

## TWO NOVELTIES IN THE GENUS *TRIAS* LINDL. (ORCHIDACEAE)

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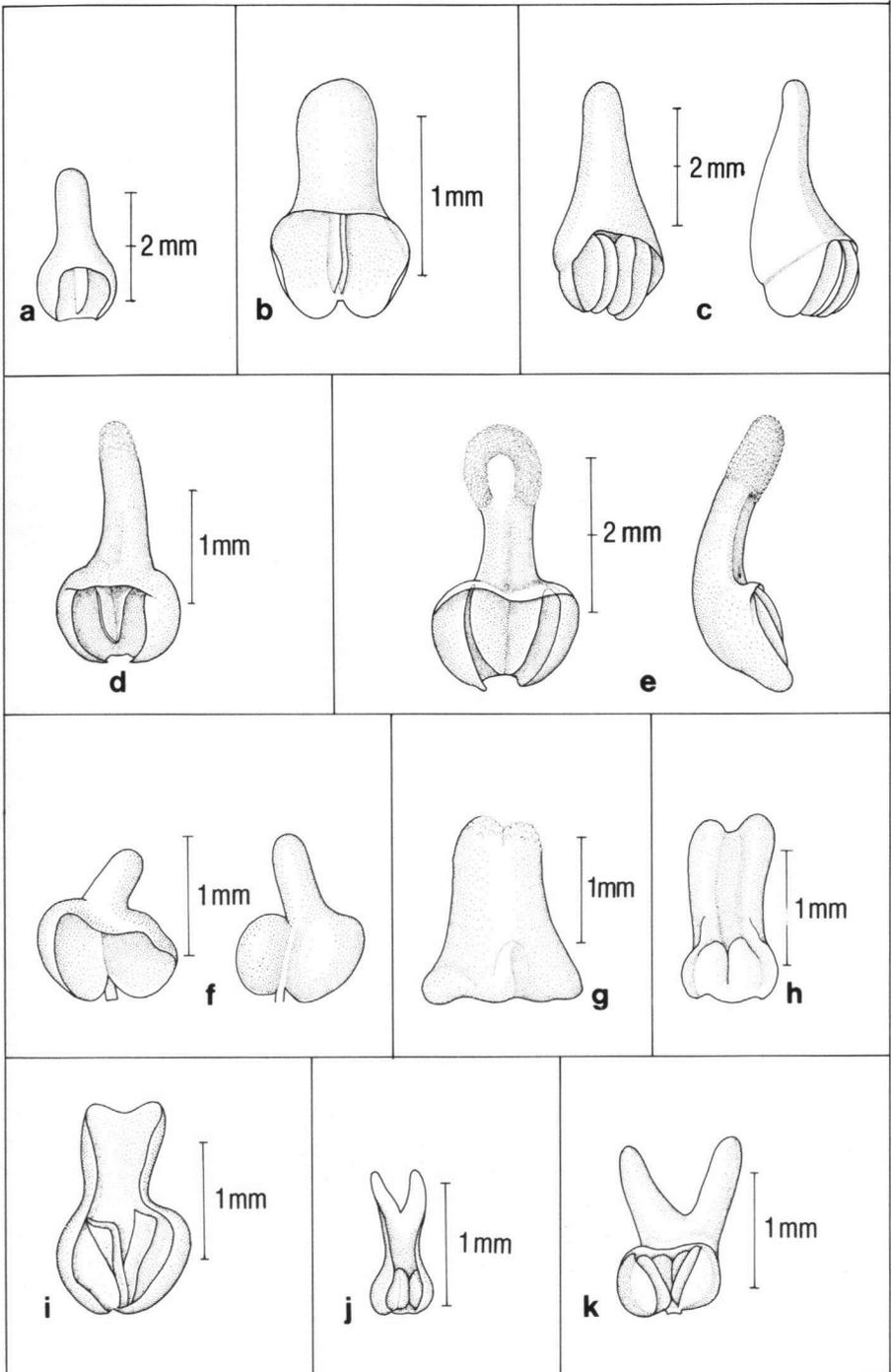
### SUMMARY

One new orchid, *Trias bonaccordensis* Sathish, is described from the Bonaccord forests of Trivandrum, Kerala State, India. Affinities with the related *T. stocksii* Benth. ex Hook. f., *T. disciflora* (Rolfe) Rolfe and *T. nasuta* (Reichb. f.) Stapf are discussed. One new combination, viz. *T. crassifolia* (Thw. ex Trimen) Sathish, is proposed for the Sri Lankan *Bulbophyllum crassifolium*. Operculum features of the genus are illustrated and a distribution map is supplied.

The generic name *Trias* (Greek trias: three) proposed in allusion to the triangular shape of the flower by Lindley in 1829 (Wall. Cat. no. 1977) was based on some Wallichian specimens collected in 1827 from Burma. Later, in his generic account, Lindley (1830: 60) proposed two new species viz. *T. oblonga* and *T. ovata*, now considered to be conspecific. Further collections added novelties and new distribution records from the mainland of Asia. Thailand has the largest number of species, seven out of the eleven recognised, of which four are endemic (Seidenfaden, 1976: 19; 1986: 161).

Though the genus *Trias* Lindl. of the subtribe Bulbophyllinae Schlechter is closely related to *Bulbophyllum*, in which some species were originally described, it is sufficiently distinct; e.g., the triangular shape of the flower and the prolonged operculum are very characteristic. The operculum features which offer keys to identification of individual species range from simple unornamented forms in *T. picta*, *T. disciflora*, and *T. crassifolia*, apically papillose forms in *T. stocksii* and *T. bonaccordensis* and apically emarginate forms in *T. nana*, *T. nasuta*, and *T. oblonga* to distinctly bifid forms in *T. intermedia* and *T. mollis* (fig. 1a-k). It has a western delimitation in the Western Ghats of India represented by *T. stocksii*, eastern in Vietnam by *T. nasuta*, southern in Sri Lanka by *T. crassifolia* and northern in Arunachal Pradesh by *T. disciflora* (fig. 2).

India is known to have only three species, viz. *Trias oblonga* (Garo Hills of Meghalaya), *T. stocksii* (mostly Western Ghats with a lone record from Arunachal Pradesh), and *T. disciflora* (Arunachal Pradesh). The novelty described here forms the fourth species.



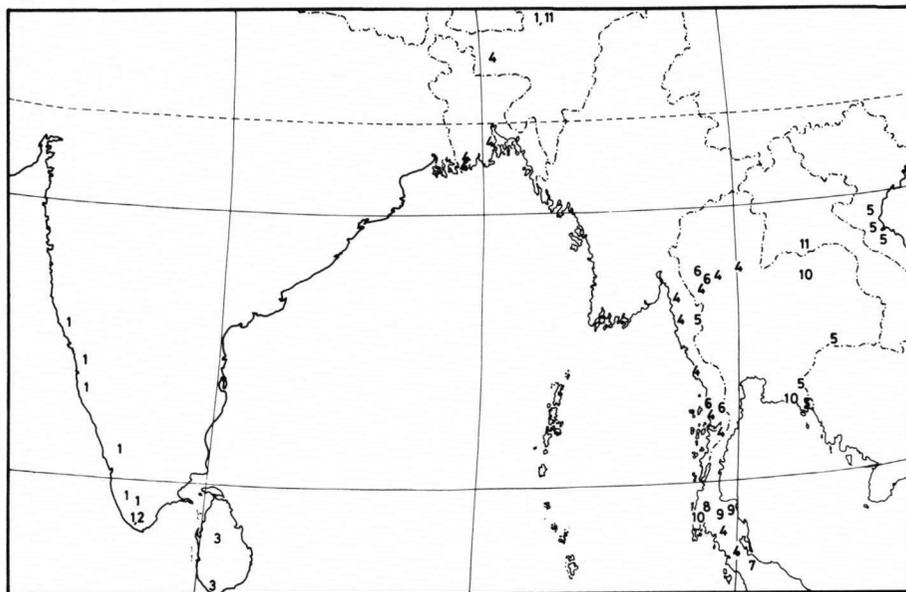


Fig. 2. Distribution of the genus *Trias* Lindl. – 1. *T. stocksii* Benth. ex Hook. f.; 2. *T. bonaccordensis* Sathish; 3. *T. crassifolia* (Thw. ex Trimen) Sathish; 4. *T. oblonga* Lindl.; 5. *T. nasuta* (Reichb. f.) Stapf; 6. *T. picta* (Par. & Reichb. f.) Par. ex Hemsley; 7. *T. rosea* (Ridley) Seidenf.; 8. *T. mollis* Seidenf.; 9. *T. nana* Seidenf.; 10. *T. intermedia* Seidenf. & Smitin.; 11. *T. disciflora* (Rolfe) Rolfe. Mainly based on Seidenfaden 1976 & 1986.

Fig. 1. Operculum features of *Trias*. – a. *T. picta* (Par. & Reichb. f.) Par. ex Hemsley; b. *T. crassifolia* (Thw. ex Trimen) Sathish; c. *T. disciflora* (Rolfe) Rolfe; d. *T. stocksii* Benth. ex Hook. f.; e. *T. bonaccordensis* Sathish; f. *T. rosea* (Ridley) Seidenf.; g. *T. nasuta* (Reichb. f.) Seidenf.; h. *T. nana* Seidenf.; i. *T. oblonga* Lindl.; j. *T. mollis* Seidenf.; k. *T. intermedia* Seidenf. & Smitin. (a, c, f, h–k after Seidenfaden 1976 & 1986; b after Jayaweera 1981; d after C.R. Suresh s.n. (TBGT); e after C. Sathish Kumar 3668, type; g after Seidenfaden & Smitinand 1961).

### *Trias bonaccordensis* Sathish, *spec. nov.* – Fig. 1e, 3.

*Trias stocksii* auct. non Benth. ex Hook. f.: Abraham & Vatsala 1981: 346 p.p., f. 80 pl. XLI b.

Ex affinitate *T. stocksii* Benth. ex Hook. f., *T. disciflora* (Rolfe) Rolfe et *T. nasuta* (Reichb. f.) Stapf, sed sepalis 10-nervatis; petalis 3-nervatis, basibus lateris; columna alis lateralibus 2, prominentibus, lateralissimis, argute acutis et regionem operculum versus extensis; prolongatione operculii globulosa, papillosa, apice latere uno complanato, differt. — T y p u s : C. Sathish Kumar 3668, India, Kerala State, Trivandrum District, Bonaccord, 1050 m, 8 Jan. 1987, (TBGT holo; C iso).

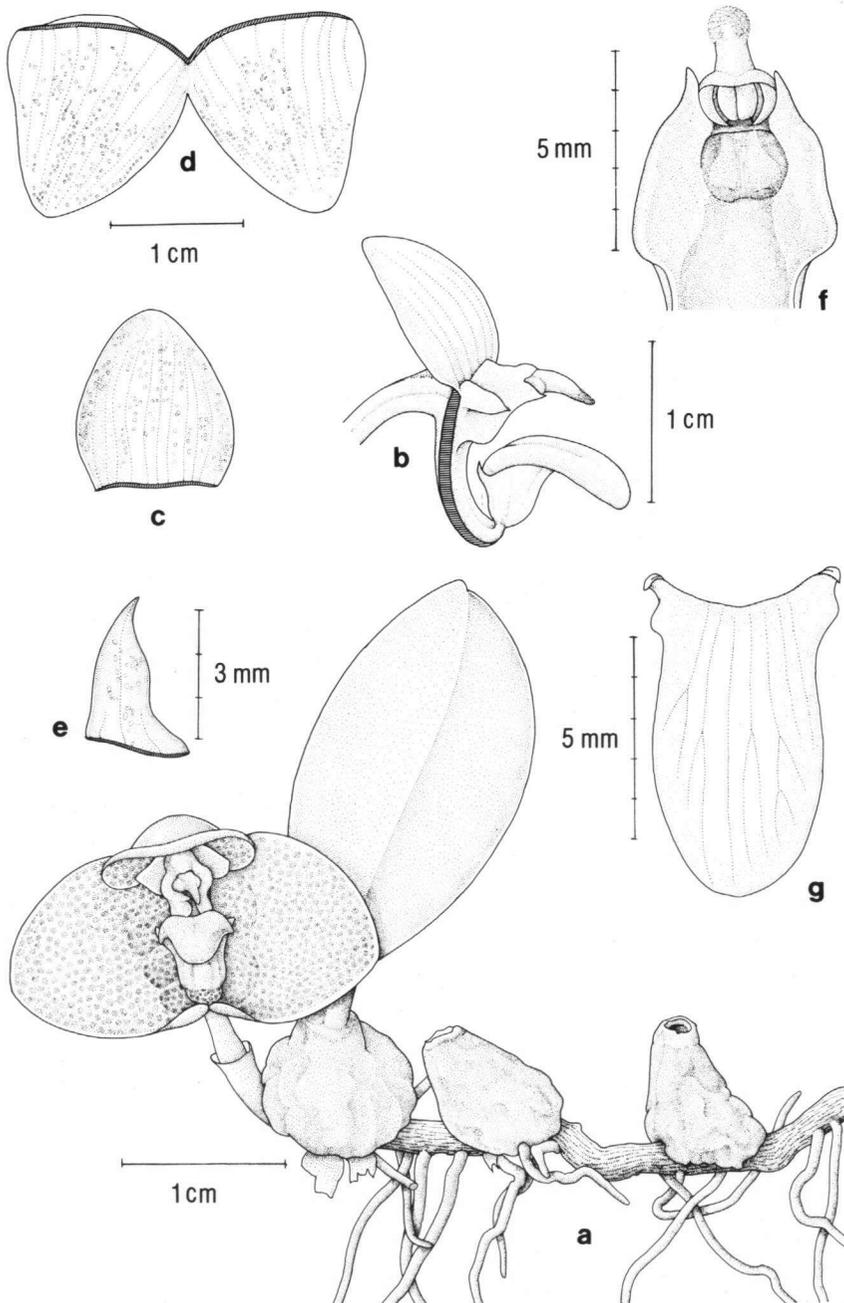


Fig. 3. *Trias bonaccordensis* Sathish. — a. Habit; b. flower, side view (lateral sepals removed); c. dorsal sepal; d. lateral sepals; e. petal; f. column, front view; g. lip, front view (all from *C. Sathish Kumar* 3668, type).

Epiphytic herbs with slender creeping rhizome. *Pseudobulbs* 8–12 × 7–9 mm, globose, covered by disintegrating sheaths below, dark greenish yellow, polished, often with brown spots, distantly (9–13 mm apart) placed on a 2.5 mm thick rhizome having wiry roots all over particularly at their bases. *Leaves* 2.5–3.5 × 1.2–1.5 cm, subsessile, ovate, narrowed at base, acute at apex. *Flower* solitary, lateral, creamy yellow with crimson red spots, 2 cm across when fully open, pedicel plus ovary about 1.2–1.5 cm long, basally with a tubular sheath of 6–7 mm long. *Dorsal sepal* 12 × 11 mm, triangular-ovate, gland-dotted, 10-veined, obtuse at apex. *Lateral sepals* 14 × 12 mm, triangular-ovate, 10-veined, fused slightly by base, obtuse at apex. *Petals* snowy white, 3.5 × 2.5 mm with broad base, shorter than the column, gland-dotted, 3-veined, shortly acuminate at apex. *Lip* about 10–12 mm long, mobile, attached to the column-foot by a short (less than 1 mm long) ligament, bent at epichile base, creamy yellow at basal half having a triangular cavity with a few crimson spots; upper half (the epichile) medianly grooved, about 9 mm long, almost crimson violet, upper surface uneven, oblong, side lobes represented by 2 yellow auricles, obtuse at apex. *Column* 5–6 mm long with two broad lateral wings which extend to operculum region as two sharply pointed teeth of about 1.5 mm long. Column-foot about 8 mm long with crimson patches throughout. Stigmatic cavity roughly hexagonal. Clinandrium semilunar. *Operculum* 4 mm long (including the 3 mm long prolongation), slightly arching, attached to the column by a thread-like ligament, 2-celled, apex somewhat globular but flattened to one side, papillose. *Pollinia* naked, 0.07–0.09 × 0.06 mm, unequal in two subcoherent pairs, subovoid but one side flattened. *Fruits* 2.2 × 1.1 cm, obovoid, strongly 6-ribbed capsules, stalk about 8 mm long. *Seeds* 180–200 × 50–70 µm, oblong with very large and massive embryos.

**D i s t r i b u t i o n.** Endemic to the South Western Ghats, Bonaccord in Trivandrum District, and possibly in adjoining areas, Kerala.

**E c o l o g y.** Evergreen to semi-evergreen forests; 950–1050 m. Growing epiphytically on many trees especially *Garcinia morelia* (Gaertn.) Desr. and *Mesua ferrea* L. (Clusiaceae), *Gluta travancorica* Bedd. (Anacardiaceae) and *Careya arborea* Roxb. (Lecythidaceae). Flowers and fruits January–March.

**E t y m o l o g y.** Named after the type locality, Bonaccord. It also denotes the bon accord which the author has with the manager Mr. Kunhiraman Nair, whose kind and generous hospitality enabled him to explore the thick primary forests that enfringe Mr. Nair's tea estate, resulting in the discovery of many a rare and interesting orchid.

**N o t e s.** The general shape of the lip and colour scheme of the flower remind strongly of *T. stocksii* and *T. disciflora*, but the latter has longer (10 cm) and broader (2.5 cm) leaves and larger flowers with a lip measuring 14–18 mm in contrast to the comparatively smaller (2.5–3.5 × 1.2–1.5 cm) leaves and smaller (10–12 mm) lip of *T. bonaccordensis*. Furthermore, the operculum of *T. disciflora* is straight, terete, conical and obtuse without any papilla.

*Trias stocksii*, the only earlier known species of the Western Ghats, has smaller flowers (less than 1 cm) with almost the same colour scheme but the sepals are 7-veined, the petals narrower, longer than the column and 1-veined, a lip with papil-

lose epichile (4 mm long), the steldia are broad and shortly acute and the operculum is 2 mm long, subterete and apically papillose.

This species is also related to *T. nasuta* which otherwise has a different colour scheme for the flower. Furthermore, the petals of *T. stocksii*, *T. disciflora* and *T. nasuta* are 1-veined and have a very different shape contrasting to the broad-based and 3-veined petals of *T. bonaccordensis*.

The figure supplied by Abraham & Vatsala (1981: 345) for *T. stocksii* closely resembles *T. bonaccordensis*, but unfortunately they have not maintained any voucher specimen for comparison. Their illustration is very unclear and the description too cursory without any measurement of the lip. Even then, if their Trivandrum (Ponmudi) collection can be separated out as *T. bonaccordensis*, the rest (Silent Valley and Chandanathode recordings) may be attributed to the widespread *T. stocksii*.

Referring to a coloured sketch by Jerdon of a *Trias* now preserved at Kew, Stapf (1926: t. 9150) declared it as representing a new species but abstained from publishing it. Mr. Jeffrey J. Wood of Kew has kindly sent me a Cibachrome print of Jerdon's sketch with the comment that it is very crude and impossible to compare with *T. bonaccordensis*. In fact, the Jerdon sketch, in my opinion, matches remotely the already known species *T. stocksii*, still a common plant in Wynad from where Jerdon collected and sketched it in 1874.

A general survey made on the genus and its related *Bulbophyllum* revealed that the Sri Lankan *B. crassifolium* Thw. ex Trimen is a true *Trias* with the characteristically prolonged operculum (see fig. 1b) and flower shape. So the necessary transfer is effected:

***Trias crassifolia* (Thw. ex Trimen) Sathish, comb. nov.**

*Bulbophyllum crassifolium* Thw. ex Trimen, J. Bot. 23 (1885) 244; Hook. f., Fl. Brit. India 5 (1890) 770; Trimen, Handb. Fl. Ceylon 4 (1898) 155; Jayaweera in Dassanayake & Fosberg (eds.), Rev. Handb. Fl. Ceylon 2 (1981) 93. — T y p e: Sri Lanka, Kukul Korle, Ratnapura Dist., Sept. 1865, s. coll. C.P. 3879 (PDA).

Trimen based his description on Thwaites' protologue written on an interleaf between pages 298 and 299 of Enumeratio Plantarum Zeylaniae in PDA. There is also a drawing in PDA made after C.P. 3879 by W. de Alwis, a copy of which was kindly sent to me by Dr. D.H.M. Jayasuriya, but which does not show the true characters of the operculum. Jayaweera's (1981: 94) line drawing clearly shows that it is a true *Trias*. This species has yellowish green solitary flowers, densely and minutely punctate with red. As in other species of the genus this also has a prolonged operculum measuring 1.6 mm in length.

**D i s t r i b u t i o n.** Endemic to Sri Lanka where it was collected only twice.

**E c o l o g y.** Tropical wet evergreen forests. Thwaites' manuscript note tells us that it was growing on the trunk of a large tree and collected in September. Flowering specimens were also collected in March (*Willis s.n.*, PDA).

**N o t e.** Apparently related to *T. picta* (Par. & Reichb. f.) Par. ex Hemsley and *T. stocksii* Benth. ex Hook. f., but entirely different.

## ACKNOWLEDGEMENTS

I am most grateful to Dr. G. Seidenfaden, Borsholmgaard, Denmark for confirming the novelty of my specimen and for his kind review of the first draft of this paper. Mr. Jeffrey Wood, Royal Botanic Garden, Kew has generously supplied Cibachrome prints of the type specimens of *Trias disciflora* and *T. nasuta* for comparison. The Latin diagnosis was provided by Dr. V. J. Nair, Botanical Survey of India, Coimbatore. This study is supported by my institute through the project on the taxonomic studies on Indian orchids, for the facilities of which I am thankful to the director. Our staff artist Mr. K. P. Pradheep Kumar has prepared the three drawings.

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