, lobis inferioribus intus indistincte fusco-lineatis; tubus parte inferiore cylindrica 4 cm longa, sursum sensim ampliatus ad orem subabrupte arcuatus et leviter lateraliter compressus, ore angusto; lobi patentes intus glanduloso-pubescentes, marginibus graciliter glanduloso-

ciliati, superiores plus minusve rotundati 13 mm longi et 11 mm lati, laterales late triangulares obtusi 15 × 15 mm, inferior oblongus obtusus 18–20 × 13-15 mm. *Stamina* 4; filamenta 20 mm longa, glabra; antherae 3 mm, apicibus per paria cohaerentibus. *Discus* cupulatus, 1 mm altus. *Ovarium* 35 mm longum, stylo glabro 10 mm longo, stigmate elliptico umbilicato 2 mm lato. *Capsula* ad 21 cm × 3 mm, pedicello elongato sub calyce constricto suffulta. *Semina* 1 mm longa appendicibus 0·75–1 mm longis.
NEW GUINEA. Central district: Musa mts., central Owen Stanley range, track NW of Doma, 28 x 1962, *Woods* 177; *ibid.*, cult. in hort. bot. reg. Edinb., *C.* 6701 (holo. E; iso, LAE).

The original Woods collection is represented by a rather poor specimen bearing dehiscing fruits. Plants raised from seed of this have only recently bloomed and the handsome flowers have proved adequate consolation for the long wait.

Specimens of *Carr* 13061 (Boridi, 1500 m, 10 ix 1935, flowers reddish purple: BM, E, NY, SING), despite having very narrow lanceolate leaves (9–10·5 cm long × 1·3–2·2 cm wide) and pubescent style and corolla, may well belong here.

A. musaensis, *A. guttatus* and *A. papuanus* are the only examples of New Guinea species having truly tubular calyces.

Aeschynanthus vinaceus P. Woods, **species nova** inter species occidentales nulli arcte affinis; fortasse *A. pachyantho* Schlechter, speciei novoguineensi, ob calycem bilabiatum et corollae colorem maxime accedit.

Suffrutex epiphyticus; caules saepe brunneo-purpurei, ad 1 m longi, internodiis ad 5 cm. *Folia* petiolis ad 8 mm purpureis; lamina crassa, lanceolata vel ovato-lanceolata 6–11 × 2–4 cm, apice acuminata, basi cuneata, costa supra impressa infra leviter elevata. *Flores* axillares; pedicelli purpurascentes, 7–14 mm longi, sub fructu elongati, glabri. *Calyx* sordide purpureus, bilabiatus, 16 mm longus (post anthesi ad 20 mm); tubus 5 mm longus in pedicello attenuatus; segmenta superiora linearia, acuta, 8 × 1·75 mm, inferiora 12 × 2 mm. *Corolla* vinaceo-purpurea, extra intusque glabra, ad 32 mm longa, leviter arcuata, in triente basali 4 mm diametro superne ad 6 mm diametro abrupte ampliata, sub ore leviter dorso-ventraliter compressa, lobis superioribus rotundatis 5 × 5 mm, inferioribus oblongis obtusis 6 × 6 mm, omnibus marginibus ciliatis. *Stamina* 4; filamenta 25 mm longa, glabra vel pilis parcissimis; antherae 1·5 mm longae. *Discus* cupularis, 2 mm altus. *Ovarium* 24 mm longum; stylus 7 mm longus, superne glanduloso-pubescens; stigma transverse ellipticum, 3 mm latum. *Capsula* 10–15 cm longa. *Semina* numerosa, 0.75 mm longa, appendicibus 2–2·75 mm longis.
SARAWAK. Third Division: Ulu Melinau, hill west of falls, 1100 m, wine red flower and dark red calyces, 22 viii 1967, *Burtt & Martin*, *B.* 5058 (holo. E), *B.* 5026; *ibid.*, cult. in hort. bot. reg. Edinb., *C.* 6361.

This species introduces a new combination of features to the section as represented in its western range, namely a short-tubed bilabiate calyx and moderately thick textured wine-purple corolla, which, in general terms, is reminiscent of the New Guinea *A. pachyanthus*.

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