ANCISTROCLADACEAE (C. G. G. J. van Steenis, Buitenzorg)

ANCISTROCLADUS

(WALL. Cat. (1832) 1052) *ex* ARNOTT, Nov. Act. 18 (1836) 325; PLANCH. Ann. Sc. Nat. III, 13 (1849) 316; SCHEFF. Nat. Tijd. N. I. 32 (1873) 407; BOERL. Handl. 1 (1890) p. XVII, XX; KING, J. As. Soc. Beng. 42, II (1893) 137; MASSART, Ann. J. B. B. 12 (1895) 121; GILG, in E. & P. ed. 2, 21 (1925) 589, f. 269-70; RIDL. Fl. Mal. Pen. 1 (1922) 250.—*Bembix* LOUR. Fl. Coch. (1790) 282, *nom. rej.*, *cf.* MOORE, J. Bot. 65 (1927) 279.—*Wormia* VAHL, Skrift. Nat. Selsk. Kjöbenh. 6 (1810) 104, *non* ROTTB.—*Bigamea* KOEN. *ex* ENDL. Gen. Pl. 1183 (1840).

Scandent shrubs (often erect in youth), without resin; branches sympodial with a series of circinate woody hooks in one plane. *Leaves* spread, simple, entire, often rosette-crowded, cuneiform, penninervous, reticulate-veined, glabrous, both surfaces minutely pitted, each pit with a peltate small hair secreting a wax-like substance; petiole articulated, scar on the twigs often saddle-shaped; stipules absent. *Flowers* ☿, actinomorphic small. Inflor. few or several times dichotomous or spike-like, often provided with said hooks and single reduced bract-like leaves, branches often recurved. Pedicels articulated. Bracts with a glandular-thickened base, margin fimbriate-membranous. Calyx tube short, at length adnate to the base of the ovary; lobes 5 inequal imbricate, enlarged and wing-like in fruit. Petals 5, united at the base, slightly contorted in bud. Stamens mostly 10, rarely 5, the episepalous slightly longer. Filaments with broadened base; anthers basifixed, ± introrse to ± latrorse, 2-celled, opening lengthwise. Ovary for the greater part inferior, consisting of 3 carpels, 1-celled, protruding into a nipple-shaped elongation bearing 3 articulated erect styles with a punctiform or horse-shoe-shaped stigmatic apex; nipple enlarging in fruit. Ovule 1, basal, ascending, with 2 integuments. *Nut* not dehiscent, crowned by the enlarged calyx. Seed roundish with testa intruding between the cerebral-like folds of the endosperm. Exocarp leathery. Embryo straight, erect, obliquely placed; cotyledons diverging; hypocotyl rather thick.

Distr. Disjunct, *ca 3 spp.* in trop. W. Africa, and 9 in SE. Asia, from the Deccan to Burma, Indochina, Hainan, S. China, the Malay Peninsula, Borneo and Sumatra (*cf.* fig. 2).

Uses. Except for some local information nothing is known (*cf.* BURKILL).

Ecol. In mixed rain forests, but most common on silicious soil in so-called 'padang-scrub', from the lowland to the hills. KERR noted of *A. wallichii* (his *no* 7006) that all specimens grew erect, and it is reported by GAGNEPAIN to be erect in youth. RIDLEY also found it on the ground as a bush, or ascending trees, and this is also observed in specimens from Sumatra and Borneo. In the open padang-scrub it is either erect or trailing.

Notes. This monogeneric family has been subsequently been referred to several families; it is now mostly placed next to the *Dipterocarpaceae* but differs by the 1-celled ovary, basal ovule, peculiar endosperm, climbing habit, sympodial structure, absence of stipules, and presence of hooks. HALLIER *f.* brought it to the *Linaceae-Hugoniaceae*, suggested already by MIQUEL. The bark of the twigs shows a peculiar cracking *viz* lengthwise superficial splitting of the thin grey corky outer bark and further by deeper transverse cracks. In *A. extensus* I found peculiar rather large craferiform glands on the base of the bracts of the inflor. Similar glands I found on 2–3 or all 5 sepals, distinctly elevated, 1–3 together. I have not found any stipules, neither in *A. extensus* nor in abundant living material of *A. hamatus* (VAHL)GILG; there are rather large bracts leaving scars amidst the leaf-tufts but these belong apparently to the leaf-spiral. GAGNEPAIN (Fl. Gén. I. C. 1 (1910) 393) mentions 3–5 styles, but I found only 3. HUTCHINSON (Fam. Fl. Pl. 1 (1926) 178) apparently assumes the style to be represented by the nipple-shaped extension of the ovary above the calyx on tip of which 3 free stigmas are articulated, but the tip of the latter I found distinctly 'stigmatic papillose' so that I assume the styles to be articulated with the ovary. The stigmatic surface is punctiform or horse-shoe-shaped. The nipple enlarges in fruit and forms a distinct part of it. All authors assume the presence of a ruminate endosperm, but HUTCHINSON

denies its presence and assumes the embryo to be constituted of remarkably 'folded cotyledons'. I had no seedlings at my disposal but an examination of the seeds did not confirm HUTCHINSON's statement. The embryo is lying loose in the endosperm.

The flowers are mostly deficient or absent in our rather rich material and when drying shrink to poor and brittle remnants. However, in *A. extensus* I found laterally slit anthers and not introrse cells, contrary to GAGNEPAIN's statements. BOERLAGE mentions slits which are turned somewhat towards the inner surface.

The size of the leaves varies much both in shape and dimensions in one specimen, specially between sterile and fertile twigs. In cultivated *A. hamatus* I found leaves of flowering twigs 6–9 by 2–2½ cm, and those of sterile twigs 35–40 by 4½–5½ cm. Notwithstanding the scanty flowering material I am perfectly satisfied that only one species occurs in Malaysia.

1. Ancistrocladus tectorius (LOUR.) MERR. Lingn. Sc. J. 6 (1930) 329; Comm. Lour. (1935) 275.—*Bembix tectoria* LOUR. Fl. Coch. (1790) 282.—*A. extensus* (WALL. Cat. 1052, *nomen*) PLANCH. Ann.

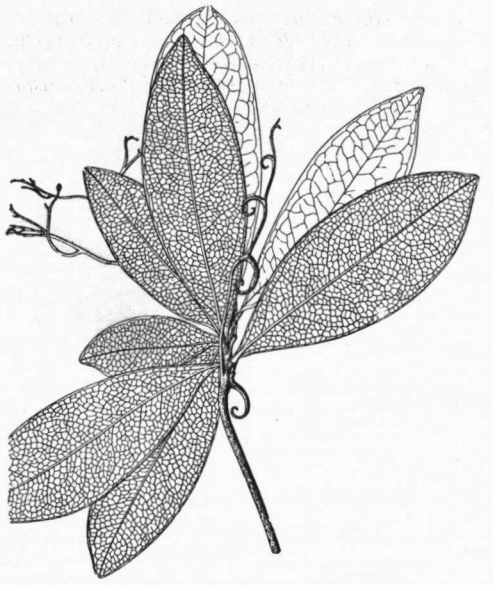

Fig. 1. *Ancistrocladus tectorius* (LOUR.) MERR., from Borneo, × 2/5.

Sc. Nat. III, 13 (1849) 318; KING, J. As. Soc. Beng. 42, II (1893) 137; BOERL. Cat. pl. phan. Hort. Bot. Bog. pt 2 (1901) 114; BURK. Dict. (1935) 155.—*A. pinangianus* (WALL. Cat. 1054, *nomen*) PLANCH. *l.c.*; MIQ. Fl. Ind. Bat. 1, 2 (1859) 587; SCHEFF. Nat. Tijd. N.I. 31 (1870) 348; 32 (1873) 407; DYER, in HOOK. *f.* Fl. Br. Ind. 1 (1874) 300; RIDL. Fl. Mal. Pen. 1 (1922) 251, f. 25.—*A. extensus var. pinangianus* KING, J. As. Soc. Beng. 42, II (1893) 137; GAGN. *l.c.*; CRAIB, *l.c.*—*A. hainanensis* HAYATA, Ic. Pl. Form. 3 (1913) 46.—Fig. 1—2.

Liana, in the youth and in open scrub often a shrub, later often trailing; main shoots provided with scattered ± erect small leaves, between and near which arise spreading non-foliate tendril-like shoots provided with 3–6 curved hooks, lower 2 rarely 3 hooks getting woody, hooks mostly unilateral, rarely 1–2 alternate; these 'tendrils' later woody, becoming branches, upper part vanishing. *Leaves* crowded mostly immediately above the 2nd hook, variable in size and shape, sessile, mostly obovate-oblong, tapering towards the base, apex obtuse, rounded, acute or even acuminate, blade 9–30 by 3–10 cm; nerves 4–8 on either side, spreading, connected by a slightly looped intramarginal vein and a 2nd feebler outer one, rather straight, numerous secondary veins often becoming as strong as the main nerves and parallel. Inflor. between the crowded leaves, very rarely lateral in the place of a 'tendril' on the main shoot, repeatedly dichotomous, branches divaricate, 8–15 cm long. *Flowers* rather crowded at their tips. Calyx lobes inequal, oval, thin-margined, glabrous except the

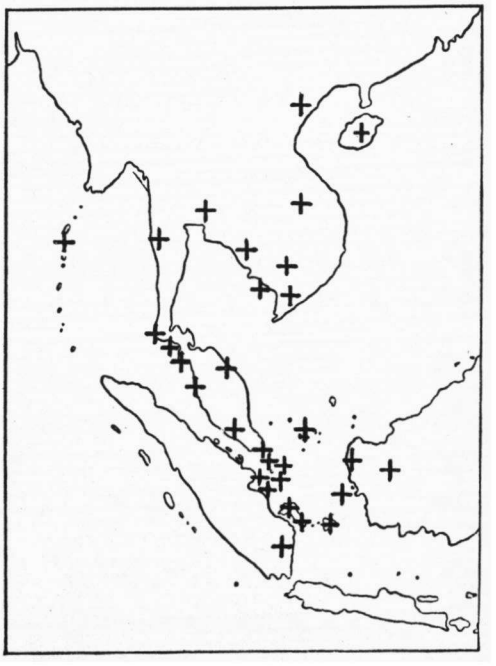

Fig. 2. Localities of *Ancistrocladus tectorius* MERR.

short ciliate rounded apex, some or all lobes provided with 1–3 conspicuous crateriform prominent glands, mostly shorter than the corolla, 1¾–2½ mm long, soon enlarging. Petals oblique-oval, one margin often involute, acute, 3–3½ by 1¾ mm. Styles erect, nearly as long as the nipple-shaped ovary-

top, both 1/2 mm high, stigma punctiform. Stamens alternately inequal; filament broadened at the base; cells free, acute, more or less latrorse. *Fruit* with spreading calyx wings slightly decurrent on the obconical sub-5-angular smooth tube, oblong-cuneate to spathulate, inequal, often oblique, apex blunt to rounded, with 3 larger nerves and numerous smaller densely reticulate ones, overlapping at the base, smallest mature ones measured 2 1/2 by 1/2 cm, largest 5 by 1 3/4 cm; nipple broad-obcampanulate, ± 3 mm high protruding, solid, not filled with part of the seed. Seed obconical with flat apex, ca 5 mm high, mostly consisting of a ruminate endosperm; germ ca 2–2 1/2 mm high, erect, straight, obliquely inserted.

Distr. Burma, Siam, the Andamans, and Indochina to S. China and Hainan, in *Malaysia:* Malay Peninsula, Riouw & Lingga Arch., Anambas Isl., W. Dutch Borneo, Karimata, Banka, Billiton, once collected in S. Sumatra (fig. 2).

Ecol. Low altitude, often near the sea, sometimes on the margin of the beach, mostly on silicious soils, both in mixed forest and padang scrub fr. fl. March-Aug.

Vern. *akar (be)boeloes, beloeloes, meloeloes* (Banka), *mendjoeloeng* (Lepar), *troeng boeloes* (Billiton).

Notes. I agree with BURKILL that no differences of importance can be found between *A. extensus* and *A. pinangianus*. I have tentatively accepted MERRILL's name, though MOORE stated that the type in the Br. Mus. is inadequate for specific identification. It was collected in the classical locality but I am not satisfied that no other species grows there; in tropical regions the identification 'by exclusion' is a somewhat dangerous procedure.

Excluded

Ancistrocladus pentagynus WARB. Bot. Jahrb. 13 (1891) 385 = *Durandea* (*Linac.*) acc. to HALLIER *f.* (B.B.C. 39, II (1921) 68–78).

Ancistrocladus sagittatus WALL. = *Tetramerista glabra* MIQ. (*Theac.*).