

REVISION OF HOMALOMENA
(ARACEAE–HOMALOMENEAE) IN NEW GUINEA,
THE BISMARCK ARCHIPELAGO AND SOLOMON ISLANDS¹

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SUMMARY

The genus *Homalomena* Schott is revised for New Guinea, the Bismarck Archipelago and Solomon Islands. 19 species are recognised, of which 10 are new to science. Three are rheophytes. *Homalomena novoguineensis* Engl., *H. klossii* Ridl., *H. ledermannii* Engl. & K. Krause, *H. moskowskii* Engl. & K. Krause and *H. carrii* Furtado are reduced to the synonymy of *H. schlechteri* Engl. *Homalomena apiculata* Ridl., *H. engleri* Bogner and *Diandriella novoguineensis* Engl. are reduced to the synonymy of *H. stollei* Engl. & K. Krause. *Homalomena versteegii* Engl. and *H. lilacina* Alderw. are synonyms of *H. lauterbachii* Engl. and *H. inaequalis* Ridl. is a synonym of *H. distans* Ridl. The cultivated *Homalomena lindenii* (Rodigas) Ridl., allegedly from Papuaia, could not be matched with any species in the area under study and is left as a *species dubia*. Medicinal and ritual uses, including alleged psychoactive properties, are noted.

Key words: Araceae, *Homalomena*, Bismarck Archipelago, New Guinea, Solomon Islands, revision.

INTRODUCTION

Homalomena is a genus of roughly 150 species occurring from India to southern China and Malesia to the Solomon Islands. There are also about 8 neotropical species, but none in Africa. About 190 taxa have been named at varietal to specific levels in *Homalomena* in Malesia, of which about 160 were recognised in Hay et al. (1995) for the unrevised genus. *Homalomena* is strongly centred on West Malesia, with about 40 taxa recognised in each of Peninsular Malaysia, Sumatra and Borneo, with a sharp fall off east with 18 in Java, four in each of Sulawesi and the Philippines, two in Maluku and then a relative resurgence with 19 in the area considered here.

Homalomena was erected by Schott (1832) for three Asiatic species of which two, *H. occulta* (Lour.) Schott and *H. aromatica* (Roxb.) Schott, had been included in the pre-Schottian concept of '*Calla*' [a ragbag including, in addition to the current concept of *Calla* L. s.s., diverse, unrelated, mainly striate-veined, mainly monoecious, mainly herbaceous aroids; see Hay et al. (1995) for the Malesian examples]. The third was *H. cordata* Schott, based on the illegitimate *Dracontium cordatum* Houtt., which bears no resemblance to *Dracontium* in Linnaeus' sense. Schott's initial conception of *Homalomena* incorporated 'subcaulescent' plants with cordate or sagittate leaves, spadices which were distally male and proximally 'hermaphrodite' (a misinterpretation of the staminodes in the female zone), spathes which first gaped (as opposed to opening

1) A Christensen Research Contribution.

widely) and then persisted closed, and tri-locular pluriovulate ovaries. Later (Schott, 1860), the concept further included 'alternate' pistils and 'pistillodes' [i.e., pistils each with a (further misinterpreted) staminode] and 3–4-merous male flowers. Miquel (1856a, b) erected the genus *Chamaecladon* next to *Homalomena* for much smaller plants with more or less oblong leaves and without staminodes to the pistils [though these are in fact present in both the species he recognised and were figured, without comment, in an illustration of the generic type, *C. lanceolatum* Miq. (1856b: f. 40)]. Schott (1860), adding several new species, recognised that staminodes ('pistillodes') were present in *Chamaecladon*, but maintained the genus on the principal basis that there were regular male flowers in *Homalomena* and irregular consociations of anthers in the male zone of *Chamaecladon* and that, as indicated by Miquel, *Chamaecladon* species were subcaulescent plants with narrow or oblong leaves. Engler (1879) recognised that the male zone in *Chamaecladon* did in fact consist of regular male flowers, and distinguished the two genera in his key (1879: 60) on the basis of the direction the micropyle faced (up or to the side in *Homalomena*, down in *Chamaecladon*), and on the 3–4-locular and 2-locular ovary, respectively. They were further distinguished in his descriptions by the infrapistillar staminodes being shorter than the ovary in *Chamaecladon* and being tall and stipitate in *Homalomena*. In his last revision, Engler (1912) reduced *Chamaecladon* to a section of *Homalomena* characterised by its short staminodes and, incompletely, by whether the ovules are fixed to the base (sect. *Chamaecladon*) or throughout the length (sect. *Homalomena* 'Euhomalomena') of the placenta. Subsequently, Furtado (1939) further divided sect. *Homalomena*, erecting sect. *Cyrtocladon* for species in which the spathe is divided into lower and upper portions separated by a constriction and in which the male and female zones of the spadix are separated by a zone of staminodes. The distinctions based on minor differences in placentation seem quite trivial. Of the grosser features, even amongst the relatively few Papuan species recognised here, these distinctions entirely break down. For example, *H. schlechteri* Engl. has the facies of sect. *Chamaecladon*, but no staminodes; *H. magna* A. Hay has the facies of sect. *Homalomena* but no staminodes and a faintly constricted spathe; *H. davidiana* A. Hay has the facies of sect. *Homalomena*, but the staminodes are sometimes shorter than the ovary; *H. lauterbachii* Engl. has a facies intermediate between sect. *Chamaecladon* and sect. *Homalomena*, has short infrapistillar staminodes and sometimes has a ring of interzonal staminodes, and so on. Therefore I do not attempt to follow the existing formal infrageneric system here.

In Malesia *Homalomena* is most closely allied to *Furtadoa* M. Hotta (two species, Peninsular Malaysia and Sumatra) which differs chiefly in the presence of pistillodes in the male flowers. *Homalomena* was placed by Engler (1912) within the Philodendroideae in the tribe Philodendreae next to the Schismatoglottidinae and closely related to the Aglaonemateae (*Aglaonema*, *Aglaodorum*) – a grouping of monoecious, striate-veined aroids. Generic limits specifically in this area of the family were reviewed by Hotta (1982) and in a wider context by Grayum (1990), Bogner & Nicolson (1991) and most recently by Mayo et al. (1997). While Bogner & Nicolson (1991) followed Englerian concepts in the Philodendroideae, with Homalomeninae next to Schismatoglottidinae in the Philodendreae. Grayum (1990), Hay & Mabberley (1991) and Mayo et al. (1997) concur in placing Homalomenaeae (*Homalomena* and *Furtadoa*) next to Neotropical Philodendreae (*Philodendron*). Hay (1996) provided a key to the striate-

veined (monoecious) herbaceous Araceae in Peninsular Malaysia, which can be applied to the area under study here also, though the situation here is rather simpler, and keys to the genera of Araceae in New Guinea (Hay, 1981, 1990). In New Guinea, *Homalomena* can be confused with *Aglaonema* which is not aromatic, has no recognisable male flowers, and has large red fruits, and with *Schismatoglottis* – also not aromatic and which here always, as far as is known, has the stem hypogaeal and hapaxanthic and the spathe limb caducous where it is persistent in *Homalomena*. Confusion may also occur with striate-veined *Spathiphyllum* and *Holochlamys* (Spathiphyllaeae), which, herbaceous relatives of the mostly climbing, bisexual-flowered Monstereae, have trichosclereids visible to the naked eye in torn leaf tissue and a geniculum at the apex of the petiole.

Homalomena was last fully revised by Engler (1912), and a review of sorts of the Indo-Malesian species was attempted by Furtado (1939), but without keys or descriptions (except of new species published there). Hotta (1986) published a species list with exsiccatae for Malesia, also without keys or descriptions. There is only limited congruence between the species concepts presented here and Hotta's concepts for the Papuan species implicit in the synonymy and specimens listed by him, and I have not attempted to include them in the synonymy here.

Homalomena is taxonomically difficult. The species making up this genus are structurally simplified compared with many other Araceae (cf. Hay & Mabberley, 1991) and often very similar; qualitative characters are frequently subtle and difficult to codify and the circumscription of quantitative characters is confounded by much infra-specific variability and poor herbarium preservation. This revision must therefore be regarded as somewhat provisional.

Homalomena species are minute to very robust creeping to erect arborescent herbs whose vegetative tissues are usually (but not always) strongly aromatic when crushed, with pungent, sometimes sickly sweet smells of citrus, celery, parsley, liquorice, anise, and ginger. Although the odour is quite variable, it does not appear to be very useful taxonomically both because it seems to vary considerably within species (perhaps related to concentration of the odour producing substances) and also because odour perception seems somewhat idiosyncratic and hence difficult to communicate effectively. The species are generally shade-loving and occur in swamp forest, in low to high-elevation forests and as rheophytes, but usually on forest floor quite often on vertical or very steep soil banks (e.g., down-cut stream banks or road cuttings). One exceptional, as yet undescribed, species from Sarawak is colonial in open, sometimes brackish swamps in full sun. Renewal growth is sylleptic and there is little or no capacity to rest or tolerate drought. However, a remarkable Sumatran species, *?H. hastata* M. Hotta, appears to have rhythmic growth and architecture resembling that of typical gingers: a subterranean sympodium with renewal growth from well below the apex of each module (Hay, unpubl. obs.). In *Homalomena* the leaves are somewhat featureless – simple, entire, glabrous and striate-veined, and often very variable in shape.

Nothing is known of pollination biology, save casual observations of visitation by beetles. Inflorescences appear in succession, usually with not more than one in a synflorescence at anthesis at any one time. The period of anthesis is very short, probably a matter of two or three days. The peduncle is erect at anthesis and later declinate, in those species with long peduncles often becoming declinate as the inflorescence passes

from female to male anthesis, but with the spathe and spadix remaining erect. At female anthesis the spathe opens, usually gaping to the base or with the basal part remaining convolute, sometimes with the margins of the upper part reflexing slightly; at this time the spadix may be deflected ventrally so that the upper part protrudes from the gaping part of the spathe. At male anthesis the spathe closes somewhat. In some species the spadix elongates at this time, so that the distal part of the spadix protrudes after the spathe has closed again after anthesis. The spathe is fully persistent into fruit, when it dehisces from the base up and falls off revealing the small greenish translucent berries which each contain few to several very small seeds. There are no observations on dispersal. Because the entire spathe closes and persists, usually with the spadix wholly inside, the young infructescence can be mistaken for an unopened inflorescence. Usually by early infructescence, there are, aside from its length relative to the spathe, no taxonomically useful features preserved on the spadix: the male flowers have rotted and the infrapistillar staminodes may have also decayed or been removed by insect visitors (which suggests a possible role as food bodies rewarding pollinators). It is therefore helpful if collectors attempt to find material which is either at or has not quite reached anthesis.

Several living accessions cultivated at the Royal Botanic Gardens Sydney are cited in this paper. Spirit and herbarium material has been harvested from them and will be distributed to relevant herbaria in due course.

HOMALOMENA

- Homalomena* Schott in Schott & Endlicher, Melet. Bot. 1 (1832) 20; Schott, Prodr. Syst. Aroid. (1860) 308; Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 332; Engl. in Engl., Pflanzenr. 55 (IV.23Da) (1912) 25; Furtado, Gard. Bull. Straits Settlements. 10 (1939) 183; Hay in Johns & Hay, Stud. Guide Monoc. Papua New Guinea 1 (1981) 59; Hay, Aroids of Papua New Guinea (1990) 72; Peekel ex Henty, Fl. Bismarck Archip. (1984) 70. — Lectotype: *Homalomena cordata* Schott (selected by Nicolson, 1967).
- Chamaecladon* Miq., Bot. Zeit. 14 (1856) 564; Schott, Prodr. Syst. Aroid. (1860) 312; Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 343; Engl. in Beccari, Malesia 1 (1877) 283. — Type: *Chamaecladon lanceolatum* Miq. [nom. illeg. = *Homalomena pygmaea* (Hassk.) Engl.].
- Diandriella* Engl., Nova Guinea 8 (1911) 250; Engl. in Engl., Pflanzenr. 55 (IV.23Da) 81. — Type: *Diandriella novoguineensis* Engl. [= *Homalomena stollei* Engl. & K. Krause].

Stem mostly erect to decumbent, occasionally strictly creeping and rather condensed, usually strongly aromatic; roots with resin canals (French, 1987). *Leaves* spirally arranged [except distichous *H. geniculata* M. Hotta (Borneo)]; petioles longer to shorter than the blades, channelled to terete, sheathing in the lower part, the sheath persistent; blade emerging from the sheath of the lower leaf in an advanced stage of expansion, simple, deeply cordate to oblanceolate, glabrous in Malesia [cf. spiny and hairy Neotropical species (Engler, 1912; Moffler, 1983)]. Anterior costa (= midrib) well developed; posterior costae not developed or each reduced to a thickened nexus of primary veins at the junction with the petiole; primary veins arising in a cluster at the base of the lamina and also distributed along the midrib, those of the posterior lobes arcuate, the rest running distally to the margin; secondary and tertiary vein orders rather poorly differentiated from one another, striate. *Inflorescences* usually borne in multiples in mixed axillary gorgonoid monophyllous sympodia (see Ray, 1987, 1988 for explana-

tion), erect at anthesis thence decumbent with the ventral side of the spathe facing down; spathe green to reddish, yellowish or white, entirely persistent, mostly of a simple boat-shape, sometimes constricted and divided into a lower convolute portion and a distal more or less widely opening limb, smooth to externally ribbed and keeled along the dorsal midline, apiculate to strongly mucronate; spadix divided into two zones – female proximally, male distally, the two zones occasionally separated by a short zone of sterile male flowers or staminodes, but usually not; *pistils* naked or each accompanied by a single staminode arising from its base on the side nearest the base of the spadix (termed infrapistillar staminodes here); ovary incompletely 2–4-locular; style none or extremely short; stigma button-like to discoid, minutely papillate, sometimes weakly lobed, sometimes impressed; ovules anatropous, several per locule, placentation basal to central; stamens arranged into 2–4-merous *male flowers*; filaments very short to none; anthers opening by short apical longitudinal slits usually concealed by the much expanded connective which forms a flat cap over the top of the stamen; pollen inaperturate, psilate (rarely fossulate), starchy (Grayum, 1990, 1992); infructescence contained within the persistent and usually somewhat enlarging spathe; fruiting spathe dehiscent from the base up; fruit, where known, a small translucent greenish berry; seeds albuminous, very small, c. 1 mm long, longitudinally ribbed, hemitropous (cf. Seubert, 1993); $2n$ mostly = 40 (Petersen, 1989).

Distribution — About 150 species from Indo-Malesia to southern China and Solomon Islands, but mainly in W Malesia; about 8 species are neotropical.

Habitat — Mainly in the understorey of lowland tropical rain forest but also reaching the mid-montane zone; sometimes rheophytic; sometimes found in regrowth and road cuttings; absent from strongly seasonal areas.

Uses — Medicinal and ritual uses are cited below under certain species. However, some sterile collections which cannot be identified with confidence include data on ritual and medicinal uses. It may be useful to record them here: 1) *NGF 13841* (K, L, LAE), Nondugl, Western Highlands – leaf heated in fire and used as a rubbing medium for muscular ailments; local name Meskal. 2) *Hamilton 88* (LAE), no locality – extensive notes on psychoactive property; local name Erebera (Dream man). 3) *Dornstreich MDD-8* (L), Upper Karawari R., Angoram, E Sepik Province – used in adornment by women, leaves hanging from rope belt over grass skirt and in armbands; local name Maisani. 4) *Boyd 3* (LAE), 10 miles SE of Okapa Eastern Highlands Province – tuber [sic] said to produce hallucinations when ingested in small amounts; local name Iraria (Awa). 5) *NGF 10645* (GH, LAE), Okapa Patrol Post – leaf stem and root eaten to induce ‘dream man’; local name Ereriba.

KEY TO THE SPECIES

- 1a. Leaf base² attenuate to acute 2
 b. Leaf base obtuse to deeply cordate to hastate 5
 2a. Spathe ribbed externally, keeled on the abaxial mid-line, straight, strongly mucronate **17. *H. schlechteri***
 b. Spathe smooth, not keeled, straight or apically reflexed, apiculate 3
 2) Observe the widest-based leaf on the specimen.

- 3a. Leaf blade with c. seven pairs of sub-opposite primary veins . . . **19. H. adiensis**
 b. Leaf with two (or three) pairs of sub-opposite primary veins 4
- 4a. Apex of spathe reflexed at anthesis, spadix protruding from the spathe after anthesis, infrapistillar staminodes present **16. H. steensiana**
 b. Apex of spathe not reflexed, spadix not exceeding the spathe, infrapistillar staminodes absent (very rarely present) **18. H. stollei**
- 5a. Blades at least four times as long as wide 6
 b. Blades less than three times as long as wide 7
- 6a. Lamina of the spathe wide-opening and strongly reflexed; infrapistillar staminodes absent **14. H. kalkmanii**
 b. Lamina of the spathe gaping, and slightly reflexed at the tip only; infrapistillar staminodes present **13. H. atroviridis**
- 7a. Leaf blade widest more than half way along midrib; spathe abaxially keeled, strongly mucronate **17. H. schlechteri**
 b. Leaf blade widest at or less than half way along the midrib; spathe not so . . . 8
- 8a. Very diminutive plant, leaf blades less than 8 cm long **15. H. pulleana**
 b. Plants moderately to very robust; leaf blades more than 8 cm long 9
- 9a. Leaf blade sagittate to hastate 10
 b. Leaf blade oblong-ovate to very broadly ovate, the base truncate to very deeply cordate 11
- 10a. Spathe with the tip reflexed; spadix exerted from the spathe after anthesis; peduncle c. 1/3–1/2 the length of the petioles **12. H. tenuispadix**
 b. Spathe tip ± hood-forming; spadix contained within the spathe after anthesis; peduncle much shorter than the petioles **11. H. lauterbachii**
- 11a. Spadix very slender: more than 15 times as long as thick (dry); plants small: leaves about 15 cm long (range 9–23 cm) 12
 b. Spadix proportionately thicker, or if these proportions then plants much more robust, with leaves about 40 cm long 14
- 12a. Leaf blade cordate; spathe 5.5–7.5 cm long, shallowly back-curved for most of its length **7. H. producta**
 b. Leaf blade very broadly oblong to rotund, the base more or less truncate, or leaf narrowly ovate with the base cordate; spathe c. 3–4.5 cm long, straight . . . 13
- 13a. Stem erect, with well developed internodes; leaf blade very broadly oblong to rotund, the base more or less truncate; spathe c. 4.5 cm long; infrapistillar staminodes absent **6. H. soniae**
 b. Stem condensed, rooting among the leaf bases; leaf blade narrowly ovate with the base cordate; spathe c. 3 cm long; infrapistillar staminodes present **8. H. jacobsiana**
- 14a. Occurring in the mid-montane zone; leaf blade c. 15 cm long and usually deeply cordate **10. H. distans**
 b. Lowlands to lower montane zone, or if mid-montane then leaf blade at least 30 cm long 15
- 15a. Infrapistillar staminodes present 16
 b. Infrapistillar staminodes absent 17
- 16a. Spadix exceeding the spathe after anthesis, spathe narrowly cylindrical **2. H. davidiana**

- b. Spadix not exceeding the spathe after anthesis; spathe more or less spindle-shaped
 **1. *H. robusta***
- 17a. Leaf blade c. 15 cm long, less than 1.5 times as long as wide, the base more or
 less truncate **9. *H. peekelii***
- b. Leaf blade mostly at least twice this length and the base deeply cordate, or if the
 leaf base more or less truncate, then the blade more than twice as long as wide
 18
- 18a. Male flowers mostly trimerous (some dimerous), irregularly rhombohexagonal;
 inflorescences dangling, the spathe weakly constricted **3. *H. melanesica***
- b. Male flowers rhomboid, dimerous; inflorescences small, pointed, clustered at the
 leaf bases; the spathe not or almost imperceptibly constricted 19
- 19a. Leaf deeply cordate, plants often very robust, to over 1 m tall . . . **4. *H. magna***
- b. Leaf oblong-ovate, the base shallowly cordate; plants less robust, to c. 50 cm tall
 **5. *H. hooglandii***

1. *Homalomena robusta* Engl. & K. Krause

Homalomena robusta Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 86. — Type: *Pulle 270* (holo B; iso BO - photo LAE, L), Irian Jaya (Dutch New Guinea), Lorentz River, Kloof bivak, 31 Oct. 1912.

Homalomena cordata auct. non Schott: Engl. in Engl., Pflanzenr. 55 (IV.23Da) (1912) 57, p.p. quoad specim. cit. *Versteeg 1072*.

Robust to very robust herb; stem erect, to c. 40 cm long, c. 5 cm thick (fresh). *Leaves* several together; petiole 50–80 cm long, sheathing in the lower 1/4; blade very broadly ovate, 25–45 cm long, 16–28 cm wide, the tip obtuse and acuminate for c. 2 cm, the base deeply cordate to (rarely) truncate; anterior lobe 20–30 cm long; primary lateral veins (4–)5–8 on each side of the midrib, diverging at c. 45–60°; posterior lobes 7–13 cm long, overlapping to widely spreading, rounded to squared. *Inflorescences* to c. 8 together; peduncle to 18 cm long, ± erect at female anthesis, thence declinate; spathe green, 3–6 cm long, rather broadly cylindrical, c. 0.8–1 cm wide (rolled, dry), mucronate for c. 5 mm; spadix sessile, 3–5 cm long, c. 5 mm diam. (dry), not exceeding the length of the spathe after anthesis; *female zone* c. 1/3–2/5 the length of the spadix; ovaries subglobose, c. 1 mm diam.; stigma discoid, large; small infrapistillar staminodes present and somewhat enlarged and crowded into an incomplete sterile zone at the interface of the male and female zones; *male zone* subcylindric, tapering to a blunt point; *male flowers* 2–3(–4)-merous.

Distribution — Southern and western New Guinea; Manus Island.

Habitat — Lowland to lower montane rain forest, from sea level to c. 350 m.

Vernacular names — Umiumi (Dsimakani); Ivaiva (Veiya); Ngapuyiu (Manus).

Notes — There is little material of this species with well-preserved reproductive structure, and some specimens could be placed with the same lack of confidence in either *H. davidiana* or *H. robusta*. This, however, is clearly due to the poor quality of the material rather than to there being only an arbitrary distinction between the two. *Homalomena robusta* is easily distinguished in flower from *H. davidiana* by its relatively shorter and fatter spathe and spadix, the latter of which does not elongate to exceed the spathe in length after anthesis (though it may be exerted ventrally). *Homalo-*

mena robusta has been confused with *H. cordata* Schott (see above, and on many determination slips). According to Backer & Bakhuizen van den Brink (1968: 115), *H. cordata* (which was based on Javan material) has stamens in which the connective is not expanded to make a flat top to cover the thecae. The type of *H. cordata* is Houttuyn's (1779: Pl. LXX1, f. 2) illustration of *Dracontium cordatum* Houtt. [non *D. cordatum* Aubl. (1775)], which is inadequate for the examination of this feature, and an epitype is needed. *Homalomena robusta* is also rather similar to *H. gaudichaudii* Schott (P. Pisang, Moluccas), which latter, it appears from the type specimen (*Gaudichaud s.n.*, L), can indeed be distinguished by the lack of an expanded anther connective, and which was sunk, perhaps correctly, by Engler (1912: 57) into *H. cordata* Schott, though Furtado (1939: 213) disagreed without noting the matter of the form of the anthers.

A single collection from Manus Island seems geographically somewhat incongruous. It is also the only variegated specimen of this species, which suggests that it may have been an escaped human introduction.

In *Carr 11660* it is noted that the stem is cut up and used in ointment in conjunction with coconut oil. The tissues are described as anise-scented.

2. *Homalomena davidiana* A. Hay, *spec. nov.* — Fig. 1

A Homalomena robusta spatha tenuiter cylindroidea, spadice fructifero producto spatham superanti differt. — Typus: *Streimann & Kairo NGF 47505* (holo L; iso LAE, US), Papua New Guinea, Morobe Province, Upper Watut, above New Tribes Mission, 12 Feb. 1970.

Homalomena lindenii auct. non (Rodigas) Ridl.: Furtado, Gard. Bull. Straits Settlement. 10 (1939) 216, p. p. quoad specim. cit. *Carr 12603*.

Robust to very robust caulescent to subarborescent herb; stem c. 3–6 cm diam. (fresh), erect to decumbent, occasionally to c. 1 m tall, usually less. *Leaves* to c. 8 together; petiole green, occasionally suffused reddish, c. 40–60 cm long, sheathing in the lower 1/3; blade very variable in size and shape, mostly very broadly ovate and deeply cordate, sometimes almost sagittate, 20–45 cm long × 13–30 cm wide, dark green, quite frequently variegated pale yellow on and near the midrib and main veins; anterior lobe 17–30 cm long, the tip broadly acute to obtuse and rather abruptly acuminate for c. 2 cm; posterior lobes 4–15 cm long, mostly rounded, sometimes rather squared off, occasionally overlapping across the sinus. *Inflorescences* to c. 10 together, variable in size; peduncle 10–17 cm long, usually declinate by anthesis with the spathe and spadix erect; spathe green, whitish towards the base, occasionally suffused reddish, narrowly cylindric, 4–8 cm long, c. 5–8 mm wide (rolled, dry), the most distal few millimetres reflexed and apiculate; spadix stipitate for 0.3–1 cm, at first subequalling the spathe, not or slightly exserted from it at anthesis, then significantly exceeding the spathe after anthesis, eventually up to 12 cm long, c. 1 cm thick (fresh); *female zone* 1/3–2/5 the length of the spadix; *pistils* subglobose, c. 1–1.5 mm diam., somewhat distant at least after anthesis, sometimes then arranged in incomplete more or less irregular verticils; infrapistillar staminodes conspicuous, about the height of the ovary to equalling the height of the whole pistil, sometimes crowded at the interface of the female and male zones into a rather ill-defined, incomplete sterile zone; *male zone* subcylindric, tapering to a blunt point, white; *male flowers* 2–3-merous.

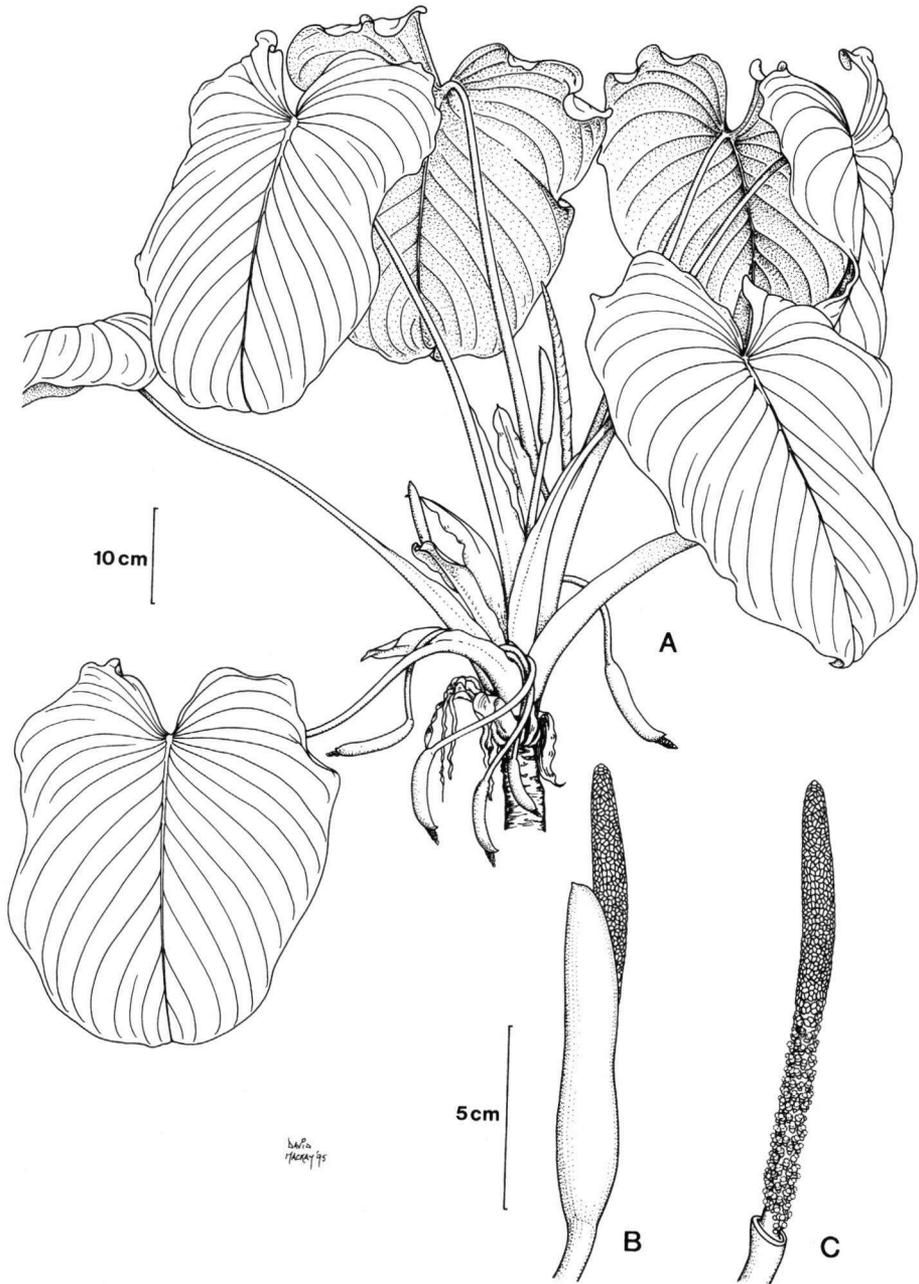


Fig. 1. *Homalomena davidiana* A. Hay. A. Habit; B. inflorescence; C. spadix (RBG Sydney Acc. No. 902399).

Distribution — Widespread but rather scattered on mainland New Guinea.

Habitat — Lowland and lower montane rain forest understorey, sometimes in swampy areas.

Notes — This species is named for Prof. Dr. David Mabberley.

It is readily distinguished from the similar and partially sympatric *H. robusta* by the spadix conspicuously protruding from the spathe after anthesis, and the more narrowly cylindrical spathe. The variegated form, vegetatively almost identical to *H. lindenii* (Rodigas) Ridl. (see below), has been collected repeatedly from the wild and from cultivation in village gardens. Both it and *H. lindenii* are in the horticulture trade and should be recognised at cultivar level. The analogous mutant is also found in *H. robusta*. Sterile specimens of variegated plants in village cultivation have often been collected by ethnobotanists, but the occurrence of similar mutants in at least these three species makes identification difficult.

The tissues are described as having a sweet-acrid liquorice-like smell.

3. *Homalomena melanesica* A. Hay, *spec. nov.*

A Homalomena robusta spatha parciter constricta, zona feminea spadicis brevior, staminodiis deficientibus differt. — Typus: *Sands, Pattison, Wood & Croft 1907* (holo K; iso US), Papua New Guinea, New Ireland, Namatanai sub-province, Hans Meyer Range, Mandih River, near Mandih Lake, 6 km WNW of Taron on E coast, 7 Sept. 1975.

Homalomena cordata auct. non Schott: Peekel ex Henty, Fl. Bismarck Archip. (1984) 70, f. 115.

Robust to very robust herb to c. 1.2 m tall. *Leaves* several together; petiole 0.5–1 m long, sheathing in the lower 1/3; blade very broadly ovate, 26–45 cm long, 16–30 cm wide, the tip obtuse then shortly acuminate for c. 2 cm, the base deeply cordate; anterior lobe 21–34 cm long; primary lateral veins 4–6 on each side of the midrib, diverging at 45–60°; posterior lobes 6–12 cm long, rounded, less often rather squared off, forming an obtuse to acute angle to overlapping across the sinus. *Inflorescences* c. 6–12 together; peduncle 11–17 cm long, elongating somewhat in fruit; spathe green, 5–7 cm long, more or less cylindrical, slightly constricted near the base at a level corresponding to the interface of the female and male zones of the spadix, becoming quite markedly swollen at the base and lengthening somewhat in fruit, the tip shortly mucronate, straight to slightly reflexed; spadix shortly stipitate to sessile, c. 5 mm diam. (dry), subequalling the spathe and not exceeding it after anthesis; *female zone* short, c. 1/6 the length of the spadix at anthesis, extending to 1/4–1/3 after anthesis; *pistils* subglobose, c. 1 mm diam., with rather broad discoid stigmas; infrapistillar staminodes absent; *male zone* cylindrical, distally tapering to a point; *male flowers* cream, 2–3(–4)-merous, the top of the connective with conspicuous shining white crystals in the surface cells.

Distribution — The Bismarck Archipelago and Solomon Islands.

Habitat — Lowland and lower montane rain forest understorey in wet places and on slopes; sometimes in regrowth and river banks from sea level to c. 800 m altitude.

Vernacular name — Bagaga na sino (Pala; Peekel, 1984); Bono (Kwara'ae); Pinu (Bougainville); Berempa (Nashoi).

Notes — This species is distinguished from other robust cordate-leaved species in the region by the short female zone without staminodes, the spadix remaining enclosed by the spathe after anthesis and the somewhat constricted spathe. The inflorescences are proportionately longer, larger and longer-pedunculate than in *H. magna*, which also differs in its entirely or very predominantly dimerous male flowers. The description of the spathe as constricted is derived from observation in herbarium specimens and from Nicolson's label notes in which the species is ascribed to sect. *Cyrtocladon*. However, it does seem that the spathe is on the whole more similar to that of sect. *Homalomena* than to typical sect. *Cyrtocladon* where the lower spathe is usually broadly ovoid to globose at anthesis and very clearly demarcated from the spreading limb [as in, e.g., *H. rostrata* Griff. and *H. sagittifolia* Jungh. ex Schott (W Malesia)].

The tissues are described as strongly aromatic, fragrant, smelling of lemon balm. In *BSIP 1039* it is noted that the rhizome is not aromatic.

4. *Homalomena magna* A. Hay, *spec. nov.* — Fig. 2

Ab aliis speciebus robustis longipetiolatis papuasicis inflorescentiis parvis numerosissimis, spathis brunneo-rubrescentibus nonnihil constrictis rectimucronatis, pistillis nudis differt. — Typus: *Hay V38* (holo LAE; iso GH, L), Papua New Guinea, W Sepik Province, c. 15 km from Vanimo on the Bewani (Pagei) Road, 7 Oct. 1979.

Homalomena robusta auct. non Engl. & K. Krause: Hay, Aroids of Papua New Guinea (1990) Pl. XIIa.

Robust to very robust herb 0.8–1.6 m tall; stem decumbent, to c. 9 cm diam.; vegetative prophyll narrowly lanceolate, to 45 cm long. *Leaves* c. 8 together; petiole to c. 70–150 cm long, sheathing in the lower c. 1/3, pale to mid green, faintly longitudinally streaked darker green; blade cordate with the sinus rather broad; anterior lobe to c. 40 cm long and 40 cm broad at the base, dull mid to dark green above, paler below, the primary venation somewhat impressed above and weakly prominent below; posterior lobes c. 20 cm long, somewhat squared off. *Inflorescences* very numerous (in robust plants) to c. 50 together, by comparison with other robust Papuan species small in proportion to the plant; peduncle slender, mostly hidden within the leaf sheath at anthesis, to 14 cm long, later elongating to c. 19 cm and pendent; spathe 3–6 cm long at anthesis, faintly constricted about half way along its length, the lower part convolute, buff coloured, becoming reddish brown distally, the limb reddish brown, tapering to a to 1 cm long straight mucro, somewhat gaping at anthesis, the whole spathe becoming green after anthesis and elongating to c. 4–7 cm; spadix sessile to minutely stipitate, ivory, subequalling the spathe and not exerted from it after anthesis, faintly constricted at the interface of the female and male zones; *female zone* subcylindric, c. 1/3 the length of the spadix; *pistils* c. 1 mm diam., flat-topped, the stigma sessile to somewhat impressed, c. 0.5 mm diam; infrapistillar staminodes absent; *male zone* subcylindric, distally tapering to a point; *male flowers* 2-merous, rhomboid, each anther triangular from above, in each flower their juxtaposed adaxial faces aligned more or less longitudinally along the spadix.

Distribution — Papua New Guinea, known only from W Sepik Province in the vicinity of Vanimo and Amanab.

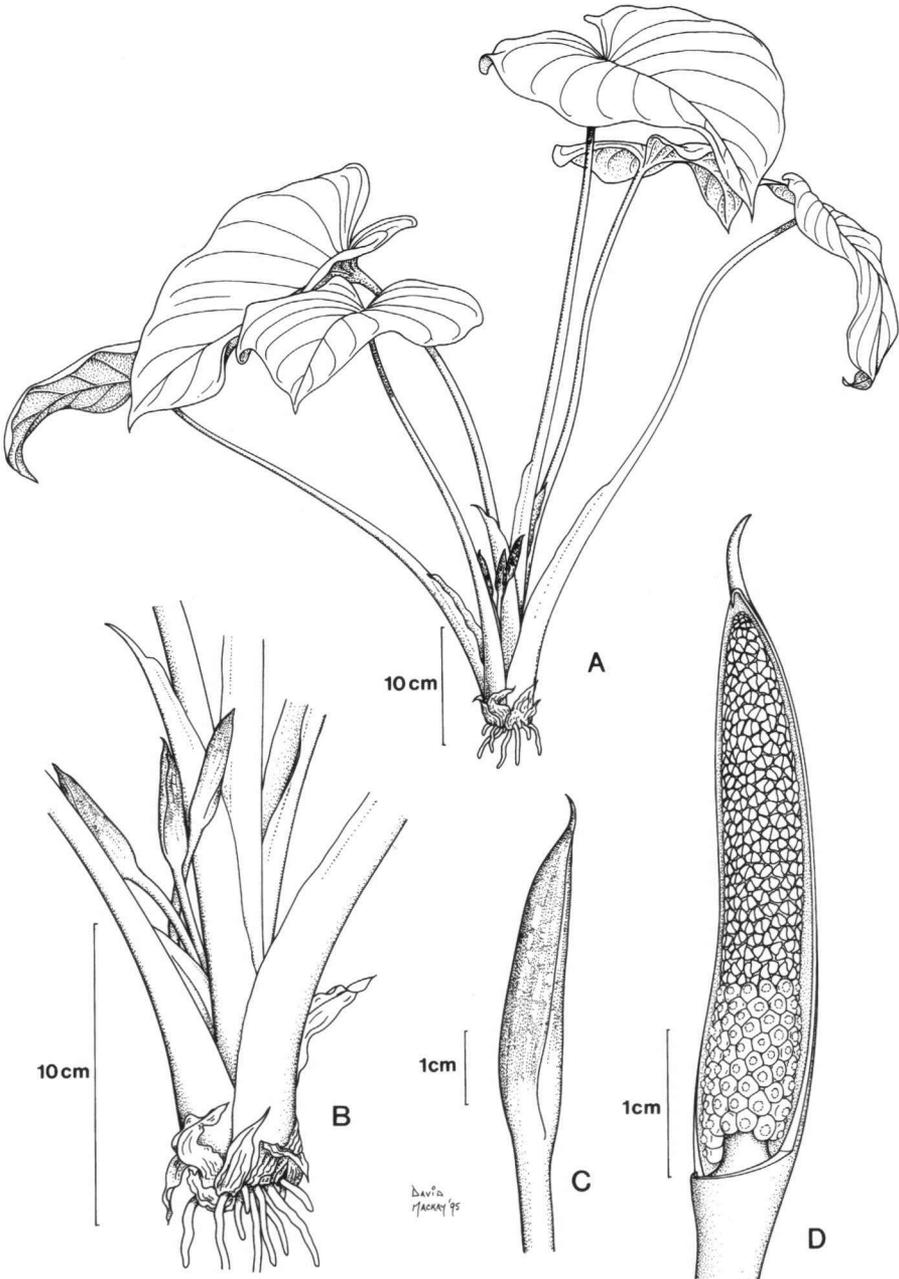


Fig. 2. *Homalomena magna* A. Hay. A. Habit; B. base of plant; C. young inflorescence; D. the same with part of spathe removed (RBG Sydney Acc. No. 902591).

Habitat — Lowland rain forest and periodically inundated swamp-forest and in regrowth, to c. 300 m altitude.

Vernacular name — Heg (Amanab).

Notes — In cultivation this species flowers at a much smaller size than that of the two cited fertile wild collections, which suggests that there may be in nature a considerably greater range in dimensions than that indicated here in the description. The larger specimens however, are much larger than any other known Papuan species of *Homalomena*, as the specific epithet is intended to suggest. *H. magna* is easily recognised by the numerous small reddish-brown pointed spathes slightly swollen at the base and the distinctive dimerous rhomboid male flowers. *Juillerat 18*, collected near Amanab, is a very depauperate specimen with leaf blades only 15 cm long. It was collected in a village garden and is probably atypical. It was noted in the same specimen that the plant is used in ritual adornment. A second collection, ascribed here to this species with some doubt [*Clarke 84* (LAE)], was made from a plant cultivated in Sipapi village at c. 800 m altitude in the Simbai Valley in the Bismarck Range (Madang Province). If of this species, the leaf blades are poorly developed – ovate-elliptic, obtuse-based and only c. 15 cm long. Decorative and ritual use is again recorded. The tissues smell of parsley or like lemon.

5. *Homalomena hooglandii* A. Hay, *spec. nov.*

Homalomena magna valde affinis sed lamina folii parciter cordata, spatha flava vel alba, stigmatum latissimo prominenti differt. — Type: *Brass 24155* (holo L; iso LAE), Papua New Guinea, Milne Bay Province, Peria Creek, Kwagira River, 24 Aug. 1953.

Moderately robust herb to c. 50 cm tall; stem short, condensed, rooting to leaf bases, to c. 2 cm diam. (dry). *Leaves* ?few, c. 5 together; petiole 18–38 cm long, sheathing in the lower 2/5; leaf blade elliptical to ovate, 15–30 cm long, 6–16 cm wide, the tip somewhat acuminate, the base shallowly cordate almost to truncate; anterior lobe 14–29 cm long; primary lateral veins c. 8 on each side of the midrib, diverging at 45–60°; posterior lobes 1.5–5 cm long, shallowly rounded. *Inflorescences* to 9 together, as in *H. magna* small relative to the whole plant; peduncle to 7 cm long, slender; spathe yellowish to off-white, to 4 cm long, faintly constricted in the middle, c. 5 mm wide (rolled, dry) tapering to a point, the tip mucronate for c. 5 mm; spadix subequalling the spathe, subsessile; *female zone* about 1/3 the length of the spadix, c. 3 mm diam. (dry); ovaries subglobose, c. 1 mm diam., with large prominent discoid stigmas to c. 0.75 mm diam.; infrapistillar staminodes absent; *male zone* distally tapering to a point, white; *male flowers* rhomboid, dimerous.

Distribution — New Guinea, known only from Northern and Milne Bay Provinces of Papua New Guinea.

Habitat — Lowland rain forest undergrowth.

Vernacular name — Bauwabau (Wanigela).

Notes — Evidently very closely related to *H. magna*, *H. hooglandii* is distinguished by the less deeply cordate leaf, the yellowish to off-white spathe and by the prominent stigmas. Although these distinctions are each fairly slight, they correspond to a distinct geographical disjunction, *H. magna* being restricted to northwestern Papua New Guinea.

This species is named for the late Dr. R.D. Hoogland, who contributed much to knowledge of New Guinea botany.

6. *Homalomena soniae* A. Hay, *spec. nov.*

Ab aliis speciebus Papuasicis caudice tenuiter procero, lamina folii rotunda vel late oblonga, nervis prominentibus, inflorescentia tenuissime elongata differt. — Typus: A. Kairo NGF 47668 (holo LAE; iso K, L, US), Papua New Guinea, Morobe Province, Bulolo-Watut Divide, 8 Apr. 1970.

Erect herb to c. 45 cm tall; stem c. 5–7 mm diam. (dry) with relatively long internodes to 2 cm; older parts of stem with fibrous residue of old leaf bases; petiole to c. 20 cm long, sheathing in the lower 1/2 to 4/5; blade light to dark green adaxially, paler below, rather broadly ovate to ovate-oblong c. 9–14 cm long × 5–7 cm wide, the base (retuse to) rather shallowly cordate; primary lateral nerves rather prominent abaxially, c. 8 on each side of the midrib, diverging at 30–45°; prophyll to c. 8 cm long. *Inflorescences* (1–)3–4 together; peduncle 8–10 cm long, slender; spathe pale green to pale yellow, c. 4.5 cm long, narrow, to c. 3 mm wide (dry, closed), mucronate for c. 5 mm; spadix held within the spathe after anthesis, c. 3 cm long, very slender, c. 2 mm diam. (dry), stipitate for c. 1 mm; *female zone* 1 cm long; *pistils* closely packed, subglobose; stigma small, button-like; infrapistillar staminodes absent; *male zone* 2 cm long, cylindrical, tapering distally to a point; *male flowers* subhexagonal 2–(3)-merous.

Habitat — Lower montane rain forest understorey and regrowth, sometimes on stream banks, but not rheophytic, 600–1800 m altitude.

Distribution — Endemic to New Guinea in sporadic localities; not yet recorded for Irian Jaya.

Vernacular names — Atket (Telefomin), Kumeilu (Okapa), Yamar (Mendi).

Notes — This species is named for my mother, The Hon. Sonia Hammond-Maude, from whom I learnt my first Latin plant name at the age of four.

The stem smells of parsley.

7. *Homalomena producta* A. Hay, *spec. nov.*

Homalomena soniae affinis, sed inflorescentia majore, spatha recurvata, lamina folii cordata vel triangularis differt. — Typus: *Manner & Street 534* (holo L; iso LAE), Papua New Guinea, Western Highlands Province, Jimi Valley, 22 Jan. 1968.

Erect herb; stem c. 1.5 cm diam. (dry). *Leaves* c. 5 together; petiole c. 19–40 cm long, sheathing in lower 1/3–1/2; blade cordate to triangular, c. 12–23 cm long; anterior lobe 11–21 cm long, c. 6–10 cm wide at base, the tip acute and acuminate for c. 2 cm; primary lateral veins c. 7 each side of midrib, diverging at 30–45°, rather prominent abaxially; posterior lobes 2.5–5 cm long, rounded to squared. *Inflorescences* 5–8 together, interspersed with attenuate prophylls to 9 cm long; peduncle slender, 10–16 cm long; spathe white, 5.5–7.5 cm long, very slender, c. 4–6 mm across (rolled, dry), the tip acuminate for 1.1 cm, slightly back-curved for most of its length; spadix sessile or partially stipitate (pistils to base on one side only), shorter than the spathe, 3.2–5.5 cm long, very narrowly cylindrical, c. 1.5–2.5 mm diam. (dry), tapering slightly to a blunt tip; *female zone* c. 1/4 the length of the spadix; *pistils* squat, somewhat angular,

flat-topped, c. 0.75 mm diam.; stigma small, button-like; infrapistillar staminodes white, somewhat shorter than the ovary, very small, c. 0.25 mm diam. or absent; *male flowers* mostly trimerous.

Distribution — Known only from two localities, in the Bird's Head Peninsula of Irian Jaya and the Western Highlands of Papua New Guinea.

Habitat — Lower to mid-montane rain forest at 840–2000 m altitude.

Vernacular name — Motcham (Maring).

Note — This species resembles *H. soniae* in the very slender long inflorescence, the apparently elongate erect stem (however, only a very little is preserved to judge from) and the rather prominent venation on the leaf underside. *Homalomena producta* is separable from *H. soniae* on the somewhat reflexed spathe, proportionately larger inflorescences combined into larger synflorescences and the relatively less rotund and more deeply cordate or triangular leaves. In the two collections ascribed to *H. producta*, one has and one does not have infrapistillar staminodes. Even based on only two collections this species is highly distinctive, with its very elongate slender inflorescences with rather recurved spathes, and I do not consider the presence or absence of staminodes a basis for separating them in this instance. The specific epithet alludes to the elongate inflorescence.

8. *Homalomena jacobiana* A. Hay, *spec. nov.*

A Homalomena producta A. Hay caudice abbreviato, inflorescentia recta producta multo minore, stigmatate lato differt; a *Homalomena schlechteri* Engl. folii lamina tenuiter ovata, spathe haud carinata brevior mucronata, spadice producto, pistillis staminodia praeditis differt. — Typus: W.S. Hoover 483 (holo GH), Papua New Guinea, W Sepik Province, Carpentaria Exploration Base Camp, Upper Prospect Creek, July 1977.

Small herb to c. 20 cm tall; stem condensed, rooting among the leaf bases, c. 1 cm diam. *Leaves* 11 together; petiole 9 cm long, sheathing in the lower 1/3; wings of sheath somewhat crisped, shortly ligulate at the apex; blade narrowly ovate to elliptic 10 × 3.5 – 12 × 5 cm, the base narrowly cordate with the posterior lobes c. 1 cm long, the tip gradually to abruptly acuminate for 1–1.5 cm; primary lateral veins c. 7 on each side of the midrib, diverging at c. 30° and curving distally towards the margin, abaxially somewhat prominent. *Inflorescences* 5 together; peduncle c. 3 cm long at anthesis, later elongating to c. 5.5 cm, slender; spathe unconstricted, narrowly cylindrical, c. 2.8 cm long, 2 mm thick (closed, dry), mucronate for c. 3 mm; spadix sessile, shorter than the spathe at anthesis, 2 cm long, c. 1 mm thick (dry), later elongating and exceeding the spathe by c. 4 mm; *female zone* 8 mm long; ovaries globose, c. 0.7 mm diam.; stigma sessile, button-like, relatively large, c. 0.5 mm diam.; infrapistillar staminodes globose, sessile, about half the height of the ovary, c. 0.3 mm diam.; *male zone* contiguous with female; *male flowers* 2–3-merous.

Distribution — Known only from the type collection.

Habitat — Not clearly specified in the collector's notes ('margin habitat'), 600–1100 m altitude.

Notes — *Homalomena jacobiana* seems closely allied to *H. soniae* and *H. producta*, sharing with them narrowly elongate inflorescences and somewhat broad leaves with abaxially rather prominent primary and secondary venation; it differs from both in

the smaller inflorescence, larger stigmas and the condensed stem rooting among the crowded leaf bases, and from *H. soniae* in the presence of infrapistillar staminodes.

The specific epithet commemorates the late Dr. Marius Jacobs (L).

9. *Homalomena peekelii* Engl.

Homalomena peekelii Engl. in Engl., Pflanz. 55 (IV.23Da) (1912) 52; Peekel ex Henty, Fl. Bismarck Archip. (1984) 70, f. 114. — Type: *Peekel 764* (holo B), New Ireland, Namatanai, 23 Feb. 1911.

Rather small herb to c. 30 cm tall; stem decumbent to erect, c. 2 cm diam. *Leaves* to c. 6 together; petiole 24–30 cm long, sheathing in the lower 1/4–1/3; blade more or less triangular, shiny deep bright green adaxially, duller abaxially, c. 14–18 cm long, 10–15 cm wide, the apex acute thence shortly acuminate and apiculate, the base very widely obtuse to truncate to very shallowly cordate; primary lateral veins c. 4 on each side of the midrib, poorly differentiated from the secondary venation and more or less flush with the lamina on both surfaces, diverging at an angle of c. 45°; secondary veins very numerous; tertiary veins fine but rather conspicuous; posterior lobes broadly rounded, 5–7 cm long. *Inflorescences* to 6 together; peduncle 10–15 cm long; spathe green, c. 4.5 cm long, rather fat, c. 1 cm wide (rolled, fresh), more or less canoe-shaped at anthesis, straight, very shortly apiculate; spadix sessile to very shortly stipitate, equalling the spathe, c. 5 mm diam. (fresh); *female zone* half the length of the spadix; *pistils* dark green, subglobose, slightly distant (c. 1/4 of a diameter apart), c. 1 mm diam.; stigma button-like; infrapistillar staminodes absent; *male zone* tapering to a blunt point, very slightly wider in the middle than below; *male flowers* white, (2–)3(–4)-merous.

Distribution — Solomon Islands, Bismarck Archipelago, E New Guinea, and Biak Island.

Habitat — Lowland to lower montane rain forest floor.

Vernacular name — Evarbei (New Ireland); Makatal*, Mumui* (Kuanua); Bagaga* (Pala); Remakatal* (Lamekot); Bono (Kwara'ae); Pin-nu (Bougainville) [* = from Peekel (1984)].

Notes — In New Ireland used for the treatment of malaria and headaches and worn as a perfume plant. In the Solomon Islands it is said to repel Taro Beetle.

Homalomena peekelii is very distinctive in the more or less triangular leaf with flush primary veins and conspicuous fine tertiary veins. Though the disjunct collection cited from Biak Island is sterile, it matches the Bismarck and Solomon Islands forms perfectly in leaf. Plants cultivated from Garasa frequently substitute incomplete pistils for one or more stamens in some of the male flowers.

The tissues are powerfully scented and variously described as smelling of pineapple, liquorice or anise.

Waterhouse 377B-B (K, L), collected on Bougainville, is a mixed collection with *H. melanesica* and *H. peekelii* on different sheets.

10. *Homalomena distans* Ridl.

Homalomena distans Ridl., Trans. Linn. Soc. II Bot. 9 (1916) 238. — Type: *Kloss s.n.* (holo BM; iso K), Irian Jaya (Dutch New Guinea), Mt Carstensz, Camp Via, 6 Jan. 1913.

Homalomena inaequalis Ridl., Trans. Linn. Soc. II Bot. 9 (1916) 238. — Lectotype (selected here): *Kloss s.n.* (BM; iso K, SING), Irian Jaya (Dutch New Guinea), Mt Carstensz, Camp VIIb, 25 Jan. 1913.

Homalomena aromatica auct. non (Roxb.) Schott: K. Krause & Alderw., Nova Guinea 14 (1924) 217, p.p. quoad specim. cit. *Pulle 1206*.

Small to moderately robust herb; stem to c. 1.8 cm diam. (dry), rather condensed, ?creeping, rooting to leaf bases. *Leaves* to 10 together; petiole c. 15–40 cm long, sheathing in the lower 1/4–2/5; blade (cordate-elliptic to) ovato-cordate, 15–19 cm long × (6–)9–13 cm wide; anterior lobe 12–18 cm long, the apex acute to acuminate for c. 2–3 cm; primary lateral veins c. 4 on each side of the midrib, diverging at an angle of c. (30–)45°, rather prominent abaxially, adaxially almost indistinguishable from the secondary venation; posterior lobes (1–)3–6 cm long, rounded to somewhat squared. *Inflorescences* c. 3–5(–11) together; peduncle slender, 6–10 cm long; spathe pale green to pale yellow or pinkish, 2–4 cm long, rather broad, c. 6 mm wide (rolled, dry), apiculate, somewhat deflected in the distal portion, but not reflexed; spadix about equalling the spathe at anthesis, very slightly exceeding it and usually laterally exerted from it in fruit; *female zone* about 1/4 the length of the spadix at anthesis, to half its length in fruit; *pistils* subglobose, c. 1 mm diam., stigma button-like; infra-pistillar staminodes present or absent; *male zone* cylindrical, tapering to a blunt point; *male flowers* 2–3-merous.

Distribution — Irian Jaya; one collection from Milne Bay Province, Papua New Guinea.

Habitat — In the mid-montane zone on mossy banks, wet places in forest and under overhanging rocks, 920–1600 m altitude. *Kairo 103* at 750 m altitude in *Vitex*- and *Intsia*-dominated forest.

Notes — Ridley distinguished *H. distans* from *H. inaequalis* principally on the basis of there being distinct primary and secondary veins in *H. distans*, while in *H. inaequalis* differentiation between vein orders was almost imperceptible. Having examined the types, I can only make this distinction between the appearance of the abaxial and adaxial leaf surfaces in either case, and conclude that these are identical. Other distinctions that Ridley made were relatively trivial ones concerning dimensions.

In the protologue of *H. inaequalis*, Ridley cited two Kloss specimens, the first from Canoe Camp at 150 ft altitude, which I have not been able to locate, the second the one selected as the lectotype. I suspect that Ridley's concept of *H. inaequalis* was heterogeneous, since there is a significant altitudinal gap between the localities of the two collections. The former specimen is more likely to have been *H. peekelii*, which *H. distans* does rather closely resemble, which occurs at lower altitude and does indeed have comparatively weakly differentiated primary and secondary veins in the leaf blade.

Circumscription of this species, incorporating the additional specimens cited below, must be regarded as provisional. There is very little material with well preserved flowering structure, and the concept here is based chiefly on features of leaf size, shape and venation characters. The wide range of spathe coloration noted on the specimens, together with the presence or absence of staminodes leads me to think that fieldwork may show that more than one taxon is included here, though I remain confident of the synonymy above.

11. Homalomena lauterbachii Engl. — Fig. 3

Homalomena lauterbachii Engl. in K. Schum. & Lauterb., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905) 61; Bot. Jahrb. Syst. 49 (1912) 97; in Engl., Pflanzenr. 55 (IV.23Da) (1912) 41, f. 22; Hay in Johns & Hay, Stud. Guide Monoc. Papua New Guinea 1 (1981) 60, f. 23; Aroids of Papua New Guinea (1990) 72, f. 28. — Type: *Schlechter 14364* (holo B), Papua New Guinea (German New Guinea), Torricelli Mts.

Homalomena versteegii Engl., Nova Guinea 8 (1910) 250; in Engl., Pflanzenr. 55 (IV.23Da) (1912) 52; K. Krause & Alderw., Nova Guinea 14 (1924) 217; Furtado, Gard. Bull. Straits Settlements 10 (1939) 220. — Type: *Versteeg 1422* (holo B; iso L), Irian Jaya (Dutch New Guinea), Noord River, 12 July 1907.

?*Homalomena versteegii* var. *divergens* Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 86. — Syntypes: *Ledermann 6632, 7782, 10449* (B, all presumed destroyed), Papua New Guinea (German New Guinea), Hauptlager Malu.

Homalomena lilacina Alderw., Bull. Jard. Bot. Buitenzorg III, 4 (1922) 333. — Type: *Lam 755* (holo BO, photo LAE; iso L), Irian Jaya (Dutch New Guinea), Pionierbivak, 31 July 1920.

Homalomena peekelii var. *mamberamica* K. Krause, Nova Guinea 14 (1927) 217. — Lectotype (selected here): *Lam 1223* (L; iso BO, photo LAE), Irian Jaya (Dutch New Guinea), Prauwenvivak.

Herb 20–40(–70) cm tall. *Leaves* usually rather numerous, to 15 together; petiole 10–26 cm long, dark green to dark reddish brown, sheathing in the lower 1/5–1/3; lamina sagittate to (usually) weakly hastate, 12–23 cm long; anterior lobe 9.5–18 cm long, triangular to faintly ovate, 3.5–14 cm wide at base, the tip acuminate for c. 2 cm; primary lateral veins 3–5 on each side of the midrib, diverging at c. 40–45°; posterior lobes 3–5(–8) cm long, somewhat rounded to narrow and blunt-tipped, usually faintly turned out. *Inflorescences* several together, clustered at the base of the crown; peduncles short, to c. 4(–8) cm long in the exposed part, much shorter than the petioles; spathe 2–4(–6) cm long, rather fat, with the apex obtuse and somewhat hood-forming, apiculate for c. 0.7–1.3 cm, distal spathe margins (but not the apex) briefly reflexed at anthesis, dark green to dark reddish brown; spadix sessile, not exceeding the spathe, but the male part exerted from it at anthesis; *female zone* c. 1/3 the length of the spadix; ovaries subglobose, c. 1 mm diam.; stigma large, almost as wide as the ovary, weakly 2–4-lobed; infrapistillar staminodes present, rather variable in size, white, about 1/2 to equalling the height of the ovary; *male zone* sub-cylindric, tapering to a blunt point; *male flowers* 2–3(–4)-merous.

Distribution — Northern and western New Guinea.

Habitat — In forest and occasionally in regrowth from the lowlands to c. 450 m alt.

Vernacular names — Wagen (Waskuk), Gadua (Wagu).

Notes — The larger dimensions in parentheses are from a few individuals (as large duplicates, not whole collections) which match *H. peekelii* var. *mamberamica*. *Homalomena peekelii* is very distinct and the syntypes of *H. peekelii* var. *mamberamica* have very little similarity with it, except in a tendency toward the leaf being cordate.

The interpretation of *H. versteegii* is somewhat problematic. It is described as having a peduncle c. 12 cm long, which is atypical for *H. lauterbachii*. The presumed holotype sheet at B is now reduced to two leaves between which an unidentified person has scribbled a pencil sketch of some leaf bases, roots and a single centrally placed inflorescence of approximately the dimensions given in the protologue. The isotype sheet at L has preserved the first, rather immature inflorescence of a synflorescence. Here the peduncle is very short, but it cannot be ascertained whether or not this is simply

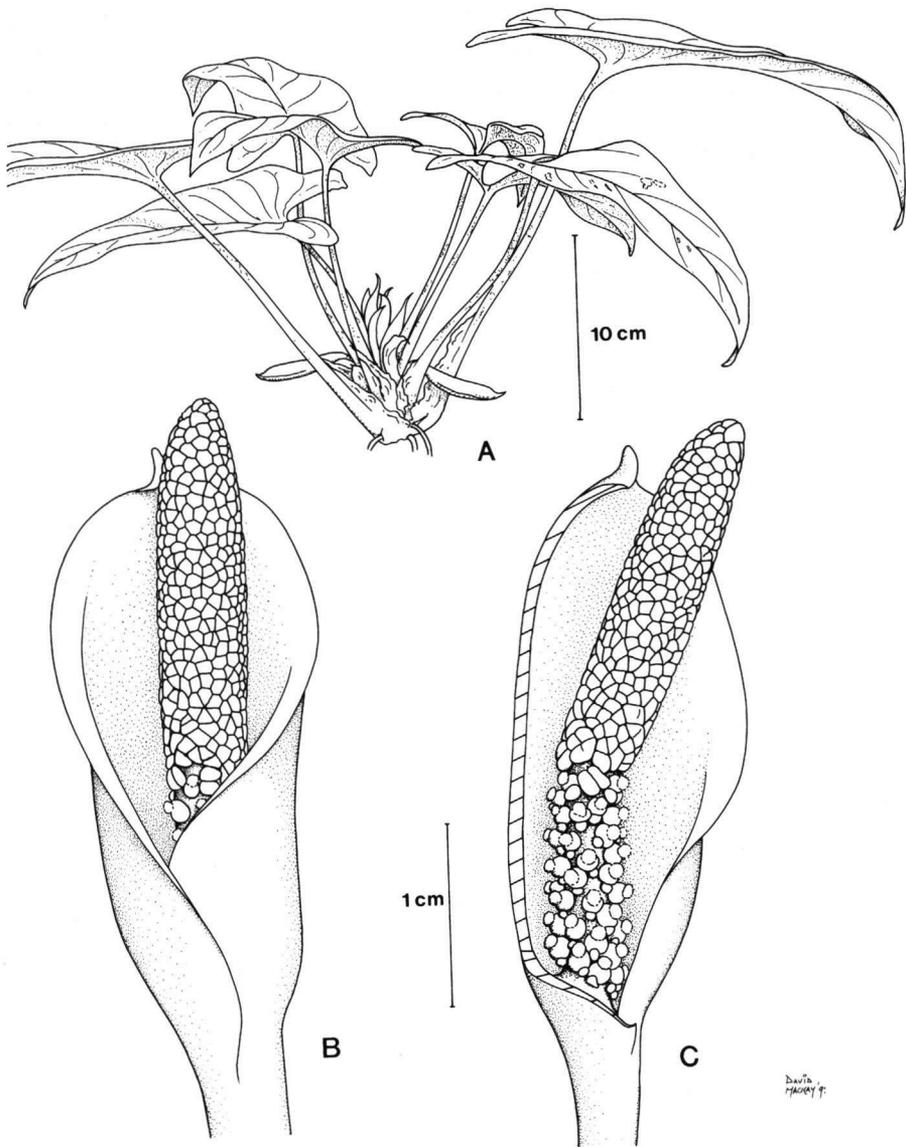


Fig. 3. *Homalomena lauterbachii* Engl. A. Habit; B. inflorescence; C. spadix (RBG Sydney Acc No. 902587).

because the inflorescence is immature. In his revision of the genus Engler (1912) placed *H. versteegii* in sect. *Homalomena* and *H. lauterbachii* in sect. *Chamaecladon*, the former characterised by staminodes equalling the pistil in height, the latter with shorter staminodes. The matter of the difference in height is really a matter of the length of the stalk (if any) of the staminode and the size of the head of the staminode. In *H. lauterbachii* the staminodes are sessile. In the type of *H. versteegii* the staminodes

are sessile but rather large, the inflorescence is immature, the spathe tightly closed and the ovaries somewhat squashed and shortened relative to the staminodes. Other than this, the described shape of the spathe in *H. versteegii* is typical for *H. lauterbachii*, the spadices are virtually identical as are leaf shape, dimensions and overall aspect of the plants. Several specimens cited here have the large staminodes of *H. versteegii* and the short peduncle described for *H. lauterbachii*. The type of *H. lilacina* is virtually identical with the type of *H. lauterbachii*, differing in slightly larger size and more developed posterior lobes of the leaf blade. The infrapistillar staminodes are small. Furtado (1939) did not deal with either of *H. lauterbachii* or *H. lilacina*, and so it apparently did not come to his attention that individuals of the same species would be allotted to different sections of the genus in his infrageneric scheme. *NGF 39239* (L), collected at Ossima, West Sepik Province, appears to fit here, but lacks infrapistillar staminodes altogether.

The tissues in *H. lauterbachii* are described as smelling of anise.

12. *Homalomena tenuispadix* Engl. — Fig. 4

Homalomena tenuispadix Engl. in Engl., Pflanzenr. 55 (IV.23Da) (1912) 51. — Type: *Schlechter 17671* (holo B; iso K, P), Papua New Guinea (German New Guinea), Kani Range, 7 May 1908.

Homalomena versteegii auct. non Engl.: K. Krause & Alderw., Nova Guinea 14 (1924) 217, p.p. quoad specim. cit. *Pulle 410*.

Homalomena pulleana auct. non Engl. & K. Krause: Furtado, Gard. Bull. Straits Settlement. 10 (1939) 212, p.p., quoad specim. cit. *Pulle 410*.

Herb to c. 50 cm tall; stem erect, to c. 2 cm diam. *Leaves* to c. 8 together; petiole (7-)20–49 cm long, sheathing in the lower 1/3; blade sagittate to somewhat hastate, (8-)17–25 cm long, dark green, often with the midrib and primary veins tinged dark red on the abaxial side; anterior lobe (6-)13–22 cm long, triangular to slightly ovate, (3-)6–12 cm wide at the base; primary lateral veins 4–5 on each side of the midrib, diverging at 30–45°, somewhat prominent abaxially, slightly impressed adaxially; posterior lobes (1-)4–10 cm long, diverging at an acute (blade sagittate) to obtuse (blade hastate) angle, rather narrowly rounded at the apex. *Inflorescences* to c. 9 together; peduncle (3-)9–13(–21) cm long; spathe pale green to dark reddish brown; narrowly cylindrical, (1-)5–7 cm long, c. (3-)7 mm wide (fresh; rolled), the tip mucronate with the mucro reflexed, the margins at anthesis spreading in the upper part, thence closing; spadix sessile, at anthesis about equalling the spathe, then extending with the tip remaining exerted from the spathe after it has closed, cylindrical, c. 5 cm long; *female zone* c. 2/5–1/2 the length of the spadix; *pistils* globose, c. 1 mm diam., usually somewhat distant, after anthesis spreading as spadix elongates; stigma button-like; infrapistillar staminodes usually present, sometimes absent altogether, sometimes absent from lowermost pistils only, whitish, shorter than ovary; *male zone* narrowly cylindrical, the tip rounded; *male flowers* 2–3(–4)-merous.

Distribution — New Guinea, known from a few widely scattered localities from western Irian Jaya to Morobe Province in Papua New Guinea.

Habitat — Lowland and lower montane forest floor in rather wet places, from 150–900 m altitude.

Notes — In the Garaina area the plant is used in sing-sing ceremonies. *Homalomena tenuispadix* is virtually indistinguishable in the vegetative state from *H. lauterbachii*.

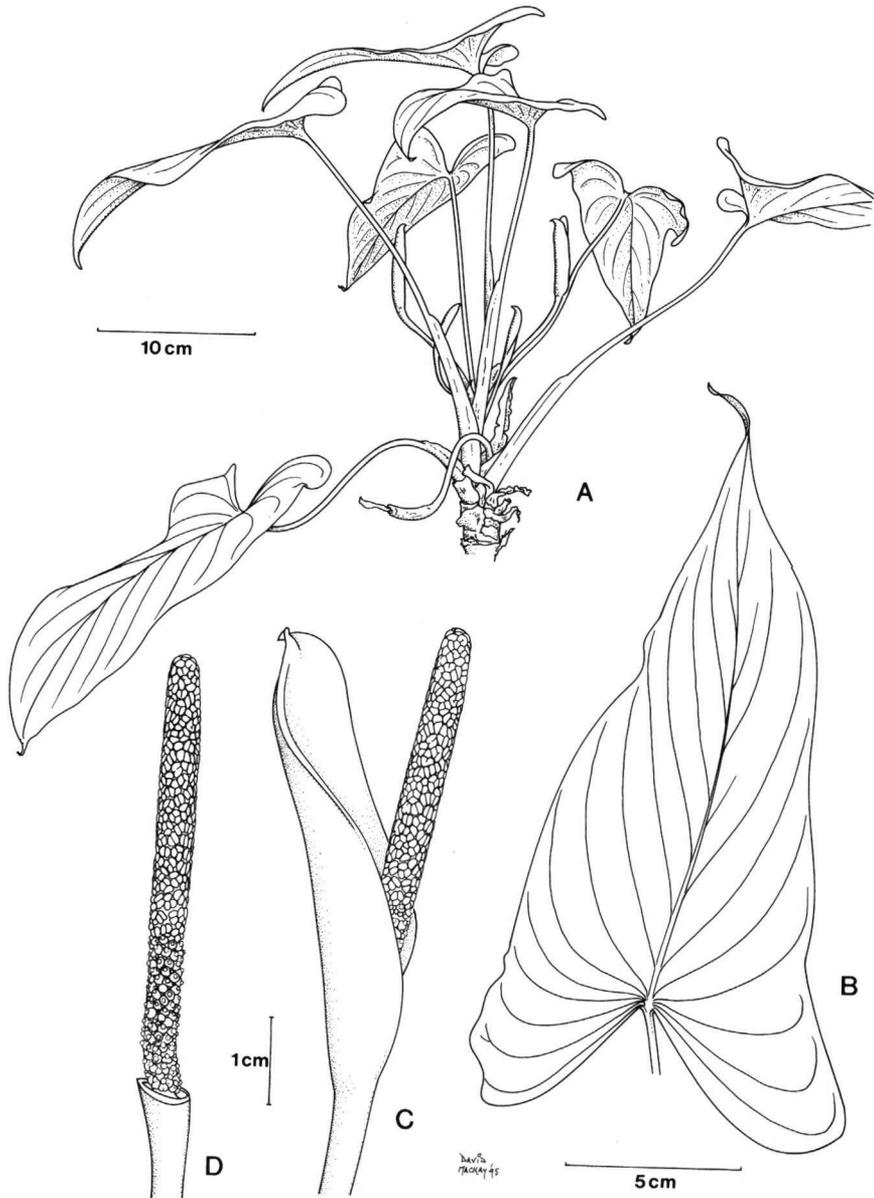


Fig. 4. *Homalomena tenuispadix* Engl. A. Habit; B. leaf blade; C. inflorescence; D. spadix (RBG Sydney Acc. No. 902612).

It differs in the longer, more delicate peduncle, the longer, narrower spathe with a reflexed mucronate tip and in the spadix exceeding the spathe after anthesis. The type specimen has the pistils much more widely separated than other specimens. Of the only collections from Irian Jaya, *BW 12153* has no infrapistillar staminodes but other-

wise matches other collections well, while *Pulle 410* is, in the duplicate at L, an extremely depauperate individual whose dimensions are inserted into the description above in parentheses; the duplicate at BO is somewhat more robust. This specimen matches *H. tenuispadix* in the sagittate leaves, infrapistillar staminodes and the apiculate, reflexed spathe tip.

The tissues are described as smelling of aniseed.

13. *Homalomena atroviridis* Engl. & K. Krause

Homalomena atroviridis Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 84. — Type: *Ledermann 9680* (holo B), Papua New Guinea (German New Guinea), April River, 14 Nov. 1912.

Herb to c. 45 cm tall; stem c. 1 cm diam. (dry), ?creeping (rooting to leaf bases). *Leaves* c. 9 together; petioles c. 26 cm long, sheathing in the lower c. 1/2; blades oblong-lanceolate, 23–28 cm long × 4–5.5 cm wide, the tip acuminate for c. 3 cm, the base obtuse to rounded and asymmetric; primary lateral veins about 4 on each side of the midrib, diverging at c. 30°. *Inflorescences* c. 4 together; peduncle c. 11 cm long (in early fruit); spathe 3–4 cm long, narrowly cylindrical, c. 4 mm wide (rolled, dry), the tip apiculate and reflexed; spadix sessile, narrowly cylindrical, slightly exceeding the spathe after anthesis; *female zone* 1/3–1/2 the length of the spadix; ovaries bluntly elliptic to globose, c. 1.2 mm diam.; infrapistillar staminodes shorter than the ovary, clavate; *male flowers* ?3-merous.

Distribution — New Guinea, known only from the type collection.

Habitat — In rain forest, 200–400 m altitude.

Note — The only remaining sheet is of a plant in early fruit and it is not possible to observe the male flowers properly. The cylindrical spathe reflexed at the very tip and slightly exceeded by the spadix after anthesis, together with the presence of infrapistillar staminodes, suggests that this species is allied to *H. davidiana*, *H. steenisiana* and *H. tenuispadix*. It most closely resembles *H. steenisiana* from which it differs in the significantly more robust dimensions, the rounded leaf base and in the forest (vs. rheophytic) habitat.

14. *Homalomena kalkmanii* A. Hay, *spec. nov.*

In folio et habitu *H. atroviridis* simulans, sed inflorescentia graciliore, spathae lamina valde aperta reflexa, spatha ad basin breviter decurrenti, staminodiis deficientibus differt.

— Typus: *Kalkman BW 6420* (holo L; iso BO, LAE), Southern Irian Jaya, Moejoe subdivision, Jibi, c. 5 km North from Ninati, 9 March 1959.

Herb c. 35–45 cm tall; stem c. 1 cm diam. (dry), ?creeping (rooting to leaf bases). *Leaves* 5–10 together; petiole 17–23 cm long, sheathing in lower 1/3–1/2; blades erect, rather broadly lanceolate to oblong-lanceolate, 20–30 cm long × 4.5–7 cm wide, the tip acuminate for c. 1.5–2 cm, the base (acute to) truncate to narrowly cordate; primary lateral veins 9–15 on either side of the midrib, diverging at c. 30–45°; posterior lobes, if developed, to 2 cm long. *Inflorescences* 5–8 together; peduncles much shorter than petioles, c. 6 cm long, slender; spathe green, c. 4 cm long, very slender in bud, at anthesis the distal 1/3–1/2 opening wide and reflexed, flag-like, the tip mucronate for 5 mm; spadix shorter than the spathe, 2.5–3.5 cm long, very narrowly cylindrical, stipitate for c. 2–3 mm with the lower part of the stipe adnate to the spathe; *female zone*

c. 7 mm long; *pistils* subglobose, c. 1 mm diam., with a discoid stigma; *male zone* 1.6–2.2 cm long, c. 1.5 mm diam. (dry); *male flowers* 2–3-merous.

Distribution — South New Guinea.

Habitat — Lowland forest on ridges and in secondary forest, to 100 m altitude.

Notes — This species is named for the collector of the type specimen, the late Prof. Dr. C. Kalkman, former Director of the Rijksherbarium.

The form of the spathe, basally decurrent on the stipe of the spadix and distally flag-like and reflexed, is highly distinctive in the genus as a whole.

15. *Homalomena pulleana* Engl. & K. Krause

Homalomena pulleana Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 84; Furtado, Gard. Bull. Straits Settlements. 10 (1939) 212; K. Krause & Alderw., Nova Guinea 14 (1924) 217. — Type: *Pulle* 398 (holo B; photo LAE, iso BO, L), Irian Jaya (Dutch New Guinea), Mt Perameles, 24 Nov. 1912.

Very diminutive herb to c. 11 cm tall; stem c. 4 mm diam., creeping. *Leaves* 4–11 together; petiole 4–7 cm long, sheathing in the lower 1/3–1/2; blade c. 5–7 cm long × 2–4 cm wide, elliptic to oblong elliptic, with the base obtuse to rounded to shallowly cordate, grey-green above, paler below, the tip acute to weakly and shortly acuminate; primary lateral veins 2–3 per side of midrib, diverging at c. 30–45°. *Inflorescences* to 3 together; peduncle c. 2 cm long, very slender; spathe 1 cm long, very narrowly cylindrical, becoming inflated in the lower part in fruit, the tip minutely apiculate, straight; spadix subequalling the spathe, not exceeding it after anthesis, sessile; *female zone* 1/3 the length of the spadix; *pistils* subglobose; stigmas button-like; infrapistillar staminodes absent; *male zone* cylindrical apically tapering to a blunt point; *male flowers* dimerous.

Distribution — Irian Jaya, known only from Mt Perameles, Mt Kusemun and in the Wissel Lakes region.

Habitat — In forest at 900–1100 m altitude.

16. *Homalomena steenisiana* A. Hay, *spec. nov.*

Ab aliis speciebus flumenicolis Papuasicis spatha ad apicem reflexa, folio paucinervi, floribus masculis (di-)trimeris, staminodiis infra pistilla differt. — Typus: *Kerenga & Lelan LAE 74206* (holo LAE; iso GH, K, L), Papua New Guinea, W Sepik Province, Telefomin Subdistrict, Mt Mauwe, nr Frieda River, 30 Apr. 1978.

Small rheophytic herb. *Leaves* c. 6–10 together, closely spaced; petiole c. 12–16 cm long, sheathing in the lower 1/4; blade dark green above, pale green below, narrowly lanceolate, 11–14 cm long × 1.5–1.8 cm wide, the tip attenuate, the base attenuate to acute; midrib faintly impressed adaxially (dry), prominent abaxially; primary lateral veins diverging at c. 20°, subopposite in 2–3 pairs. *Inflorescences* few to c. 16 together; peduncles slender, c. 1/2 the length of the petiole at anthesis, thence elongating slightly; spathe green, subcylindrical, c. 2 cm long × 4 mm wide (rolled, dry), the apex shortly mucronate and reflexed at and after anthesis; spadix c. 1.8–2.4 cm long, slender, at first subequalling the spathe, then somewhat extended (at male anthesis?) to protrude c. 2–3 mm beyond spathe tip; *female zone* about equalling the male, sessile to very briefly stipitate; *pistils* rather distant, globose with large flat button-like sessile stigmas,

each with a single infrapistillar staminode about 2/3 the height of the ovary; *male zone* white, subcylindric to faintly clavate, blunt-tipped; *male flowers* (2–)3-merous.

Distribution — Papua New Guinea, Telefomin area, near Frieda River.

Habitat — On rocks in stream beds at c. 400 m altitude. No data is given on whether this plant occurs in forested or open areas.

Notes — This species is named for the late Prof. Dr. C. G. G. J. van Steenis who was the authority on rheophytes, among other things, and who encouraged my interest in the botany of Malesian aroids.

Although vegetatively virtually indistinguishable from *H. stollei*, the inflorescence is reminiscent of *H. davidiana* to which it may be more closely related, sharing the reflexed mucronate spathe tip and the spadix extending at anthesis spreading the pistils.

17. *Homalomena schlechteri* Engl.

Homalomena schlechteri Engl., Pflanzenz. 55 (IV.23Da) (1912) 45, f. 24; Engl. & K. Krause, Bot. Jahrb. Syst. 49 (1912) 98, f. 2. — Type: *Schlechter 17203* (holo B), Papua New Guinea (German New Guinea), Alexishafen, 13 March 1909.

Homalomena novoguineensis Engl., Pflanzenz. 55 (IV.23Da) (1912) 47; Engl. & K. Krause, Nova Guinea 8 (1912) 806; Furtado, Gard. Bull. Straits Settlement. 10 (1939) 211. — Type: *Von Römer 451* (holo ?U, n.v.; BO - photo LAE, iso), Irian Jaya (Dutch New Guinea), Alkmaar, Oct. 1909.

?*Homalomena klossii* Ridl., Trans. Linn. Soc. Lond. 9 (1916) 238. — Type: *Kloss s.n.* (holo BM - photo US), Irian Jaya (Dutch New Guinea), Mt Carstensz, Canoe Camp, Jan. 1913.

Homalomena ledermannii Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 85. — Lectotype (selected here): *Ledermann 7891* (B, the only remaining syntype located), Papua New Guinea (German New Guinea), Sepik River, Malu, 13 July 1912.

Homalomena moskowskii Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 85. — Type: *Moskowski 385* (holo B), Papua New Guinea (German New Guinea), Naumoni Range, 10 Apr. 1911.

Homalomena stenophylla Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 86. — Lectotype (selected here): *Schlechter 14341* (B, the only remaining syntype located), Papua New Guinea (German New Guinea), Torricelli Mts, Apr. 1902.

Homalomena carrii Furtado, Gard. Bull. Straits Settlement. 10 (1939) 189. — Type: *Carr 12053* (holo SING; iso K, L), Papua New Guinea (Australian Territory of Papua), Koitaki, 26 Apr. 1935.

Homalomena pygmaea auct. non (Hassk.) Engl.: Alderw., Bull. Jard. Bot. Buitenzorg III, 4 (1922) 332; K. Krause & Alderw., Nova Guinea 14 (1924) 216.

Small, mostly solitary herb to c. 8–25 cm tall. *Leaves* several together; petiole mostly shorter than the blade, 4–32 cm long, sheathing in the lower 1/3–1/2; wings of sheath usually rather conspicuous, sometimes relatively very broad, cartilaginous, sometimes undulate, distally tapering to truncate and shortly ligulate; blade usually dull mid green above and somewhat paler below, occasionally variegated with thin grey streaks between the primary veins or with the midrib whitish yellow, oblanceolate to oblong to obovate (rarely elliptic to ovate, but then nearly always with some blades wider distal to the middle), 5 × 2 cm–10 × 2.5 cm–22 × 11 cm, the tip acute to shortly acuminate, the base rarely attenuate, usually obtuse to emarginate to shallowly and rather narrowly cordate and usually distinctly asymmetrical; primary lateral veins 6–8 per side of midrib, diverging at 30–60°, abaxially prominent. *Inflorescence* 2–many together; peduncles very short, hardly or only slightly exerted from the sheath of the subtending leaf or cataphyll; spathe c. 2–4 cm long, nearly always with a very conspicuous ± straight mucro to 9 mm long, longitudinally ribbed abaxially and with a

strong keel along the abaxial midline running into the mucro, green to whitish to red-tinged, at anthesis convolute in the lower quarter, the rest gaping and demarcated from the convolute portion by a faint constriction which becomes undetectable when the spathe closes after anthesis; spadix 1.6–2.7 cm long, c. 3 mm diam., at anthesis bent at the junction of male and female zones so the male portion is exerted from the mouth of the spathe limb, very shortly stipitate; *female zone* about half the length of and contiguous with the male zone; infrapistillar staminodes absent; stigma button-like, papillate, sessile; *male zone* more or less spindle-shaped, ivory; *male flowers* 2–3-staminate.

Distribution — Endemic to New Guinea.

Habitat — On the floor of lowland to lower montane rain forests, mainly on slopes; occasionally on stream sides and there somewhat stenophyllous, though this species is not rheophytic.

Notes — Infrapistillar staminodes are absent in this species. They were, however, recorded explicitly or implicitly in the protologues of three of the synonyms viz. *H. ledermannii*, *H. moskowskii* and *H. carrii*. In the first two they are explicitly described, in the last case the species was placed in sect. *Chamaecladon* which Furtado (loc. cit.) defined as having staminodes half the height of the pistils. I have carefully examined the types of each of these and in all three cases infrapistillar staminodes are absent.

This variable species is easy to recognise by its leaf blades which are rough beneath due to the prominent venation, usually longer than the petioles and usually widest distal to the midpoint along the midrib, and by the ribbed mucronate spathe. There is a fairly well-defined cline of increasing robustness from northwest to southeast New Guinea, though *BW 12174* (Fakfak) is incongruously large.

I have only seen a photograph of the type of *H. klossii* Ridl., *Ledermann 7891* (B lecto, selected here – the only remaining syntype located) and it is provisionally placed here in the synonymy of *H. schlechteri* on the basis of this and the description, the key features being the small size overall, the petiole shorter than the leaf blades (notwithstanding the petiole length being given in millimetres in error), the cuspidate spathe, the shortly stipitate 1 cm long spadix and the absence of staminodes.

18. *Homalomena stollei* Engl. & K. Krause

Homalomena stollei Engl. & K. Krause, Bot. Jahrb. Syst. 54 (Apr. 1916) 83. — Lectotype: *Ledermann 8205* (B), Papua New Guinea (German New Guinea), Sepik, Hunsteinspitze, 10 Aug. 1912.

Diandriella novoguineensis Engl., Nova Guinea 8 (1911) 251; in Engl., Pflanzenr. 55 (IV.23Da) (1912) 82, f. 54; K. Krause & Alderw., Nova Guinea 14 (1924) 218; Steen., Rheoph. (1981) 191; Hay in Johns & Hay, Stud. Guide Monoc. Papua New Guinea 1 (1981) 55, f. 21. — *Homalomena engleri* Bogner, Aroideana 8 (1985) 75; Steen., Allertonia 4 (1987) 292 [non *H. novoguineensis* Engl. (1911)]. — Type: *Versteeg 1682* (holo B; iso BO - photo LAE, L, U), Irian Jaya (Dutch New Guinea), Resi Mts, 30 Aug. 1907.

Homalomena apiculata Ridl. ('*apiculatum*'), Trans. Linn. Soc. Lond. 9 (Aug. 1916) 237. — Type: *Kloss s.n.* (holo BM), Dutch New Guinea, Mt Carstensz, Camp I, 4 Dec. 1912.

Minute to small (facultatively) rheophytic herb, solitary to mat-forming; stem creeping, to c. 6(–9) mm diam. *Leaves* to c. 8 together on a crown; petiole (2–)4–20 cm long, sheathing in the lower c. 1/4–1/2(–3/4), if short the sheath distally rather truncate,

otherwise tapering; blade narrowly lanceolate to subrhomboid-elliptic to oblanceolate, with the base attenuate, the apex attenuate to somewhat obtuse and then apiculate, (1.3–)4–17(–24) cm long, (0.5–)1.6–2.4 cm wide, olive to dark green above, paler below; primary lateral veins subopposite in 2(–3) pairs (one \pm basal, the second $1/3$ – $1/2$ of the length along the midrib), diverging at c. 30° . *Inflorescence* often solitary, occasionally up to 5 in series; peduncle slender, erect, (1–)3–7 cm long; spathe c. 1–2 cm long at anthesis, green to orange, mucronate for 3–4 mm, uncontracted; spadix subequalling the spathe, minutely stipitate; the *female zone* $1/4$ – $1/3$ the length of the spadix, subcylindric, c. 1.5 mm diam.; infrapistillar staminodes nearly always absent; ovaries (sub)globose, c. 0.6 mm diam.; stigma button-like, sessile; *male zone* white, subcylindric, distally tapering to a point; *male flowers* dimerous, rhomboid.

Distribution — West New Guinea, extending into the Sepik Provinces of Papua New Guinea.

Habitat — Mostly on stream banks and on rocks in streams, but sometimes also on ridges in forest from sea level to c. 550 m altitude; sometimes on limestone.

Notes — Two collections (*Darbyshire & Hoogland 8165* and *NGF 39341*), ascribed here to this species, have infrapistillar staminodes which are otherwise absent. The first was collected growing on rocks in a stream and has unusually short petioles for this species; the second is from a ridge in limestone and falls well within the morphological range of *H. stollei*. Except in the staminodes, these specimens do not bear any greater resemblance to each other than they do to the rest of *H. stollei* and it does not seem useful to segregate them on the basis of a single feature.

Although this species has mostly been collected in or near streams and is very stenophyllous, it is not an obligate rheophyte. For example, the type of *H. engleri* was collected in forest on a ridge, while morphologically identical individuals have been collected in streams.

The paired and few primary veins are a distinctive feature shared only with the vegetatively extremely similar *H. steenisiana* (q.v.) which differs in the presence of staminodes, the trimerous male flowers and the more numerous inflorescences with the spathe tip recurved.

The type of *H. apiculata* does not have an inflorescence young enough to make observation of the flowering structures of the spadix possible, but it agrees so well in aspect with the types of both *H. stollei* and *H. engleri* that I have no hesitation in including it here as a synonym.

19. *Homalomena adiensis* A. Hay, *spec. nov.*

A. H. stollei inflorescentia relative pusilliore, laminae nervis primariis pluribus differt.

— Type: *Versteegh BW 7578* (holo K; iso L, LAE), Irian Jaya, Fak-Fak Division, Adi Island, 16 Aug. 1960.

Small rheophytic herb; stem creeping, c. 1 cm diam. *Leaves* 4–6 together; petiole 15–24 cm long, sheathing in the lower $1/3$ – $1/2$; blade oblanceolate, 19–28 cm long, 3–5 cm wide at widest point, the base attenuate, the tip acuminate for c. 2–2.5 cm; primary lateral veins prominent abaxially, sub-opposite in c. 7 pairs, diverging from the midrib at c. 30° . *Inflorescences* to c. 5 together; peduncles very short and slender, to c. 2 cm long (exposed part only); spathe 1.1–1.5 cm long (dry), c. 2 mm diam.

(rolled) at anthesis, later c. 4 mm diam., finely mucronate for 1–2 mm; spadix very shortly stipitate, c. 1.1 cm long × 1 mm wide (dry) at anthesis; *female zone* 4 mm long; ovaries globose, distant, c. 0.5 mm diam., stigmas sessile, small, button-like; *male zone* c. 6 mm long, tapering to a point; *male flowers* 2–3-merous.

Distribution — Irian Jaya; known only from the type collection.

Habitat — The collector's notes read "in primary forest along brooklet on temporarily inundated stony soil; alt. ± 50 m."

Vernacular name — Webboe (Argoeni).

Note — This species is clearly close to *H. stollei*, differing in the relatively much smaller inflorescence which is about half the size of that in those specimens of *H. stollei* that are vegetatively as robust as this plant, and the significantly more numerous primary lateral veins in the leaf (two, rarely three, pairs in *H. stollei*, against about seven pairs in this species).

SPECIES DUBIA

20. *Homalomena lindenii* (Rodigas) Ridl.

Homalomena lindenii (Rodigas) Ridl., J. Straits Branch Roy. Asiat. Soc. 49 (1908) 49; Furtado, Gard. Bull. Straits Settle. 10 (1939) 216; Bogner, Baileya 20 (1976) 7, f. 1, 2. — ?*Alocasia lindenii* Rodigas, Ill. Hort. 33 (1886) 111, Pl. 603; Engl. & K. Krause, Pflanzenr. 71 (IV.23E) (1920) 109. — Type: Rodigas, Ill. Hort. 33 (1886) Pl. 603. — Epitype (designated here): *N. E. Brown s.n.* (K), Cult. Hort. Reg. Bot. Kew, 6 Sept. 1886.

Homalomena singaporensis auct. non Regel: Engl. & K. Krause, in Engl., Pflanzenr. 55 (IV.23Da) (1912) 52, p.p., quoad *Alocasia* ? *lindenii* Rodigas in synon.

A full description was provided by Bogner (1976).

In Hay et al. (1995: 80) I confused two issues around the typification of this name: one being that there is a specimen at Kew cited by Bogner (1976) as the holotype, the other being that this species was described by Rodigas from sterile material. From the former, I cited a Linden specimen at Kew as the type; from the latter, I inferred (loc. cit.) that the type was sterile.

In fact, the specimen cited as the holotype by Bogner (loc. cit.) is fertile, but it is not the holotype. The species was described by Rodigas from a sterile plant, an illustration of which accompanied the description (loc. cit.). The specimen cited by Bogner is not annotated by Rodigas. The only annotations on the specimen are in N. E. Brown's hand saying "*Homalomena* ... '*Alocasia lindenii* Rodigas!' ... , from Mr. Linden, Sept. 6. 1886" with brief descriptive notes in English and the provenance 'New Guinea' [Rodigas said 'Papouasie', which includes New Guinea and the Moluccas where Linden also collected]. No other date appears.

Since there is no annotation by Rodigas, the only date associated with the specimen is later than the month of publication of the species (July), and it is fertile while the species was described from a sterile plant, I conclude that there is not a direct link between it and the publication of *Alocasia lindenii* Rodigas. Furthermore, since there is no label from Linden, I infer that the specimen is taken from a plant received by Brown at Kew rather than that the specimen itself was received from Linden, and that it should be cited as an N.E. Brown specimen. However, since the specimen is evidently from a plant of Linden's and was made in the year of publication of the species, it

seems reasonable to conclude that it is of the same taxon, and quite probably of the same clone, as the sterile plant which Rodrigues described. It therefore seems appropriate, since it is fertile, to designate it the Epitype (Art. 9.7, Tokyo Code – Greuter & McNeill, 1994) of *Alocasia lindenii*.

Although *H. lindenii* is said to have come from New Guinea, there is no material collected from the wild which can be deemed conspecific with it, the nearest being *H. melanesica* which differs in the much shorter female zone and the somewhat constricted spathe. It is certainly a different species from almost identically variegated individuals of *H. davidiana* and *H. robusta* (q.v.), and would therefore seem to represent an equivalent mutation in an otherwise as yet unidentified species. It is of course possible that it was never collected from the wild in New Guinea, and must await comparison with species elsewhere in the range of the genus as its revision proceeds.

PRESUMED MISAPPLIED NAMES

The following names have been applied in published articles to specimens originating within Papuasia but which are presumed to have been destroyed at Berlin during World War II. The taxa concerned are not found in the Papuan region.

Homalomena aromatica auct. non (Roxb.) Schott: Engl., Pflanzenz. 55 (IV.23Da) (1912) 61, quoad specim. cit. Sattelberg, *Lauterbach 608 & Warburg 20981*.

These specimens were probably of *H. robusta* or *H. davidiana*.

Homalomena cordata auct. non Schott: Engl., Bot. Jahrb. Syst. 25 (1898) 17; Engl. in Engl., Pflanzenz. 55 (IV.23Da) (1912) 57, quoad specim. cit. New Ireland, Ralum, *Dahl s.n.*

This specimen was probably of *H. melanesica*.

Homalomena rubescens auct. non Kunth: Engl., Bot. Jahrb. Syst. 25 (1898) 18, p.p quoad specim. cit. Sattelberg, *Lauterbach 608*.

NOMEN DUBIUM

Homalomena cordata var. *minor* Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1916) 86. — Type: *Ledermann 7071* (B; presumed destroyed), German New Guinea, Sugarloaf camp, Apr. 1912

Based on a sterile plant, the description is inadequate to interpret this name with confidence. However, no material has been collected near the type locality of *H. cordata* var. *minor* which might logically be used as a neotype. Selection of a neotype merely to dispose of the name would be almost entirely arbitrary.

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REFERENCES

- Backer, C. A. & R. C. Bakhuizen van den Brink. 1968. *Flora of Java*. Vol. III. Wolters-Noordhoff NV, Groningen.
- Bogner, J. 1976. *Homalomena lindenii* (Araceae). *Baileya* 20: 7–10.
- Bogner, J. & D. H. Nicolson. 1991. A revised classification of the Araceae with dichotomous keys. *Willdenowia* 21: 35–50.
- Engler, A. 1879. Araceae. In: A. & C. de Candolle (eds.), *Monographiae Phanerogamarum*. Vol. 2: 1–681. Masson, Paris.
- Engler, A. 1912. Homalomeninae und Schismatoglottidinae. In: A. Engler (ed.), *Pflanzenreich* 55 (IV.23Da): 1–134. Engelmann, Leipzig.
- French, J. C. 1987. Systematic survey of resin canals in the roots of Araceae. *Bot. Gaz.* 148: 360–371.
- Furtado, C. X. 1939. Araceae Malesicae II. Notes on some Indo-Malesian *Homalomena* species. *Gard. Bull. Straits Settlements*. 10: 183–238.
- Grayum, M. H. 1990. Evolution and phylogeny of the Araceae. *Ann. Missouri Bot. Gard.* 77: 628–697.
- Grayum, M. H. 1992. Comparative external pollen ultrastructure of the Araceae and some putatively related taxa. *Monogr. Syst. Bot. Missouri Bot. Gard.* 43: 1–167.
- Greuter, W. & J. McNeill (eds.). 1994. *International Code of Botanical Nomenclature (Tokyo Code)*. Koeltz, Königstein.
- Hay, A. 1981. Araceae. In: R. J. Johns & A. Hay (eds.), *A Students' Guide to the Monocotyledons of Papua New Guinea*. Part 1: 31–83. Office of Forests, Port Moresby.
- Hay, A. 1990. *Aroids of Papua New Guinea*. Christensen Research Institute, Madang.
- Hay, A. 1996. The genus *Schismatoglottis* Zoll. & Moritz (Araceae: Schismatoglottidiaceae) in Peninsular Malaysia and Singapore. *Sandakania* 7: 1–30.
- Hay, A., P. C. Boyce, W. L. A. Hettterscheid, N. Jacobsen, J. Murata & J. Bogner. 1995. Checklist of the Araceae of Malesia, Australia and the tropical western Pacific region. *Blumea Suppl.* 8: 1–161.
- Hay, A. & D. J. Mabberley. 1991. 'Transference of Function' and the origin of aroids: their significance in early angiosperm evolution. *Bot. Jahrb. Syst.* 113: 339–428.
- Hotta, M. 1982. On the differentiation of subtribes Homalomeninae and Schismatoglottidinae (Araceae) in Malesia. *Acta Phytotax. Geobot.* 33: 127–139 [in Japanese].
- Hotta, M. 1986. Species list and cited specimens of the genus *Homalomena* (Araceae) in Malesia. In: M. Hotta (ed.), *Diversity and Dynamics of Plant Life in Sumatra*. Part 2: 73–120. Appendix 8. *Sumatra Nature Study (Botany)*, Kyoto University.
- Houttuyn, M. 1779. *Natuurlijke Historie*. Part 2, Fascicle 11. Amsterdam.
- Mayo, S. J., J. Bogner & P. C. Boyce. 1997. *The Genera of Araceae*. Kew.
- Miquel, F. A. W. 1856a. *Aroideae novae javanicae*. *Berl. Bot. Zeit.* 14: 561–565.
- Miquel, F. A. W. 1856b. *Flora van Nederlandsch Indië*. Vol. 3. Van der Post, Amsterdam.
- Moffler, M. 1983. A commentary on the anatomy of a neotropical species of *Homalomena*. *Aroideana* 6: 19–23.
- Nicolson, D. H. 1967. Selection of lectotype species for genera of the family Araceae. *Taxon* 16: 514–519.
- Peekel, P. G. 1984. *Flora of the Bismarck Archipelago for Naturalists*. Translated by E. E. Henty. Office of Forests, Lae.
- Petersen, G. 1989. Cytology and systematics of the Araceae. *Nordic J. Bot.* 9: 119–166.
- Ray, T. S. 1987. Diversity of shoot organisation in the Araceae. *Amer. J. Bot.* 74: 1373–1387.
- Ray, T. S. 1988. Survey of shoot organisation in the Araceae. *Amer. J. Bot.* 75: 56–84.

Schott, H.W. 1832. Aroidearum synopsis. In: H.W. Schott & S.L. Endlicher, Meletemata Botanica: 15–22. Gerold, Vienna.

Schott, H.W. 1860. Prodrromus Systematis Aroidearum. Mechitarists' Press, Vienna.

Seubert, E. 1993. Die Samen der Araceen. Koeltz, Königstein.

IDENTIFICATION LIST

<i>Homalomena</i>	10 <i>distans</i>
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2 <i> davidiana</i>	12 <i>tenuispadix</i>
3 <i>melanesica</i>	13 <i>atroviridis</i>
4 <i>magna</i>	14 <i>kalkmanii</i>
5 <i>hooglandii</i>	15 <i>pulleana</i>
6 <i>soniae</i>	16 <i>steenisiana</i>
7 <i>producta</i>	17 <i>schlechteri</i>
8 <i>jacobsiana</i>	18 <i>stollei</i>
9 <i>peekelii</i>	19 <i>adiensis</i>

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