

## MATERIALS TO THE REVISION OF THE GENUS *SEIDENFIA* (ORCHIDACEAE, MALAXIDINAE), WITH A DESCRIPTION OF A NEW SPECIES

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**Abstract:** Materials to the taxonomic revision of the genus *Seidenfia* Szlach. (Orchidaceae, Malaxidinae) are compiled. A new species from South India is described and illustrated, and its taxonomic affinity is briefly discussed.

**Key words:** Magnoliophyta, Orchidales, Malaxidinae, *Seidenfia*, taxonomy, Asia

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### INTRODUCTION

The genus *Seidenfia* Szlach. has been separated from the highly polymorphic genus *Malaxis* Sw. by Szlachetko (1995). Generally, the gynostemium structure of *Seidenfia* Szlach. is similar to that of *Crepidium* Bl., but these genera are easily differentiated based on flower structure, particularly lip morphology. The lip of *Crepidium* is sessile, prominently auriculate, with only the apical margins denticulate or entire. The characteristic feature of *Crepidium* is the presence of a simple or complicated callus-fovea complex near the lip base. The lip of *Seidenfia* is not auriculate; its basal part is channelled, forming a kind of claw with thickened margins; the lamina is widely and abruptly expanded above the channel, and the lamina margins are more or less denticulate.

According to Szlachetko (1995), *Seidenfia* contains eight species: *S. crenulata* (Ridl.) Szlach., *S. densiflora* (A. Rich.) Szlach., *S. discolor* (Lindl.) Szlach., *S. intermedia* (A. Rich.) Szlach., *S. lancifolia* (Thwait.) Szlach., *S. rheedii* (Sw.) Szlach., *S. seychellarum* (Kraenzl.) Szlach., and *S. stocksii* (Hook. f.) Szlach.. According to Seidenfaden (1978–79), *Malaxis stocksii* (Hook. f.) Kuntze [= *S. stocksii* (Hook. f.) Szlach.] should be treated as synonym of *M. intermedia* (A. Rich.) Seidenf. [= *S. intermedia* (A. Rich.) Szlach.]. In our opinion *S. rheedii* (Sw.) Szlach. contains two

different species and could be split into *S. rheedii* (Sw.) Szlach. *sensu stricto* and *S. versicolor* (Lindl.) Marg. & Szlach., *comb. nov.* The new combination is validated below.

While working with herbarium materials of *Malaxis* Sw. and *Crepidium* Bl. *sensu lato* from Asia we found some specimens which in our opinion represent a new species. It is described and illustrated below.

The results of our investigations on morphology and in the literature may be summarized as follows:

### *Seidenfia* Szlach.

Fragm. Flor. Geobot., Suppl. 3: 122. 1995.

Terrestrial, rarely epiphytic [*S. seychellarum* (Kraenzl.) Szlach.] or lithophytic [sometimes *S. versicolor* (Lindl.) Szlach.] herbs. Roots usually a few cm long, filiform, at base of pseudobulbs. Pseudobulbs fusiform to ovate, covered at basal portion by a few tubular scales, commonly apiculate, acute to acuminate and sheathing the leaf bases. Lowermost leaf much smaller than upper ones. Leaves usually 2–7, alternate, sometimes only apparently nearly opposite [*S. densiflora* (A. Rich.) Szlach.], petiolate. Leaf petiole canalliculate, widening towards the base into the sheath,

greenish to flavescent, sometimes purple-tinged. Leaf sheath often lax, colored as leaf petiole. Leaf blade usually lanceolate to ovate, plicate, oblique, thin-textured, green or sometimes purple, paler beneath, veins prominent and usually darker on underside. Inflorescence terminal, elongate, many-flowered, racemose; length of rachis between base of peduncle and lowermost flower increasing with age. Floral bracts linear to lanceolate, usually becoming reflexed and adpressed to the rachis. Ovary oblong, obovate to oblong-elliptic, with 6 ribs, greenish to purplish, pedicellate. Flowers nonresupinate, small to medium-sized, 5–7 days lived, greenish, yellow, orange, reddish to purple, violet (even with maroon or brownish tint). Color of flowers in same species often varies, also depends on age of flowers and intensity of light in their habitats. Sepals and petals commonly incurved, lateral sepals reflexed towards the dorsal one and sometimes over the lip. Lip obscurely 3-lobed, broadly cuneate, reniform, flabelliform to triangular in outline; lateral lobes without auricles, apical margins usually toothed [except *S. discolor* (Lindl.) Szlach.]; midlobe single, broad, obtuse to acute; base of lip narrow and long, commonly with bilateral lobes; concave in center with thickened margins, covered partially by a thick roof.

Gynostemium erect, with 2 fleshy, finger-like projections on both sides of anther. Anther dorsal, erect, movable. Connective narrow. Locules 2, opening ventrally. Pollinia 4, pyriform or obovoid, outer pollinium of each pair commonly slightly larger than the inner. Rostellum shelf-like, truncate. Viscidium absent.

Plants growing on decaying leaves, clay or humus, also on humus-covered or mossy rocks; in wet, sometimes moist habitats, often along water courses, usually under shade, in evergreen or semi-evergreen tropical forest, subtropical montane forest, bamboo forest or deciduous forest, sometimes in more open habitats (on edges of forests, along roads or even among shrubs or grasses, forest cleared for cultivation); in lowlands to submontane level. Color of plants (leaves and flowers) often depends on intensity of sunlight and seems to be inversely proportional to light intensity.

GENERITYPE: *Malaxis rheedii* Sw. [= *Seidenfia rheedii* (Sw.) Szlach.]

ETYMOLOGY. Named in honor of Dr. Gunnar Seidenfaden (Seidenf.), eminent Danish orchidologist.

The genus so far embraces 9 species distributed in Sri Lanka and India, with a single species in the Seychelles.

#### KEY TO THE SPECIES

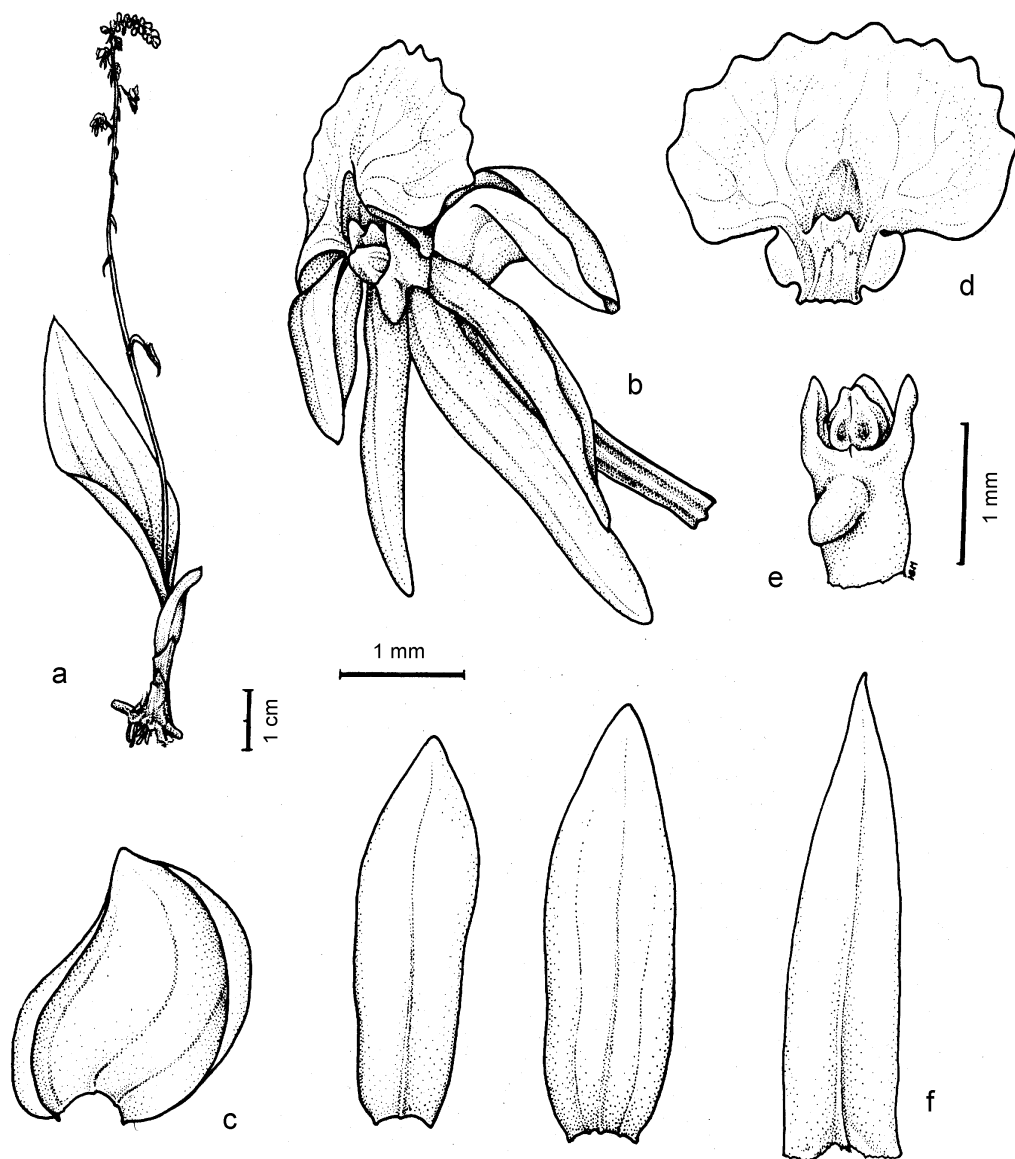
1. Gynostemium with horn on dorsal surface . . . . . *S. crenulata*
- 1\* Gynostemium without any horn . . . . . 2
  2. Plants with almost ovate pseudobulbs . . . . . 3
  - 2\* Plants with fusiform pseudobulbs . . . . . 4
3. Leaves almost ovate in outline, short-petiolate . . . . . *S. densiflora*
- 3\* Leaves lanceolate, long-petiolate . . . . . *S. lancifolia*
4. Lip without teeth at apical margin . . . . . *S. discolor*
- 4\* Lip toothed at apical margin . . . . . 5
5. Teeth short and broad, triangular . . . . . 6
- 5\* Teeth long and narrow, attenuate . . . . . 7
  6. Lip triangular in outline . . . . . *S. malabarica, sp. nov.*
  - 6\* Lip reniform in outline . . . . . *S. seychellarum*
7. Lip with 9–13 teeth on each side of mid-tooth . . . . . 8
- 7\* Lip with more than 19 (even to 30) teeth on each side of mid-tooth . . . . . *S. intermedia*
8. Mid-tooth shorter than the nearest, lateral teeth . . . . . *S. versicolor*
- 8\* Mid-tooth similar in length to the nearest, the longest, lateral teeth . . . . . *S. rheedii*

#### Section *Crenulatae* Szlach. & Marg., *sect. nov.*

TYPE: *Seidenfia crenulata* (Ridl.) Szlach.

This section is characterized by a unique horn-like appendage at the base of the dorsal surface of the gynostemium. Similar projections are observed in all species of *Pseudoliparis* Finet. In our opinion, however, they are the result of convergence rather than close relationships.

This is a monotypic section.



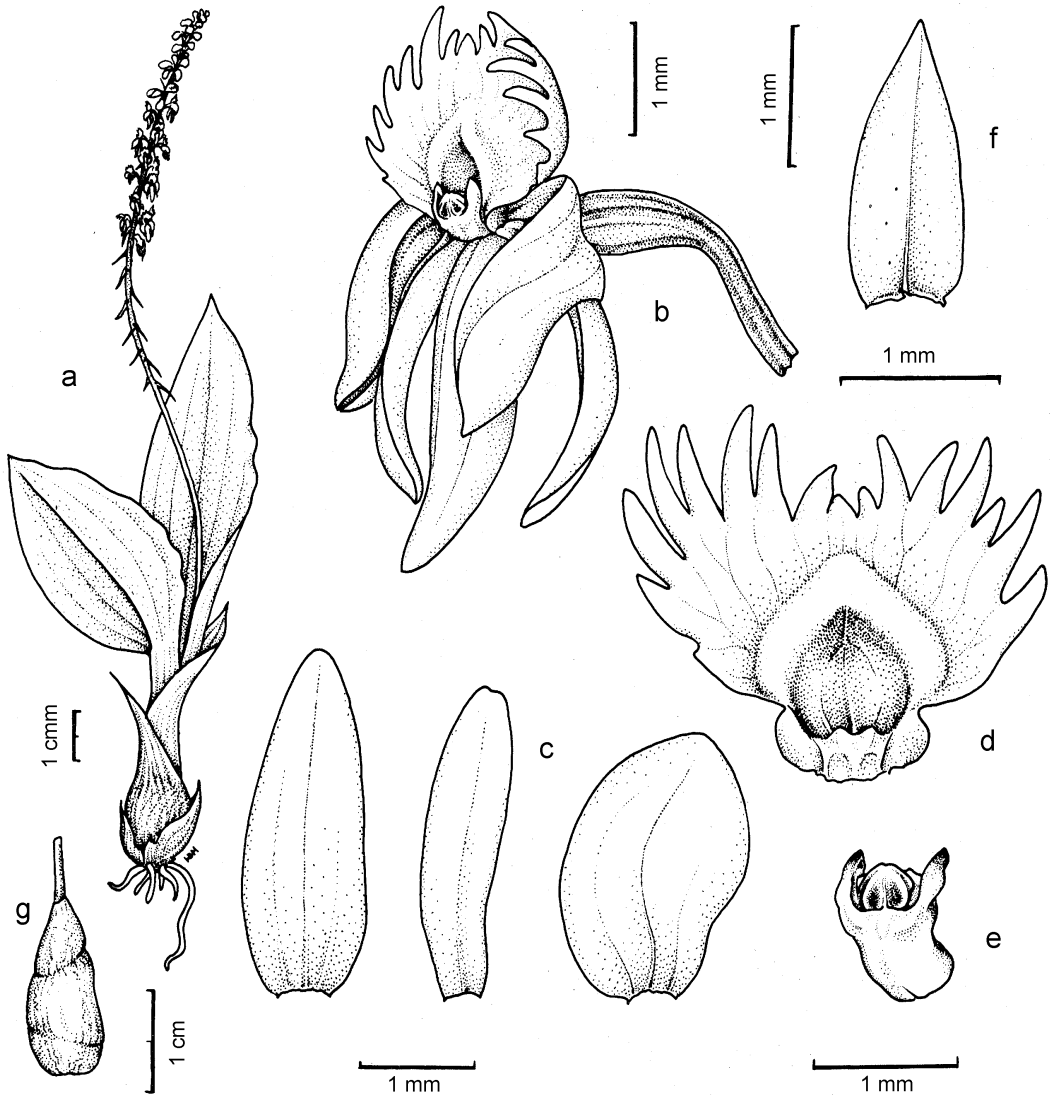
**Fig. 1.** *Seidenfia crenulata* (Ridl.) Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract (drawn from holotype – *Beddome 8108* – BM).

***Seidenfia crenulata* (Ridl.) Szlach.**

Fig. 1

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Microstylis crenulata* Ridl., J. Linn. Soc. Bot. 24: 346. 1888. TYPE: INDIA. Deccan, Western Nilgiris, *Beddome 8108* (HOLOTYPE: BM!). – *Malaxis crenulata* (Ridl.) Kuntze, Rev. Gen. 2: 673. 1891.

Pseudobulbs fusiform. Leaves 1–3, 3.8–5.0 cm long, 1.4–1.6 cm wide, sheathing at base, the lowermost ovate, the upper ones lanceolate-ovate, acuminate to acute, *ca* 5-veined. Inflorescence *ca* 10 cm long, many-flowered, racemose, flowers only at short apical part of raceme. Floral bracts



**Fig. 2.** *Seidenfia densiflora* (A. Rich.) Szlach. a – plant (drawn from W-R 58373); b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from holotype – Perrottet 878 – P).

3.5–4.0 mm long, *ca* 1 mm wide, lanceolate, acute, 1-nerved. Flowers greenish. Tepals 1-veined. Dorsal sepal 2.8–3.2 mm long, 1.0–1.2 mm wide, lanceolate, acute, slightly incurved. Petals *ca* 3 mm long, 0.9–1.1 mm wide, oblong, obtuse, incurved. Lateral sepals 2.1–2.3 mm long, *ca* 2 mm wide, broadly ovate, short attenuate, obtuse

to acute, concave, incurved, reflexed towards dorsal sepal. Lip *ca* 2 mm long, 2.5–3.0 mm wide, flabelliform to reniform, adnate to base of gynostemium, narrowly concave at middle part; apical margin with *ca* 11 triangular, short and broadly obtuse teeth, the external one shortest and smallest. Gynostemium 1.0–1.2 mm long, with large,

prominent horn on dorsal surface. Pollinia 0.30–0.35 mm long, 0.08–0.10 mm wide.

DISTRIBUTION. Endemic to India. Very rare, only in S part of country (Deccan): Madras: Tamil Nadu, Kerala (Nilgiris).

ECOLOGY. In wet, tropical forest.

### Section *Seidenfia*

TYPE: *Seidenfia rheedii* (Sw.) Szlach.

This section differs from the previous one in lacking the horn-like projection at the back of the gynostemium.

#### *Seidenfia densiflora* (A. Rich.) Szlach. Fig. 2

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Liparis densiflora* A. Rich., Ann. Sci. Nat., ser. 2, 15: 18. 1841. TYPE: INDIA. Deccan, Nilgiris, *Perrottet* 878 (HOLOTYPE: P!). – *Microstylis densiflora* (A. Rich.) Fischer in Gamble, 1408. 1928. – *Microstylis pratensis* Ridl., J. Linn. Soc. Bot. 24: 344. 1888 (*nom. illeg.*). – *Microstylis luteola* Wight, Ic. Pl. Ind. Or. 5(1): 4, pl. 1632. 1851. – *Microstylis bella* Reichenb.f., Gard. Chron. 25: 9. 1886. – *Microstylis versicolor* Wight, Ic. Pl. Ind. Or. 3(2): 9, pl. 901. 1844–1845 (*non* Lindl.). – *Malaxis densiflora* (A. Rich.) Kuntze, Rev. Gen. 2: 673. 1891.

Pseudobulbs 8–15 cm long, 1.5 cm in diameter, globose at base. Leaves 2(3), alternate, only apparently nearly opposite, 2.5–7.5 cm long, 0.8–1.8 cm wide, sessile or shortly petiolate; leaf blade ovate to ovate-lanceolate, plicate, acuminate or acute, with distinctly wavy margins, 5-nerved. Inflorescence 5–10 cm long, 60–80-flowered, dense, flowers form a very dense and purple raceme. Peduncle 2.5–7.5 cm long, with a few deflexed, sterile bracts. Floral bracts as long as flower, lanceolate, acute, deflexed. Ovary with pedicel *ca* 4 mm long. Flowers yellow, greenish-yellow or red, purple to violet, small, commonly slightly spreading. Sepals *ca* 6 mm long, *ca* 1.1–1.7 cm wide, linear-oblong, falcate; the dorsal one narrower, lateral ones deflexed. Petals *ca* 4.7–5.0 mm long, 0.8–1.0 mm wide, linear, obtuse, falcate. Lip *ca* 2 mm long, 1.8–2.0 mm wide, subquadrate, short, cuneate or subreniform, pectinately toothed. Gynostemium 1.0–1.1 mm long.

Anther *ca* 0.5 mm long, *ca* 0.6 mm wide. Pollinia *ca* 0.4 mm long, 0.3 mm wide. Fruit small, pedicellate, pyriform capsule.

DISTRIBUTION. Sri Lanka, South India (Kamataka, Kerala, Tamil Nadu). Rare. Alt.: 210–2300 m.

ECOLOGY. Under shade of trees in tropical, wet, evergreen forests, among grasses on hills. Flowering in March to December. Fruiting October.

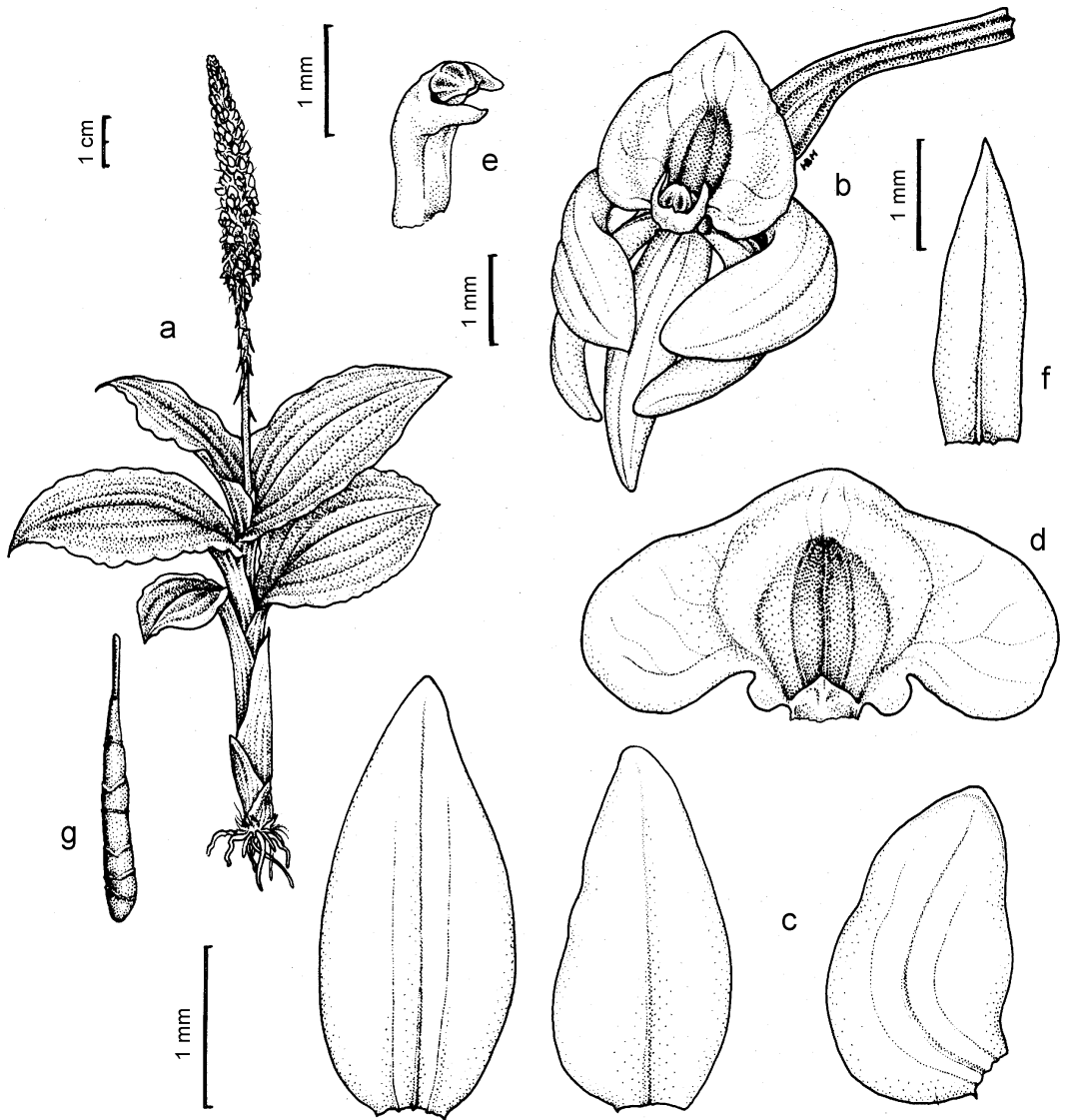
REPRESENTATIVE SPECIMENS. SRI LANKA. RATNAPURA DISTR.: Ratnapura, *Thwaites* 2743A (P!, K!); KANDY DISTR.: Norwood, *Lushington* 9872 (PDA-*fide* Jayaweera); Makeliya, *sine coll.*, *s.n.* (PDA-*fide* Jayaweera). INDIA. DECCAN: Madras, *Wight s.n.* (type of *Micr. versicolor* Wight, HOLOTYPE: K!), *Wight* 1632. (type of *Micr. versicolor* Wight var. *luteola*, HOLOTYPE: K!), Shembaganur, *van Melderer* 1193 (K!), *sine coll.*, 1653 (K!); NILGIRIS DISTR.: Wadearhatta, Dodabetta, Nilgiri, *Barnes* 1192, 1328 (K!), *Gamble* 15348, 17533 (K!); *Hohenacker* 1321 (BM!, K!, P!, W); *King s.n.*, *Lobb* 2063 (K!), *Metz* 1321 (P!); *Miers s.n.* (BM!); *Perrottet* 1099 (P!); 8206 (W-R 15172 – lost); *Schmidt s.n.* (K!); *Thomson* 2063, *s.n.* (K!); *Wight* 178(K!), *s.n.* (BM!, K!), 2063 (K!, P!, W-R!); *Gough s.n.* (US!); Koathagerry, *Wight* 2943 (AMES, C, K!, P!); Ootacamund, *Beddone* 8106 (BM!); *Brandis* 294 (W-R 7346 – lost); *Perrottet s.n.* (W-R 15171 – lost); *Bourne* 4614, 5384, (K!); Majaburam *Adams s.n.* (K!); Koonor, *Gamble* 12259 & 12436 (K!); Travancore, *Johnson* 1652 (K!); MADURA DISTR.: Kodaikanal, *Bourne* 590, 1062, 1035 & 2935 (K!), *Sauliere* S. J. 16 (K!); N. Kanara, Sirsi, *Hallberg & Mc Cann* 34975 (*fide* Santapau & Kapadia); Khasia Hills, *sine coll.* (K-L, W-R! – only left/down specimen); South India: *Beddone* 8095 (BM!). LOCALITY UNKNOWN. *Sine dat.*, *s.n.* (W-R! – 58373).

NOTE. Taxon variable in flower color.

#### *Seidenfia discolor* (Lindl.) Szlach. Fig. 3

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Microstylis discolor* Lindl., Gen. Sp. Orchid. Pl.: 20. 1830. TYPE: SRI LANKA. *Macrae* 3 (LECTOTYPE: K) & *Thwaites* C. P. 2375 (ISOLECTOTYPE: K). – *Malaxis discolor* (Lindl.) Kuntze, Rev. Gen. 2: 673. 1891.

Pseudobulbs fusiform. Leaves 3.4–7.5 cm long, 3–4 cm wide, continuous with sheathing bases, lower ones broadly ovate to ovate, upper



**Fig. 3.** *Seidenfia discolor* (Lindl.) Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from isotype – *Thwaites C. P. 2375 – K*).

ones narrowly ovate, acuminate, plicate, undulate, unequal-sided, maroon, purplish, purple-fuchsia or dark green but purple underneath, 5–7-veined, veins prominent below. Inflorescence long-peduncled, purplish, 6 cm long, flower-bearing portion *ca* 3 cm long and light green, racemose. Sterile bracts persistent. Floral bracts 2.5–5.0 mm long,

0.6–1.2 mm wide, subulate, reflexed, acuminate, tapering to a point, 1-nerved. Flowers *ca* 0.4 cm long, 0.3 cm in diameter, resupinate, younger yellow to orange, fading to purplish red when old. Sepals 3-veined. Dorsal sepal 2.5–3.6 mm long, 1.0–1.5 mm wide, oblong-ovate, obtuse, decurved. Petals 2.4–3 mm long, 0.6–0.8 mm wide,

lanceolate, obtuse, 1-veined. Lateral sepals 2.1–2.6 mm long, 0.9–1.5 mm wide, obliquely oblong, obtuse, reflexed above lip. Lip 1.6–2.4 mm long, 2.2–3.0 mm wide, subreniform, 5-veined, adnate to gynostemium base, apex blunt, obtuse or rounded, margin entire. Gynostemium 1.1–1.3 mm long, slightly broader at apex, narrowing below and bending forward slightly, with long obtuse projecting arms at apical part. Pollinia 0.30–0.35 mm long, *ca* 0.08 mm wide. Capsule 0.7–1.1 cm long, clavate.

**DISTRIBUTION.** Endemic to Sri Lanka. Alt.: 60–1830 m.

**ECOLOGY.** Rather common, along with other herbs under shade (*ca* 57% of normal light) of trees in tropical wet evergreen forests, often near streams. Growing with *Eulophia sanguinea* Hook. f. and *Seidenfia densiflora* (A. Rich.) Szlach, on decaying leaves. Flowering in August.

**REPRESENTATIVE SPECIMENS.** SRI LANKA. ANURADHAPURA DISTR.: Ritigala, *Bernardii* 16114 (US!); KANDY DISTR.: Corbet's Gap, *Jayaweera* 2016 (PDA-fide Jayaweera); Ambagamuwa, *Jayaweera* 2 (AMES!); KALUTARA DISTR.: Western Prov., Denihena, *Waas* 1888 (K!, US!); GALLE DISTR.: Hiniduma, Godakande Hill, *Cramer* 2764 (US!); *Kostermans*, 25566 (L!); *Wheeler & Balakrishnan* 12621 (US!); Nakiyadenia, Hiniduma-Galle, *R. B. & A. J. Faden* 76/517 (US!); MATALE DISTR.: Illukkumbura, Karakolagastenna, *Jayasuriya, Dassanayake & Balasubramanium* 429 (US!); COLOMBO DISTR.: Waga forest, *Dassanayake* 497 (K!). LOCALITY UNKNOWN: *Thwaites C.P.* 3698 (K!, BM!, P!); *sine coll., s.n.* (AMES!).

***Seidenfia intermedia*** (A. Rich.) Szlach. Fig. 4

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Liparis intermedia* A. Rich., Ann. Sci. Nat., ser. 2, 15: 17. 1841. TYPE: INDIA. Deccan. Kati, Nilgiris, *Perrottet s.n.* (HOLOTYPE: W-R!). – *Microstylis stocksii* Hook. f., Ic. Pl. 19: t. 1833. 1889. et Fl. Brit. Ind. 5: 690–691. 1890. – *Malaxis stocksii* (Hook.f.) Kuntze, Rev. Gen. 2: 673. 1891. – *Malaxis intermedia* (A. Rich.) Seidenf., Bot. Tids. 73: 99. 1978–79. – *Seidenfia stocksii* (Hook.f.) Szlach., Fragn. Flor. Geobot., Suppl. 3: 122. 1995.

Pseudobulbs fusiform. Leaves 2–4, 3.8–10.0 cm long, 2.5–5.0 cm wide, continuous with shea-

thing bases, the lowermost broadly ovate, the upper ovate, acuminate, sometimes slightly plicate, margins crispate, 5–7-veined. Inflorescence 6–21 cm long, many-flowered, racemose. Floral bracts 3.5–5.0 mm long, 1.0–1.3 mm wide, lanceolate, attenuate, acute, 1-nerved. Ovary with pedicel *ca* 4 mm long. Flowers *ca* 1.2 cm across, yellow, yellowish or pink, purple to brownish purple. Tepals 1-veined. Dorsal sepal 2.8–3.2 mm long, 1.2–1.4 mm wide, oblong-ovate, obtuse to acute. Lateral sepals 2.0–2.4 mm long, 1.5–1.7 mm wide, broadly ovate to ovate, obtuse to acute, concave, reflexed under lip. Petals *ca* 3 mm long, 0.9–1.1 mm wide, lanceolate, obtuse. Lip 2.3–2.6 mm long, 3.2–3.6 mm wide, flabelliform, adnate to base of gynostemium, widely concave at middle part, apical margin with *ca* 21 teeth, external ones short and small, falcate, attenuate, acute; the middle tooth the widest, commonly the shortest, obtuse to rounded, sometimes retuse. Gynostemium 1.3–1.6 mm long. Pollinia 0.30–0.35 mm long, 0.08–0.1 mm wide.

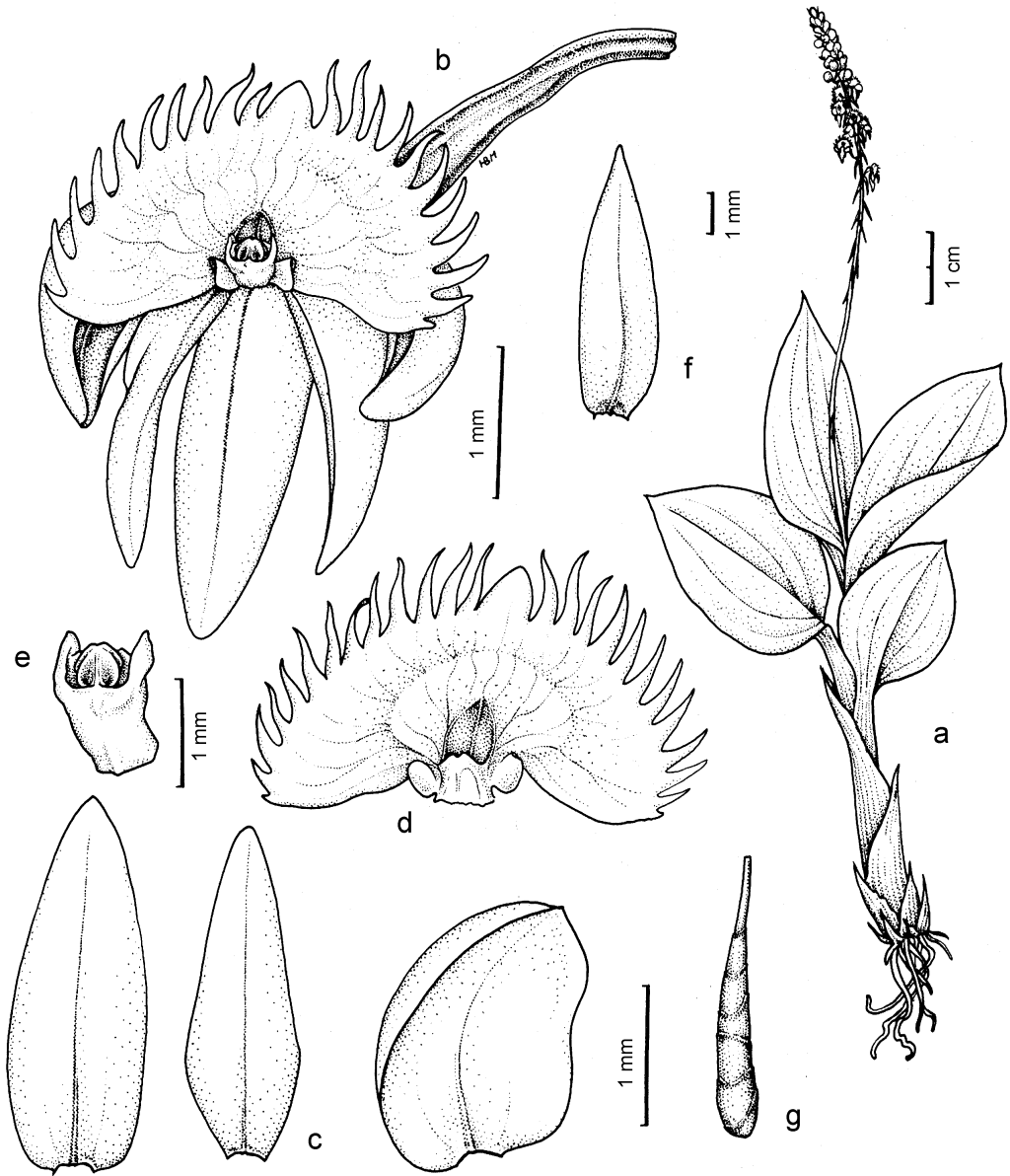
**DISTRIBUTION.** South India: Kamataka, Kerala, Tamil Nadu. Endemic, rare. Alt.: 1400–1900 m.

**ECOLOGY.** In tropical forest. Flowering in May, June, August.

**REPRESENTATIVE SPECIMENS.** INDIA. MALABAR AND CONCAN: Bababoodan Hills, Kanara, *Stocks & Law, sine no* (type of *Microstylis stocksii* Hook.f., HOLOTYPE: K!, ISOTYPES: K!, BM!, P!, W-R 41010 – lost), *Stocks & Law* 902 (K!); Ootacamund, *Wight s.n.*, (W-R 41011 – lost); Ghats, *Stocks* 150 (K-L!); Nilgiris Hills, *Gamble* 12001 (K!), Naduvattam, *Barnes* 1232, *Bourne* 6148 (K!); Billigirirangan Hills, near Dupabari, *Barnes* 1906 (K!); Kodaikanal, Pambar, *Saldanha S.J.* 4286 (K!). LOCALITY UNKNOWN: *Thwaites C. P.* 2375 (W-R! – 41041); *Wight s.n.* (K!), *sine coll., s.n.* (K!).

***Seidenfia lancifolia*** (Thwait.) Szlach. Fig. 5

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Microstylis lancifolia* Thwait., Enum. Ceyl. Pl.: 297. 1864. TYPE: SRI LANKA, AMBAGAMAWA DISTR., Saffragam, *Thwaites CP* 2742 (HOLOTYPE: K!, ISOTYPES: BM!, K!, P!, W!). – *Malaxis lancifolia* (Thwait.) Kuntze, Rev. Gen. 2: 673. 1891. – *Malaxis thwaitesii* Bennet, Ind. J. Forest. 5(4): 326. 1982.

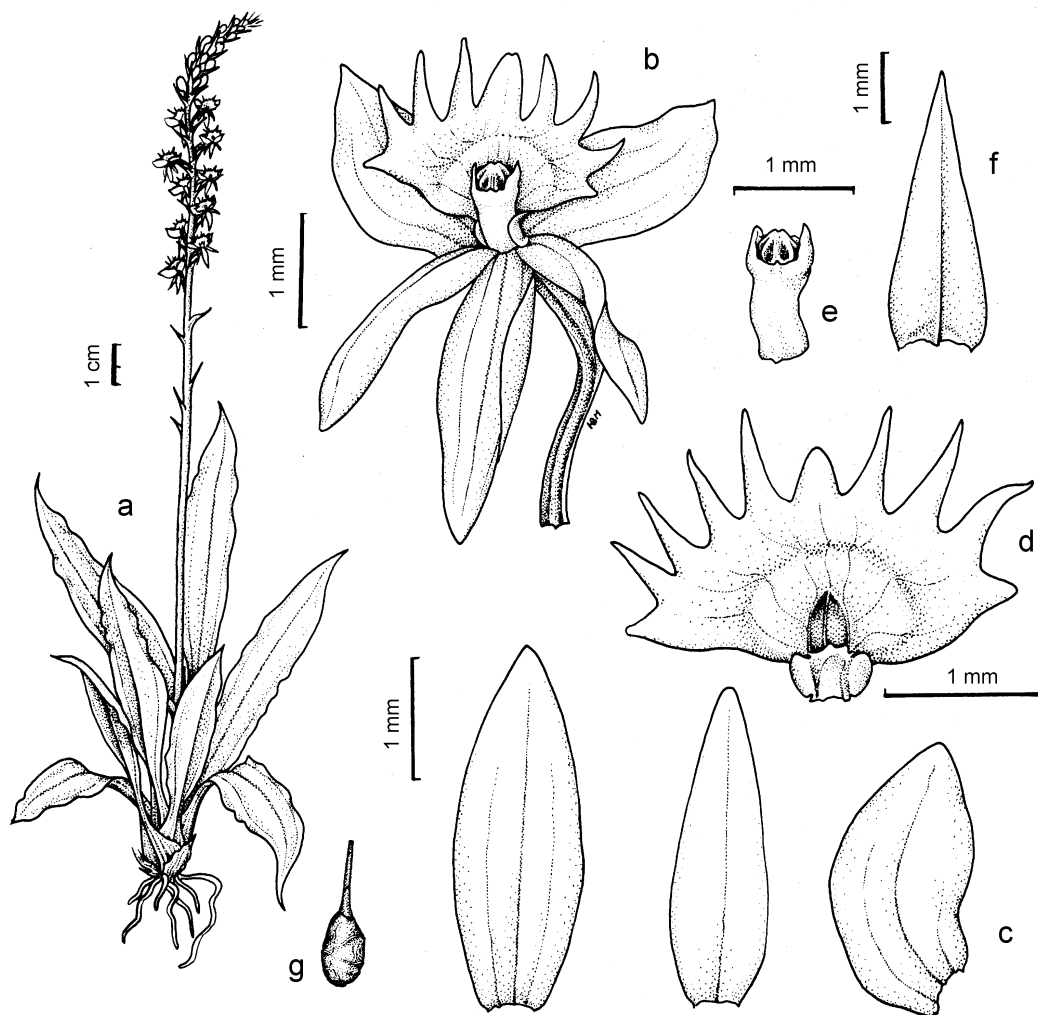


**Fig. 4.** *Seidenfia intermedia* (A. Rich.) Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from *Thwaites C. P. 2375 – W-R 41041*).

Pseudobulbs 1.0–1.2 cm long, 0.4 cm in diameter, fusiform. Leaves 5–6, distichous, petiolate, petiole 1–2 cm long, sheathing the pseudobulb, blade 4–8 cm long, 0.6–0.9 cm wide, lanceo-

late, acute, 3-nerved, margins waxy. Inflorescence 16–17 cm long, peduncle 3.5–5.0 cm long, green, 4-edged, racemose. Flowers 4.2–5.0 mm long, 3 mm wide, yellow, ocher to deep orange, some-





**Fig. 5.** *Seidenfia lancifolia* (Thwait.) Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from holotype – Thwaites C. P. 2742 – K).

times light to dark violet. Floral bracts 3.6–4.1 mm long, *ca* 1.7 mm wide, triangular-ovate, acuminate to acute, 1-veined. Dorsal sepal 2.8–3.0 mm long, *ca* 0.8 mm wide, linear-oblong, obtuse. Petals *ca* 2.8 mm long, *ca* 0.7 mm wide, linear-oblong, truncate, 1-nerved. Lateral sepals *ca* 2.6 mm long, *ca* 1.2 mm wide, falcately oblong, obtuse, 3-nerved. Lip *ca* 1.9 mm long, *ca* 3.2 mm wide, 3-nerved, pectinately 7–11-toothed: middle tooth triangular, short and broad, sometimes with retuse

apex; the other teeth attenuate, commonly obtuse. Gynostemium *ca* 1.2 mm long, 0.5 mm wide, slender. Anther 0.36 mm long, 0.44 mm wide. Pollinia 0.3 mm long, 0.14 mm broad.

**DISTRIBUTION.** Endemic to Sri Lanka. Alt.: up to 60 m.

**ECOLOGY.** In shady places, in crevices of rocks, as isolated clumps along water courses in tropical wet evergreen forests. Flowering in June.

REPRESENTATIVE SPECIMENS. SRI LANKA. RATNAPURA DISTR.: Beraliya, *Alston 2362* (PDA-*fide* Jayaweera); Rasagala, *sine coll.*, *s.n.* (PDA-*fide* Jayaweera), *Jayaweera 2(6)* (AMES!); Ratnapura, *Thwaites 2743 B* (BM!); Sinha Raja Forest *sine coll.*, *s.n.* (PDA-*fide* Jayaweera); Hettikanda, Bambarabotuwa Forest Reserve, *Hoogland 11434* (US!); Dotaluoya, Bambarabotuwa Oya, *Meijer 868* (US!); KEGALLE DISTR.: Kitalgala, *Livera s.n.* (PDA-*fide* Jayaweera); GALLE DISTR.: Kanneliya Forest, *van Steenis 19546* (L!); *B. & K. Bremer 856* (US!, S); NUWARA ELIYA DISTR.: above Balangoda, road Tamanawatte – Massena, Tambagoda, *Kostermans 24482 A* (K!), KANDY DISTR.: Karamita Kande, *sine coll.*, *s.n.* (K!).

*Seidenfia rheedii* (Sw.) Szlach. Fig. 6

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Malaxis rheedii* Sw., Kongl. Vet. Akad. Handl. 21: 235, 1800. TYPE: SRI LANKA. Kandy Distr., Kandy, Narawella, *Champion s.n.* (LECTOTYPE: K-L). – *Microstylis rheedii* (Sw.) Lindl., Gen. Sp. Orchid. Pl.: 21. 1830.

Pseudobulbs fusiform 5.0–25 cm long, 0.9–1.4 cm in diameter. Leaves 4–7, 4.4–18.0 cm long, 2.6–8.4 cm wide, sessile, the lower broadly ovate to ovate, broadly round at basal portion; the youngest the narrowest – ovate-lanceolate, plicate, acute to acuminate, margins softly wavy, 5–7-veined, with base continuing into purple-tinged sheaths 2–5 cm long. Inflorescence 60–100-flowered, racemose, peduncle 6.5–10.0 cm long; flower-bearing portion 6–18 cm long, length of rachis between peduncle and lowermost flower increasing with age. Floral bracts 4–8 mm long, 0.9–1.3 mm wide, lanceolate to oblong-lanceolate, acuminate, deflexed, 1-veined. Ovary with pedicel about 3 mm long. Flowers *ca* 6.5 mm in diameter, greenish yellow, yellow to orange-yellow or purple to maroon, with sweet pungent smell. Dorsal sepal 3.5–4.0 mm long, 0.8–1.3 mm wide, oblong, linear-lanceolate, obtuse, 3-veined. Petals 3.4–3.7 mm long, 0.6–0.9 mm wide, lanceolate, truncate, sometimes retuse, 1-veined. Lateral sepals 2.4–3.8 mm long, 1.2–1.5 mm wide, obliquely oblong-lanceolate, obtuse, 3-nerved, deflexed. Lip 2.0–2.3 mm long, 2–2.8 mm wide, broadly cuneate to narrowly flabelliform, pectinate, 9–13-toothed, teeth subequal in length, oblong triangular, commonly acute to obtuse at apex.

Gynostemium 1.2–1.8 mm long, 0.8–1 mm wide at top. Anther 0.34–0.45 mm long, 0.5–0.6 mm wide. Pollinia 0.30–0.35 mm long, 0.1–0.14 mm broad. Capsule 6–10 mm long, 3–5 mm in diameter, pyriform or oblong-obovate.

DISTRIBUTION. Sri Lanka, India (Gujarat, Kerala). Rare. Alt. up to 1860 m.

ECOLOGY. Terrestrial; growing in shady places, on clay, in submontane or midlevel tropical wet evergreen forests, extending to subtropical mountain forests. Flowering July–September, fruiting September–November.

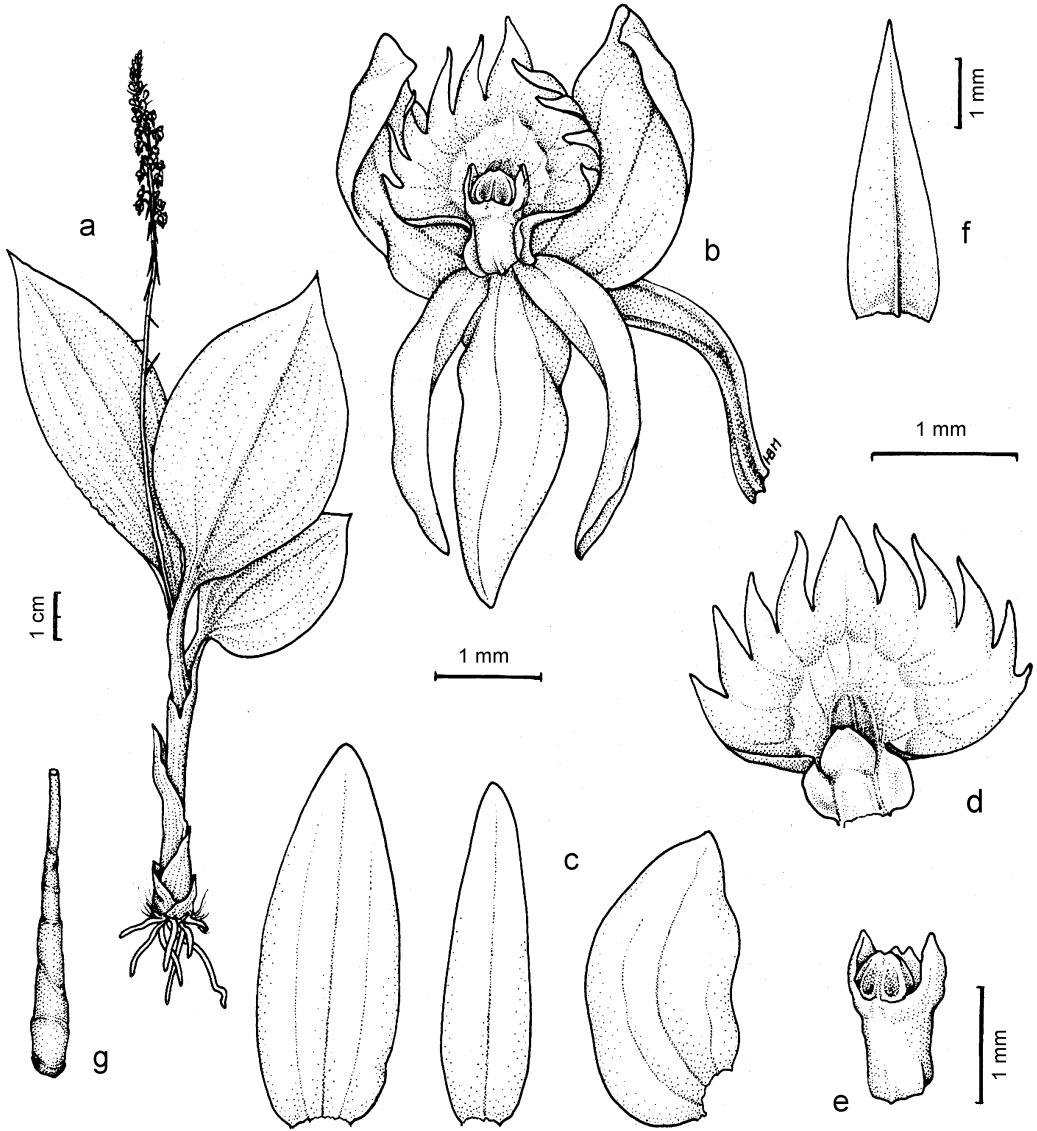
REPRESENTATIVE SPECIMENS. SRI LANKA. Near Norton Bridge, *Simpson 9762* (BM!); *Walker s.n.*, I, II (K!); *sine coll.*, *sine dat.* (K!-3 specimens in upper part of sheet). INDIA. Kodaikanal, *Sebastine 25019* (L!); South India, *Beddome 8096* (BM!-2 left specimens), *Beddome 8097* (BM! – only left and right specimens). LOCALITY UNKNOWN: *sine coll.*, *sine dat.*, (W-R! 41030 – only right top specimen); Kew Cult.: *sine loc.*, *s.n.* (W-R! 41032).

NOTE. Taxon variable in size and flower color.

*Seidenfia versicolor* (Lindl.) Marg. & Szlach., *comb. nov.* Fig. 7

BASIONYM: *Microstylis versicolor* Lindl., Gen. Sp. Orchid. Pl.: 21. 1830. TYPE: SRI LANKA. *Macrae 2* (LECTOTYPE: K-L, type of *Microstylis versicolor* Lindl., drawing in Bibl. Hort. Soc., *fide* Ridley.). – *Malaxis versicolor* (Lindl.) Abeywick, Ceyl. J. Sci. Biol. 2: 147. 1959; *Malaxis rheedii* Heyne *ex* Wall., Cat. *sub. n.* 1939. 1829.

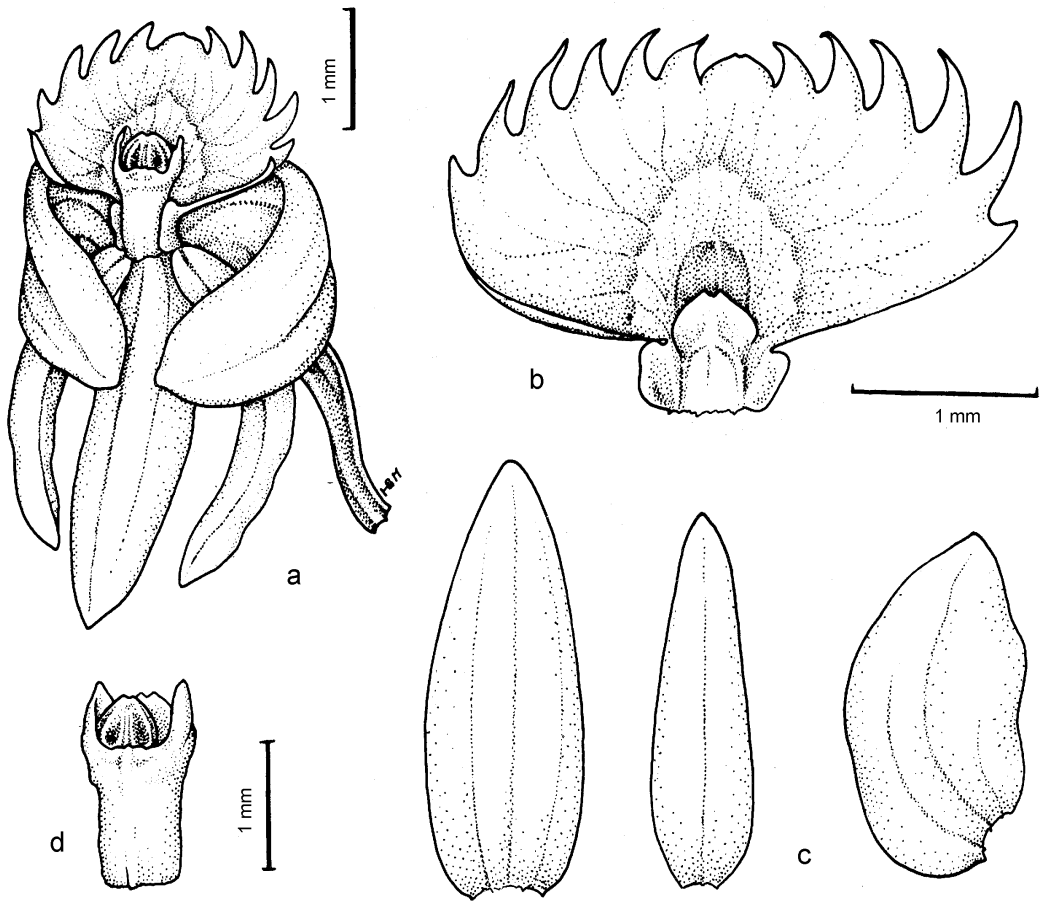
Pseudobulbs fusiform 7.5–30.0 cm long, 0.9–2.2 cm in diameter. Leaves 2–5, 5–15 cm long, 2–13 cm wide, sessile, the lower one ovate, the upper one the narrowest, broadly round at base of blade, sometimes nearly obcordate (older leaves), plicate, acute to acuminate, margin wavy, sometimes very slightly, 5(7)-veined, greenish, sometimes tinged with purple, with prominent purple or even pink-tinged veins; purple color seems to be inversely proportional to light intensity. Base of leaf blade continuing into purple-tinged sheaths 3–6 cm long. Inflorescence 40–80-flowered, racemose; peduncle 3.5–10.0 cm long, 6-ribbed,



**Fig. 6.** *Seidenfia rheedii* (Sw.) Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from lectotype – *Champion s.n.* – K-L).

purplish with a single leafy bract; flower-bearing portion 4–8 cm long, length of rachis between peduncle and lowermost flower increasing with age, with persistent, deflexed bracts. Flowers 3.0–5.5 mm in diameter, small; when young and under full sunlight greenish, yellow, orange; in shade or with

age turning red or purplish, even brownish; sometimes lip tinged with yellow but sepals and petals purplish, or vice versa; odorous. Floral bracts 2.5–10.0 mm long, 0.7–1.5 mm wide, ovate-lanceolate to lanceolate, acuminate or acute, deflexed, 1-veined. Dorsal sepal 2.0–3.6 mm long, 1–1.6 mm



**Fig. 7.** *Seidenfia versicolor* (Lindl.) Marg. & Szlach. a – flower, b – lip, c – lateral sepal, petal, dorsal sepal, d – gynostemium (drawn from – Saldanha 14236 – US).

wide, oblong to lanceolate, obtuse to acute, 3-veined. Petals 2.0–3.5 mm long, 0.6–1.0 mm wide, oblong-ovate to lanceolate, obtuse to retuse at apex, 1-veined. Lateral sepals 1.5–2.8 mm long, 1.0–1.8 mm wide, asymmetrical-ovate, obtuse, deflexed, 3-nerved. Lip 1.2–2.8 mm long, 2.1–3.2 mm wide, subquadrate to reniform, pectinate, 9–13-toothed, middle tooth short and wide, distinctly shorter than the nearest, lateral tooth blunt and trifid at apex. Gynostemium 1–2 mm long, 0.8–1.2 mm wide at top. Anther 0.4–0.5 mm long, 0.5–0.7 mm wide. Pollinia 0.3–0.4 mm long, 0.12–0.15 mm broad. Capsule 0.7 cm long, 0.4 cm in

diameter, short pedicellate, pyriform or oblong-ovate, purple on furrow, green on ridges.

**DISTRIBUTION.** Sri Lanka, India. Alt. 390–1830 m.

**ECOLOGY.** Terrestrial or lithophytic; growing in shade, sometimes in partial shade, in wet or moist habitat, in bamboo forest, in undergrowth of deciduous forest, semievergreen forest, edges of forest, land cleared for coffee, along roads among shrubs, humus-covered rock surface, on mossy rocks, often along a stream. Flowering June–November, fruiting September to January.

REPRESENTATIVE SPECIMENS. SRI LANKA. MATALE DISTR. Karakolagastenna, Illukkumbura, *Jayasuriya, Dassanayake & Balasubramaniam* 429 (US!); ANURADHAPURA DISTR., Ritigala Strict Natural Reserve, *Jayasuriya* 1159 (US!); Weragamtota (Mahawelatota?), *Sledge* 954 I and II (K!); sine loc., *Walker* 844 (K! – only lower right specimen); INDIA. HASSAN DISTR, Mysore, *Saldanha* 14236 (US!); Bisle, *Saldanha* 13601 (US!); Chikkanahalli-Arehalli, *Jarrett & Ramamoorthy HFP* 1040 (US!); *Saldanha & Ramamoorthy HFP* 472 (US!); between Hebbasale and Devarunde, *Nicolson, Saldanha & Ramamoorthy HFP* 221 (US!); Kadamane, Siradi, *Ramamoorthy HFP* 1896 (US!); *Saklespur-Byakaravalli, Saldanha & Ramamoorthy HFP* 437 (US!); Uchangi, *Nicolson, Saldanha & Ramamoorthy HFP* 184 (US!); NILGIRIS DISTR., Mercana, *Barnes* 1384 (K!, spirit. coll. – K!), Gudalur Ghat Pilgiris, *Barnes* 1770 (K!, L!), Kambakkam Hills, Grownat Tambaram, *Barnes* 1990 (BM!, spirit. coll.-K!), 2061 (K!), Nadurvattam, *Barnes* 1237 (K!), Wynaad, *Barnes* 1219, 1383, s.n. (K!); MADRAS DISTR., Perumbukanal: *Bourne* 2934 I and II (K!), Periga, *Bourne* 371 (K!); MADURA DISTR., Kodaikanal: *Sauliere* 105 (K!), *Sauliere* s.n. (BM!), Rambaruer, *Barber* 7570 (K!), Tamilnadu Hills, Dindigul, *Matthew* 41723 (C, K!), *Wight* 903, s.n. (K!); KORAPUT DISTR, Orissa, Pottangi, *Mooney* 3850 (K!); NAMAKKAL DISTR, Kolli Hills, Salem, *Matthew & Paramasivan* 24121 (K!); CENTRAL PROV., *Thwaites* CP 2375 (BM!, K!, P!, PDA); BASTAR STATE, Bailadila, *Mooney* 1042 (K!); MALABAR AND CONCAN, *Stocks & Law* s.n. (K!), Bababoodan Hills, *Stocks & Law* s.n. (K!); South India: *Beddone* 8096 (BM! – 2 right specimens), *Beddone* 8097 (BM! – middle specimen); sine loc.: *Gibson* s.n., *Wallich* 1832 (K!). LOCALITY UNKNOWN: sine coll., sine dat. (W-R! 41034).

NOTE. Taxon variable in size and color of plants and color of flowers.

*Seidenfia seychellarum* (Kraenzl.) Szlach. Fig. 8

Fragm. Flor. Geobot., Suppl. 3: 122. 1995. – *Liparis seychellarum* Kraenzl., Syst. Bot. Jahrb. 33: 60. 1902. TYPE: SEYCHELLES. Mahe, Mt. Harrison, *Schimper* 104, 352 (SYNTYPES: unloc.). – *Microstylis seychellarum* (Kraenzl.) Schlecht., Beih. Bot. Centralbl. 33, 2: 411. 1915. – *Malaxis seychellarum* (Kraenzl.) Summerh., Kew Bull. 1953: 578. 1954.

Fusiform pseudobulbs 33–47 cm tall. Leaves ca 4, 3.8–17.5 cm long, 2.5–6 cm wide, the lower ovate, the upper oblong-ovate to lanceolate-ovate,

attenuate to acuminate, sometimes slightly plicate, ca 5-(7-) veined, veins prominent below. Inflorescence 17–25 cm long, many-flowered, racemose. Flowers 1.6–2.5 mm in diameter, green. Floral bracts 3.5–5.0 mm long, lanceolate, attenuate, acute, 1-nerved. Sepals and petals 3-veined, middle vein thicker. Dorsal sepal ca 4 mm long, ca 1.3 mm wide, oblong-ovate to lanceolate-ovate, acute, incurved and falcate. Petals ca 3.4 mm long, ca 0.9 mm wide, slightly asymmetrical, lanceolate, obtuse, incurved, strongly falcate. Lateral sepals 3.1 mm long, ca 1.5 mm wide, asymmetrical-ovate, obtuse to acute, concave, incurved and falcate, reflexed toward dorsal sepal. Lip ca 2.6 mm long, ca 3.8 mm wide, reniform, adnate to base of gynostemium, broadly concave at middle part, apical margin ca 11-toothed, teeth triangular, obtuse, external smaller and shorter, the middle one shortest and widest, broadly obtuse, sometimes absent. Gynostemium ca 1.6 mm long. Rostellum slightly acute at apical margin. Staminodes distinctly reflexed behind rostellum. Pollinia ca 0.4 mm long, 0.08–0.10 mm wide.

DISTRIBUTION. Endemic to Seychelles. Alt. up to 400 m.

ECOLOGY. In relict *Dillenia-Northea* forests with cinnamon and much *Colea*, in damp shady humus in crevices between boulders.

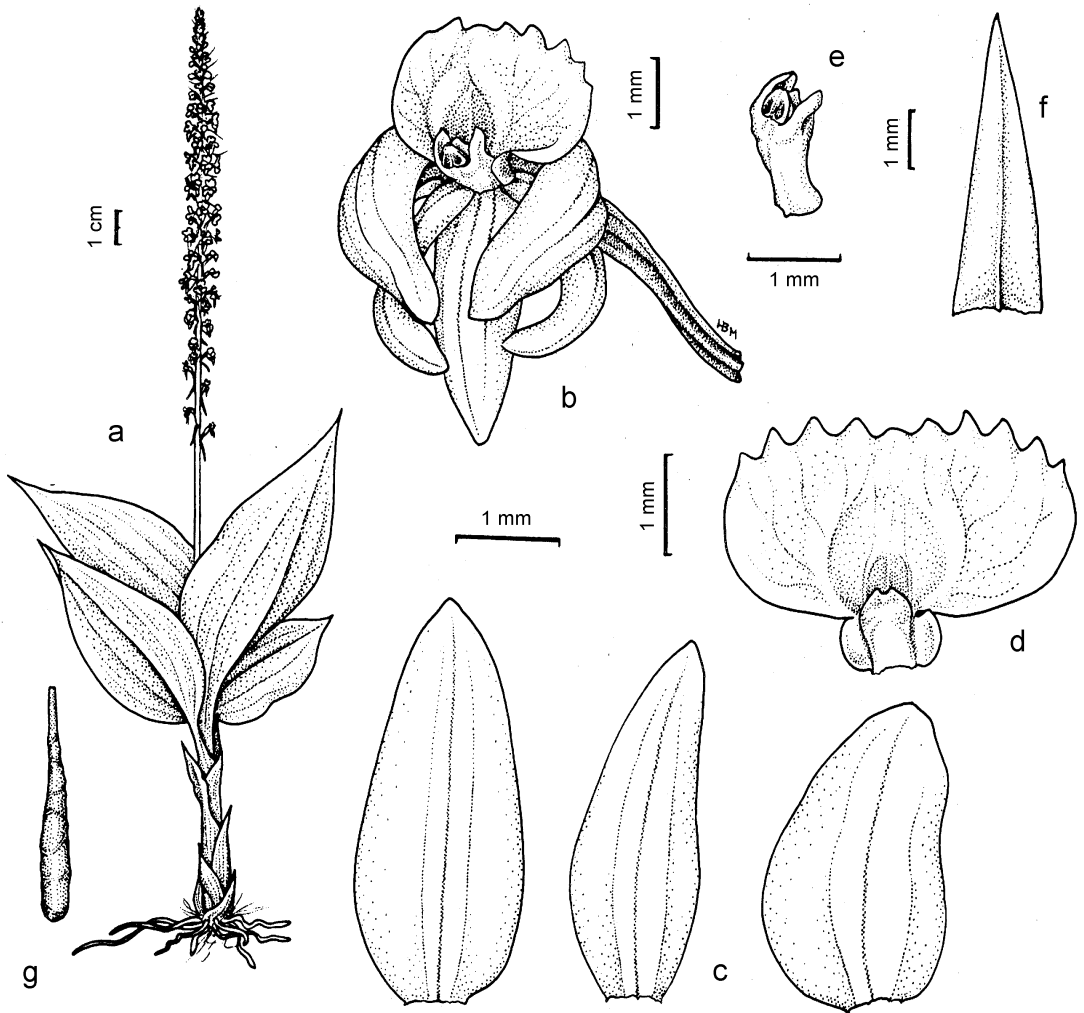
REPRESENTATIVE SPECIMENS. SEYCHELLES. MAHE ISLAND: Trois Freres, *Jeffrey & Zelia* 552 (K!, P!); La Reserve Mahe Forest, *Evrard* 11652 (BR!).

*Seidenfia malabarica* Marg. & Szlach., sp. nov.

Fig. 9

*Folia ovali-lanceolata. Labellum triangulare, marginem ca 9-denticulatis in parte apicali, denticulis brevibus, late triangularibus, denticulo mediano maximo.*

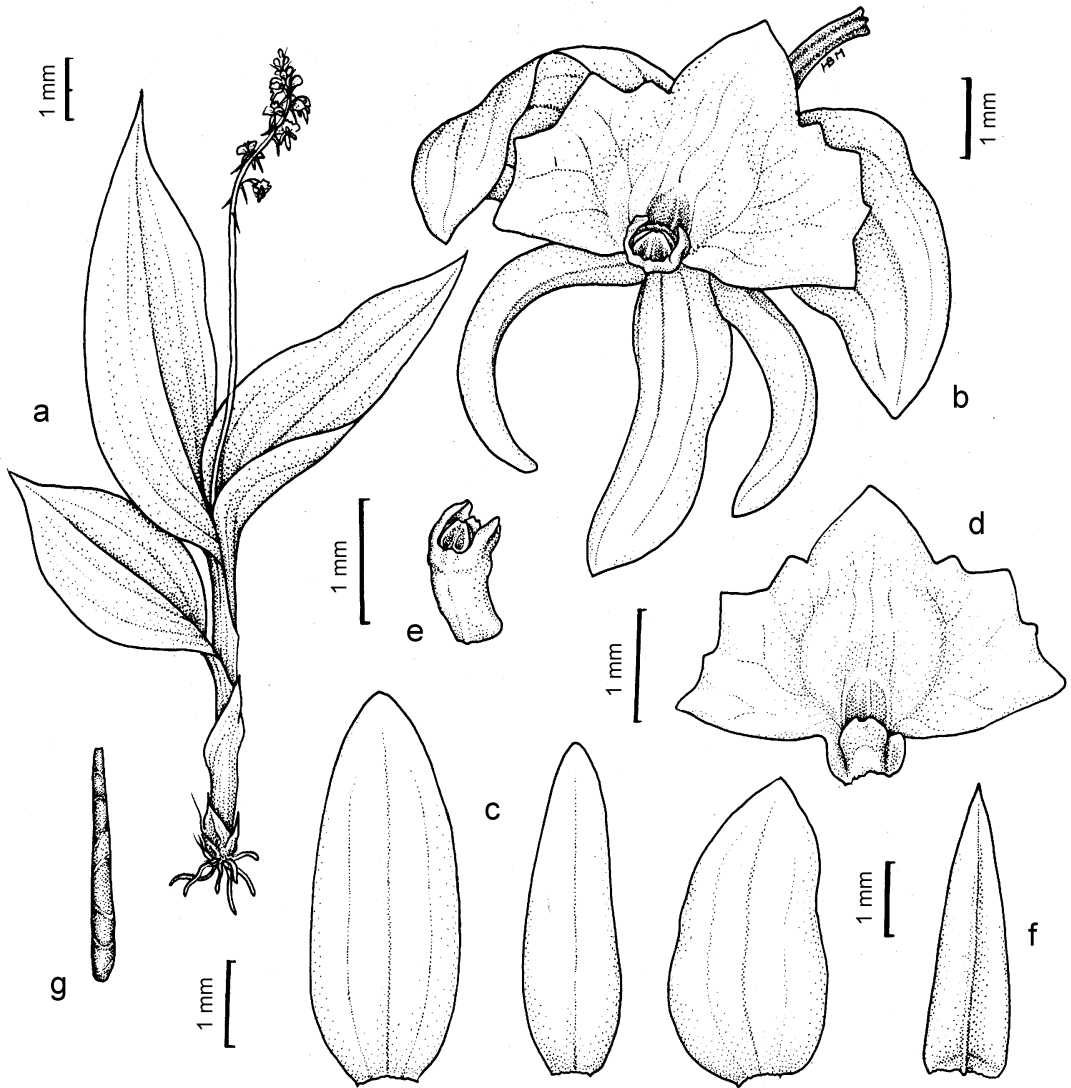
Fusiform pseudobulbs 11–16 cm tall, slender. Leaves 3.9–10.0 cm long, 1.8–4.2 cm wide, 2–5, the lower ovate, the upper oblong to lanceolate-ovate, attenuate or acuminate, with sheathing bases, 5–7-veined, veins prominent below. Inflorescence with 10 to more than 20 flowers, slender, racemose; peduncle 5–7 cm long, flower-bearing portion 3.5–4.5 cm long. Flowers medium-sized,



**Fig. 8.** *Seidenfia seychellarum* (Kraenzl.) Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from – Jeffrey & Zelia 552 – P).

yellow, sometimes purplish, lip yellow-orange to purple. Floral bracts 3.0–4.5 mm long, 1.2–1.5 mm wide, oblong-triangular, acute, 1-nerved. Dorsal sepal 4.8–5.0 mm long, 0.8–1.2 mm wide, oblong-lanceolate, obtuse to acute, slightly incurved. Petals 4–4.5 mm long, 0.8–1 mm wide, slightly asymmetrical, oblanceolate, obtuse to acute, softly incurved, reflexed towards dorsal sepal. Lateral sepals *ca* 3 mm long, 1.3–1.5 mm wide, asymmetrical-ovate, acute, slightly con-

cave, incurved and falcate, reflexed towards dorsal sepal and slightly above lip. Lip 2.5–3.0 mm long, 3.5–4.0 mm wide, broadly triangular in outline, adnate to base of gynostemium, cavity small and narrow, apical margin 7–9-toothed, teeth broadly triangular, subequal in size, acute to obtuse, the middle tooth biggest, apiculate or sometimes retuse at apex. Gynostemium 1.0–1.2 mm long. Anther 0.4–0.5 mm long, 0.6–0.7 mm wide. Pollinia 0.3–0.4 mm long, 0.1–0.15 mm wide.



**Fig. 9.** *Seidenfia malabarica* Marg. & Szlach. a – plant, b – flower, c – lateral sepal, petal, dorsal sepal, d – lip, e – gynostemium, f – floral bract, g – pseudobulb (drawn from lectotype – *Stocks & Law s.n.* – W-R).

TYPE: INDIA. MALABAR, Concan, *Stocks & Law s.n.* – (HOLOTYPE: W-R!)

ETYMOLOGY. In reference to the place of origin.

DISTRIBUTION. South India

ECOLOGY. Tropical forest. Flowering in September.

NOTE. In the newly described *S. malabarica* the leaves are ovate-lanceolate, the lip is triangular, *ca* 9-dentate along apical margin, teeth wide, broadly triangular, the median tooth being the largest. It differs from its close relatives *S. versicolor* (Lindl.) Mar. & Szlach and *S. rheedii* (Sw.) Szlach. in the shape of the lip.

REPRESENTATIVE SPECIMENS. INDIA. MALABAR: Concan, *Stocks, Law s.n.* (BM!), *Hooker & Thomson 28* (P!); Niligiris Hills, Gudalur Ghat, *E. Barnes 1770* (K!); Billigirirangan Hills, Attikan, *E. Barnes 2195* (spirit. coll. – K!); Mysore, Bababudan Hills, *E. Barnes 2306 A* (spirit. coll. – K!); *E. Barnes s.n.* (spirit. coll. – K!);

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