

CARDIOPTERIDACEAE (H. Sleumer, Leyden)

1. CARDIOPTERIS

[WALL. *ex*] ROYLE, Ill. Bot. Himal. Mts (1834) 136, *in text*; *em.* Bl. Rumphia 3 (1847 or 1849) 205; *ibid.* 4 (1849) t. 177; HASSK. Flora 30 (1847) 110, *in adnot.*; Nat. Tijds. N. I. 10 (1855) 64; ENGL. in E. & P. Nat. Pfl. Fam. 3, 5 (1893) 239, 257 ('*Cardiopteryx*'); BAKH. *f.* & STEEN. Fl. Mal. Bull. 15 (1960) 725; Taxon 11 (1962) 28; BACK. & BAKH. *f.* Fl. Java 2 (1965) 62. — *Sioja* BUCH.-HAM. *ex* LINDL. Nat. Syst. ed. 2 (1836) 82, *nom. nud.* — *Peripterygium* HASSK. Tijds. Nat. Gesch. Phys. 10 (1843) 142; Cat. Hort. Bog. (1844) 235; SLEUM. in E. & P. Nat. Pfl. Fam. ed. 2, 20b (1942) 400; AMSH. in Back. Bekn. Fl. Java (*em. ed.*) 6 (1948) fam. 135, p. 9. — Fig. 1.

Sinistrorsely twining herbs with white milky juice. *Leaves* spirally arranged, simple or lobed to varying degrees, cordate, palmatinerved, long-petioled, glabrous as is the stem, exstipulate. *Flowers* bisexual, or polygamous (andromonoecious), small, subsessile, in unilateral repeatedly forked cincinni, composed of loose axillary panicles, ebracteate. *Calyx* deeply (4-)5-partite, lobes imbricate in bud, whether or not slightly accrescent in fruit, persistent. *Petals* (4-)5, caducous, lower half forming a widely funnel-shaped corolla, lobes imbricate in bud. *Stamens* (4-)5 inserted on the upper part of the corolla tube, alternate with its lobes; filaments very short, glabrous; anthers medifixed, introrse; pollen grains oblate, triangular in polar view, tricolporate. *Disk* absent. *Ovary* oblong-ovoid, subquadrangular (rudimentary in δ), 1-celled; styles 2, one with a deep longitudinal groove, and two unequal ovate rather obtuse distal divisions, accrescent in fruit and becoming linear and succulent then, the other short-curved, capitate at apex, deciduous; ovules 2 (often one of them aborted), pendent from apex of cavity, anatropous, with dorsal raphe. *Fruit* indehiscent, compressed, with 2 longitudinal broad and transversely striate stramineous wings, obovate-elliptic to orbicular in outline, apex emarginate, crowned by the columnar accrescent soft and green stigma, base very shortly or hardly (Mal.), sometimes elongately contracted into a kind of stipe. *Seed* 1, linear, sulcate; testa thin; embryo minute, conical, in top of granular fleshy albumen.

Distr. Two *spp.*, one in SE. Asia and W. Malesia, and one in E. Malesia.

Ecol. Climber on edge of (mostly secondary) forest and thickets, in open places as limestone rocks.

Uses. The leaves are eaten as a vegetable.

Taxon. *Cardiopterys* was conceived as type of a monogeneric family by BLUME (1847 or 1849) and R. BROWN (1852); it was considered to constitute a subfamily of the *Icacinaceae* by ENGLER (1893) and POST & KUNTZE (1904), and again as a distinct family within the *Celastrales* by KING (1893), WILLIAMS (1915, as *Peripterygiaceae*), GAGNEPAIN (1910, 1911), SLEUMER (1942, as *Peripterygiaceae*), HUTCHINSON (1959) and TAKHTAJAN (1966).

The pollen of the genus shows no distinctive features against *Icacinaceae* and resembles very much that of the Afro-Malagasian genus *Cassinopsis* SONDER.

Note. The family name *Cardiopteridaceae* is derived from the original spelling *Cardiopterys* used by WALLICH and later by BLUME and others. ENGLER changed the name to *Cardiopteryx*, which would be more correct as an allusion to the winged fruit, a substitute name, however, which cannot be used according to the Code; for this reason, the family name '*Cardiopterygaceae*', proposed recently, has not been used.



Fig. 1. *Cardiopteris moluccana* BL. a. Habit, with ♂ inflorescence, $\times \frac{1}{2}$, b. ♂ flower, corolla and stamens, $\times 15$, c. ♀ flower, corolla and ovary, $\times 15$, d. flower, lateral view with calyx and corolla, $\times 7$, e. flower calyx, $\times 10$, f. infructescence, $\times \frac{1}{2}$ (a-f BLUME).

KEY TO THE SPECIES

- 1. Leaves membranous, generally ± deeply and ± acutely 3-5(-9)-lobed, very rarely (sub)entire. Inflorescence 1-2(-3)-forked, cincinni rather few-flowered. 1. *C. quinqueloba*
- 1. Leaves firmly chartaceous, entire. Inflorescences with more numerous forks, cincinni rather many-flowered. 2. *C. moluccana*

1. *Cardiopteris quinqueloba* (HASSK.) HASSK. Nat. Tijd. N. I. 10 (1855) 64. — *Peripterygium quinquelobum* HASSK. Tijd. Nat. Gesch. Phys. 10 (1843) 142; Cat. Hort. Bog. (1844) 235; SLEUM. in E. & P. Nat. Pfl. Fam. ed. 2, 20b (1942) 400, f. 120 F-G; AMSH. in Back. Bekn. Fl. Java (em. ed.) 6 (1948) fam. 135, p. 9. — *C. javanica* BL. Rumphia 3 (1847 or 1849) 206, *nom. illeg.*; *ibid.* 4 (1849) t. 177, f. 1A; BACK. & BAKH. f. Fl. Java 2 (1965) 63. — *C. lobata* R. BR. [in WALL. Cat. (1847) n. 8033] in Benn. & Br. Pl. Jav. Rar. (1852) 246, t. 49, *nom. illeg.*; MIQ. Fl. Ind. Bat. 1 (1856) 799; MAST. in Hook. f. Fl. Br. Ind. 1 (1875) 597; KURZ, J. As. Soc. Beng. 44, ii (1875) 157; BECC. Malesia 1 (1877) 131; KING, J. As. Soc. Beng. 64, ii (1895) 131; GAGNEP. Fl. Gén. I.-C. 1 (1912) 849; BACK. Schooffl. Java (1911) 230; KOORD.-SCHUM. Syst. Verz. 1, Fam. 162 (1912) 6; MERR. En. Born. (1921) 357; RIDL. Fl. Mal. Pen. 2 (1923) 464; CRAIB, Fl. Siam. En. 1 (1926) 276; BURK. Dict. (1935) 456; KANJILAL c.s. Fl. Assam 1, 2 (1936) 254; HENDERS. J. Mal. Br. R. As. Soc. 17 (1939) 59; GAGNEP. Fl. Gén. I.-C. Suppl. (1948) 759; HEYNE, Nutt. Pl. 1 (1950) 987; WU & WANG, Act. Phytotax. Sin. 6 (1957) 284; LARSEN, Dansk Bot. Ark. 23 (1963) 71. — *C. rumphii* BAILL. Adansonia 10 (1872) 280, *nom. illeg.*, *incl. var. lobata* BAILL. *et var. subhamata* BAILL. l.c. 281; DC. Prod. 17 (1873) 26; SCHEFF. Ann. Jard. Bot. Btzg 1 (1876) 14. — *C. platycarpa* GAGNEP. Not. Syst. 1 (1910) 198; Fl. Gén. I.-C. 1 (1911) 847, f. 104, *p.p.*, f. 105. — *Peripterygium platycarpum* (GAGNEP.) SLEUM. Notizbl. Berl.-Dahl. 15 (1940) 257; in E. & P. Nat. Pfl. Fam. ed. 2, 20b (1942) 400. — *C. moluccana* (non BL.) WU & WANG, Act. Phytotax. Sin. 6 (1957) 284.

Much branched with twining terete stems, which often preserve their freshness after the fall of the leaves and are loaded with fruits then, 2-5(-9) m. Leaves widely spaced, polymorphous, broadly ovate in outline, with a cordate base, generally ± deeply or irregularly 3-5(-9)-lobed, apex generally acutish, lateral lobes acute or obtuse, very rarely entire or almost so, herbaceous, caducous, pale green, (4)-6-12(-17) by (3)-4-7(-16) cm, main nerves 7-9 radiating from apex of the petiole, slightly raised beneath, veins rather obscure; petiole (3)-5-12 cm. Panicles solitary on 3-5(-10) cm long peduncles, 1-2(-3)-forked, cincinni rather few-flowered, glandular-puberulous or almost glabrous, 5-10 cm, accrescent in fruiting stage. Flowers distant from each other along rachis, on short pedicels (1 mm, accrescent to 5 mm in fruit). Calyx lobes 2 mm. Petals white, 2.5(-3.5) mm. Fruit obovate-elliptic in outline, the wings included, apex emarginate, base cuneate and suddenly contracted to a kind of foot up to 2 mm, on the very base of which the persistent calyx is found,

wings glossy yellow or light stramineous colour, tipped by the accrescent style which remains green and fleshy for a long time.

Distr. SE. Asia (W. Bengal and Assam to Burma, Thailand, Indo-China and Yunnan); in *Malesia*: N. & NE. Sumatra, Malay Peninsula (Kedah, Perlis, Perak), SE. Borneo (twice found), Java (incl. also Bawean & Kangean Is. and Madura), Lesser Sunda Is. (Lombok, Sumbawa, Sumba, Alor), Celebes (incl. also Saleijer Is.), Moluccas (Tenimber Is.).

Ecol. Primary and secondary (also seasonal, deciduous) forest edge, scrub jungle, bamboo forest, hedges around villages, open waste places, even on open limestone rock, generally at low elevations, rarely up to 1000 m, scattered.

Uses. Locally the leaves are used as a vegetable.

Vern. *Angi angin*, *iri iri*, *kanjar kawan*, *parianom*, *rindengan*, *serintil*, *sobowengi*, *wiwi wiwo*, *J, oke oke*, Mad., *gambas kawaong*, *riru ruruan*, *saburung*, S, *kokrah*, Alor.

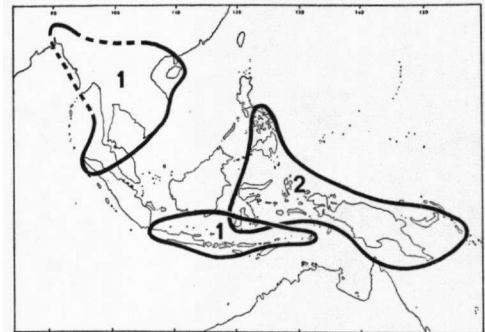


Fig. 2. Distribution of *Cardiopteris*. 1. *C. quinqueloba* (HASSK.) HASSK., 2. *C. moluccana* BL.

2. *Cardiopteris moluccana* BL. Rumphia 3 (1847 or 1849) 207; *ibid.* 4 (1849) t. 177, f. 1 B, f. 2 A & B, *incl. var.*; MIQ. Fl. Ind. Bat. 1 (1856) 799; BECC. Malesia 1 (1877) 131; K. SCH. Notizbl. Berl. 2 (1898) 130; K. SCH. & LAUT. Fl. Schutzgeb. (1900) 418; MERR. Philip. J. Sc. 2 (1907) Bot. 423; SCHELLENB. Bot. Jahrb. 58 (1923) 176; MERR. En. Philip. 2 (1923) 493; HEYNE, Nutt. Pl. 1 (1950) 987. — *Dioscorea sativa* L. Amoen. Ac. 4 (1759) 133, *pr. pl. Amboin.* — *C. rumphii* BAILL. *var. blumeana* BAILL. Adansonia 10 (1872) 281, *incl. var. integrifolia* BAILL. l.c. 280; DC. Prod. 17 (1873) 26. — *C. lobata* R. BR. *var. moluccana* (BL.) MAST. in Hook. f. Fl. Br. Ind. 1 (1875) 597. — *C. lobata* (non R. BR.) BECC. Nuov. Giorn. Bot. Ital. 9 (1877) 100, t. 8; F.-VILL. Nov. App. (1880) 46;

F. M. BAILEY, Queensl. Agric. J. 24 (1910) 20. — *C. celebica* R. BR. ex KOORD. Minah. (1898) 392, *nom. nud.* — *Aspidocarya kelidophylla* K. SCH. & LAUT. Fl. Schutzgeb. (1900) 313, *sec.* DIELS, Menisp. (1910) 320. — *Peripterygium moluccanum* (BL.) SLEUM. Notizbl. Berl.-Dahl. 15 (1940) 257; in E. & P. Nat. Pfl. Fam. ed. 2, 20b (1942) 400, f. 120 A-E; DAHL, J. Arn. Arb. 36 (1955) 161 (pollen). — *Olus sanguinis* RUMPH. Herb. Amb. 5 (1747) 482, t. 180. — Fig. 1.

Leaves ovate-cordate, entire, acutely acuminate, base \pm deeply cordate, firmly chartaceous, edge often slightly recurved in dry specimens, up to 24 by 22 cm. *Panicles* generally 3- or more-forked, cincinni rather rich-flowered, flowers usually close together. Otherwise as *C. quinqueloba*.

Distr. Malesia: Celebes, Philippines (Luzon, Panay?, Negros, Samar, Bohol, Catanduanes,

Mindanao), Moluccas (Buru, Ambon (type), Ternate, Ceram), New Guinea, and New Britain (Gazelle Peninsula).

Ecol. Climber in tall rain-forest or forest edge, also in secondary vegetation and in native gardens, generally in the lowland, ascending to 1460 m in New Guinea, scattered.

Uses. A decoction of the stem is used against hepatitis in Ternate. The leaves are eaten as a vegetable.

Vern. *Matta matta*, *tamatta*, Makassar, *telin teli*, Menado, *uge jabba*, Ternate, *uta lala*, *u. turi*, Ambon; Philippines: *bangogan*, Bik., *gurisan*, *sagumati*, Bag., *lila*, Buk., *tagulauai*, P. Bis.; New Guinea: *foyomangeni*, Wapi (Miwaute), *kehunghe*, Mekeo (Maipa), *swalow*, Buang.

Note. According to MIQUEL also in Bali, which is apparently erroneous.