

## HAEMODORACEAE (C. G. G. J. van Steenis, Leyden)

Perennial, caulescent, rhizomatous herbs with fasciculate, fibrous roots, sometimes stoloniferous, rarely with rounded tubers. *Leaves* radical, equitant, linear or ensiform, strongly laterally compressed (*Iris*-like), with an open or closed amplexicaulous, sheathing base, closely striate-nerved or plicate-nerved. *Flowers* ♂, in *Mal. spp.* actinomorphic, paniculate. *Perianth-segments* 6, 2-seriate, free. *Stamens* 3, epipetalous; filaments  $\pm$  free; anthers 2-celled, basifixed or versatile, introrse, splitting lengthwise. *Ovary* superior to inferior, 3-celled. Style simple, usually filiform, stigma punctiform. *Ovules*  $\infty$  to 2 per cell, on axile placentas. *Capsule* loculicid, 3-valved. Seeds with abundant endosperm and a small embryo, often flat, sometimes winged.

Distr. About 9 or 16 genera, mainly in Australia, less in S. Africa and N. and tropical America, in *Malaysia* one native *sp.* of an otherwise Australian genus and one American ornamental.

Note. The delimitation of the family has been rather different in different handbooks, but since several genera have been assigned to the *Liliaceae*, *Amaryllidaceae*, or other families, the circumscription has been narrowed down to a rather homogeneous group (cf. PAX, *Pflanzenfamilien* ed. 2, 15a, 1930, 386-390, and HUTCHINSON, *Fam. Fl. Pl.* 2, 1934, 164).

### KEY TO THE GENERA

1. Sheathing leaf-base open, blade 4-5 mm broad, tough. Flowers red to blackish. Ovary inferior, half-superior in fruit. Ovules 2 per cell . . . . . 1. *Haemodorum*
1. Base of leaf-sheath closed, blade 2-3 cm wide, not tough. Flowers white. Ovary and fruit superior. Ovules  $\infty$  in each cell . . . . . 2. *Xiphidium*

### 1. HAEMODORUM

J. E. SMITH, *Trans. Linn. Soc. Lond.* 4 (1798) 213; BENTH. *Fl. Austr.* 6 (1873) 418.—Fig. 1.

Erect, glabrous, tough, perennial herbs; stem-base or rhizome thickened and enclosed in the persistent, sheathing (but open) leaf-bases; roots fibrous, densely covered with hair-roots, looking spongy, often red. Stem (inflorescence) mostly branched, noded, with reduced leaves. *Leaves* flat (or terete), entire, linear, amplexicaulous; sheaths open. *Inflorescence* terminal on the (mostly solitary) stem, paniculate, (head-like contracted or spike-like,) nigrescent; branches subtended by stem-clasping, bract-like reduced leaves. Pedicels mostly provided with 2 often scarious bracteoles. *Flowers* usually fragrant, red, black, or greenish. *Perianth* persistent, rather erect. *Filaments* often enclosed by the inrolled margins of the inner tepals and coherent with them at their ultimate base, persistent!; anthers sagittate at the base, versatile. Apex of the  $\pm$  obconical *ovary* truncate, often slightly bulging between the stamens. Style filiform. *Ovules* 2 per cell, laterally attached to a protruding, thickened placenta in the upper part of each cell. *Capsule* semi-inferior,  $\pm$  3-lobed, opening with 3 radial, apical slits. Placenta much thickened in fruit, bearing on each side a large, winged, peltately attached, flattened seed.

Distr. About 20 *spp.* in Australia (most in the N. half), one in Tasmania, in *Malaysia*: one *sp.* in New Guinea.

Ecol. Mostly plants of dry savannah land.

Notes. In both editions of the 'Pflanzenfamilien' it is copied from ENDLICHER (Iconogr. t. 98) that the flower of *H. spicatum* R.BR. possesses 3 ovules per cell. In the flowers I examined of this species there are only 2; I assume that ENDLICHER mistook the placental knob, on which these 2 ovules are laterally attached, for a third ovule (fig. 1 d-f).



Fig. 1. *Haemodorum corymbosum* VAHL. a. Habit,  $\times \frac{2}{3}$ , b. flower,  $\times 5$ , c. inner tepal and stamen,  $\times 7$ , d. section of ovary, e. insertion of ovules in longitudinal section, f. placenta in fruit, g. fruit with conerescent perianth and persistent filament, cells dehiscent on top, that in front  $\pm$  abortive,  $\times 3$ .— h. Seed of *H. planifolium* R.BR.,  $\times 3$  (a-g after BRASS 8384, h after CONSTABLE 5266).

1. *Haemodorum corymbosum* VAHL, En. Pl. 2 (1806) 179; BRITTEN, Ill. Bot. COOK's Voy. 3 (1905) 93, t. 303; DOMIN, Bibl. Bot. 20 (1915) 527; EWART & DAVIES, Fl. North. Terr. (1917) 73.—*H. coccineum* R.BR. Prod. (1810) 300; BENTH. Fl. Austr. 6 (1873) 422; F.v.M. Descr. Not. Pap. Pl. 2 (1890) 67; BAILEY, Queensl. Fl. pt 5 (1902) 1600; HALLIER f. Nova Guinea 8 (1913) 902; BRASS, J. Agr. Arb. 19 (1938) 190; STEEN. *ibid.* 28 (1947) 420.—Fig. 1.

Rootstock woody, red in section. *Leaves* tough, drooping, fine-striate, 30–60 cm by 4–6 mm, those on the stem (inflorescence) all amplexicaulous on the nodes, gradually reduced in size upwards, upper ones sustaining the branches of the inflorescence bract-like. Stem (with inflorescence) 50–100 cm high (of which the unbranched part occupies 30–70 cm). *Flowers* red, numerous, in dense cymes forming a compact, corymbose, large or depauperate panicle. Pedicels 2–10 mm, mostly with 2 appressed, scarious, lanceolate, 1-nerved, very acute, 3–4 mm long bracteoles inserted at unequal height. *Tepals* oblong-lanceolate; outer ones thickened and subsaccate at the base, 5–6 by  $1\frac{1}{2}$ – $1\frac{3}{4}$  mm; inner ones narrower, 6–7 by  $1\frac{1}{2}$ – $1\frac{3}{4}$  mm; all lengthwise 5-nerved, apex bluntish, margins slightly scarious. *Filaments* nearly as long as the inner tepals, linear, flat,  $\frac{1}{2}$  mm broad, slightly broadened at the base, apex filiform; anthers elliptic, flat, 3 by 1 mm, incised to c.  $\frac{1}{3}$ – $\frac{1}{4}$  from the base, blunt at both ends; connective minutely apiculate. Style filiform, 7–8 mm. *Capsule* roundish, enveloped by the erect, somewhat accrescent tepals, c. 8–10 mm

through, by abortion sometimes only 2–1 cells developed. *Seeds* not seen.

Distr. Australia (tropical parts of the Northern Territory and Queensland), in *Malaysia*: S. New Guinea (Mai-Kussa, Wassi Kussa, Okaba, Merauke area).

Ecol. In grass-fields and in *Melaleuca* and *Banksia* lowland, coastal savannah forest; common on sour, grey, clay soil, hard packed in the dry season and an inch to ankle deep in water during the wet, together with *Schoenus*, *Rhynchospora*, *Drosera*, *Thysanotus*, *Tricoryne*, *Velleia*, etc. (BRASS, l.c.); fl. July–Sept., fr. Dec.

The perianth of this and other *spp.* is apparently never wholly expanded during anthesis and is, therefore, not very conspicuous. The whole plant is provided with a red coloured substance in its tissues, to which the generic name alludes.

The leaf-sheaths form a *tunica* round the rootstock, thus providing an excellent protection from fires in the dry season.

Uses. The roasted rootstock is eaten by Australian aborigines. In Australia a strong fibre is made from the long, tough leaves; also bags are plaited from them. The plant is bitter and reputed poisonous to stock in Queensland (F. M. BAILEY, Queensl. Agr. J. 5, 1899, 41–42).

Vern. *Scarlet blood root*, Queensland.

Notes. The type of this species is the BANKS & SOLANDER specimen on which J. E. SMITH apparently based his generic description and to which VAHL gave the specific epithet. An allied species is *H. planifolium* R.BR.

## 2. XIPHIDIUM

AUBL. Hist. Pl. Guiane Fr. 1 (1775) 33, vol. 3, t. 11.

Rhizomatous, erect, perennial, stoloniferous herb. *Flowers* in terminal panicles with cincinnate branches. Anthers basifixed. *Ovary* superior, each cell with numerous ovules. *Capsule* globose, fleshy. *Seeds* numerous, small, black.

Distr. Monotypic, tropical America and the West Indies.

Note. The generic name *Xiphidium* is sometimes credited to LOEFLING, Iter Hisp. (1758) 179. Mr EXELL informs me that in this work *Xiphidium* is published in *synonymis* under the Iridaceous genus *Ixia*.

1. *Xiphidium coeruleum* AUBL. Hist. Pl. Guiane Fr. 1 (1775) 33, vol. 3, t. 11; WILLD. Sp. Pl. 1 (1797) 248; BACKER, Handb. Fl. Java pt 3 (1924) 80 incl. *var. albidum* BACKER; BAKHUIZEN VAN DEN BRINK f. in BACKER, Bekn. Fl. Java (em. ed.) 10 (1949) fam. 236, *ditto*; STANDL. & STEYERMARK, Fieldiana (Bot.) 24, 3 (1952) 102, fig. 21.—*X. albidum* LAMK, Ill. 1 (1791) 131.—*X. album* WILLD. Sp. Pl. 1 (1797) 248.

Perennial, erect, but stems often nodding, 40–70 cm. *Leaves* fan-wise arranged, rather densely set, linear-lanceolate, (incl. the closed sheath) 30–50 by 2–3 cm; sheaths only amplexicaulous at the base, somewhat narrower than the blade; blade remotely minutely toothed specially at the posterior

margin. *Panicles* 6–25 cm excluding the 15–30 cm long stem (peduncle), rather dense; branches patent, densely short-hairy. Bracts ovate-triangular, inconspicuous. *Flowers* ± nodding, white, base sometimes greenish, 1–5 mm pedicelled. *Tepals* oblong, white, creamy or the inner side bluish, sparsely pubescent, obtuse, 6–9 by  $2\frac{1}{2}$ –3 mm, inner ones broadest, all 4–5-nerved. *Filaments* flat, short, c. 2 mm; anthers yellow to orange,  $1\frac{3}{4}$ –2 mm. Style longer than the stamens. *Capsule* orange to dull-red, finally purple black, c. 7–10 mm. *Seeds* subglobose, warty.

Distr. Native of S. America, in *Malaysia* sometimes cultivated in gardens in the lowland and hills.