

### THREE NEW SPECIES OF ASCLEPIADACEAE FROM PENINSULAR MALAYA

R. E. RINTZ\*

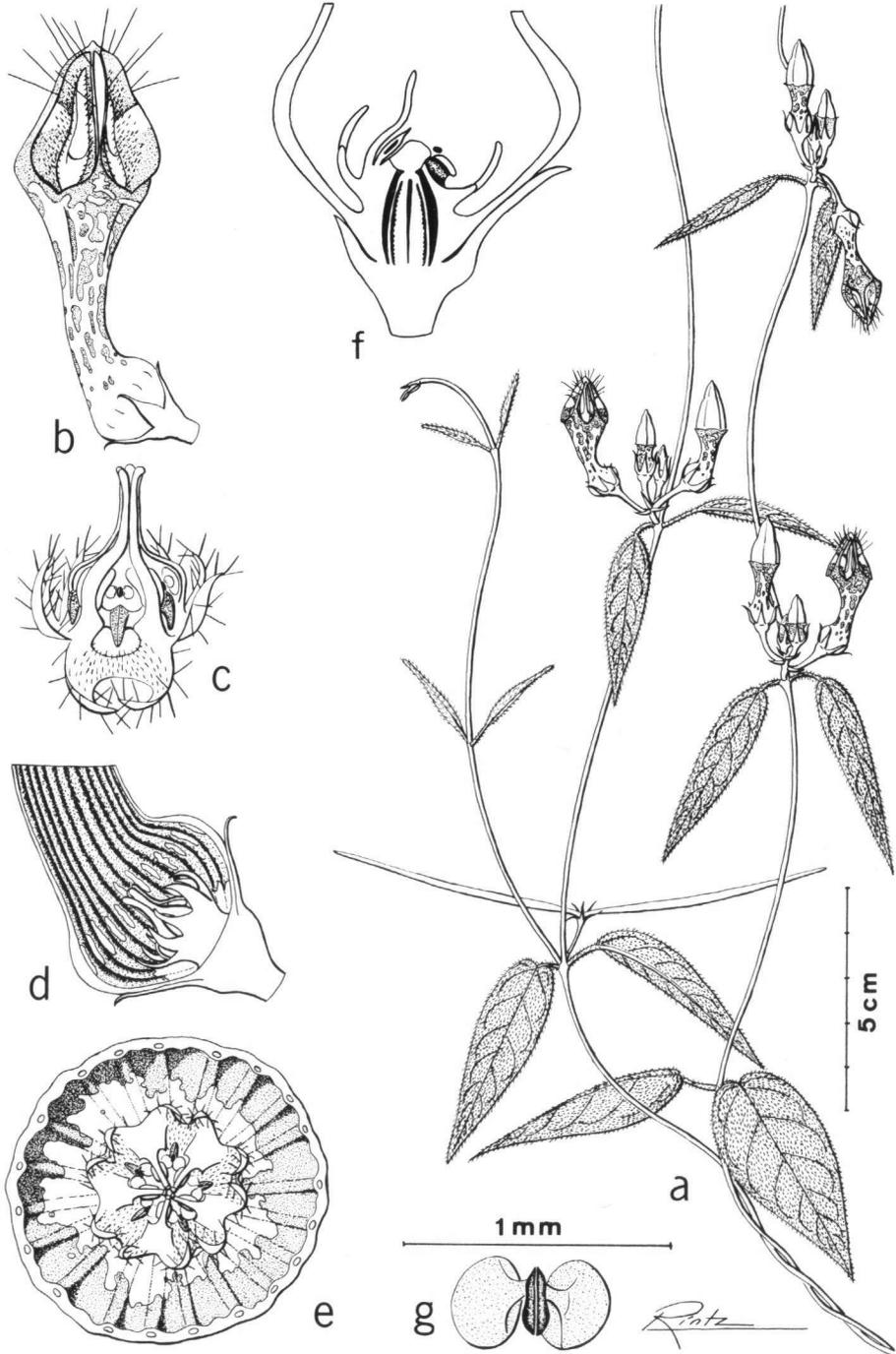
Recent intensive exploration in peninsular Malaya for members of the *Asclepiadaceae* has resulted in the collection of many rare species and new records of species formerly known only from Thailand. In addition, the following 3 new species were also collected. I wish to express my thanks to Mrs. Zaleha Christine Alang, former Head of the Biology Department at Universiti Pertanian Malaysia (UPM), whose generosity made this study possible; to the staffs of the herbaria at the University of Malaya (KLU), the Forest Research Institute at Kepong (KEP), the Singapore Botanic Gardens (SING), Kew (K), British Museum (BM) and Leiden (L) for their generous assistance and to Dr. Herbert Huber for his help with the identification of the new *Ceropegia* sp.

***Ceropegia langkawiensis* Rintz, sp. nov. — Fig. 1.**

Planta scandens ad 6 m longa. *Caulis* gracilis circiter 1 mm diametro glaber. *Folia* petiolis pubescentibus; laminis membranaceis ovato lanceolatis, basibus cordatis vel rotundatis, supra et infra pubescentibus, 3–6 × 1–3 cm. *Inflorescentiae* breve pedunculatae, 1–6 floribus; pedunculis glabris. *Tubus corollae* extus et intus glaber, 1.7 cm longus; lobis corollae 0.8 cm longis intus ciliatis extus 10–20 pilis longis flexuosis. *Folliculi* graciles glabri, 5–6 × 0.2 cm.

Long perennial twiner to 6 m or more in length. *Stems* and branches c. 1 mm diameter, glabrous. *Leaves* with pubescent petioles 1 cm long; laminae membranaceous, ovate-lanceolate with round to cordate bases, both surfaces and the margins uniformly pubescent with short patent hairs, lower laminae 5–6 × 2–3 cm, upper laminae at floriferous nodes progressively smaller, often 3–4 × 1 cm or less. *Inflorescences* axillary, bearing 1–6 flowers centripetally; peduncles c. 2 mm long, glabrous; pedicels c. 13 mm long, glabrous, each pedicel subtended by a single bract 2 mm long. *Corolla* tube pale green with purple spots on the outer surface, the inner surface deep red except for 20 white windows between the ribs at the base of the corolla and an irregular white portion surrounding the base of the gynostegium, glabrous on both surfaces; base swollen, upper portion funnel shaped, entire tube 1.7 cm long; corolla lobes lanceolate, 0.8 cm long, united at the apex, the upper inner surfaces often bright green, the lower inner surfaces clear white, inner surfaces with short reflexed hairs, the outer margins with flexuous cilia 2–3 mm long. *Corona* yellow, consisting of a filiform upper lobe, glabrous, and a deeply bifid lower lobe with stout hairs along the margins and short reflexed hairs on the inner surface. *Twin-pollinia* exposed at maturity, globose, sessile to a small corpuscle. *Follicles* glabrous, produced in divergent pairs, each 5–6 × 0.2 cm.

\* Current address: 17374 Millar Rd., Mt. Clemens, Michigan, U.S.A. 48043.



MALAYA. K e d a h : Pulau Langkawi, Kuah, beneath shrubs along sandy beach east of town and at the base of a large limestone outcrop, October 11, 1976. *R. E. Rintz 128* (L, holotype: K, L, with flowers in liquid, UPM, isotypes).

**Note:** This species seems most closely related to *C. monticola* W. W. Sm. (*Forrest 10944* type!) and *C. kachinensis* Prain (*Lace 5471* type!) which are recorded from the mountains of SW. China, N. Burma and N. Thailand. The Langkawi plant differs from both of them in being a much longer and slimmer plant with much smaller leaves. Moreover, its leaves and petioles are uniformly pubescent on both surfaces while those of *C. monticola* and *C. kachinensis* are both sparsely pubescent above and glabrous below. *Ceropegia langkawiensis* has subsessile inflorescences and flowers *c.* 2.5 cm long while both *C. monticola* and *C. kachinensis* have peduncles 1–3 cm long and flowers 3.5–4.5 cm long. The flowers of *C. langkawiensis* are similar in shape, though smaller, to those of *C. kachinensis* but differ from flowers of *C. monticola* in their non-spathulate corolla lobes.

*Ceropegia langkawiensis* represents only the second member of this large paleotropical genus to be recorded from peninsular Malaya. The other species, *C. lucida* Wall., is known only from a collection by Curtis on Bukit Penara, Pulau Pinang. *Ceropegia lucida* is an entirely glabrous plant with leaves 10–17 cm long and has flowers 3.5–5 cm long with spatulate corolla lobes.

**Flower biology:** The flowers of *C. langkawiensis* are remarkable in acting as insect retainers as part of their pollinating mechanism. The flower opens in the early morning in a vertically-erect position with the long marginal cilia held nearly perpendicular to their points of attachment. These cilia are not rigidly fixed but swing about in the air currents. The flowers do not seem to be scented and small flies are apparently attracted to them because of their color. The flies enter the openings between the corolla lobes and are directed downwards into the tube by the reflexed hairs lining the inner surfaces of the lobes. Though the corolla tube is deep red inside, the gynostegium, which is yellow, is illuminated by 20 narrow pigmentless windows in the swollen basal portion of the tube and by the irregular pigmentless base on which it sits. These pigmentless areas are not visible from the outside of the flower. The entering insects crawl (or fall) through the darkened narrow portion of the tube and enter the well-illuminated gynostegial chamber. Once inside and at the gynostegium, the flies are directed toward the twin pollinia by the reflexed hairs on the inner surface of the lower corona lobe. I suspect that nectaries are present but did not see them. Liquid-preserved flowers occasionally contained flies with the twin pollinia adhering to their heads. About 12 hrs after anthesis the pedicel bends downward and places the flower in a horizontal to up-side-down position, thus allowing the flies to escape, often with the twin pollinia adhering to them. The downward bending of the pedicel occurs independently of pollination. If unpollinated, the flower falls *c.* 48 hrs after anthesis.

Fig. 1. *Ceropegia langkawiensis* Rintz. — a. habit; b. flower; c. gynostegium with front lower corona lobes bent down to show the hairs, the twin-pollinia and the anther wings; d. base of corolla in lateral cut-away view showing the windows between the ribs; e. base of the corolla in top cut-away view showing the pigmentless basal portion surrounding the gynostegium; f. base of the corolla in median sectional view; g. twin-pollinia (after *R. E. Rintz 128*).

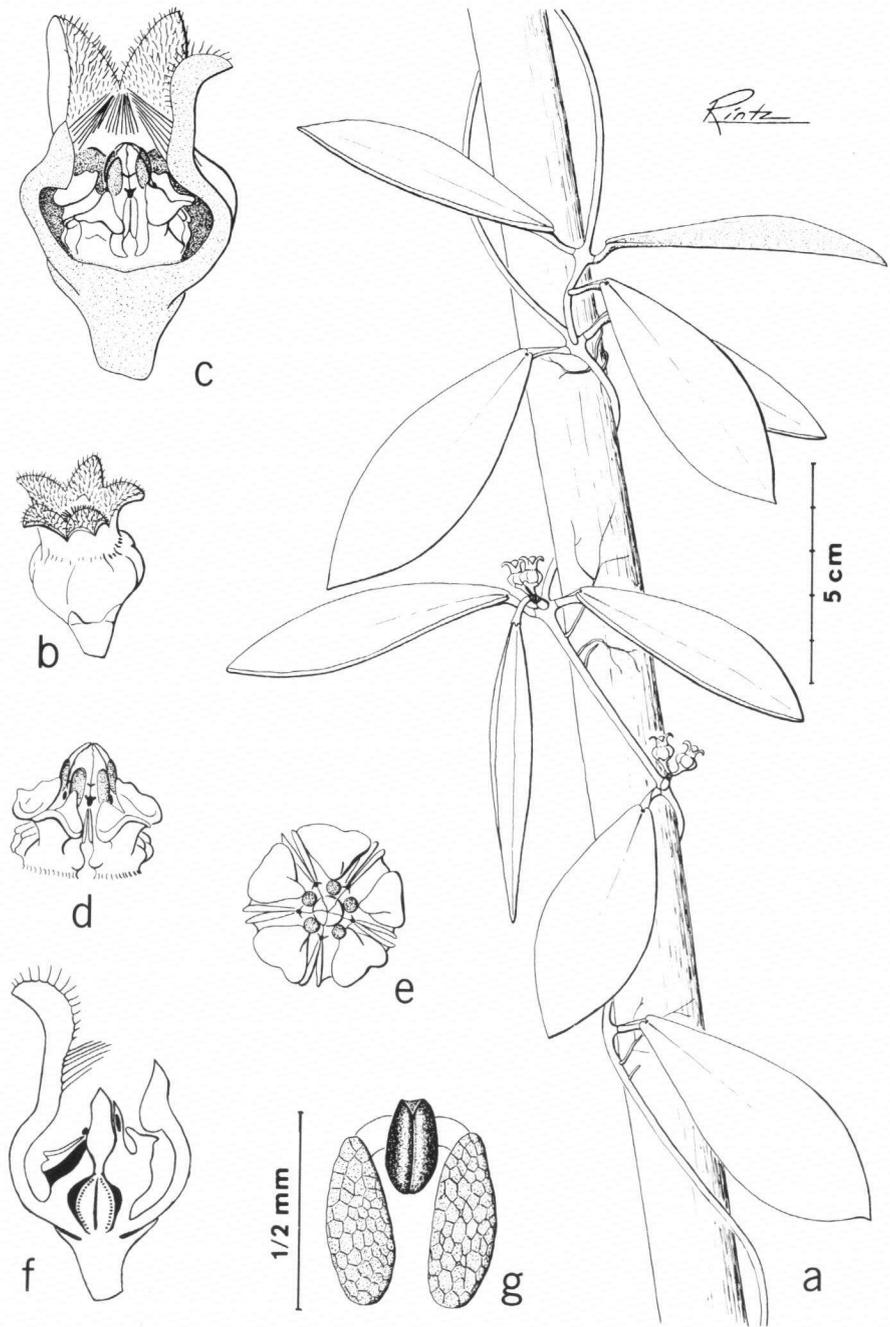


Fig. 2. *Dischidia superba* Rintz. — a. habit; b. flower; c. flower in cut-away view; d. gynostegium in lateral view; e. gynostegium in top view; f. flower in median sectional view; g. twin-pollinia (after R. E. Rintz 71).

***Dischidia superba* Rintz, *sp. nov.* — Fig. 2.**

Planta epiphytica scandens glabra. *Caulis* longus 2 mm diametro. *Folia* alterna vel opposita, petiolis 0.7 cm longis; laminis carnosis obovatis, basibus cuneatis, 5—6 × 3 cm, folia *Hoyae* similissima. *Inflorescentiae* 1—5 floribus; pedunculis brevibus 0.3 cm longis vel minus; pedicellis 0.2 cm longis. *Corolla* alba carnosae urceolata, extus glabra, 0.7 cm longa. Lobi corollae circiter 0.3 cm longi reflexi intus pilosi, fauce clausa turmis 5 pilorum longorum infra lobos corollae, lobis 5 parvis subter et alterna lobis corollae. Lobi coronae selliformes valde dilatati; alae antherorum valde dilatatae. *Pollinia* oblongata ad caudiculas brevissimas affixa in corpusculum magnum. *Folliculi* trianguli flavi, 7 × 1 cm.

Glabrous epiphyte with long-twining *stems* 2 mm diameter; roots produced along the stems. *Leaves* alternate or opposite with stout petioles 0.7 cm long; laminae fleshy, obovate with cuneate bases and acute apices, 5—6 × 3 cm; very similar in appearance to the leaves of *Hoya* spp. *Inflorescences* 1—5 flowered; peduncles 0.3 cm long or less; pedicels 0.2 cm long. *Corolla* creamy white, fleshy, urceolate with a broad 5-angled base, glabrous outside, *c.* 0.7 cm long. Corolla lobes *c.* 0.3 cm long, reflexed, densely pubescent on the inner surfaces, throat closed by 5 groups of long hairs inside and below the corolla lobes, below these hairs and alternate with the corolla lobes with 5 additional lobes which project downward into the corolla. *Gynostegium* short-stalked with a long narrow stigma; anther wings long with a broad basal opening. Corona lobes broadly saddle-shaped. *Pollinia* oblong, attached to very short caudicles on a large corpuscle. *Follicles* 3-angled, yellow, 7 × 1 cm. *Seeds* comose.

**MALAYA.** *Selangor*: Sungai Langat, 200 m, on trees along the river, June 12, 1976, *R. E. Rintz* 71 (L, holotype; K, L, flowers in liquid), 67 (UPM), 84 (UPM). Also seen along the Sungai Semenyih, Selangor at 150 m and at Gua Luas, Pahang at *c.* 100 m.

**Note:** This species agrees well with specimens of *Dischidiopsis* that I examined at BM. Schlechter, however, described the genus as being without a corona and, though his specimens definitely do have coronas similar to this species, it seems best at present to describe it in *Dischidia* until both genera can be properly reviewed.

*Dischidia superba* is similar to *D. squamulosa* Becc., *D. griffithii* Hook. f. and *D. latifolia* Decsne. in Section *Normalia* II of Beccari's treatment of *Dischidia*. It can be distinguished from them by its much larger flowers with long reflexed corolla lobes densely hirsute on the inner surface and by its more well developed corona lobes.

***Dischidia vadosa* Rintz, *sp. nov.* — Fig. 3.**

Planta epiphytica scandens glabra. *Caulis* longus gracilis 1—1.5 mm diametro. *Folia* petiolis 1—2 mm longis; laminis carnosis ovatis, basibus rotundatis haud cordatis, circiter 15 × 10 mm. *Inflorescentiae* 1—6-floribus; pedunculis 3—5 mm longis; pedicellis gracilissimis 8 mm longis. *Calyx* sparse pubescens. *Corolla* lato-urceolata alba vel dilute roseus, 5—6 mm diametra, extus glabra, inferius basi loborum pilis paucis provisus, cetero glabra; lobis corollae reflexis. *Gynostegium* breve stellatum; corona spatulata et bifida ad apicem. *Pollinia* ovata, caudiculis longis latissimis. *Folliculi* glabri, 2.5—3 × 0.5 cm.

Glabrous epiphyte with long twining *stems* 1—1.5 mm diameter; roots produced along the stems. Entire plant often deep red. *Leaves* with petioles 1—2 mm long; laminae fleshy, ovate with round bases and acute apices, 15 × 10 mm. *Inflorescences* 1—6 flowered, on peduncles 3—5 mm long; pedicels very thin, *c.* 8 mm long. *Calyx* sparsely pubescent. *Corolla* broadly urceolate, white to pink, glabrous on both surfaces except for a few hairs inside below each lobe; corolla lobes broadly

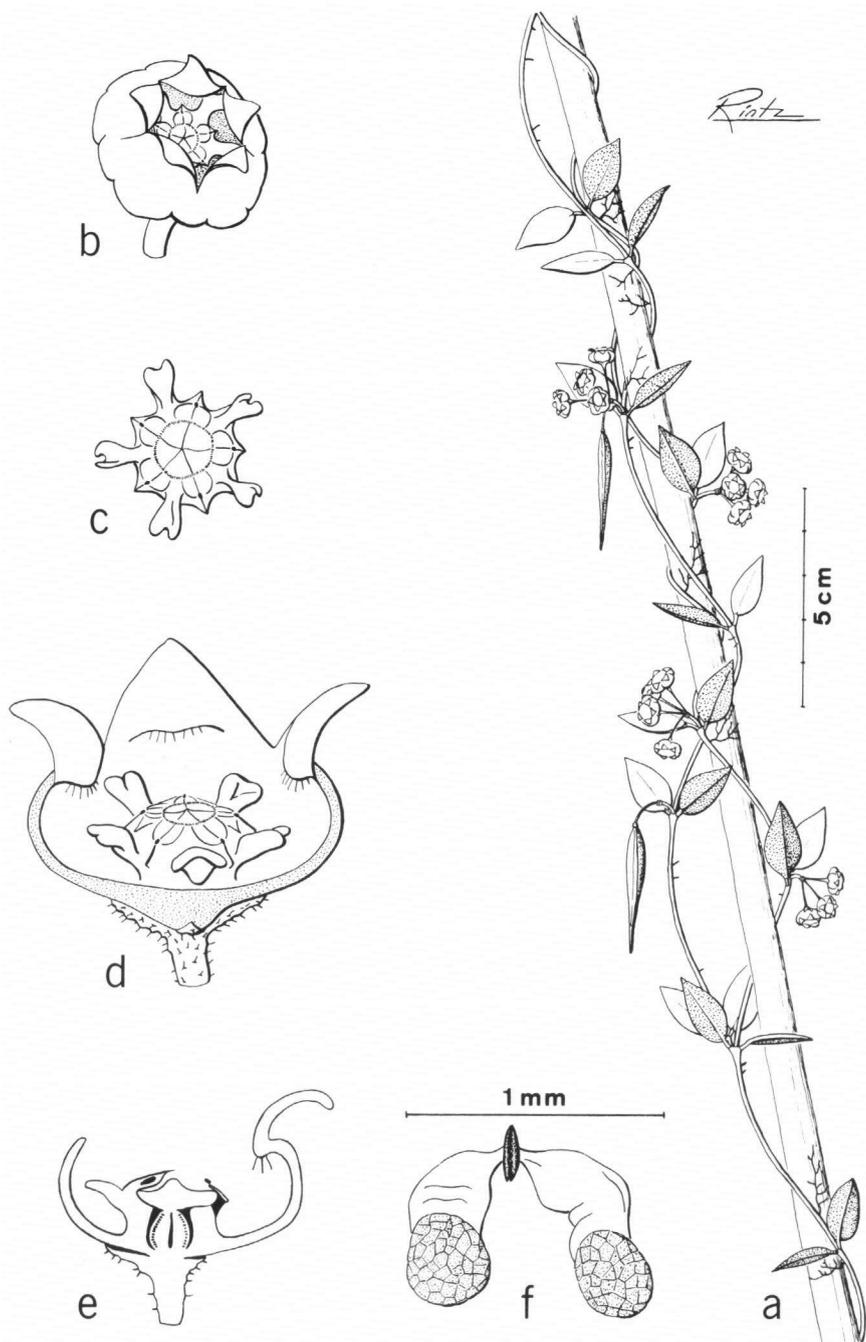


Fig. 3. *Dischidia vadosa* Rintz. — a. habit; b. flower; c. gynostegium in top view; d. flower in lateral cut-away view; e. flower in median sectional view; f. twin-pollinia (after R. E. Rintz 130).

triangular, reflexed. *Gynostegium* star-shaped, flat, short-stalked. *Corona* lobes pale yellow, spatulate, shortly bifid at the apex. *Anther* appendages covering the stigma. *Pollinia* ovate, caudicles as broad and nearly twice as long as the pollinia, attached to a narrow corpuscle. *Follicles* red, glabrous, flattened along the face of the suture, 2.5–3 × 0.5 cm. *Seeds* c. 1 mm long, comose.

MALAYA. P a h a n g : Bukit Frazer, Bukit Pokok Pain, 1400 m, on trees and shrubs at the summit, February 1976, R. E. Rintz 130 (L, holotype; K, L, flowers in liquid), August 18, 1960, H. M. Burkill 2348 (K); Cameron Highlands, Bukit Mentigi, October 10, 1963, W. L. Chew 866 (L).

N o t e s : The flowers of this species are very distinctive. The spatulate bifid corona lobes, the very flat stellate gynostegium, and the ovate pollinia with their very broad caudicles easily separate it from other members of the genus. Vegetatively, however, *D. vadosa* is very similar to *D. albida* Griff. and *D. parvifolia* Ridl., both of which are common at elevations above 1000 m and have small ovate leaves. The flowers of both of these species are narrowly urceolate, 2–3 mm diameter and have entirely different corona lobes.

*Dischidia vadosa* occurs on mountains along the Main Range at elevations above 1000 m. It is very frequently associated with *D. astephana* Scort. and is curiously absent from hills on which either *D. albida* or *D. parvifolia* occur.