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A revision of *Leucomphalos*  
including *Baphiastrum* and *Bowringia*  
(Leguminosae - Papilionoideae)

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# Contents

Summary	1
Introduction	2
Generic delimitation in the <i>Baphia</i> group	3
Relation of <i>Leucomphalos</i> with other genera of the <i>Baphia</i> group	6
Geography of the <i>Baphia</i> group	7
Cytology	10
Description of the genus <i>Leucomphalos</i>	10
Key to the species	11
Alphabetical treatment of the species	13
Excluded species	35
Note concerning Fig. 1-3	35
Literature cited	38
Index to scientific names	40

## Summary

The related genera *Baphiastrum*, *Bowringia* and *Leucomphalos* are taxonomically revised. They share a singular seed character and mainly on that account they are united under the name *Leucomphalos*. Six species are recognized of which one is new from Liberia. They are described and mostly amply illustrated. A key to the species is provided and their distribution is mapped. Five species occur in Africa, mainly in Central Africa, one in East Asia. The distribution of the genus is compared with the distribution of the other genera of the *Baphia* group of the *Sophoreae*.

## Introduction

The present revision is the result of an investigation that started quite some time ago, in fact as far back as the early sixties when I was collecting specimens in Cameroun. The first observations concerned *Baphiastrum brachycarpum* and *Bowringia mildbraedii*, both well represented in the eastern part of that country. The seeds of these two species are rather peculiar but so much alike that one wonders why they belong to two different genera, while judged from outside they could have easily originated from a single specimen! The problem was laid aside till the late sixties when a student named J.W. Meijeraan did some additional research. He studied the genus *Bowringia* from Africa and Asia, and found that the *Bowringia* material from Liberia represented a new species. More than two decades have past since then before the original question was taken up again.

In the meantime much more material became available and the position of the genera in the *Sophoreae* was studied and became more clear (Polhill, 1981). A new genus related to *Baphiastrum* was created by Brummitt (1968): *Airyantha*, and Soladoye (1985) revised the large genus *Baphia*.

This revision answers the question put forward in the early sixties, and gives some comment on the classification of the remaining genera that were considered to be closely related.

## Generic delimitation in the *Baphia* group

The genera *Baphiastrum*, *Bowringia*, and *Leucomphalos* together with *Airyantha*, *Baphia* and *Dalhousiea* constitute the *Baphia* group in Polhill's (1981) treatment of the *Sophoreae*. In Yakovlev's (1991) classification the first 3 genera form group B, the other 3 group A, and both groups together his tribe *Baphieae*.

The genus *Leucomphalos* was published by Planchon in 1848 and so far remained monotypic. *Bowringia* was based by Bentham (1852) on a species from Hong Kong. Later on 3 African species were added, one from West Africa, one from Central Africa and one from Madagascar. Harms (1913) described *Baphiastrum* and based it on material of a single species from Cameroun. Several species were added, some of them being transferred to it from *Baphia*. The boundaries between the latter genus and *Baphiastrum* were elucidated by Brummitt (1968) when he created the genus *Airyantha*. *Baphiastrum* in fact appeared to be monotypic again.

Polhill's *Baphia* group is mainly characterized by unifoliolate leaves, free stamens with basifixed anthers and dehiscent fruits. As regards the calyx the group is rather variable: cupular with short lobes in *Bowringia* and *Dalhousiea*, or invaginate with small apical lobes or not (*Leucomphalos*). When lobed the lobes may be more or less imbricate (*Airyantha*) or valvate (*Baphia*, *Baphiastrum*). The corolla also shows a wide variation. In *Leucomphalos* s.s. the petals are only slightly unequal and have no claw (fig. 10.4) and the flowers are  $\pm$  regular as in the *Cadia* group of the same tribe, while in the other genera of the *Baphia* group the corollas are distinctly papilionoid. The greatest variation within this group, however, is found in the characters of the pod and seed. This can be classified in 3 distinct subgroups. The first comprises the genera *Baphia* and *Dalhousiea* with an elongate flat pod with discoidal unicoloured brown or blackish seeds. The second subgroup with elongate spiral pods which are constricted between the  $\pm$  lenticular, red seeds is represented by *Airyantha*. The third subgroup has short, few-seeded pods and comprises the genera *Baphiastrum*, *Bowringia* and *Leucomphalos*. The seeds of this subgroup show a character that is unique in the *Papilionoideae*, viz. the short thick cotyledons with their opposing flat faces perpendicular to the pod axis, and provided with a distinct cupular strophiole or aril (small and  $\pm$  flattish in *Bowringia discolor*). Polhill (l.c.) does not mention this orientation of the cotyledons explicitly and the unique character is not dealt with in the classification of these 3 genera. But Yakovlev (l.c.) does mention it and groups the genera accordingly. It is doubtful if this type of seeds may be classified as overgrown (Polhill, l.c.).

The question has now to be raised whether the genera of the third subgroup showing this unique character, are to be united or to be kept separate, and where they have to be placed: in a separate group or tribe of their own, or are they to remain in the *Baphia* group.

Table 1. Survey of the evolutionary characters in species of *Leucomphalos* s.l. The arrangement is from primitive (bottom) to advanced (top) (—— indicates the former generic boundary between *Leucomphalos* s.s. and *Baphiastrum*, and - - - - - the boundary between the latter genus and *Bowringia*).

species	calyx-coro- la ratio	calyx at anthesis	differentiation of corolla and/or flower	number of stamens	length of anthers, apiculate or not	number of ovules	number of seeds	geography
<i>L. callicarpus</i>	1 — 3-4	shortly lobed, rucked at anthesis	papilionoid; completely white; distinct pocket in keel petals & wings; claw distinct, slender; flower fragrant	10	1-1.5 mm, apiculate or not	3-5	1(-3)	E Asia
<i>L. mildbraedii</i>	1 — 3	shortly lobed, rucked at anthesis	papilionoid; completely white; distinct pocket in keel petals & wings; claw distinct, slender	10	1-1.5 mm, usually not apiculate	4-8	1-2(-3?)	Central Africa + Madagascar
<i>L. discolor</i>	1 — 2.5-3	shortly lobed, usually split one side and rucked at anthesis	papilionoid; white with yellow blotch on standard; pocket in keel petals; claw ± distinct, broad	10	1.5-2 mm, apiculate or not	5-6	1-2(-3?)	Ivory Coast, Ghana
<i>L. libericus</i>	1 — 2	shortly lobed, usually split one side and rucked at anthesis	papilionoid; white with yellow blotch on standard; pocket in keel petals; claw ± distinct, broad	10	2-2.5 mm, apiculate	2-4	?	Liberia
<i>L. brachycarpus</i>	1 — 1.2-1.5	2-5-lobed or not, opening by 2 slits, partly rucked at anthesis	papilionoid; white with yellow blotch on standard and wings; pocket in keel petals present or not; claw present or not, mostly short	(10)11(-12) once 14	2.5-3 mm, apiculate or not	5-10	1	Central Africa
<i>L. cappariideus</i>	1 — 1.1(-1.3)	2 valved, not lobed	adaxial petal slightly larger; all petals white; claw absent; anthers dark yellow to orange	11(-12)	4-6 mm, distinctly apiculate	8-13	1(-4)	narrow distribution in Western C Africa

In a note on a Zenker specimen of *Leucomphalos capparideus* in the Paris Herbarium, Pellegrin made the following observation: 'Pour moi ce genre me semble très très près de *Bowringia*. Voir si ce n'est pas le même genre. Mêmes fruits, mais calice et étamines différent'. Brummitt (1968) when comparing his new genus *Airyantha* with related genera mentioned the close resemblance of the pods and seeds of *Baphiastrum*, *Bowringia* and *Leucomphalos*. However, Soladoye (1985: 306) found that *Baphiastrum* had seeds like *Airyantha*. The 3 genera with similar pods and seeds are not placed together in his scheme (p. 305) showing the phenetic relationships within *Baphia* proper and with related genera.

The species of the 3 genera forming subgroup 3 have been analysed to see whether they belong to one genus or not. In table 1 the main evolutionary characters are shown. The differences in the calyx (calyx-corolla ratio, and opening at anthesis), used for a long time to separate *Bowringia* from the other two genera are rather gradually evolving from perfectly 2-valved without lobes in *Leucomphalos* s.s. to the short cupular one in *L. callicarpus*, the type species of *Bowringia*. As regards the corolla all species, except *L. capparideus*, are quite papilionoid, but this character has never been employed in generic delimitation. The same holds for the number of stamens which is always 10 in the former *Bowringia* species, but never so in *Leucomphalos* s.s. and rarely so in the former *Baphiastrum*. The length of the anthers has been used to separate *Leucomphalos* s.s. from *Baphiastrum*, but the table shows that this character, although useful for specific distinction, is not of generic importance. The number of ovules per ovary is gradually reducing from 8–13 in the most primitive member to 3–5 in the most advanced. In the primitive species *L. capparideus* the ovary is well filled by a complete double row of ovules (see fig. 10.6) a feature not observed before. In this well filled ovary the ovules remain more or less in a transverse position and this is responsible for the orientation of the cotyledons in the pod. The other species of this subgroup have a normal ovule arrangement (rows with gaps, but see note with *L. brachycarpus*) with sufficient space for a different ovule orientation, but apparently they do not use it, with transverse cotyledon orientation as result.

In conclusion it may be observed that within this subgroup the genera *Leucomphalos*, *Bowringia* and *Baphiastrum* have a strong unique character uniting them, viz. the orientation of the cotyledons, but characters to separate them are lacking, at least between *Bowringia* and *Baphiastrum*. The differences between these two genera on the one hand and *Leucomphalos* s.s. on the other hand are more pronounced e.g. calyx perfectly 2-valved not lobed, corolla almost actinomorphic, which could be used to keep this most primitive member apart. However, in this revision it is preferred to treat the former 3 genera as one genus based on the unique seed character. The unification of these genera is not contradicted, neither by Soladoye's leaf anatomical investigations (1982) nor by Den Outer & Van Veenendaal's work on the wood anatomy (1992).



## Relation with the other genera of the *Baphia* group

The question remains whether the new amalgamation of the 3 genera *Leucomphalos*, *Bowringia* and *Baphiastrum* should be kept as a member of the *Baphia* group or be placed in a group or tribe of its own.

In the subgroup formed by *Baphia* and *Dalhousiea* the variation in the calyx is almost identical to that in *Leucomphalos* s.l.: spathaceous in *Baphia*, cupular in *Dalhousiea*. In this case the small cupular calyx of the latter is accompanied by another distinctive character, viz. the large bracteoles, so unification of these genera is not called for.

The second subgroup with the only genus *Airyantha* should be removed from the *Baphia* group and be placed in the *Ormosia* group close to *Ormosia* s.l., a genus which is, surprisingly, absent from the African continent. Pod and seed characters of *Airyantha* belong there, despite its somewhat aberrant calyx with subimbricate lobes. It remains to be seen if the presence of stipellae is a good character for this genus. A specimen from Angola, *B. Machado 160* (LISC), with the same type of pod and seeds as *Airyantha*, has no stipels on its unifoliolate leaves.

'The *Sophoreae* is a tribe of convenience between the *Caesalpinioideae* and the bulk of the *Papilionoideae*, sharply defined from neither' (Polhill, 1981: 213). This statement is still largely valid. Much more profound studies have to be made before the different genera are well understood and can be classified more definitively. Under these circumstances it is preferred to keep *Leucomphalos* with its new circumscription where it is now: in the *Baphia* group.

## Geography of the *Baphia* group

The *Baphia* group only contains old world genera. All of them, except *Baphia*, have a disjunct Afro-Asian distribution (Fig. 1). *Baphia*, the largest genus, is restricted to Africa with 46 species on the mainland (Soladoye, 1985; Breteler, 1994) and 2 on Madagascar (Soladoye, 1985; Stirton & Dupuy, 1992), with one species in common.

*Dalhousiea* (see note p. 36), the genus most closely related to *Baphia*, is represented in Africa by one species (Fig. 2) and by 1-2 species in East India and Bangladesh (Fig. 3).

The two species of *Airyantha* 'are very closely allied to one another and are distinguished only by the darker brown indumentum and larger bracts and bracteoles in the African plants' (Brummitt, 1968: 376). In this respect the *Airyantha* species resemble two closely related species of *Leucomphalos*: *L. callicarpus* in East Asia, and *L. mildbraedii* in Africa. The distribution of *Leucomphalos* as a whole is more or less a combination of the distributions of *Baphia* and *Airyantha*.

Most species of *Leucomphalos* and the most primitive of it (see table 1) are African, the most advanced species occurs in Asia. This points to an African origin of the genus. This is certainly true for *Baphia* and may also be the case for *Airyantha* and *Dalhousiea*.

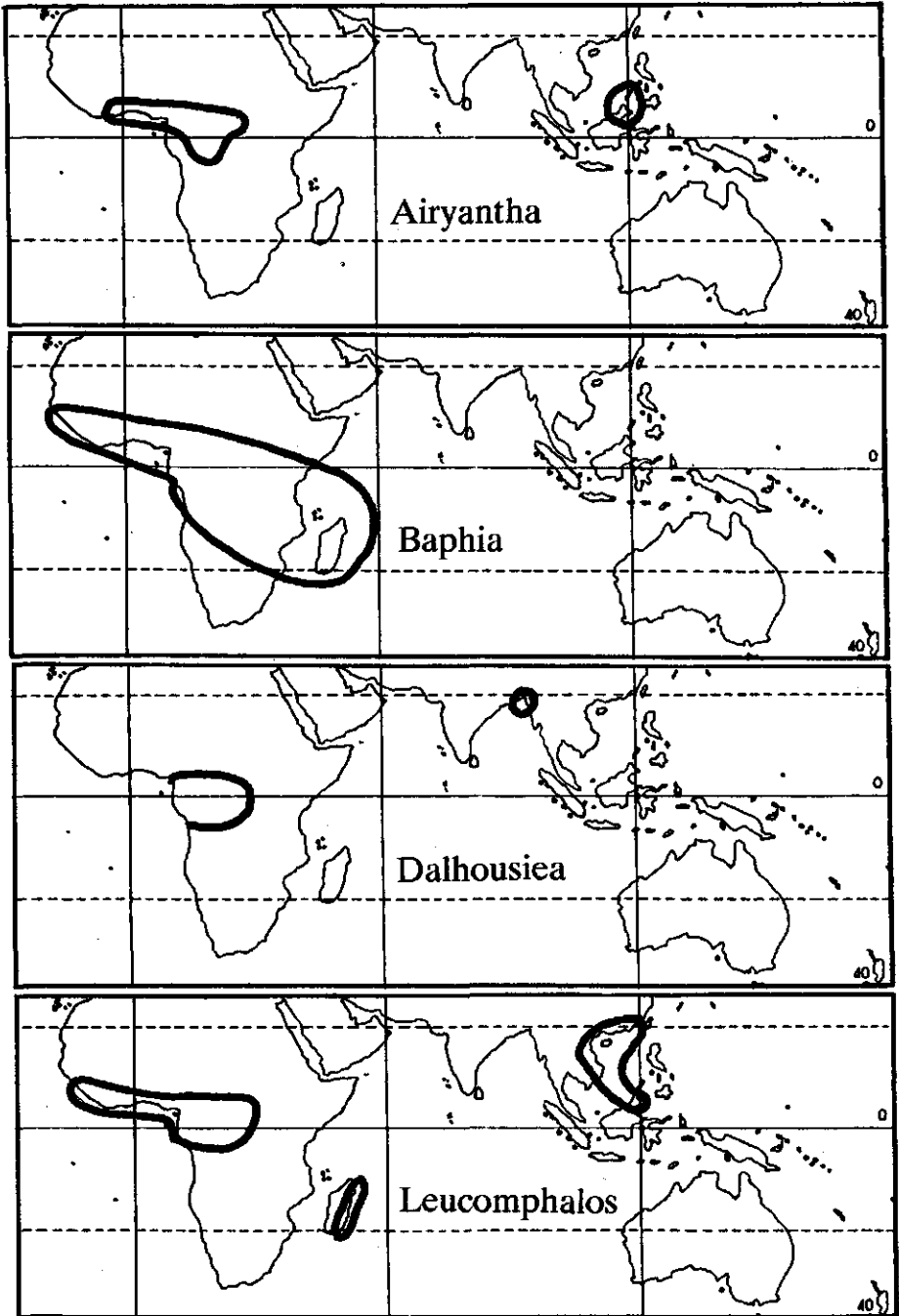


Fig. 1. Distributions of the genera of the *Baphia* group (see note p. 7)

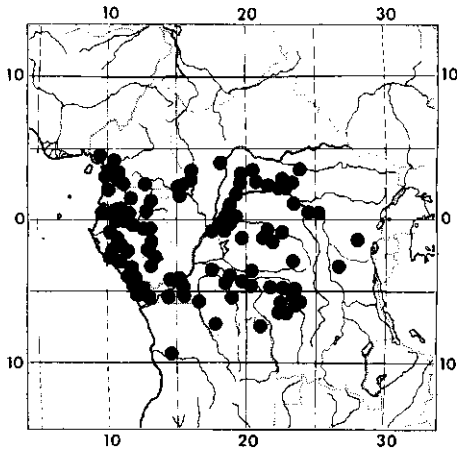


Fig. 2. Distribution of *Dalhousiea africana* S. Moore (see note p. 7, 36)

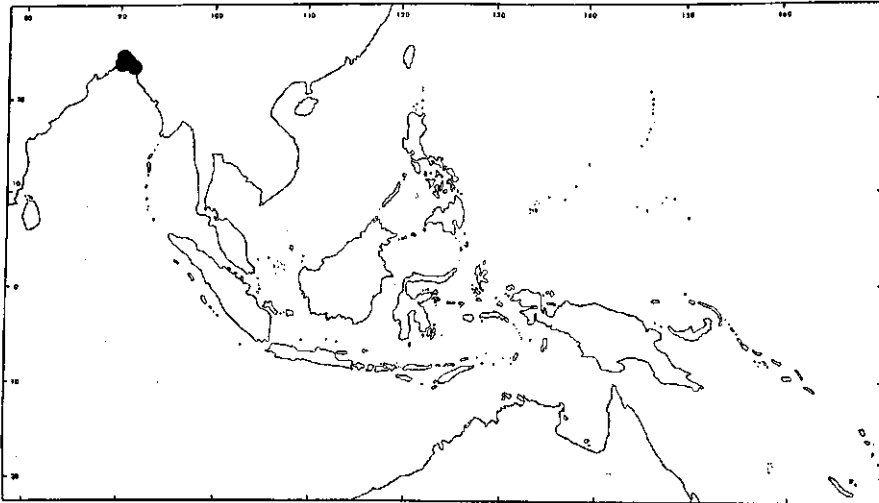


Fig. 3. Distribution of *Dalhousiea* in Asia (see note p. 7, 37)

## Cytology

The chromosome numbers of some members of *Leucomphalos* s.l. have been investigated :  $2n = 22$  for *Baphiastrum brachycarpum* (Gadella, 1969) and also  $2n = 22$  for *Bowringia mildbraedii* (Frahm-Lelieveld, 1969). Recent investigations by M.J. Zevenbergen at the Herbarium Vadense, Wageningen, of root tips from seedlings grown from *Breteler et al. 11073* revealed that *L. capparideus* is also characterized by  $2n = 22$ .

Other genera of the *Baphia* group are characterized by  $2n = 22, 44$  (46) (Polhill, 1981) for *Baphia* and by  $2n = 22$  for *Airyantha* (Gadella, 1969). So far *Dalhousiea* had not been investigated. It is therefore worth mentioning that Mr. Zevenbergen found  $2n = 44$  for *D. africana* in root tips of a seedling grown from *Breteler c.s. 12384*.

## Description of the genus *Leucomphalos*

**Leucomphalos** Benth. ex Planch., Hook. Ic. Plant. 784 (1848); Benth., Fl. Nigrit.: 323, pl. 31 (1849); Benth. in Benth. & Hook., Gen. Plant. 1:553 (1867); Bak. in Oliv., F.T.A. 2:251 (1871); Taub. in Engl. & Prantl, Natürl. Pflanzenf. 3(3):198 (1894); Harms in Engl., Bot. Jahrb. 49:433, 436 (1913); Bak. f., Leg. Trop. Afr. 2: 591 (1929); Pellegrin, Leg. Gabon : 257 (1948); Hutch., Gen. Flow. Pl. 1:334 (1964); Brummitt, Kew Bull. 22:382 (1968); Polhill in Polhill & Raven, Advances Leg. Syst. 1:226 (1981); Soladoye, Kew Bull. 40:295, 299 (1985); Den Outer & Van Veenendaal, IAWA Bull. n.s. 13:135 (1992).

**Type species:** *L. capparideus* Benth. ex Planch.

*Bowringia* Champ. ex Benth., Hook. Journ. Bot. & Kew. Misc. 4:75 (1852); Fl. Hongkong, 95 (1861); in Benth. & Hook., Gen. Pl. 1:553 (1867); Taub. in Engl. & Prantl, Natürl. Pflanzenf. 3(3):198 (1894); Harms in Engl., Bot. Jahrb. 49:433 (1913); Bak. f., Leg. Trop. Afr. 2:591 (1929); Pellegrin, Leg. Gabon : 259 (1948); Toussaint, Fl. Congo Belge 4:6 (1953); Brenan, Kew Bull. 1950:219 (1950); Hutch., Gen. Flow. Pl. 1:333 (1964); Brummitt, Kew Bull. 22:382 (1968); Hall, Kew Bull. 29:497 (1974); Polhill in Polhill & Raven, Advances Leg. Syst. 1:226 (1981); Soladoye, Kew Bull. 40:295, 299 (1985); Den Outer & Van Veenendaal, IAWA Bull. n.s. 13:135 (1992). Type species: *B. callicarpa* Champ. ex Benth. = *L. callicarpus* (Champ. ex Benth.) Breteler **comb. nov.**

*Baphiastrum* Harms in Engl., Bot. Jahrb. 49:435 (1913); De Wild., Pl. Bequaert. 3:307 (1925); Bak. f., Leg. Trop. Afr. 2:589 (1929); Pellegrin, Bull. Soc. Bot. Fr. 90:161 (1944); -, Leg. Gabon:256 (1948); Toussaint, Fl. Congo Belge, 4:30 (1953); Hutch., Gen. Flow. Pl. 1:334 (1964); Brummitt, Kew Bull. 22:382 (1968); Polhill in Polhill & Raven, Advances Leg. Syst. 1:226 (1981); Soladoye, Kew Bull. 40:295, 299 (1985). Den Outer & Van Veenendaal, IAWA Bull. n.s. 13:135 (1992). Type species: *B. brachycarpum* Harms = *L. brachycarpus* (Harms) Breteler **comb. nov.**

Small- to medium-sized lianas or lianescent shrubs, small trees (?), or shrubs. Leaves 1-foliolate, the petiole bipulvinate, stipels absent. Inflorescence a simple or basally branched raceme (panicle), axillary or terminal, few- to many-flowered; bracts usually early caducous, the bracteoles at the top of the pedicel rarely lower, usually caducous at anthesis. Calyx rather small, cupular, shortly toothed and partly rucked at anthesis to spathaceous and closed almost till anthesis, splitting down at 1–2 sides and partly rucked or not. Corolla distinctly papilionaceous or petals only slightly differentiated, glabrous or with ciliate apical parts. Stamens 10–11 (–14), free or nearly so, glabrous, anthers longer or shorter than the filaments, apiculate or not. Ovary (3–)5–8(–13) ovulate, the ovules in a single or a double row. Fruit short, dehiscent, 1–2(–4) -seeded, glabrous or hairy, smooth or prominently veined. Seed red or black, or red with black, subellipsoid with a distinct strophiole (aril) or not, the plane between the short,  $\pm$  hemispherical, thick cotyledons perpendicular to the ventral suture.

**Distribution:** Old World tropics, 6 species, 5 in Africa (including Madagascar), 1 in East Asia.

### Key to the species

1. a. Calyx large, distinctly more than half as long as the corolla in the full grown flower bud ..... 2  
 b. Calyx at most half as long as the corolla in the full grown flower bud ..... 3
2. a. Anthers 4–6 mm long, much longer than the filaments; leaves glabrous, rarely with a few hairs beneath when young; pods glabrous. Western Central Africa .  
 ..... **L. capparideus**  
 b. Anthers 2.5–3 mm long, much shorter than the filaments; leaves hairy beneath; pods densely hairy. Central Africa ..... **L. brachycarpus**
3. a. Petals completely glabrous ..... 4  
 b. Petals ciliate in upper part (see Fig. 15.3, 17.6, 7) ..... 5
4. a. Inflorescence glabrous or with a very few hairs only; pods prominently veined; seeds bright red. E. Asia. .... **L. callicarpus**  
 b. Inflorescence with a distinct brown-hairy indumentum; pods smooth; seeds black. West Africa (Ivory Coast, Ghana) ..... **L. discolor**
5. a. Inflorescence rather densely brown-hairy; pods hairy, at least when young. West Africa (Liberia). .... **L. libericus**  
 b. Inflorescence glabrous or only sparsely hairy; pods glabrous, also when young. West and Central Africa, Madagascar ..... **L. mildbraedii**

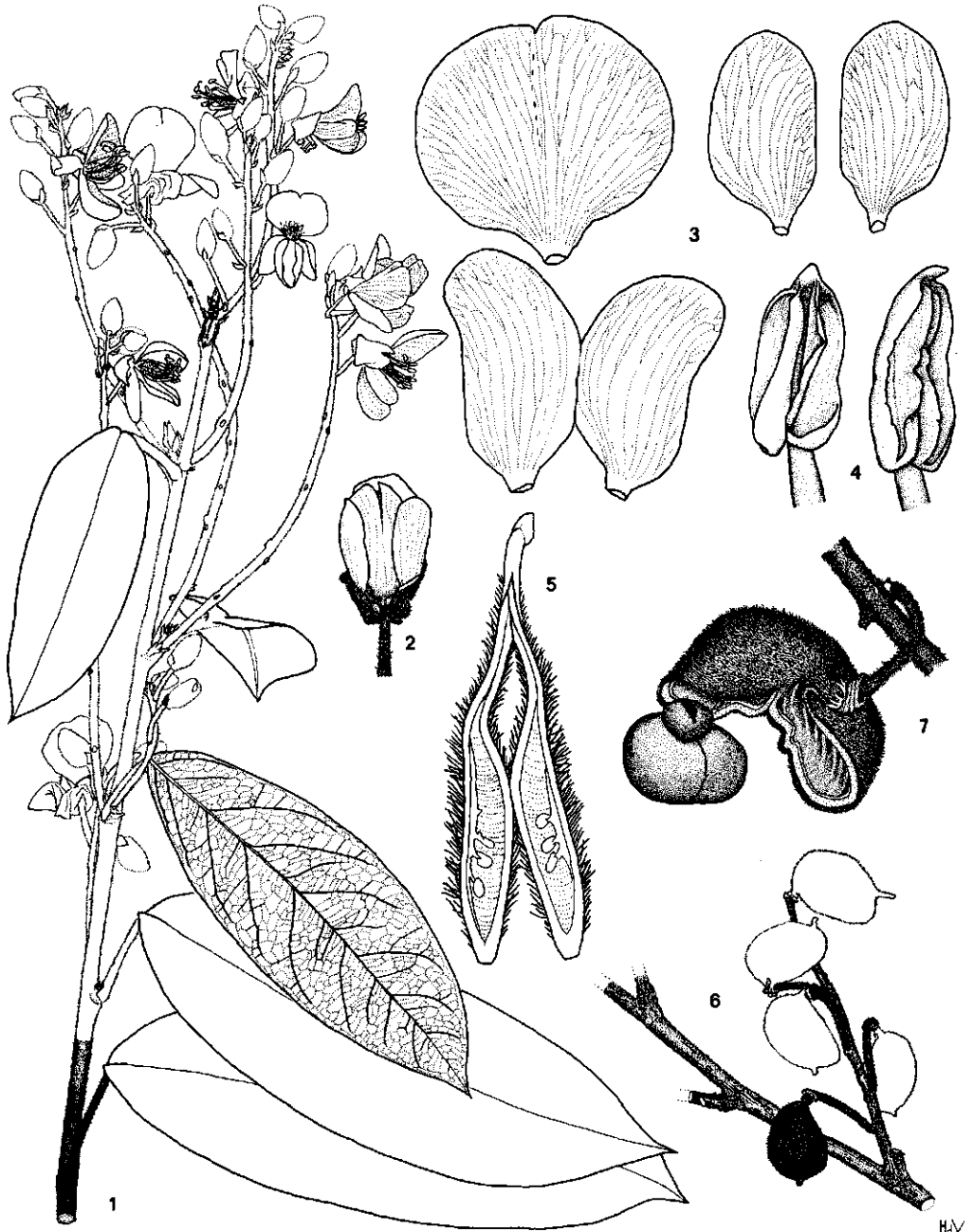


Fig. 4. *L. brachycarpus* (Harms) Bret.: 1. flowering branchlet,  $\times 2/3$ ; 2. flower abaxially, calyx partly rucked,  $\times 1$ ; 3. petals,  $\times 2$ ; 4. anthers,  $\times 6$ ; 5. open ovary,  $\times 4$ ; 6. infructescence,  $\times 2/3$ ; 7. open pod with seed,  $\times 2$  (1-4. Louis, Breteler, & de Bruijn 683; 5. Leeuwenberg 6528; 6. Breteler 2052; 7. Breteler, de Wilde, & Leeuwenberg 2457). Drawing by H. de Vries.

# Alphabetical treatment of the species

## *L. brachycarpus* (Harms) Breteler comb.nov.

Fig. 4-8.

Basionym: *Baphiastrum brachycarpum* Harms in Engl. Bot. Jahrb. 49:435 (1913); Baker f. Leg. Trop. Afr. 2:590 (1929); Pellegrin, Bull. Soc. Bot. France 90:161 (1943); Brummitt, Kew Bull. 22:382-383 (1968); Lock, Legum. Afr. Checklist: 473 (1989). Den Outer & Van Veenendaal, IAWA Bull. n.s. 13: 143 (1992).

Type: Cameroun, near Tounggrélo, 27 km S.W. of Bertoua, *Breteler, de Wilde & Leeuwenberg 2457* (neo-, WAG; iso-, BR, G, K, LISC, M, P, Z), see notes.

*Baphiastrum boonei* (De Wild.) Verm. ex De Wild., Pl. Bequaert. 3:310 (1925); Toussaint, Fl. Congo Belge 4:32 (1953). Basionym: *Baphia boonei* De Wild., Bull. Jard. Bot. Brux. 5:16 (1915). Type: Zaire, Nala, *Boone 79* (lecto-, BR), see notes.

Liana up to 8 cm in diam., with a mostly brown-tomentose (rarely greyish) indumentum on branchlets, stipules outside, petioles, inflorescences, calyx, fruits, and, to a lesser extent, on the leaf lamina beneath; branches of young specimens less densely hairy than of mature individuals; branches glabrescent. Stipules early caducous, often obliquely so to falcate, striate, 5-9 x 1.5-6 mm. Leaves: petiole (0.5-)1-2(-9) cm long (up to 13 cm long in young individuals); lamina folded along the midrib when young, papery to coriaceous, ovate-oblong-elliptic-obovate, (8-)15-22(-31) x (3-)5-9(-12) cm, (1.5-)2-3(-4) times as long as wide, from rounded to subcordate rarely cuneate at base, rounded or acutely to obtusely acuminate at apex, mucronate or not, or notched, the acumen 0.5-1(-2) cm long, glabrous above, midrib plane or slightly impressed above, prominent beneath, the (7-)8-13 pairs of main laterals plane or very slightly prominent above, more distinctly so beneath. Inflorescence a simple or basally branched raceme (panicle), up to ca 15 cm long, usually curved, with many spirally arranged flowers; peduncle 0-2.5 cm long; bracts and bracteoles ovate-triangular, 3-6 x 2 mm, striate outside, the bracts early caducous, the bracteoles usually so at anthesis. Pedicel 9-20(26) mm long, hairy as calyx; calyx 11-14 mm long, partly split and partly rucked at anthesis, the splits usually 2, 4-12 mm deep, apex 2-5-lobed or not, the lobes 0.5-1 mm long, densely brown-short-hairy outside, glabrous inside; corolla 15-20 mm long, the petals hairy on upper margin or not; standard broadly obovate to subcircular, 15-20 x 16-22 mm, more or less notched apically or not, claw indistinct or distinct and up to 4 mm long and 2 mm wide, with a distinct yellow blotch at base; wings elliptic, 15-20 x 6-9 mm, claw 1-4 mm long; keel petals 16-22 x 5-9 mm, usually with a distinct groove-like pocket, claw 1-3 mm long; stamens usually 11, sometimes 10 or 12 in number, 11-17 mm long, glabrous, anthers 2.5-3 mm long, slightly apiculate or not; pistil 15-21 mm long, densely brown-short-hairy, style incurved with glabrous apical part, ovary 5-10-ovuled. Fruits obliquely ovoid-obovoid, laterally compressed, stipitate at base or not, acuminate or apiculate at apex, 1.5-2.5 x 1.2-1.5 cm x 1.2 cm, densely brown-hairy, 1-seeded; seeds subellipsoid, slightly compressed, 11-14 x 7-10 x 5-6 mm, red, glossy, smooth; strophiole (aril) glabrous, ± brittle, glossy outside, 3-6 mm diam. Seedling without a





Fig. 5. *L. brachycarpus* (Harms) Bret.: open flower & flower bud (Flowering specimen in greenhouse at Wageningen, grown from seeds of *Breteler 2052*). Photograph by H.C.D. de Wit.



Fig. 6. *L. brachycarpus* (Harms) Bret.: open pod & seed (Fruiting specimen in Wageningen greenhouse, grown from seeds of *Breteler 2052*). Photograph by H.C.D. de Wit.

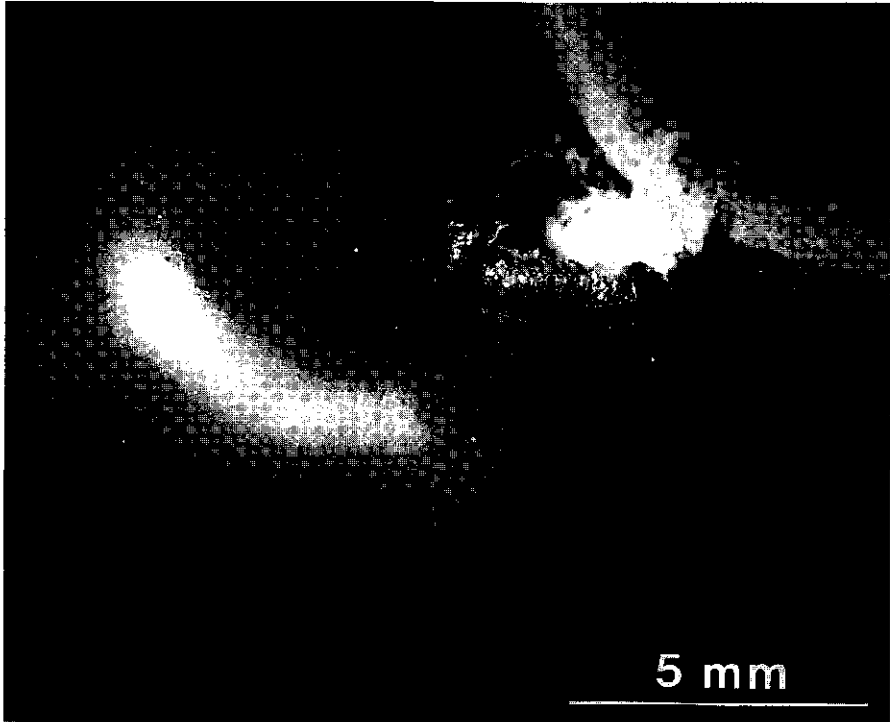


Fig. 7. *L. brachycarpus* (Harms) Bret.: seed with strophiole (aril) (Fruiting specimen in Wageningen greenhouse, grown from seeds of *Breteler 2052*) Photograph by H.C.D. de Wit.

hypocotyl; epicotyl 4–10 cm long, with 3–13 ± leafless nodes with either a bract (cataphyll) or with a very strongly reduced leaf with stipules; first full grown leaves alternate, lamina with cordulate base, folded when young, glabrous above, subappressed-brown-hairy beneath; the same indumentum present on the stem, the stipules and the petioles.

**Distribution:** Cameroun, Gabon, Congo, Zaïre, Central African Republic.

**Ecology:** Mainly in semi-deciduous forests or gallery forests, up to ca 700 m altitude.

**Specimens examined:**

CAMEROUN: 4 km S of Nguélémendouka (fr. Nov.) *Breteler 2052* (BR, K, P, WAG); km 9 Bertoua-Doumé Rd. (fr. Dec.) *Breteler 2178* (BR, K, LISC, M, P, WAG); 27 km SW of Bertoua, near Toungrélo (fr. Jan.) *Breteler, de Wilde & Leeuwenberg 2457* (BR, G, K, LISC, M, P, WAG, Z), type; 50 km SW of Batouri (fl.b., fr. April) *Breteler 2842* (BR, K, LISC, P, WAG); 67 km E of Yaoundé along road to Ayos (fr. April) *Leeuwenberg 5709* (B, BR, K, LISC, P, WAG); 3 km N of Lomié (fl. Sept.) *Leeuwenberg 6528* (B, BR, K, LISC, P, WAG); Ngondouma, Bertoua area (ster. Febr.) *Letouzey 3103* (P); km 22 Yokadouma-Batouri Rd (fl. June) *Letouzey 5264* (P).

GABON: Near Djidji, 5–10 km W of Koumameyong (fr. April) *Breteler, Jongkind & Dibata 8716* (BR, LBV, MA, MO, P, PRE, WAG); (seed, April) 8739 (WAG); 40 km SE of Lastoursville (fl.b., Nov.) *Breteler c.s. 12331* (WAG) Lastoursville (fl. Nov.) *Le Testu 7601* (B, BM, BR, K, LISC, P); 30–40 km SE of Achouka (fl. Nov.) *Louis, Breteler & de Bruijn 683* (B, BR, C, FHI, K, LBV, LG, MA,

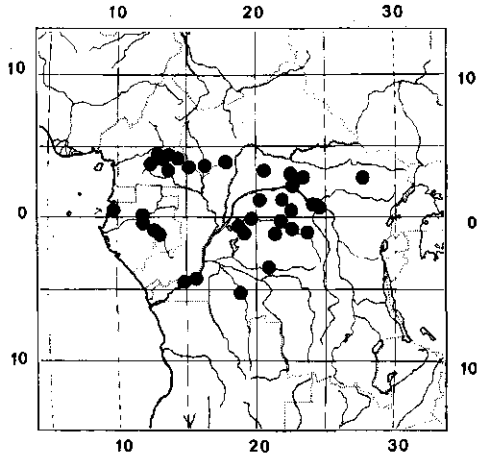


Fig. 8. Distribution of *L. brachycarpus* (Harms) Bret.

MO, P, PRE, SRGH, WAG); 4 km N of Libreville (fl. March) *Reitsma c.s. 654* (WAG); 10 km N of Djidji (fl. b. May) *Reitsma, Wilks & Nzabi 3413* (WAG).

CONGO: From Renéville to Mbamou (ster. Aug.) *Chevalier 27641* (P); near Mbamou (fr. Jan.) *Trochain 9545* (IEC).

ZAIRE: Nala (fl. April) *Boone 48* (BR); (fl. July) *79* (BR); Maluku (fl. Dec.) *Breyne 3159* (BR); (fr. March) *3211* (BR); Bofonge de Likote (fl. May) *Collart 22* (BR); Mobwasa (fl. —) *De Giorgi 739* (BR); (fl. May) *767* (BR); (fl. June) *969* (BR); Basankusu (fl. June) *Dubois 464* (BR), *466* (BR), *467* (BR); (fr. April) *653* (BR); Bokatola (fr. Sept.) *Dubois 812* (BR); Bongangatua (fl., fr. juv. June) *Evrard 1146* (BR); Salonga R. near Ilonge (fr. Aug.) *Evrard 4692* (BR); Ndeke (fr. Sept.) *Evrard 4899* (BR, K); Yalikungu (fr. Nov.) *Evrard 5208* (BR); km 25 Djolu-Befori Rd. (fr. Febr.) *Evrard 5779* (BR, K); sin. loc. (fr. May) *Flamigni 10284* (BR, K); Busira (fl. June) *Ghesquière in herb. Louis 2770* (BR, K, P); Mpenjwa (fl. Sept.) *Jans 1162* (BR); between Dekese and Bumbuli (fl. Oct.) *Lebrun 6469* (BR, K); Mobwasa (fl. June) *Lemaire 295, 367* (BR); Yangambi (fl. April) *Louis 1764* (BR, LISC); (fl. June) *2274* (BR, K); (fl. Nov.) *2800* (BR); (fl. April) *3681* (BR), *3760* (BR, K); (fl., fr. juv. June) *4049* (B, BM, BR, K, M, P); (fl., fr. Sept.) *5935* (BR); (fr. Sept.) *6062* (BR, L); (fr. Dec.) *7135* (BR); (fl., fr. Jan.) *7383* (BR); (fl., fr. June) *9641* (BR, K); (fl., fr. July) *10184* (BR, K); (fl., fr. Oct.) *11635* (BR); (fr. Jan.) *13429* (BR, K); between Opala and Mayoko (fr. Febr.) *Louis 14184* (BR); Yangambi (fl. May) *Louis 15031* (B, BM, BR, K, LISC, M, P); (fl. Jan.) *15626* (BM, BR, K, LISC, P); (fr. April) *16810* (BR, K); (fl. Oct.) *Menantanza 85* (BR, K, Z); Dundusana (fl. —) *Mortehan 186* (BR); Kikwit (fr. June) *Renier 65* (BR, K); Mobwasa (fl. —) *Reygaert 445* (BR); Yambata (fr. March) *Vermoesen 122* (BR); Mobwasa (fl. April) *Vermoesen 318* (BR).

CENTRAL AFRICAN REPUBLIC: Near Mbanza, km 15 Nola – Sola Rd. (ster. Nov.) *Leeuwenberg 7124* (BR, P, WAG); Boukoko (fl. July) *Tisserant (équipe) 7* (BM, BR, P); (fr. April) *902* (BM, BR, P).

CULTIVATED: Cameroun, Yaoundé (seedl. June) *Breteler 2999* (WAG). Netherlands, Wageningen (seedl. Oct.) *Breteler 3029* (WAG); (seedl. Aug.) *12170* (WAG); (seedl. April) *de Bruijn 923* (WAG); (fl. Sept.) *de Bruijn 2170* (P, WAG); (seedl. April); *de Bruijn s.n.* (WAG).

**Notes:** Harms based *Baphiastrum brachycarpum* on two collections from Cameroun, both made by *Mildbraed*, one (no 4777) in fruit the other (no 5178) with flower buds. These syntypes have been lost at Berlin and no duplicate has been traced (see also *Brummitt, 1968: 383*). The neotype chosen also originates from S.E. Cameroun and bears mature fruits and seeds as reported from *Mildbraed 4777*.

Toussaint (l.c.) cited the combination *Baphiastrum boonei* as having been published by Vermoesen ('Vermoesen in De Wild.'). This is not correct as De Wildeman himself is the publishing author of this combination, which was, however, initiated by Vermoesen on a herbarium sheet. Although Brummitt (l.c.: 383) cited this combination with the correct authors, Lock (l.c.: 473) classified it as 'provisional'.

*Boone 79* was cited by Toussaint (l.c.) as the holotype of the forementioned name, but there is no indication whatsoever in De Wildemans protologue to confirm this. The latter author cited nine specimens, two of which were collected by *Boone* without any indication which specimen should be considered as the type. Therefore these specimens must be treated as syntypes. The specimen *Boone 79* is here designated as lectotype.

The flowers of this species usually have 11 stamens, sometimes 10 or 12, but in a cultivated specimen (*de Bruijn 2170*) a flower was observed with 14 stamens and 6 petals. *De Giorgi 969* from Zaïre showed one flower with a complete double row of ovules (as in *L. capparideus*) in the upper part of the ovary.

***L. callicarpus* (Champ. ex Benth.) Breteler, comb. nov.**

**Fig. 9.**

Basionym: *Bowringia callicarpa* Champ. ex Benth., Hook. Journ. Bot. & Kew Misc. 4:75 (1852); Fl. Hongkong: 95 (1861); Drake del Castillo, Journ. Bot. 5:215 (1891); Dunn, Flor. Kwangt. & Hongkong: 87 (1912); Harms in Engl. Bot. Jahrb. 49:433 (1913); Gagnepain in Lecomte, Flor. Gén. Indo-Chine 2:505 (1920); Hallé, Webbia 19:851 (1965); Brummitt, Kew Bull. 22:385 (1968); Hall, Kew Bull. 29:498 (1974).

Type: Hong Kong, *Bowring in coll. Champion 257* (holo-, K).

*Baphia micrantha* Ridley, Kew Bull. 1938:280. Type: Sarawak, Baram, *Hose 337* (holo-, K; iso-, BM, L).

*Baphiastrum micranthum* (Ridley) Yakovl., Botanicheskij Zhurnal 52:1645 (1967). Type: see above.

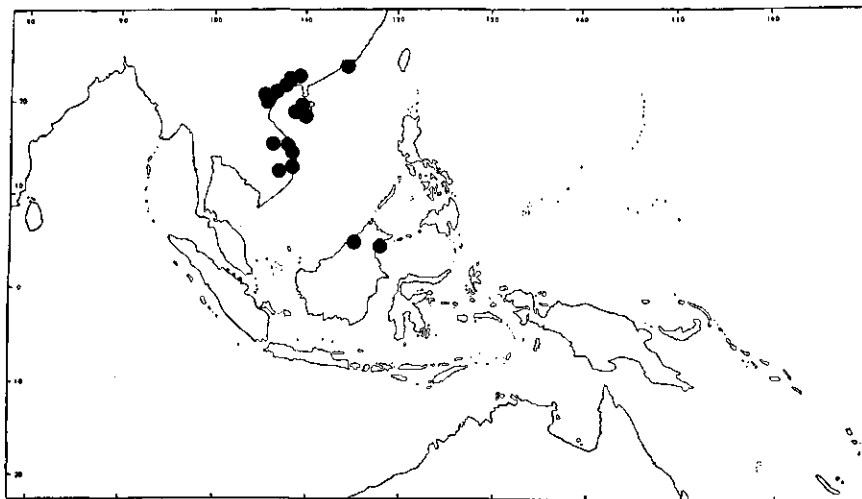


Fig. 9. Distribution of *L. callicarpus* (Champ. ex Benth.) Bret.

Scandent shrub to small liana up to 15 m high and 25 m long (rarely small tree up to 4 m?). Branches and branchlets glabrous, sometimes sparsely hairy when very young. Stipules caducous, ovate-triangular, 1–2 mm long, striate, sparsely hairy to glabrous. Leaves: petiole (0.5–)1–2.5(–3) cm long, glabrous, sometimes with a few hairs when young; lamina papery, ovate-elliptic to oblong, rarely obovate, 2–3 times as long as wide, (4–)7–12(–17) x (1.5–)3.5–5(–7) cm, rounded to obtuse or cordulate rarely cordate at base, acuminate at apex, the acumen usually acute, rarely rounded apically, 0.5–2(–3) cm long, midrib and the thin (5–)6–8(–9) pairs of lateral nerves plane to slightly prominent above, slightly more prominent beneath, glabrous, sometimes with a few hairs mainly on the nerves beneath when very young; lamina folded along the midrib in young leaves. Inflorescence a simple or basally branched raceme (panicle) subappressed-hairy, sparsely so or not; bracts and bracteoles small (the latter usually appressed against calyx), ovate-elliptic c. 1 mm long. Pedicel (5)6–9 mm long, hairy as calyx; calyx cupular, partly rucked at anthesis, 3–5 mm long, with small up to 0.7 mm long teeth, evenly appressed-brown-hairy outside or mainly so in upper part; corolla 7–11 mm long, glabrous, white; standard ± circular in outline, 7–11 x 7 mm, shallowly to distinctly notched at apex, cuneate to obtuse at base with up to 1.5 mm long claw; wings ± oblong, 8–11 x 3–4 mm, with 1–2 mm long claw and shallow but usually distinct pocket; keel petals oblong, slightly curved or not, 8–11 x 3 mm with distinct pocket, claw 1–1.5 mm; stamens 10, 6–10 mm long, glabrous; anthers basifixed, 1–1.5 mm long, apiculate or not; pistil 9–11 mm long, slightly curved, glabrous to sparsely appressed-hairy mainly on the sutures, 3–5-ovulate. Fruits subellipsoid, laterally compressed, 2–2.5 x 1.5–2 x 1–1.5 cm, stipitate, apex acuminate, glabrous, strongly prominently veined at maturity, 1(–3)-seeded; seeds subellipsoid, 8–14 x 7–10 x 5–6 mm, red at maturity, with a distinct white more or less fibrous, dull, cupular strophiole (aril), 3–5 mm wide.

**Distribution:** Hong Kong, S.E. China, Laos, Vietnam, Malaysia (Borneo).

**Ecology:** Forest remnants, thickets, often along streams, up to 800 m altitude.

**Specimens examined:**

HONG KONG: Kadoorie Farm (fl. May) *But* 328 (K); *Camponon* (*Herb. Pierre*) s.n. (P); *Bowring in Champion*, 257 (K), type; Kwun Yam Shan (fr. March) *Chan* 69 (P); Ng Tung Chai (fr. Aug.) *Chan* 112 (P); Kadoorie Farm (fl. b. Aug.) *Chan* 119 (P); (fr. Sept.), *Chun* 7455 (K); (fr. Jan.) 40226 (P); (fl. –) *Forbes* 129 (BM); (fl. –) *Furet* 115 (P, WAG); (fl., fr. Nov.) *Hance* 310 (BM, P); Victoria (fr. Febr.) *Lamont* 199 (BM); Ravine of Mt. Tough (fl. fr. June) *Lamont* 199 (BM); Happy Valley woods (fr. Oct.) *Lamont* 199 (BM); (fr. Dec.) *Lienchow* 57/265 (P); Botanical Garden (fl. Aug.) *Lo Fan Shan* s.n. (K); near Pokfolum reservoir (fr. Nov.) *Sampson* s.n. (BM, K); Kadoorie Farm (fr. March) *Shiu Ying Hu* 9586 (K); 9703 (K); Wa Shan Kuek, N.T. (fr. Aug.) *Shiu Ying Hu* 10914 (K); (fr. –) *Shiu Ying Hu* 12090 (K); Ng Tung Choi (fr. Jan.) *Shiu Ying Hu* 12724 (K); Lantau Isl. (fl. June) *Taam* 2118 (G); (fl. June) *Urquart* 183 (K); Mt. Tough & Victoria (fr. Jan.) *Wilford* 293 (K); Tai Mo Shan (fr. Nov.) *J.P.W. & T.K. Woo* 854 (P); *Wright* 141 (K, P).

CHINA: Hainan, Janfengling (fr. –) *Chow* 78429 (BM, K); Ho San Leng (fr. Nov.) *Chun & Tso* 44384 (K, P); Yaichow (fl. –) *Chun & Tso* 44632 (P); Ling Shui (fl. May) *Fung* 20152 (BM, G, K, P); Yaichow (fl. b. –) *How* 70739 (L); (fr. –) 71008 (L); Bao Ting (fl. b. April) *How* 71645 (BM, P); Vang Dau Dei (fl. July) *Lau* 320 (BM, G, K, P); Tsat Cha Ling (fr. May) *Lau* 1785 (BM, P); Sam Mo Watt (fl. b. April) *Lau* 3847 (P); Ching Mai (fr. Oct.) *Lei* 82 (K, L, P); (fl. Sept.) 1033 (K, L, P); sin. loc. (fr. Aug.), *Liang* 62668 (G); Yaichow (fr. Aug.) *Liang* 62729 (P); sin. loc. (fr. Nov.) *Liang* 63635 (K); (fr. Jan.) 64735 (K); (fr. Febr.) 65181 (P); (fr. Dec.) 66566 (G, K); Kwangtung, Tsing Leung Shan (fr. July)

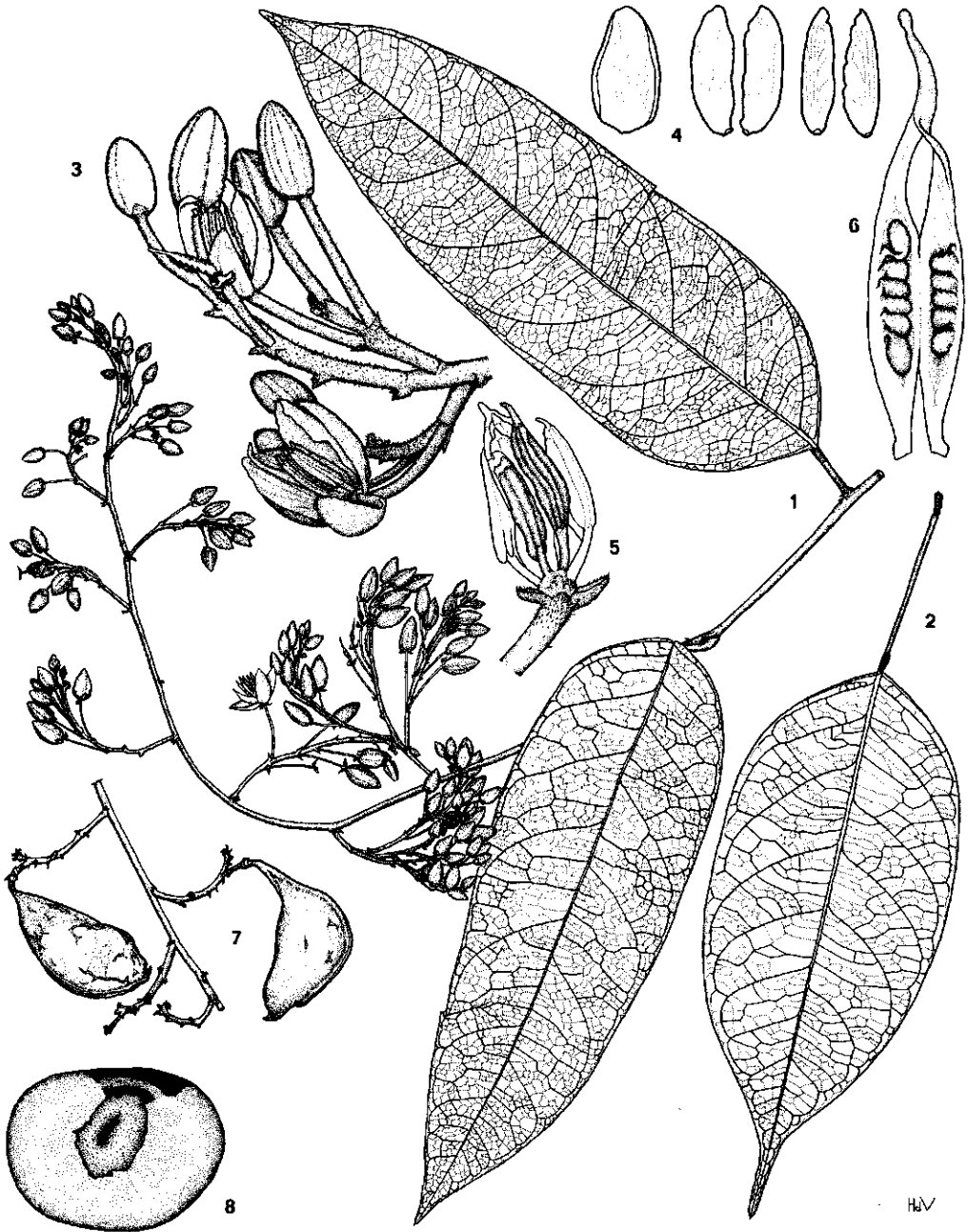


Fig. 10. *L. capparideus* Benth & Planch.: 1. flowering branchlet,  $\times 2/3$ ; 2. leaf from beneath,  $\times 2/3$ ; 3. detail of inflorescence,  $\times 2$ ; 4. petals,  $\times 2$ ; 5. stamens,  $\times 4$ ; 6. open ovary,  $\times 10$ ; 7. fruiting branchlet,  $\times 2/3$ ; 8. seed with strophiole,  $\times 2$  (1,3-6. Louis, Breteler, & de Bruijn 1320; 2. Leeuwenberg 9057; 7-8. Breteler & de Wilde 470). Drawing by H. de Vries.

*McClure 6691* (K); Hainan, Yik Tsok Mau (fl. May) *McClure 9647* (BM, G, K, P); Amory Mts (fr. May) *Swinhoe s.n.* (K); Kwangtung, Tung Koo Shan (fr. Sept.) *Tsang 21568* (BM, K, P); Kwangsi, Shap Man Taai Shan (fl. b. June) *Tsang 22447* (BM, P); Kwangtung, Fang Cheng (fl. Aug.) *Tsang 26655* (K, P); Kwangsi, Po Yam Shan (fl. Oct.) *Tsang 22979* (P); Hainan, Hung Mo Shan (fr. June) *Tsang & Fung 360* (K); Kwangtung, Wan Tong Shan (fl. b. June) *Tsui 382* (K, L, P); Hainan (fr. Dec.) *Wang 35798* (P); 36393 (G); Najing, Fujian (fr. Dec.) *Ye Guo-dong 2272* (K).

VIETNAM: Thu-Phap (fl., fr. July) *Balansa 2248* (K, P, WAG); (fl., fr. May) 2249 (G, K, P); Lang-Kok (Mont Bavi) (fr. Dec.) *Balansa 2250* (K, P); Yen Thi (fr. Dec.) *Bois 295* (P); Vinh Thai (fl., fr. June) *Bon 3155* (P); (fr. Nov.) 3282 (P, WAG); s.n. (fl. fr. -) (P); Co-Ba F.R. (fl. May) *Chevalier 32365* (P); Fleury in Chevalier 32538 (P); Thuy-Cam (fl. -) *Eberhardt 3123* (P); Lang Luc (fr. -) *Eberhardt 4924* (P); (fl. -) 4929 (P); Hué (fl. Sept.) *Harmand 1840* (P); Tonkin, sin. loc. (fl. b. Sept.) *Mouret 37* (P); Phu Tho (fl. June) *Pételot 1060* (P); 3024 (P); Thua Thien (fl. May) *Poilane 1418* (P, WAG); Quang Nam (fr. March) *Poilane 29444* (P); Near Hué (fl. April) *Poilane 30024* (P); Chuk-Phai (fl. b. -) *Tsang 29018* (K, P); 29237 (K, L, P); Dam-Ha (fl. -) *Tsang 29924* (G, K, L, P); (fr. -) 30309 (K, P).

LAOS: Attopeu Basin (fl., fr. -) *Harmand s.n.* (P); Saravane (fl., fr. Aug.) *Poilane 15446* (P); km 130 Saravannakhet - Quang Tri (fr. Jan.) *Poilane 1151* (P).

MALAYSIA: Sabab, Hap Seng (fl. b. March) *Fedilis & Sumbing 89793* (K); Sarawak, Baram R., Lobok Pasar (fl., fr. Aug.) *Fuchs 21237* (K, L); Baram Distr. (fl. b. Dec.) *Hose 257* (K, L); (fl. Oct.) 337 (BM, K, L), type of *Baphia micrantha*.

**Note:** The morphological differences between this species and the African *L. mildbraedii* are small as observed by Harms (l.c.), more or less like between the two species of *Airyantha* (fide Brummitt cited above) and I have been tempted to unite them. However, the petals are glabrous in *L. callicarpus* and always apically ciliate in *L. mildbraedii*. Also the strophiole is different between the two species. In the former the strophiole is loosely fibrous and rather dull, but it is glossy and brittle in the latter. It may further be mentioned that the flowers of *L. callicarpus* have very often been reported as fragrant, while no flower smell whatsoever has been noted for *L. mildbraedii*.

### **Leucomphalos capparideus** Benth. ex Planch.

**Fig. 10-12.**

Hook. Ic. Plant. 784 (1848); Benth., Fl. Nigr.:323, pl. 31 (1849); Bak., Fl. Trop. Afr. 2:251 (1871); Bak. f., Leg. Trop. Afr. 2:591 (1929); Hutch. & Dalziel, Fl. W. Trop. Afr. 1:371 (1928); Pellegrin, Leg. Gabon: 257 (1948); Hepper in Keay, Fl. W. Trop. Afr., ed. 2, 1:511 (1958); N. Hallé, Webbia 19:847 (1965); Brummitt, Kew Bull. 22:382 (1968); Lock, Leg. Afr. Checklist: 475 (1989); Den Outer & Van Veenendaal, IAWA Bull., n.s. 13:143 (1992).

Type: Equatorial Guinea, Bioko (Fernando Po), *Vogel 264* (holo-, K).

Small to medium-sized liana or small tree (? , see notes). Branches glabrous. Branchlets glabrous, sometimes with a few sparse hairs when very young. Stipules early caducous, triangular, striate or not, 0.5-1.5 mm long. Leaves: petiole (0.3-) 0.5-6 (-11) cm long, glabrous, rarely with a few hairs when young; lamina glabrous papery to thinly coriaceous, ovate to elliptic to oblong, (5-) 9-20 (-29) x (1.5-) 3-7 (-12) cm, (1.5-) 2-3 (-4.5) times as long as wide, rounded to obtuse rarely subcordate at base, acutely or obtusely acuminate at apex, the acumen (0.3-) 0.5-2.5 (-3.5) cm long, midrib slightly impressed to slightly prominent above, prominent beneath, the (5-) 6-9 (-13) pairs of main laterals  $\pm$  prominent beneath,





Fig. 11. *L. capparideus* Benth. ex Planch.: fruiting branch (Breteler, Jongkind, & Dibata 8897). Photograph by C.C.H. Jongkind.

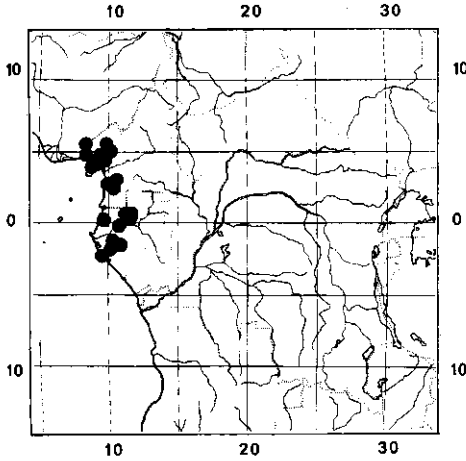


Fig. 12. Distribution of *L. capparideus* Benth. ex Planch.

slightly so above. Inflorescence axillary or terminal, a panicle (a raceme of racemes) or a simple raceme, many-flowered, subappressed-short-hairy, the racemes with a peduncle up to 7 mm long, the flowers often in 2 rows on one side of the rachis (see notes); bracts and bracteoles broadly ovate-subtriangular, 0.5–1 mm long. Flowerbuds ovoid-ellipsoid. Flowers up to 10 mm long; pedicel 5–12 mm long, glabrous or with a few short hairs; calyx 7.5–9 mm long, split at 2 sides in 2 subequal  $\pm$  spreading parts, glabrous, sometimes with a few hairs at apex; corolla white, glabrous; ‘standard’ broadly elliptic to circular, 7–10.5 x 4–7 mm, claw usually absent at most 1 mm long; ‘wings’ lanceolate-elliptic, 8–11 x 2.5–4 mm, claw thick when present, up to 0.5 mm long; ‘keel’ petals free, narrowly elliptic, 8–11 x 2.5–4 mm, claw 0–1 mm long; stamens 11 (–12), glabrous, anthers 4–6 mm long, with a prominent sterile apical part, filaments 1–2.5 mm long; pistil  $\pm$  straight, 6–7 mm long, ovary stipitate, 2–3 mm long, with 8–13 ovules in two complete rows, sparsely subappressed-hairy, style glabrous. Fruit subellipsoid, tapering both ends, 2–5.5 x 1.2–2.5 x 1–1.8 cm, 1 (–4)-seeded, glabrous, not or faintly nerved, pink at maturity (the immature pods are usually white to pale pink and usually turgid). Seeds scarlet with an incomplete, saddle-like black zone around the middle, depressed subellipsoid, 14–20 x 10–13 x 7–9 mm, strophiole (aril) white, ca 6 mm in diameter, consisting of a dense tuft of papillae-like hairs. Seedling without a hypocotyl; epicotyl glabrous, up to ca. 12 cm long, with some cataphylls; first leaves alternate, ovate, cordulate at base, long acuminate, 6–9 x 3–5 cm, folded along the midrib and with a few appressed hairs on the petiole when young, soon glabrous.

**Distribution:** E. Nigeria, Cameroun, Equatorial Guinea, Gabon.

**Ecology:** Tropical rain forest, at altitudes of 0–760 m.

**Specimens examined:**

NIGERIA: Obura Distr., Agoi-Ibami (fr. Jan.) *Ariwaodo* 152 (WAG); Orem (fr. Jan.) *Onochie & Latilo* FHI 36038 (K); (fr. March) *Onochie* FHI 36468 (K); Oban Distr. (fl., fr. –) *Talbot* 1208 (BM, K); (fl. buds –) *Talbot* 1326 (K); Akarare (juv. fr. May) *Ujor* FHI 30840 (K).

CAMEROUN. Lake Barambi (juv. fr. Dec.) *Binuyo & Daramola FHI 35080* (K, P); 6 km E. of Kribi (fl. Jan.) *Bos 3541* (BR, K, WAG); 13 km E. of Kribi (fr. May) *Bos 4558* (WAG); 6 km S. of Kribi (fl. Sept.) *Bos 5416* (BR, P, WAG); 13 km E. of Kribi (fl. Oct.) *Bos 5510* (P, WAG); 15 km E. of Kribi (fr. April) *Bos 6670* (BR, K, M, P, WAG); sin. loc. (ster. -) *Büsgen 178* (B); 16 km Kribi - Ebolowa Rd. (fl. June) *J.J. de Wilde 8302* (AAU, B, BR, C, COI, EA, FHI, HBG, K, LG, LISC, M, MA, MBG, MC, P, PRE, SRGH, WAG, YA); Kumba (fl. b. -) *Etuge & Thomas 262* (BR); between Ndo & Muguka (fl. buds June) *Fleury in Chevalier 33384* (P); Nkam R, Ekom Falls (fr. Dec.) *Leeuwenberg 9004* (WAG); 25 km NNE of Mamfe (fl. July) *Letouzey 14143* (BR, K, P, WAG); 20 km NW of Yabassi (fr. March) *Letouzey 14431* (K, P); Bipindi (fr. -) *Zenker 2882* (BM, BR, G, K, L, P, WAG, Z); (fr. -) *3590* (BM); (fr. -) *3967* (BM, BR, G, K); Mimfia (juv. fr. Oct.) *Zenker s.n.* (P).

EQUATORIAL GUINEA: Bioko (Fernando Po) (fl. buds, fr. Dec.) *Vogel 264* (K), type.

GABON: Waka (fl., fr. Nov.) *Arends, Louis & de Wilde 420* (WAG); 10 km SSE of Mitzic (fr. April) *Breteler, Jongkind & Dibata 8767* (BR, C, K, LBV, MA, MO, P, PRE, WAG); 5-10 km E. of St. Germain (fl., fr. April) *Breteler, Jongkind & Dibata 8897* (AAU, B, BR, C, EA, FHI, K, LBV, LISC, MA, MBG, MO, P, PRE, SRGH, WAG); 5-30 km NNW of Ndjolé (fl., fr. April) *Breteler, Jongkind & Wieringa 11073* (WAG); Afoubou (fl. buds, juv. fr. May) *Breteler, Jongkind, Wieringa & Nzabi 11487* (WAG); 7 km La Lara-Ndjolé Rd. (fl., fr. Sept.) *Breteler & de Wilde 470* (AAU, B, BR, C, FHI, HBG, K, LBV, LISC, MA, MBG, MO, P, POZG, PRE, SRGH, TALL, WAG); Diobomagala (fr. July) *Chevalier 26123* (P); Sette Cama (fr. June) *Farron 7361* (P); 10 km SW of Ndjolé (fr. April) *N. Hallé 1931* (K, P); near Libreville (fr. June) *Klaine 1256* (BR, L, P); (fr. Aug.) *1618* (K, P); Mandilou (fl. Febr.) *Le Testu 6389* (BM, BR, LISC, P); Mitzic (fr. May) *Le Testu 9161* (BM); Waka (fl. Dec.) *Louis, Breteler & de Bruijn 1320* (BR, EA, K, LBV, MA, MO, P, PRE, SRGH, WAG); near Ezanga lake (ster. Jan.) *McPherson 15182* (BR); Oveng (fl. buds May) *Reitsma, Breteler & Louis 868* (WAG); (fl. buds, juv. fr. May) *907* (WAG); (fr. May) *925* (WAG); 15 km N of Oveng (fr. Febr.) *Reitsma c.s. 3037* (WAG).

CULTIVATED. Netherlands. Wageningen, seedlings from *Breteler & de Wilde 470* (March) *van Setten 356* (WAG); (Aug.) *427* (WAG).

**Notes:** The habit of *L. capparideus* is usually lianescent, but a few collectors (*Farron 7361*, *Fleury in Chevalier 33384*, *Klaine 1618*, and *Onochie & Latilo FHI 36038*) have noted it as a small tree up to 15 m tall. Personal observations in Gabon, however, have never encountered a specimen with that habit.

The flowering branchlets of this species, are usually drooping with gently upward curved inflorescences. The flowers are, at least initially, spirally arranged on the rhachis of the raceme. By twisting of the rhachis their position changes and they often become arranged in 2 rows on one side, especially so in the distal part of the raceme. This phenomenon does not always occur and is usually not or less apparent in the basal part of the raceme. It has first been reported by Hallé (l.c.) and has been used as a character of generic distinction by Polhill (1981). It is true that in the other species of *Leucomphalos s.l.* the twisting of the rhachis does not occur in a way that the flowers become arranged in two rows on one side, but only to bring them in two opposite rows.

In the original description by Bentham 10 stamens are recorded. The present author has analysed many flowers from different origin, but never has encountered 10 stamens, always 11 or rarely 12.

The vouchers (*Hussaini 221*) of Karatela & Gill's (1985) research, deposited in the Herbarium of the University of Benin, Nigeria, have not been investigated. The authors reported about an unusual stomatal feature in *L. capparideus*. Dr. C.C.H. Jongkind kindly investigated the stomata of some specimens of this species

(Arends *et al.* 420 and Ariwaodo FHI 88641) to see whether the same feature could be observed. He also investigated a few specimens of some other species: Wright 141 (*L. callicarpus*), Dekkers 1 (*L. discolor*) and Breteler 2770 (*L. mildbraedii*). His conclusion is that all the specimens investigated showed the same stomatal feature as in *Baphia* (Soladoye, 1982), but nothing like the phenomenon reported by Karatella & Gill.

**Leucomphalos discolor** (J.B. Hall) Breteler comb. nov.

Fig. 13–14.

Basionym: *Bowringia discolor* J.B. Hall, Kew Bull. 29:497 (1974); De Koning, Flore du Banco 2:651 (1983); Lock, Leg. Afr. Checklist: 473 (1989).

Type: Ghana, Dompin to Ndumfri F.R., *Enti & Hall GC 38394* (holo-, K! iso-, GC).

*Leucomphalos capparideus* Auct. non Benth. ex Planch., N. Hallé, Webbia 19, 2:848 (1965), as regards *Aké Assi 4569* from Ivory Coast.

Liana up to 25 m long, or scandent shrub. Branches glabrous. Branchlets glabrous to very sparsely short-hairy when young. Stipules early caducous,  $\pm$  deltoid, 0.5–1 mm long, sparsely short-hairy outside. Leaves: petiole (1–)2–4(–5.5) cm long, glabrous to very sparsely short-hairy when young; lamina coriaceous, ovate-oblong-elliptic to obovate, (8–)10–15(–16) x 4–6(–7) cm, 2–2.5(–3) times as long as wide, obtuse to rounded to slightly cuneate at base, usually rather gradually acuminate, rarely obtuse, the acumen rounded to acute, rarely mucronate, 0.5–1(–1.5) cm long, nervation usually prominent both sides, lateral nerves (5–)6–7(–8) pairs, glabrous both sides, sometimes very sparsely short-hairy on midrib beneath when young. Inflorescence a simple or basally branched raceme (panicle), up to 4.5 cm long, up to ca 20-flowered, appressed-brown-short-hairy; bracts and bracteoles  $\pm$  ovate, up to 1.5 x 1.5 mm, appressed-short-brown-hairy outside, glabrous inside, rounded to acutish at apex, deciduous at or before anthesis. Pedicel (3–)4–5(–10) mm long, short-brown-hairy as calyx; calyx cupular, 5 mm long, lobes minute, usually split one side and rucked at anthesis; corolla glabrous; standard subcircular in outline, 10–12 x 9–12 mm, 1.5–2 mm split apically, claw 1.5–2 mm; wings oblong, 10–12 x 5 mm, claw 1 mm long; keel petals somewhat sickle-shaped, 11–13 x 4–5 mm,  $\pm$  united in the lower half above the claw, without pocket, claw 0.5 mm long; stamens 10, glabrous, filaments 6–10 mm long, anthers 1.5–2 mm long not or slightly apiculate; pistil 11–14 mm long, ovary appressed-brown-hairy, style glabrous or nearly so. Fruits 3–4 x 2.5 cm, tapering both ends, 1–2 (–3?) seeded, smooth, glabrous (young pods may be hairy along the sutures). Seed ellipsoid, ca 3 x 1.5 cm, black, smooth, glabrous, strophiole (aril) minute.

**Distribution:** Ivory Coast (in Banco Forest near Abidjan) (see note), S.E. Ghana.

**Ecology:** Riverine forest at low altitudes.

**Specimens examined:**

IVORY COAST: Banco Forest near Abidjan (fl. March) *Aké Assi 13365* (G, K); (fr. Jan.) *4569* (UJC); (fl. March) *Dekkers 1* (WAG); (fl., juv. fr. March) *2* (WAG); (fl. June) *de Koning 3707* (WAG); (fl. Febr.) *5366* (WAG); (fl., juv. fr. April) *5635* (WAG); (ster. June) *5833* (WAG); (fl. April) *6789* (WAG); (fl. May) *6872* (WAG); (ster. August) *7057* (WAG).

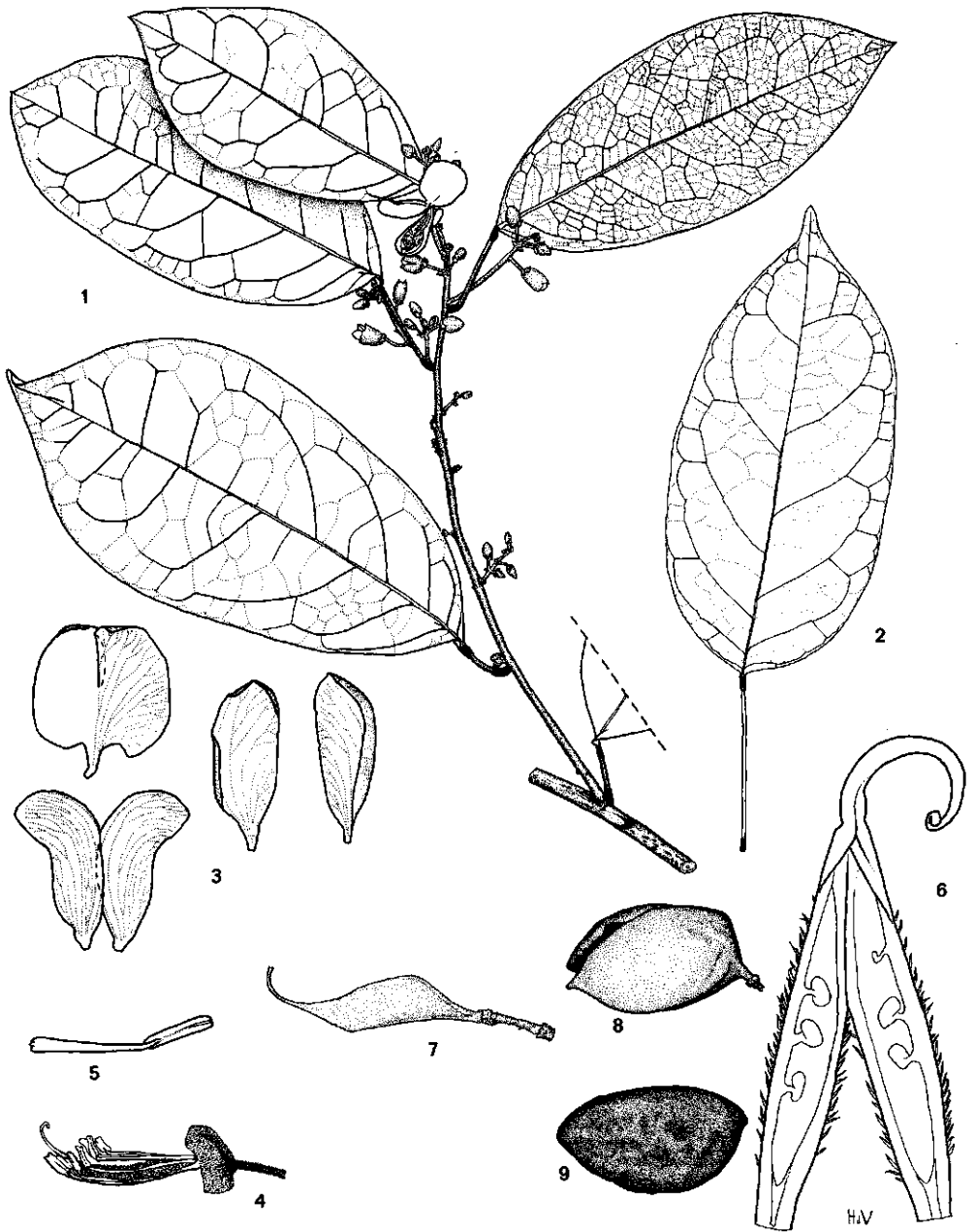


Fig. 13. *L. discolor* (J.B. Hall) Bret.: 1. flowering branchlet,  $\times 2/3$ ; 2. leaf,  $\times 2/3$ ; 3. petals,  $\times 2$ ; 4. flower without petals,  $\times 2$ ; 5. stamen,  $\times 4$ ; 6. open ovary,  $\times 8$ ; 7. young pod,  $\times 2$ ; 8. mature pod,  $\times 2/3$ ; 9. seed,  $\times 1$  (1. de Koning 6872; 2,7. de Koning 5635; 3,4. Dekkers 2; 5,6. de Koning 3707; 8,9. Aké Assi 4569). Drawing by H. de Vries.

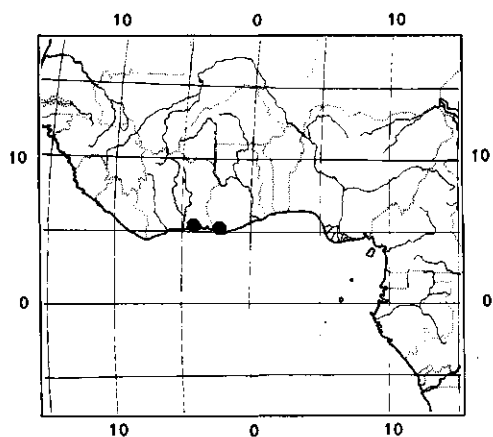


Fig. 14. Distribution of *L. discolor* (J.B. Hall) Bret.

GHANA: Dompim to Nduμφri F.R. (fl. April) *Enti & Hall GC 38394* (K), type; Simpa near Tarkwa (juv. fr. June) *Hall & Agyakwah GC 3330* (K, P, WAG).

CULT.: Ivory Coast (seedling, May) *de Koning 5751* (WAG).

**Notes:** Before this species was described as *Bowringia discolor* by J.B. Hall, Hallé (l.c.) identified the fruiting specimen collected by Aké Assi (no. 4569) as *Leucomphalos capparideus*. According to Hallé the collector had reported the seeds as being bicoloured, the same as he himself had observed for that species in Gabon. Examination of Aké Assi's collection did not reveal any trace of a bicoloured seed. It is most likely that the seeds of this specimen were (as they are at present) black at maturity. This is in accordance with a photograph (preserved in WAG) taken at de Koning's request which shows black glossy seeds.

The seedlings collected by de Koning under no. 5751 are preserved in spirit. They are too young to make a complete description possible. However, in essential characters they fit the description given for *L. brachycarpus*.

I have not seen any specimen from the Taï area in West Ivory Coast where, according to de Koning (l.c.: 652), Aké Assi had observed this species.

### *Leucomphalos libericus* Breteler sp. nov.

Fig. 15–16.

*Leucomphalos discolor* affinis, a quo differt stipulis anguste triangularibus, foliis relative latioribus, pedicellis longioribus, petalis margine ciliatis et leguminibus pubescentibus.

Type: Liberia, Gola National Forest, N.E. of Bomi Hills, *Bos 1960* (holo-, WAG; iso- (not seen), LIB, MO).

Liana. Branches and branchlets appressed-brown-hairy, glabrescent. Stipules early caducous, narrowly triangular, 2.5–3 mm long, 0.5–1 mm wide, striate, appressed-brown-hairy. Leaves: petiole (1–)2–4.5(–5.5) cm long, ± appressed-brown-hairy; lamina coriaceous, ovate-elliptic, (8–) 10–13 x (4–) 4.5–6 (–7.5) cm, 1.5–2 times

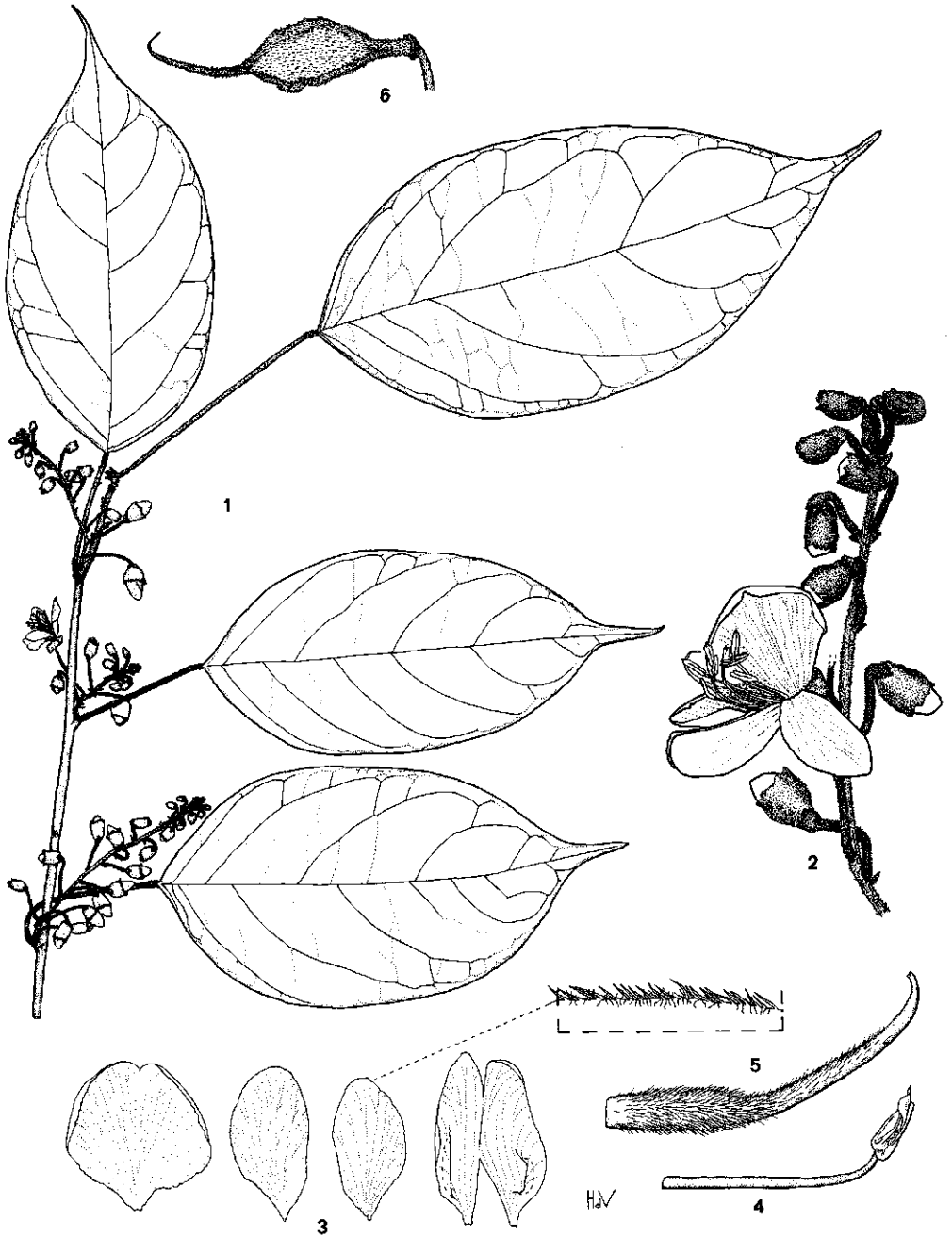


Fig. 15. *L. libericus* Bret.: 1. flowering branchlet,  $\times 2/3$ ; 2. inflorescence,  $\times 2$ ; 3. petals with detail of indumentum, resp.  $\times 2$  &  $\times 27$ ; 4. stamen,  $\times 4$ ; 5. pistil,  $\times 4$ ; 6. young pod,  $\times 2$  (1-5. Bos 1960; 6. van Meer 98). Drawing by H. de Vries.

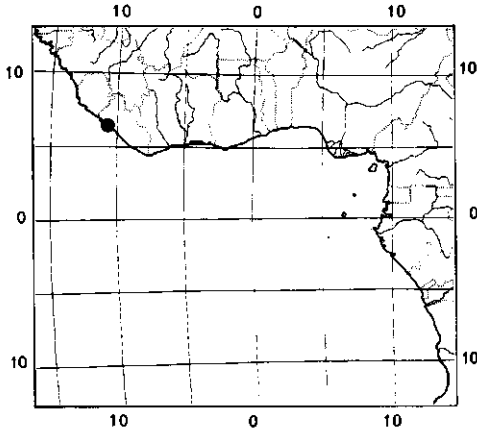


Fig. 16. Distribution of *L. libericus* Bret.

as long as wide, rounded at base, acutely acuminate at apex, the acumen 1–1.5 (–2) cm long, nervation prominent both sides, lateral nerves 4–5 (–7) pairs, glabrous above, appressed-brown-hairy mainly on midrib beneath, glabrescent. Inflorescence a simple or basally branched raceme (panicle), up to 5 cm long, up to ca 15-flowered, appressed-brown-hairy; bracts and bracteoles depressed ovate, 1–1.5 x 1 mm, short-brown-hairy outside, glabrous inside, ± striate, deciduous at or before anthesis. Pedicel (5–) 8–12 (–14) mm long, short-brown-hairy as calyx; Calyx cupular 4–5 mm long, with minute lobes, usually split one side and rucked at anthesis; standard ± circular in outline, 10–11.5 x 10 mm, claw 0.5–1.5 mm, notched at apex, margin short-hairy in apical part; wings oblong, 10–12 x 4–7 mm, claw ca 1 mm, apex with short-hairy margin; keel petals adnate more or less in the middle, elliptic, 10–11 x 5 mm, with a distinct pocket near base, short hairy on outer margin from apex to adnation, claw 1–1.5 mm long; stamens 10, glabrous; filaments 6–9 mm long, anther 2–2.5 mm long, apiculate; pistil 11 mm long, ovary ± appressed-brown-hairy, style more sparsely so glabrous at top, 5.5 mm long. Young fruits subappressed-brown-hairy.

**Distribution:** Western Liberia.

**Ecology:** Rain forest.

**Specimens examined:**

LIBERIA: Gola National Forest, N.E. of Bomi Hills (fl. April) *Bos 1960* (WAG), type; Bomi Hills roadside in Gola National Forest (fl., juv. fr. July) *van Meer 98* (WAG).

**Notes:** *Leucomphalos libericus* is most closely related to *L. discolor*. Both species have a similar hairy inflorescence, a subequal calyx–corolla ratio, and the standard marked by a distinct yellow blotch. The new species differs from *L. discolor* mainly by the narrowly triangular stipules, the longer pedicels, the ciliate petals and the hairy young pods. True, in both species the ovary is hairy, but in *L. discolor* this indumentum is gradually disappearing in fruit development while in the new species from Liberia it remains at least at the same density.



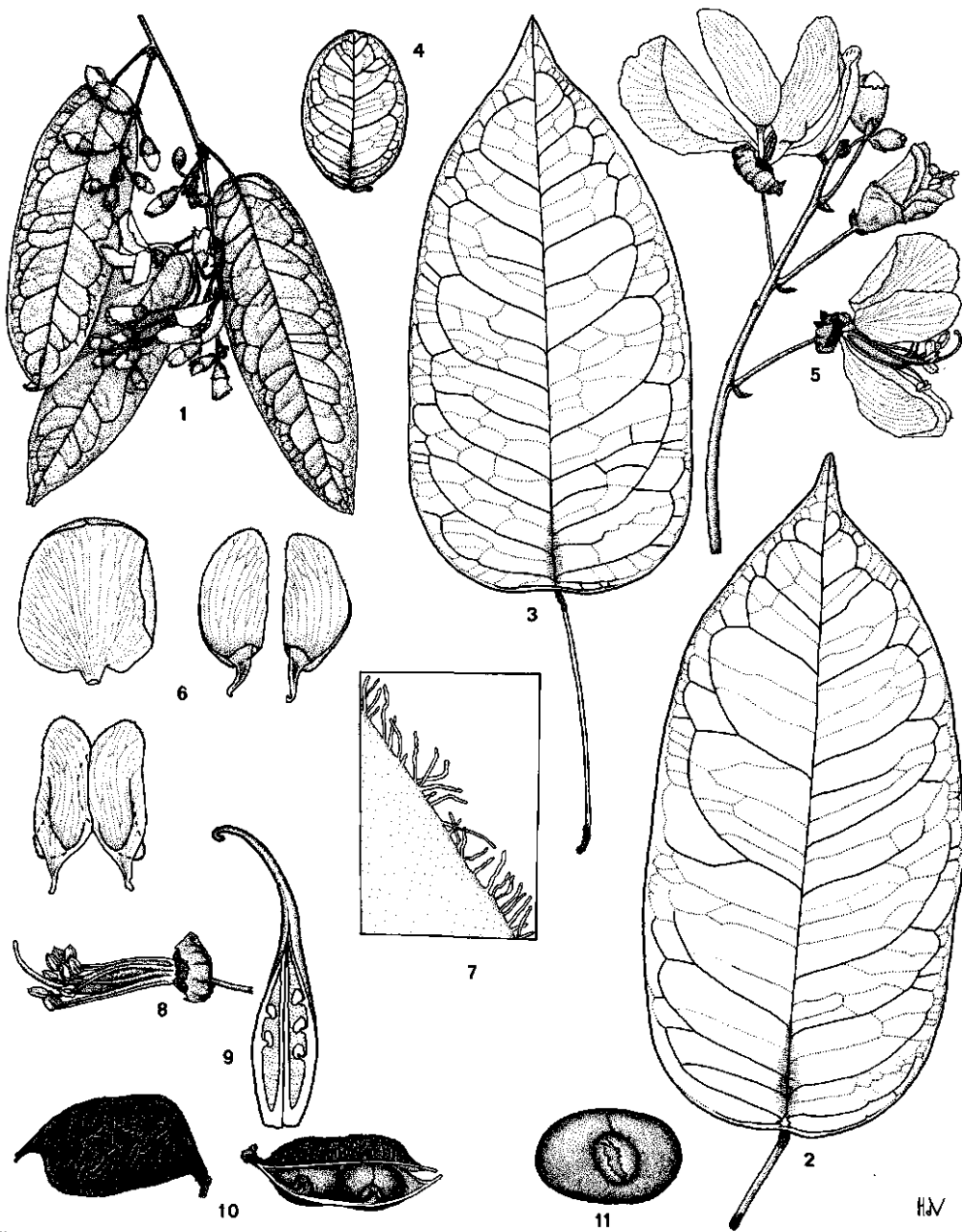


Fig. 17. *L. mildbraedii* (Harms) Bret.: 1. flowering branchlet,  $\times 2/3$ ; 2-4. leaves,  $\times 2/3$ ; 5. part of inflorescence,  $\times 2$ ; 6. petals,  $\times 2$ ; 7. detail of petal indumentum,  $\times 80$ ; 8. flower without petals,  $\times 2$ ; 9. open ovary,  $\times 4$ ; 10. pod, laterally and showing dehiscence,  $\times 1$ ; 11. seed with strophiole,  $\times 2$  (1. *J. & M. Peltier* 1523; 2. *Perrier* 4220; 3. *Breteler* 1482; 4. *Alleizette s.n.*; 5-9. *Breteler* 1285; 10. *Badré* 253; 11. *Breteler* 2770). Drawing by H. de Vries.

**Leucomphalos mildbraedii** (Harms) Breteler comb. nov.

Fig. 17–19.

Basionym: *Bowringia mildbraedii* Harms in Engl. Bot. Jahrb. 49:432 (1913); Bak. f., Leg. Trop. Afr. 2:592 (1929); Pellegrin, Leg. Gabon :259 (1948); Toussaint, Fl. Congo Belge 4:7 (1953); Hepper in Keay, Fl. W. Trop Afr., ed. 2, 1:511 (1958); N. Hallé, Webbia 19:852 (1965); Hall, Kew Bull. 29:498 (1974); Lock, Leg. Afr. Checklist:473 (1989).

Type: Cameroun, between Yokadouma and Assobam, *Mildbraed 4985* (holo- B †; lecto- HBG).

*Bowringia madagascariensis* Viguier, Not. Syst. 16. 3:185 (1951). Type: Madagascar, lower Matitanana, *Perrier de la Bâthie 4176* (lecto-, P).

Shrub or small to medium-sized liana. Branchlets glabrous, often sparsely hairy when young, glabrescent. Stipules early caducous, ovate-triangular, 0.5–2 mm long, usually striate, glabrous or sparsely hairy. Leaves: petiole (0.5–) 1–4.5 (–6) cm long, glabrous to sparsely hairy when young, soon glabrescent; lamina ovate-elliptic to oblong-lanceolate, (1–) 2–3 times as long as wide, (3–) 7–12 (–15) x (1.5–) 2–6 (–8) cm, rounded to cordate and usually slightly peltate at base, acuminate at apex, the acumen 0.5–1.5 (–2) cm long, acute to obtuse rarely notched apically, lateral nerves 4–8 pairs not very distinct from tertiary venation, glabrous above, glabrous to sparsely subappressed-hairy when young beneath, glabrescent. Inflorescence an axillary raceme, basally branched (panicle) or not, up to c. 15-flowered and 8 cm long, the flowers often more or less in 2 rows by twisting of the rhachis, glabrous to more or less brown-short-hairy; peduncle up to 1 cm long; bracts and bracteoles ovate, ± striate, 1–2 mm long. Pedicel (3) 5–12 (–15) mm long, glabrous to sparsely subappressed-brown-hairy; calyx cupular, rucked at anthesis, 3–4 mm long, 3–5 mm wide, lobes very small up to 1 mm long, outside ± evenly sparsely subappressed-brown-hairy or only so on upper part; corolla white, glabrous except for the ciliate apical part of the petals; standard almost circular in outline, 9–14 x 9–13 mm, not or very shallowly notched at apex, subcordate to tapering at base, claw 1–2 mm long; wings with a distinct pocket, elliptic to slightly sickle-shaped, 10–14 x 3–5 mm, claw 1–3 mm long, straight or curved; keel petals with a distinct pocket, ± elliptic, 10–14 x 3.5–5 mm, claw straight or curved 1–2 mm long; stamens 10, glabrous, 7–11 mm long, anthers 1–1.5 mm long, apiculate or not; pistil 9–13 mm long, glabrous, style incurved, ovary shortly stipitate, 5–7-ovulate. Fruits subellipsoid, more or less tapering at both ends, 2.5–4 x 1.2–1.5 (–2) x 0.7–0.8 cm, 1–2 (–3)-seeded, glabrous, distinctly and prominently reticulate-ly veined; seeds ellipsoid, somewhat compressed, 8–12 x 7–8 x 5 mm, smooth, red, with a greyish, brittle strophiole (aril) of 3–4 mm diameter.

**Distribution:** Nigeria, Cameroun, Congo, Zaïre, Angola, Central African Republic, Madagascar.

**Ecology:** Semi-deciduous forest, gallery forest, up to 750 m altitude.

**Specimens examined:**

NIGERIA: Idanre (fr. –) *Bayo in coll. Brenan 8716* (BM, BR, K, P); lower slope of Orosun Mt (fr. Jan.) *Brenan et al. 8677* (K); Ishan Distr. (fl. April) *Daramola FHI 31277* (K); Omo & Shasha F.R. (fr. March) *Jones & Onochie FHI 17182* (K); Palma Camp (fr. Oct.) *Ujor FHI 23925* (K); Onitsha (fr. Sept.) *Unwin 76* (K); Babalola (ster. April) *Verger 937* (P).

CAMEROUN. Bertoua (fl. April) *Breteler 1285* (BR, K, P, WAG); near Yokadouma (fl., fr. June) *Breteler 1482* (BR, K, P, WAG); Bertoua (fl., fr. April) *Breteler 2770* (BR, K, LISC, M, P, WAG); be-

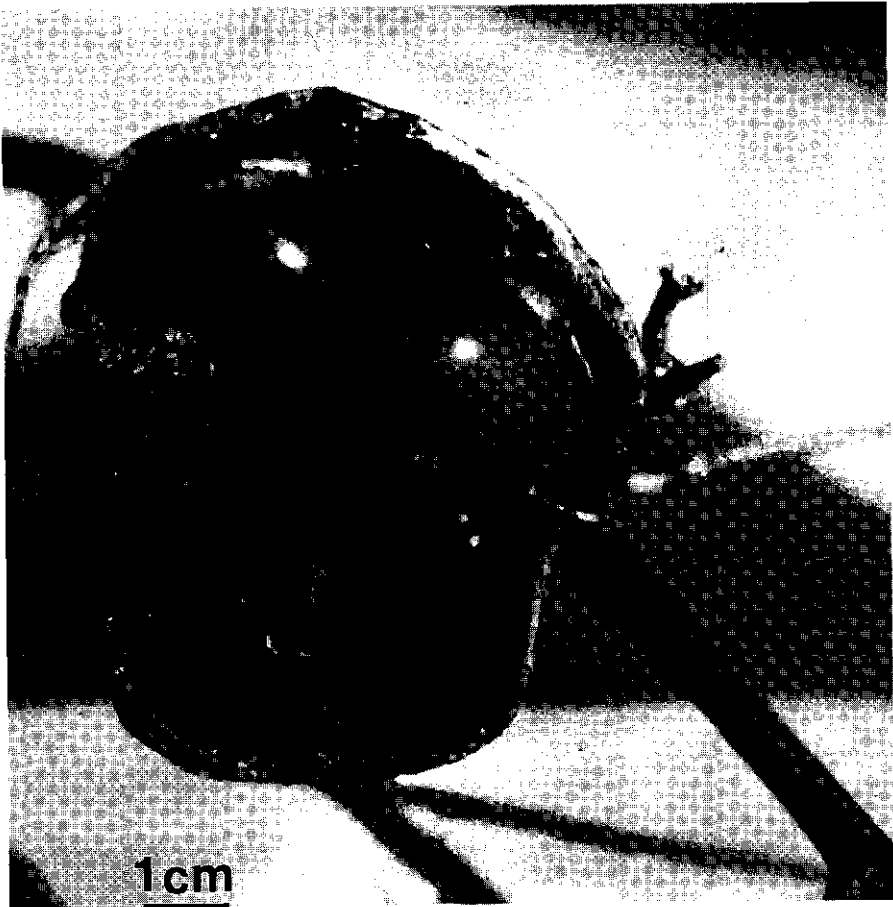


Fig. 18. *L. mildbraedii* (Harms) Bret.: fruiting branchlet (Breteler 2770). Photograph by F.J. Breteler.

tween Dyebadop and Djokne –Boum (fl., fr. May) *Letouzey* 3982 (K, P); 50 km S of Batouri (fr. July) *Letouzey* 5465 (BR, P); 40 km NE of Obala (fl., fr. Nov.) *Letouzey* 9548 (BR, K, P, WAG); between Yokadouma and Assobam (fl. April) *Mildbraed* 4985 (HBG), type; Deng Deng (fl. buds March) *Mildbraed* 8578 (K); (fl. April) 8896 (BM, K); Kongola (fl. April) *Mildbraed* 9006 (BM, K).

CONGO. Djoumouna Forest (fr. April) *Farron* 5121 (P); sin. loc. (fr. –) *Sita* 1543 (P); near Brazzaville (fl. Nov.) *Sita* 1924 (IEC, P); Kinkala (fl., fr. Oct.) *Sita* 2660 (BR, IEC, P); Mbamou Isl. (fl. Nov.) *Sita* 2808 (IEC, P, WAG); near Brazzaville (fl. Nov.) *Sita* 2964 (IEC, P).

ZAIRE. Kinshasa (fl., fr. April) *Bequaert* 7301 (BR, K); Zongo (fl. Nov.) *Breyne* 3505 (BR); Kifuma (fr. July) *Breyne* 4160 (BR); Zongo (fr. Sept.) *Callens* 2853 (BR); Sanga (fl., fr. Nov.) *Callens* 3748 (BM, BR, K, P); sin. loc. (fr. –) *Camp* 39 (BR); Timansi (fr. Jan.) *Compère* 1257 (BR, K); Gombe Matadi (fr. March) *Compère* 1776 (BR, K); Kiyaka-Kwango (fr. Sept.) *Devred* 2636 (BR, M); Boketa (fl., fr. Febr.) *Evrard* 195 (BR); Befale (fr. Febr.) *Evrard* 3522 (BR, K); (fr. May) 4153 (BR, K); Lukaya R. (fr. June) *Evrard* 6282 (BR); near Kinshasa (fr. July) *Gillet* 1697 (BR); Karawa (fl. April) *Goossens* 4089 (BR); Lisala (fl. buds March) *Goossens* 4706 (BR); Kalina (fr. July) *Jans* 550 (BR, K); Lodja (fl. –) *Lebrun* 6249 (BR); Sankuru Forest (fr. Aug.) *Luja* 49 (BR); Kifuma (fl., fr. Dec.) *Pauwels* 5797 (BR, WAG); Zongo (fl., fr. Dec.) *Pauwels* 6063 (BR, WAG); Bena Makima (fr. May) *Sapin s.n.* (BR, K).

ANGOLA. Lunda (fl., fr. Oct.-Dec.) *Cavaco* 1233 (P, WAG); Dundo (fr. July) *Fontinha* 13574 (P);

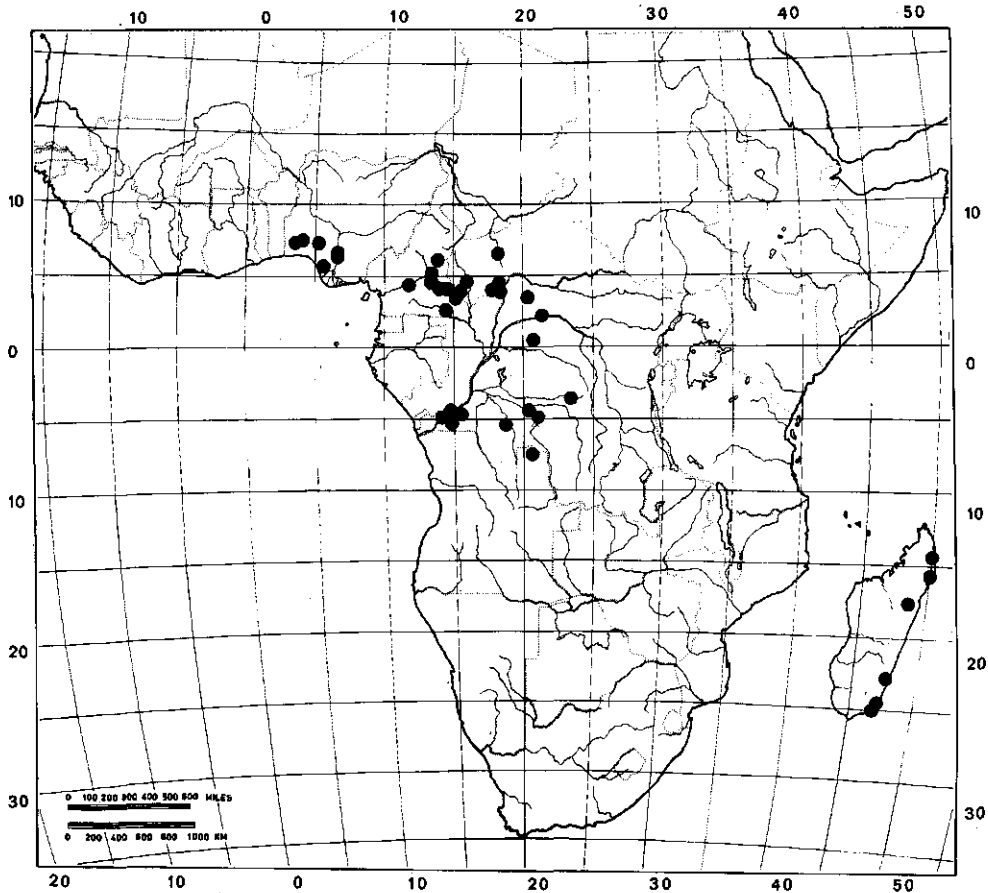


Fig. 19. Distribution of *L. mildbraedii* (Harms) Bret.

(fr. Nov.) *Gossweiler 13574 a* (K); *13574 b* (BM, K); *13574 c* (BM, LISC); (fl. Oct.) *13739* (BM, K, P); *13739 b* (K); (fr. July) *Barros de Machado 70* (LISC).

CENTRAL AFRICAN REPUBLIC. Carnot (fr. Nov.) *Badré 253* (P, WAG); Youmba (fl. Aug.) *Chevalier 5116* (K, P); Yalinga (fr. Oct.) *Le Testu 4264* (BM, BR, K, LISC, P); (fl. March) *4632* (BM, BR, L, LISC, P); Boukoko (fl. -) *Sillans s.n.* (P); (fl. March) *Equipe Tisserant 775* (BM, BR, P); (fr. July) *1031* (BM, K, P); Bangui (fl. March) *Tisserant 2849* (P); Bayanga (fl. Febr.) *Wraber 70* (K).

MADAGASCAR. S of Farafangana (fr. Oct.) *Capuron SF 23578* (BR, K, P); Anjabe (fl. Oct.) *Cons. Rés. Nat. RN 9241* (K, P); Fort Dauphin (fl. Oct.) *Decary 10819* (K, P); Fitana (fl. Oct.) *Humbert 6037* (P); Alaotra Lake (fl. Oct.) *Humbert & Cours 17492* (K, P); Mangotry (fl. Nov.) *J. & M. Peltier 1523* (BR, HBG, K); Bas Matitanana (fl., fr. Sept.) *Perrier de la Bâthie 4176* (P), type of *Bowringia madagascariensis*; Antongil (fl. -) *Perrier de la Bâthie 4220* (P).

**Notes:** The material from Madagascar, to date always distinguished as belonging to another species, has been included in *L. mildbraedii*. The Madagascar specimens, not differing in flower or fruit characters, are very slightly different from the mainland ones in the following aspects: usually smaller and a little more hairy

leaves and a denser indumentum on the inflorescences as well as on the calyx. These differences, gradual as they are, are insufficient for maintaining *Bowringia madagascariensis* as a distinct species, nor are they worth recognition at the infraspecific level.

Contrary to the closely related *L. callicarpus*, the flowers of *L. mildbraedii* have never been reported as fragrant.

In this species it has been observed that in open flowers very often the standard is not found in its original adaxial position, but in a more or less abaxial situation. This change of position is achieved by twisting of the pedicel as could clearly be examined in a flowering specimen (*Breteler 1285*) from Cameroun. In *Carpolobia lutea* G. Don of the *Polygalaceae* a more or less similar phenomenon has been observed (*Breteler & Smissaert-Houwing, 1977*). The twisting in *L. mildbraedii* most likely occurs when the adaxial position of the standard is not favourable for insect visit. This may be so when the slender rhachis of the inflorescence is not in an upright position but more or less pendulous.

So far *L. mildbraedii* has not been collected in Gabon. Exploration in the NE part of the country adjacent to Cameroun could reveal its presence there, comparable to the distribution in Gabon of *Keayodendron bridelioides* Leandri (*Breteler, 1993*). Where *L. mildbraedii* is absent, i.e. around the Bay of Biafra, *L. caparideus* occurs.

## Excluded species

*Baphiastrum bequaertii* De Wild., Pl. Bequaert. 3 (1):308 (1925) = *Baphia pilosa* Baill. subsp. *pilosa*, Soladoye, Kew Bull. 40:341 (1985).

*Baphiastrum borneënsse* (Oliv.) Yakovl., Bot. Zhurnal 52:1645 (1967) (Basionym: *Baphia borneënsse* Oliv.) = *Airyantha borneënsis* (Oliv.) Brummitt, Kew Bull. 22:378 (1968).

*Baphiastrum calophylla* (Harms) De Wild., Pl. Bequaert. 3 (1):311 (1925) (Basionym: *Baphia calophylla* Harms) = *Baphia pilosa* Baill. subsp. *batangensis* (Harms) Soladoye, l.c.: 343.

*Baphiastrum claessensii* De Wild., l.c. = *Baphia pilosa* Baill. subsp. *pilosa*, Soladoye l.c.: 341.

*Baphiastrum confusum* (Hutch. & Dalz.) Pellegr., Bull. Soc. Bot. Fr. 90:162 (1944) (Basionym: *Baphia confusa* Hutch. & Dalz.) = *Airyantha schweinfurthii* (Taub.) Brummitt subsp. *confusa* (Hutch. & Dalz.) Brummitt, l.c.: 381.

*Baphiastrum elegans* (Lester-Garland) De Wild., l.c.: 312 (Basionym: *Baphia elegans* Lester-Garland) = *Baphia pilosa* Baill. subsp. *batangensis* (Harms) Soladoye, l.c.: 343.

*Baphiastrum klainei* (De Wild.) De Wild. l.c.: 312 (Basionym: *Baphia klainei* De Wild.) = *Baphia pilosa* Baill. subsp. *batangensis* (Harms) Soladoye, l.c.: 343.

*Baphiastrum klainei* (De Wild.) De Wild. var. *patulo-pilosum* (De Wild.) De Wild., l.c.: 313 (Basionym: *Baphia klainei* De Wild. var. *patulo-pilosum* De Wild.) = *Baphia pilosa* Baill. subsp. *pilosa*, Soladoye l.c.: 341.

*Baphiastrum pilosa* (Baill.) De Wild., l.c.: 313 (Basionym: *Baphia pilosa* Baill.) = *Baphia pilosa* Baill. subsp. *pilosa*, Soladoye l.c.: 341.

*Baphiastrum spathaceum* sensu Staner, Ann. Soc. Sci. Brux. 56:427 (1936) & sensu Toussaint, Fl. Congo Belge 4:31 (1953) = *Airyantha schweinfurthii* (Taub.) Brummitt subsp. *schweinfurthii*, Brummitt, l.c.: 380.

*Baphiastrum tisserantii* Pellegr. Bull. Soc. Bot. Fr. 90:163 (1944) = *Airyantha schweinfurthii* (Taub.) Brummitt subsp. *schweinfurthii*, Brummitt l.c.: 380.

*Baphiastrum vermeulenii* (De Wild.) De Wild., l.c.: 313 (Basionym: *Baphia vermeulenii* De Wild.) = *Baphia pilosa* Baill. subsp. *pilosa*, Soladoye l.c.: 341.

### Note concerning Figures 1–3

The distributions of the genera shown in Fig. 1 are partly copied from literature, partly produced here for the first time.

The distribution of the genus *Airyantha* is after Brummitt (1968) with one species, *A. schweinfurthii* (Taub.) Brummitt, in Africa and one, *A. borneënsis* (Oliv.) Brummitt, in Asia.

*Baphia*'s distribution (47 species) has been taken from Soladoye's (1985) revision and from Stirton & Du Puy (1992) and Breteler (1994).

The map of *Leucomphalos* is produced from the present revision.

Figure 2 and 3 form the base for the distribution map of *Dalhousiea*, with one species, *D. africana* S. Moore in Central Africa and one (possibly two) species in NE India and Bangladesh.

The following specimens of *Dalhousiea* have been examined.

Fig. 2. *Dalhousiea africana* S. Moore

CAMEROUN: Efulen (fl. June) Bates 270 (BM, BR, K); 20–25 km Kribi-Lolodorf (fl. May) Bos 4664 (BR, K, P, WAG); (fl. June) 4798 (BR, K, P, WAG); (fl. Jan.) 6140 (BR, K, P, WAG); (fl. March) 6597 (WAG); (fl. April) 6746 (BR, K, P, WAG); 10 km W of Béla (fl. Dec.) de Kruif 800 (WAG); 50 km W of Béla (fl. buds Dec.) de Kruif 830 (WAG); 72 km Ebolowa-Ambam (fl., fr. Jan.) J.J. de Wilde 7907 (BR, WAG); 40 km S of Badjob (fl. Dec.) (fl. Dec.) W. de Wilde c.s. 1539 (BR, P, WAG); (fl., fr. Dec.) 1599 (BR, K, P, WAG); 65 km SSW of Eséka (fl. June) W. de Wilde c.s. 2729 (BR, K, P, WAG); 2729 B (P, WAG); Gross Batanga (fl. –) Dinklage 704 a (P); 704 b (P, WAG); 8 km W of Masok (fl. April) Leeuwenberg 5422 (BR, K, P, WAG); 58 km Edea-Kribi (fl. May) Leeuwenberg 5694 (BR, K, P, WAG); 38 km SSE of Djoum (fl. Nov.) Letouzey 8392 (K, P); near Kinsassa (fl. March) Letouzey & Villiers 10483 (K, P); 90 km SE of Djoum (fl. Jan.) Letouzey 11836 (K, P); 5 km E of Mbanga (fl. April) Letouzey 14741 (BR, K, P); Lolodorf (fl. –) Staudt 386 (K, P); 25 km N of Moloundou (fl. buds April) Villiers 635 (P); Bipindi (fl. –) Zenker 17 (BR, P); (fl. –) 317 (BR, P, WAG); (fl. –) 2265 (BM, K, P, WAG); (fl. –) 3330 (P); (fl. –) 3369 (BM, BR, K, P); (fl. –) 3916 (BM, BR, K, P).

EQUATORIAL GUINEA: Nkolentangan (fl. Jan.) Tessmann 131 (K).

GABON: Waka (fl. Nov.) Arends et al. 396 (BR, WAG); Libreville (fl. buds –) Autran 12 (P); Mts de Cristal (fl. July) Bos et al. 10503 (BR, WAG); 10591 (BR, WAG); 16 km Moanda-Mbinda (fl. Sept.) Breteler 6470 (BR, WAG); 70 km SSW of Moanda (fl. buds Oct.) Breteler 6887 (BR, WAG); 24 km N of Koumameyong (fl., fr. April) Breteler et al. 8572 (BR, WAG); 5–10 km E of St. Germain (fr. April) Breteler et al. 8859 (BR, WAG); 5–30 km NW of Ndjolé (fr. April) Breteler et al. 10901 (WAG); (fl. April) 10922 (WAG); ca 70 km E of Lastoursville (fr. Nov.) Breteler c.s. 12384 (WAG); 12–45 km NE of Asok (fl. Aug.) Breteler & de Wilde 122 (BR, WAG); Bélinga (fl. buds Sept.) Breteler & de Wilde 698 (BR, WAG); 88 km NNW Doussala (fl. buds March) de Wilde & Jongkind 9531 (BR, WAG); between Tchimbélé and Kinguélé (fl. Jan.) de Wilde et al. 25 (BR, WAG); 71 (BR, WAG); 297 (BR, WAG); SE of Tchibanga (fl. Febr.) de Wilde et al. 594 (BR, WAG); Mpassa (fl. buds June) Gentry 33004 (WAG); Makokou (ster. Febr.) N. Hallé 1202 (P); Ayem (fl. April) N. Hallé 1958 (P); Bélinga (fl. Jan.) N. Hallé 3642 (P); (fl. June) 4118 (P); Lebamba (fl. May) Hallé & Cours 5857 (P); Mpassa (fl. Oct.) Hladik 1575 (P); (fl. buds May) 2104 (P); (fl. Nov.) Leeuwenberg 11467 (BR, WAG); Mts de Cristal (fl. Sept.) Leeuwenberg & Persoon 13539 (WAG); Tchibanga (fl. Febr.) Le Testu 1699 (BM, BR, P); Inganga (fl. May) Le Testu 1745 (BM, BR, P); between Mouila and Ndende (fl. Dec.) Le Testu 5149 (BM, BR, K, P); Mouila (fl. Jan.) Le Testu 5198 (BM, BR, P); Lastoursville (fl. April) Le Testu 7199 (BM, P); (fl. May) 7315 (BM, BR, P); Oyem (fl. June) Le Testu 9178 (Bm, BR, P); 30–40 km SE Achouka (fr. Nov.) Louis et al. 661 (BR, WAG); (fl. Nov.) 672 (BR, WAG); 32 km SE Sindara (fl. Dec.) Louis et al. 1219 (BR, WAG); km 50 Ndjolé-Ayem (fl. buds March) Louis 1738 (WAG); Oveng (fl. May) Louis 2115 (WAG); eastern border Lopé-Okando Res. (fl. Dec.) McPherson 15617 (BR); Onangué Lake (fl., fr. Nov.) Pobeguain 31 (BR, P); 10 km N of Booué (fl. buds April) Reitsma c.s. 614 (WAG); Oveng (fl. March) Reitsma c.s. 722 (WAG); (fl. April) 764 (WAG); (fl. May) 874 (WAG); 932 (WAG); (ster. Sept.) 1552 (WAG); 1553 (WAG); 10 km N of Djidji (fr. May) Reitsma c.s. 3414 (WAG); Lastoursville (fl. Nov.) van der Maesen et al. 5557 (WAG).

CONGO: Ngongo (fl. buds March) Attims 126 (P); Djoumouna (fl. Sept.) Bitsindou 413 (P); Moutampa (fl. Dec.) Bouquet 862 (P); Bouba (ster. Jan.) Bouquet 1055 (P); Mafouta-Misasa (ster. Jan.) Bouquet 1129 (P); Mouanda Rd. (fl. May) Bouquet 1387 (P); Mangokélé (fl. July) Bouquet 1624 (P);

Brazzaville (fl. Jan.) *Chevalier* 1112 (P); Boko (fl. Aug.) *de Néré* 425 (P); 550 (P); Brazzaville (fl. Dec.) *de Wit* 6009 (BR, WAG); Kouilou (fl. buds Jan.) *Dowsett-Lemaire* 1536 (BR); near Pointe Noire (fl. buds Febr.) *Farron* 4958 (P); Brazzaville (fl. buds March) *Koechlin* 853 (P); Kokomoeka (fl. Jan.) *Lecomte D 21* (P); *B 87* (P); Brazzaville (fl. Febr.) *Pobeguain* 30 (P); (fl. Jan.) *Sita* 1499 (P); sin.loc. (fl., fr. -) *Thollon s.n.* (P).

ZAIRE (a selection of the more than 250 specimens examined): Malela (fl. July) *Becquaert* 8 (BR, K); Walikale (fl. Jan.) *Bequaert* 6696 (BR); Limbutu (fl. -) *Body* 26 (BR); Eala (fl. buds April) *Bonnivair* 43 (BR); Bombo R. (fl. Dec.) *Breyne* 707 (BR); Mpese (fl. buds Dec.) *Callens* 1981 (BR); Kisungu (fl. Febr.) *Callens* 2452 (BM, BR); St. Trudon (fl. Oct.) *Casier* 93 (BR); Muetshi (fl., fr. Dec.-Febr.) *Casier* 197 (BR); Basoko (fr. July) *Claessens* 610 (BR); Kinanga (fl. Nov.) *Compère* 847 (BR, K); Eala (fl. Febr.) *Corbisier Baland* 869 (BR, K, P); Matadi (fl. Nov.) *Dacremont* 351 (BR, K); Likimi (fl. Jan.) *De Giorgi* 185 (BR); Mobwasa (fl. May) *De Giorgi* 806 (BR); Kiyaka (fl. Aug.) *Devred* 2381 (BR); Luki (fl. Febr.) *Devred* 3113 (BR); Bokondji (fl. buds May) *De Wanckel* 35 (BR); Botsima (fl. buds Febr.) *Dhetchuwi* 789 (BR); Umangi (fl. May) *Duchesne* 17 (BR); Boketa (fl. buds March) *Evrard* 514 (BR); Mondombe (fl. buds Febr.) *Evrard* 3027 (BR); Amateka (fl. Aug.) *Evrard* 4594 (BR); Bosankusu (fr. Sept.) *Evrard* 4758 (BR); Djoa (fr. Oct.) *Evrard* 5040 (BR); Djuma valley (fl. July) *Gentil s.n.* (BR); Kakenge (fl. -) *Gillardin* 300 (BR, K); Port Franqui (fl. May) *Gillardin* 370 (BR); Sangaia (fl. Oct.) *Gillardin* 455 (BR); Mukumari (fl. buds May) *Gillardin* 588 (BR); Kimuenza (fl. May) *Gillet* 2175 (BR); Karawa (fl. buds March) *Goossens* 4007 (BR); Budjala (fl. buds May) *Goossens* 4697 (BR); Ingende (fl. June) *Goossens* 6031 (BR, K); Wendji (fl. -) *Lebrun* 1018 (BR, K); Bumbuli (fl. Nov.) *Lebrun* 6526 (BR, K); Yaligimba (fl. -) *Le Jeune* 81 (BR, K); Madibi (fl. June) *Lescauwaet* 108 (BR); Bakwa Nsakalonga (fr. Nov.) *Liben* 1984 (BR); Dibaya (fl. Jan.) *Liben* 2303 (BR); Musoko (fl., fr. Aug.) *Liben* 3515 (BR); near Kisangani (fl., fr. June) *Lisowski* 45486 (BR, K); Likata (fl., fr. Dec.) *Lisowski* 46884 (BR, K); Yangambi (fr. Aug.) *J. Louis* 5715 (BR); Lubue (fl. -) *Luja* 295 (BR); Likimi (fl., fr. Febr.) *Malchair* 104 (BR); Pangi (fl., fr. -) *Michelson* 358 (BR, K); Yambata (fl. -) *Montchal* 164 (BM, BR); Popokabaka (fl. Febr.) *Pauwels* 844 (BR, WAG); Dobo (fl. May) *Pynaert* 32 (BR); MUSA (fl. buds May) *Sparano* 36 (BR); Kanango (fl. -) *Sparano* 136 (BR); Mombongo (fl. Febr.) *Thonner* 149 (BR); Mabali (fl. Nov.) *Thonnet* 160 (BR, K); Leverville (fl. -) *Vanderyst* 6159 (BR); Gombe (fl. June) *Vermoesen* 2384 (BR, P); Sanda (fl. Nov.) *Verschueren* 938 (BR); Kizu (fl. March) Wellens 241 (BR).

ANGOLA: Noki (fl. -) *Dawe* 107 (K); Loanda (fl. -) *Gossweiler* 615 (BM, K, P); (fl. Oct.) 4392 (BM, K); Chilungo (fl. -) *Gossweiler* 6483 (K); Buco Zau (fl. Dec.) *Gossweiler* 6885 (BM); Dundo (fl. Oct.) *Gossweiler* 13695 (BM, K, P); sin.loc. (fl. -) *Monteiro s.n.* (K); Dalamboa (fl. Oct., fr. May) *Welwitsch* 2236 (BM, K, P).

CENTRAL AFRICAN REPUBLIC: 15 km SW Mbaïki (fl. May) *Badré* 34 (P); confluent Oubangui and Congo (fl. Dec.) *Fidao s.n.* (BR, K, P); 6 km Nola-Salo (fr. Dec.) *Leeuwenberg* 7183 (BR, K, P, WAG); Boukoko (fl. July) *Tisserant (équipe)* 11 (BM, BR, P); 381 (BM, BR, P); (fr. Aug.) 1095 (BM, P).

### Fig. 3. Asiatic specimens of *Dalhousiea*.

BANGLA DESH: Sylhet station (fl. Dec.) *Clarke* 14369 (BM); (fl. -) *da Silva & Gomez* 5339 (BM, K); East Bengal (fl. -) *Griffith* 1762/1 (BM, P); Sylhet (ster. Dec.) *Hooker f. & Thomson s.n.* (K); (fl., fr. Aug.) *s.n.* (K, P); Chittagong (ster. July) *Hooker f. & Thomson s.n.* (K); Pelaid (fl. Nov.) *Hooker f. & Thomson s.n.* (K); Sylhet-Churra (fl. Aug.) *Hooker f. & Thomson s.n.* (K); Sylhet (fl. buds -) *Wallich* 5339 (*Herb. Richard*) (K, P); (fl. May) *Watt* 7246 (BM, K).

INDIA: Assam (fl. -) *Beddome s.n.* (BM); Assam (fl. -) *Griffith* 705 (BM); Assam (fl. -) *Jenkins* 50 (K, P); (fl., fr. -) 610 (K); Assam (fl. -) *Masters* 547 (K, P); (fl. buds -) *Pierre* 215 (P); (ster. -) 216 (P); Cachar (fl. May) *Præzer* 75 (K, P); sin.loc. (fl. -) *Roxburgh s.n.* (BM); Cachar, (fr. Sept.) *Shaik Mokim* 170 (BM); Assam (fl. buds) *Simons s.n.* (P); Cachar (fl. May) *Tessier-Yandell* 160 (K); Assam (fl. -) *Wallich* 50 (K).



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## Index to scientific names

Synonyms are in *italics*. Page numbers of principal entries are in **bold face**, those of figures and maps in *italics*.

Airyantha Brummitt .....	2,3,5,6,7,8,10,21
Airyantha borneënsis (Oliv.) Brummitt .....	<b>35</b>
Airyantha schweinfurthii (Taub.) Brummitt .....	<b>35</b>
Airyantha schweinfurthii (Taub.) Brummitt subsp. <i>confusa</i> (Hutch. & Dalz.) Brummitt .....	<b>35</b>
Airyantha schweinfurthii (Taub.) Brummitt subsp. <i>schweinfurthii</i> .....	<b>35</b>
Baphia Afzel. ex Lodd. ....	2,3,5,6,7,8,10,25,36
<i>Baphia boonei</i> De Wild. ....	<b>13</b>
<i>Baphia borneënsis</i> Oliv. ....	<b>35</b>
<i>Baphia calophylla</i> Harms .....	<b>35</b>
<i>Baphia confusa</i> Hutch. & Dalz. ....	<b>35</b>
<i>Baphia elegans</i> Lester-Garland .....	<b>35</b>
Baphia group .....	3,5,6,7,8,10
<i>Baphia klainei</i> De Wild. ....	<b>35</b>
<i>Baphia klainei</i> De Wild. var. <i>patulo-pilosum</i> De Wild .....	<b>35</b>
<i>Baphia micrantha</i> Ridley .....	<b>18,21</b>
<i>Baphia pilosa</i> Baill. subsp. <i>batangensis</i> (Harms) Soladoye .....	<b>35</b>
<i>Baphia pilosa</i> Baill. subsp. <i>pilosa</i> .....	<b>35</b>
<i>Baphia vermeulenii</i> De Wild. ....	<b>35</b>
<i>Baphiastrum</i> Harms .....	2,3,4,5,6, <b>10,11</b>
<i>Baphiastrum bequaertii</i> De Wild. ....	<b>35</b>
<i>Baphiastrum boonei</i> (De Wild.) Verm. ex de Wild. ....	<b>13,18</b>
<i>Baphiastrum borneënsis</i> (Oliv.) Yakovl. ....	<b>35</b>
<i>Baphiastrum brachycarpum</i> Harms .....	2,10, <b>13,17</b>
<i>Baphiastrum calophylla</i> (Harms) De Wild. ....	<b>35</b>
<i>Baphiastrum claessensii</i> De Wild. ....	<b>35</b>
<i>Baphiastrum confusum</i> (Hutch. & Dalz.) Pellegr. ....	<b>35</b>
<i>Baphiastrum elegans</i> (Lester-Garland) De Wild. ....	<b>35</b>
<i>Baphiastrum klainei</i> (De Wild.) De Wild. ....	<b>35</b>
<i>Baphiastrum klainei</i> (De Wild.) De Wild. var. <i>patulo-pilosum</i> (De Wild.) De Wild. ....	<b>35</b>
<i>Baphiastrum micranthum</i> (Ridley) Yakovl. ....	<b>18</b>
<i>Baphiastrum pilosa</i> (Baill.) De Wild. ....	<b>35</b>
<i>Baphiastrum spathaceum</i> sensu Staner, & sensu Toussaint .....	<b>35</b>
<i>Baphiastrum tisserantii</i> Pellegr. ....	<b>35</b>
<i>Baphiastrum vermeulenii</i> (De Wild.) De Wild. ....	<b>35</b>
Baphieae .....	3
<i>Bowringia</i> Champ. ex Benth. ....	2,3,4,5,6, <b>10</b>
<i>Bowringia callicarpa</i> Champ. ex Benth. ....	10, <b>18</b>
<i>Bowringia discolor</i> J.B. Hall .....	<b>25</b>
<i>Bowringia mildbraedii</i> Harms .....	2,10,20, <b>31</b>
<i>Bowringia madagascariensis</i> Viguier .....	<b>31,34</b>
Cadia group .....	3
<i>Carpolobia lutea</i> G. Don (Polygalaceae) .....	34

Dalhousiea R. Grah. ex Benth. ....	3,6,7,8,10,36
Dalhousiea africana S. Moore .....	9,10,36
Dalhousiea, Asian specimens .....	9,37
Keayodendron bridelioides Leandri (Euphorbiaceae) .....	34
Leucomphalos Planchon .....	3,4,5,6,7,8,10,24,36
Leucomphalos brachycarpus (Harms) Breteler <b>comb. nov.</b> .....	4,5,10,11,12,13,14,15,16,17,27
Leucomphalos callicarpus (Champ. ex Benth.) Breteler <b>comb. nov.</b> .....	4,5,6,7,10,11,18,21,34
Leucomphalos capparideus Benth. ex Planch. ....	4,5,10,11,18,20,21,22,23,24,34
<i>Leucomphalos capparideus</i> auct. non Benth. ex Planch. ....	25,27
Leucomphalos discolor (J.B. Hall) Breteler <b>comb. nov.</b> .....	4,11,25,26,27,29
Leucomphalos libericus Breteler <b>sp. nov.</b> .....	4,11,27,28,29
Leucomphalos mildbraedii (Harms) Breteler <b>comb. nov.</b> .....	4,6,30,31,32,33,34
Ormosia (group) .....	6
Sophoreae .....	2,3,6