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A NEW SPECIES OF THOTTEA ROTTB. (ARISTOLOCHIACEAE) FROM INDIA

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SUMMARY

Thottea dinghoui Swarup., *sp. nov.* is described from Kerala India. This is the first record of a species of *Thottea* with biseriate stamens from India.

Duchartre in DC., Prod. 15, 1 (1864) 428, Hooker, Fl. Brit. India 5 (1886) 72–74, Schmidt in E. & P., Nat. Pfl. Fam. 16B (1935) 232, and many others distinguished the two aristolochiacean genera *Bragantia* Linn. (=*Apama* Lamk.) and *Thottea* Rottb. as distinct, the former with 1-seriate and the latter with 2-seriate stamens. However, Hooker (l.c.) observed continuity of characters between the two genera and suggested that they may be united. Recently, after critical studies of the species belonging to both the genera, Ding Hou, Blumea 27 (1981) 301–332, came to the same conclusion. Because the fact that there are species now known with 3- and 4-seriate stamens, this variable character cannot stand a dependable criterion for generic delimitation and hence he aptly merged the two together under the single genus *Thottea* Rottb.

Hooker listed as many as eight species of regular flowered aristolochiacean taxa from the whole of British India under the three genera *Asarum* Linn. (1 sp.), *Bragantia* Linn. (= *Apama* Lamk.; 4 spp.), and *Thottea* Rottb. (3 spp.). Of these, only four species, *Asarum himalaicum* Hk. f. & Thoms. ex Klotzsch, *Thottea barberi* (Gamble) Ding Hou, *T. siliquosa* (Lamk.) Ding Hou, and *T. tomentosa* (Bl.) Ding Hou are known to inhabit the present geographical limits of India, another described species, *T. dalzellii* Hk. f., being a synonym of *T. siliquosa* (Lamk.) Ding Hou. However, during our recent floristic explorations along the Western Ghats in Kerala we discovered a curious species of *Thottea* with stamens arranged in two series, which proved to be new. This species is described and illustrated.

Thottea dinghoui Swarupanandan, *sp. nov.* – **Fig. 1–18.**

Herbae caespitosae, perennes, 40–60 cm altae. *Lamina* lanceolata vel elliptico-lanceolata, 15–17(–22) x (5–)6–8.3(–10) cm, apice acuminata, basi rotunda, obtusa vel acuta, supra glabra, infra hispida vel puberula; nervis 5–8 paribus, venis subreticulatis; petiolo 3–5(–6) mm longo.

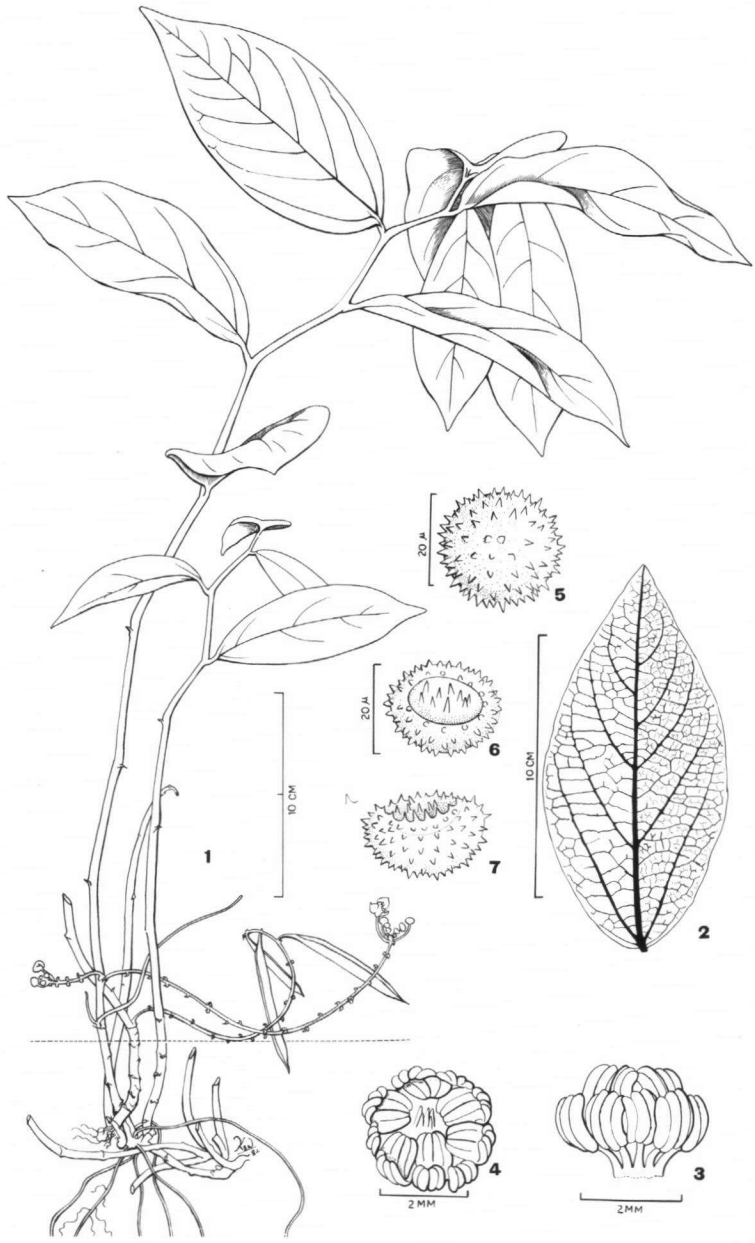

Fig. 1–7. *Thottea dinghoui* Swarup. – 1. Habit; 2. a cleared leaf showing venation; 3 & 4. lateral and top views of the upper portion of the gynostemium showing the biseriate stamens; 5–7. distal, subproximal and equatorial aspects of the pollen.

Inflorescentia radicalis, 10–22(–31) x 2–3 cm. Bracteae et bracteolae lineares, ± 2 x 1 mm, supra glabrae, infra pilosae. *Flores* flavi vel aurantiaco-lutei. Pedicellus 15–18 mm longus, pilosus. Lobi calycis orbiculato-ovati, 6 x 4 mm, extus pilosi, intus glabri. *Stamina* 15, biseriata, serie superiore 6, inferiore 9; filamenta 1–1.5 mm longa, glabra vel adaxiale papillosa; antherae 1–1.5 mm longae. *Ovarium* 12–16 x 1–1.5 mm, tetragonum, pubercens. Columna stylina curta vel nulla, lobi 4 vel 5, erecti. *Capsulae* immaturae, purpureae, tetragonae, 5–6.5 x 0.5 cm, leviter pubercentes. Semina immatura, trigona, 4 x 2.5 x 1.75 mm. – Holotypus: *Swarupanandan ECOL 302 A* (MH), India, Kerala State, Quilon Dist., Moozhiyar, Goodrikkal Range, c. 800 m, 26-11-1981, fl., fr. – Isotypes: *Swarupanandan ECOL 302 B* (Herb. Kerala For. Res. Inst. Ecol. Div.), *C* (CAL), *D* (MH), *E* (CAL), *F* (Herb. Kerala For. Res. Inst. Bot. Div.). – Other specimens seen: Locality as the type, 18-8-1981, fl., *Swarupanandan & Sujith ECOL 292* (Herb. Kerala For. Res. Inst. Ecol. Div.); locality as above, 25-8-1981, *Swarupanandan ECOL 294 A* (K), *B* (L), *C* (Herb. Kerala For. Res. Inst. Bot. Div.).

Caespitose, non-aromatic, perennial herbs, 40–60 cm tall. *Root-stocks* aromatic, when cut smelling like that of *Kyllinga brevifolia* Rottb. (Cyperaceae), with nodes and scale leaves, internodes 0.5–2 cm long; roots thin, wiry, clustered. *Shoots* erect, stems 2–4(–5) mm thick, unbranched or rarely branched at the tips, nodes 10–11 or more per shoot, with internodes 7–10(–12) cm long, lower ones shorter. *Leaves* alternate, bifarious but those of lower nodes and rarely a few of the upper nodes reduced to scales, scales persistent or deciduous; petiole 3–5(–6) mm long, puberulent, deeply channelled, reniform in cross section with 3–4 traces in an arc; lamina 15–17(–22) × (5–)6–8.3(–10) cm, lanceolate or elliptic-lanceolate, tip acuminate, base round, obtuse or acute, glabrous above, underneath hispid or puberulent; hairs multicellular, geniculate, stalk uniseriate, made of 2–3 small cells, apical cell long, lanceolate, acuminate with an obtuse base, peltately attached to the stalk; nerves and veins depressed above, prominent beneath, primary laterals 5–8 pairs, arching, basal pair opposite, not extended beyond the middle of the leaves, secondary laterals occasionally few or absent, intercostae subreticulate. *Inflorescence* radical, arising from the basal 4–5 subterranean nodes, 10–22(–31) × 2–3 cm, ascending or trailing on the ground, occasionally branched; peduncle short or absent, puberulent; rachis continuously growing, nodes 20–60 per rachis. *Flowers* 8–9, alternate, opening acropetally, one flower maturing at a time, 25–27 × 8 mm, yellow or orange-yellow, dichogamous and protandrous. *Bracts and bracteoles* c. 2 × 1 mm, linear, hairy without, glabrous within, persistent, recurved downwards. *Pedicel* 15–18 × 0.7 mm, cylindric, hairy. *Calyx lobes* three, free, spreading, 6 × 4 mm, orbicular-ovate, tip acute, base cuneate, hairy without, glabrous within, valvate in bud; nerves 5, reticulately ramified. *Corolla* absent. *Stamens* 15, in two whorls, 9 stamens of outer whorl in three groups of three, 6 stamens of the inner whorl in three groups of two, groups of stamens opposite to the sepals, erect, not spreading in the male phase (i.e., enclosing the immature stigma), in the female phase curved and spreading (i.e., exposing the stigmatic lobes); filaments connate at base, 1–1.5 mm long, cylindric, glabrous or papillate adaxially; anthers 1–1.5 mm long, linear, extrorse, yellow, dehiscing longitudinally, connective not produced beyond the anther locules. *Ovary* 12–16 × 1–1.5 mm, hairy; ovules numerous, axile, anatropous, in two vertical rows in each locule. *Stylar column* short or none. *Stigma* with 4–5 linear lobes, lobes erect, not spreading,

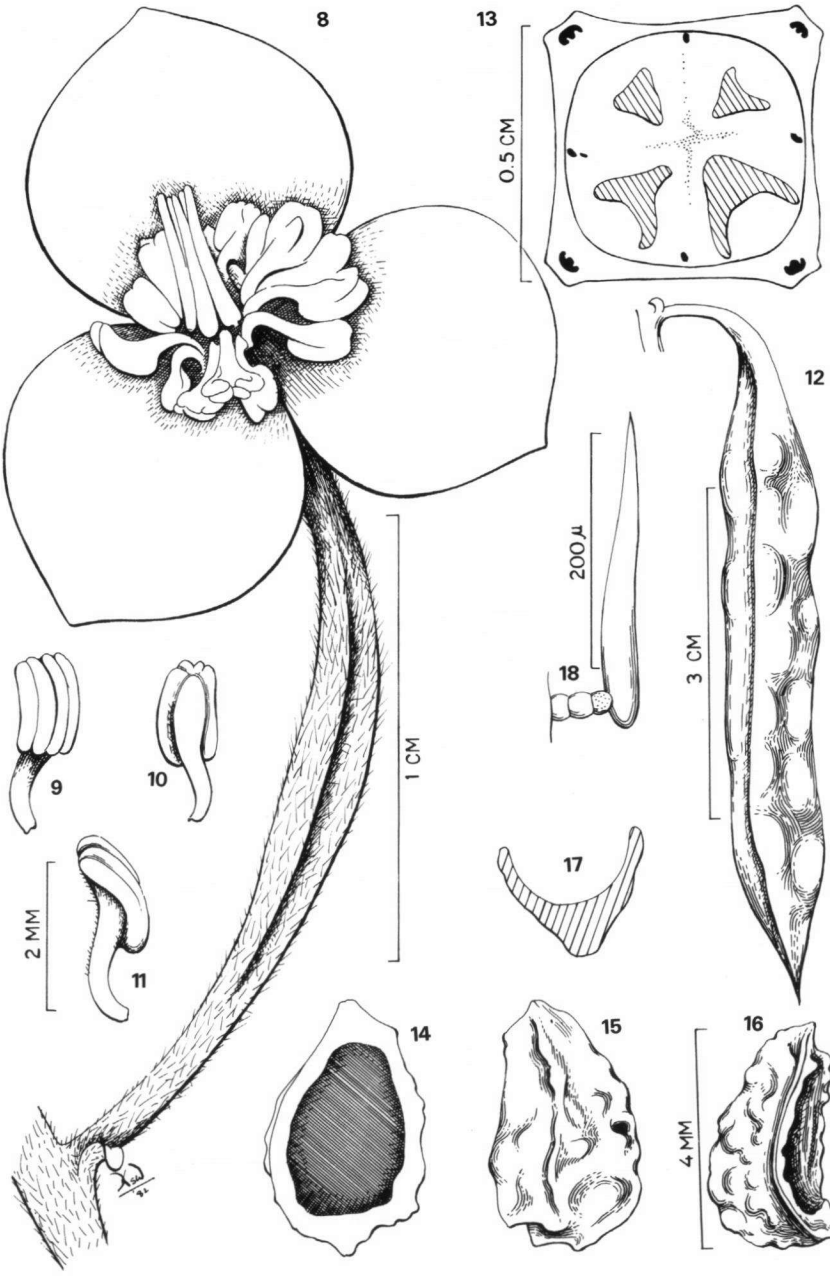

Fig. 8–18. *Thottea dinghoui* Swarup. – 8. Flower; 9–11. adaxial, abaxial and lateral views of the stamen; 12. capsule; 13. a semidiagrammatic transection of the capsule; 14–16. abaxial, adaxial and lateral views of the seed (slightly immature); 17. a diagrammatic transection of the seed; 18. an epidermal hair of the leaf.

slightly shorter than and concealed between the stamens during the male phase, in the female phase longer than the stamens. *Capsules* (slightly immature) quadrangular, 4-valved, purple, stalk 8–15 mm long, puberulent, capsule proper 5–6.5 × 0.5 cm, acuminate at tip, base narrowed, with a medianly longitudinal very narrow furrow on each facet, rectangular in transection, angles projecting, each angle with a large dorsal bundle, placental bundles four, small, alternating with the dorsal bundles; fruit-placentum 4-ridged. *Seeds* (immature) 28–40, 4 × 2.5 × 1.75–2 mm, yellowish brown, longitudinally oriented along the angles of the capsule, trigonous with the raphe visible along one of the angles, two lateral facets plane and rugose, the dorsal surface (facing the angle of the fruit) smooth, deeply depressed to form a concavity in which the placental remnants remain; albumen fleshy, embryo rudimentary.

Distribution. Probably endemic in the area of the type locality, Kerala State, India.

Ecology. Undergrowth in evergreen forests. Flowering in August to December.

Etymology. The species is named in honour of Dr. Ding Hou, because of his distinguished contributions to the knowledge of the genus *Thottea.*

Notes. The discovery of *Thottea dinghoui* in India is interesting in that this is the first report of a species of the genus with 2-seriate stamens in the country. Other species of the genus with 2-seriate stamens are distributed in SE. Asia. The Bornean species *T. curvisemen* Ding Hou, with longitudinally folded seeds, has similarities to the seeds of *T. dinghoui* and is closely related (Ding Hou, personal communication, 1981). This probably adds to the floristic affinities between the Indian and the SE. Asian regions, as has already been speculated by Van Steenis (Blumea 11, 1962: 343) and Nayar (Bull. Bot. Surv. India 19, 1979: 145–155). The species also shows affinities with *T. barberi* (Gamble) Ding Hou, and *T. siliquosa* (Lamk.) Ding Hou in the deeply lobed calyx, but can be easily distinguished in the radical inflorescence and herbaceous habit and so also from *T. curvisemen* Ding Hou.

Pollen grains. Oblate (P × 100/E = >50), concavo-convex, polar axis (P) c. 17.6 μm, equatorial axis (E) 26.4–27.5 μm; wall 2.64–3.3 μm thick, inaperturate, acute-spinate throughout.

ACKNOWLEDGEMENT

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