

## ADDITIONS TO THE FLORA OF CHINA

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Four taxa, *Dryopteris kweichowicola* (Dryopteridaceae), *Gastrochilus nanus* (Orchidaceae), *Rubus fanjingshanensis* (Rosaceae), and *Sabia swinhoei* var. *parvifolia* (Sabiaceae), are described as new. *Deinostema adenocaulon* is reported for the first time from China and represents a disjunction of ca. 1800 km from the closest populations in Korea.

Joint fieldwork in northeastern Guizhou Province, China, in 1986 by Chinese and American botanists resulted in the collection of 2474 numbers and 28,633 sheets of flowering plants and ferns, including four previously undescribed taxa, *Dryopteris kweichowicola* Ching ex P. S. Wang (Dryopteridaceae), *Gastrochilus nanus* Z. H. Tsi (Orchidaceae), *Rubus fanjingshanensis* L. T. Lu (Rosaceae), and *Sabia swinhoei* Hemsley ex Forbes & Hemsley var. *parvifolia* Y. H. Xiang & Q. H. Chen (Sabiaceae), and one, *Deinostema adenocaulon* (Maxim.) Yamaz. (Scrophulariaceae), previously unknown in China. The collections are all from the vicinity of the 38,000-hectare Fanjing Shan Nature Reserve, one of six Man and the Biosphere reserves in China (Chen, 1988). The reserve contains rich botanical resources in associations ranging from broad-leaved evergreen forests at the lowest elevations (ca. 550 m) through mixed deciduous-broad-leaved evergreen forests at middle elevations to subalpine scrub and meadows and dwarf bamboo thickets near the summits of the highest peaks at ca. 2550 m (Huang *et al.*, 1982). The area, an island of relatively undisturbed vegetation, is unusual within the vast, mostly deforested south-central part of China because of the richness of its flora.

***Dryopteris kweichowicola*** Ching ex P. S. Wang, sp. nov.

FIGURE 1.

Affinis *Dryopteris wallichianae* (Sprengel) Hylander, sed minore, folliis tenuiter chartaceis, soris prope marginem, venis utrinque facie conspicuis.

Plants 50–70 cm tall. Rhizome short, erect. Fronds tufted, thin-chartaceous, the upper surface nearly glabrous, with few hairlike scales along costa, the lower surface with ovate-lanceolate scales; stipe 13–16 cm long, 3–5 mm in diameter, clothed in dense, brown scales, those at stipe base entire and those above

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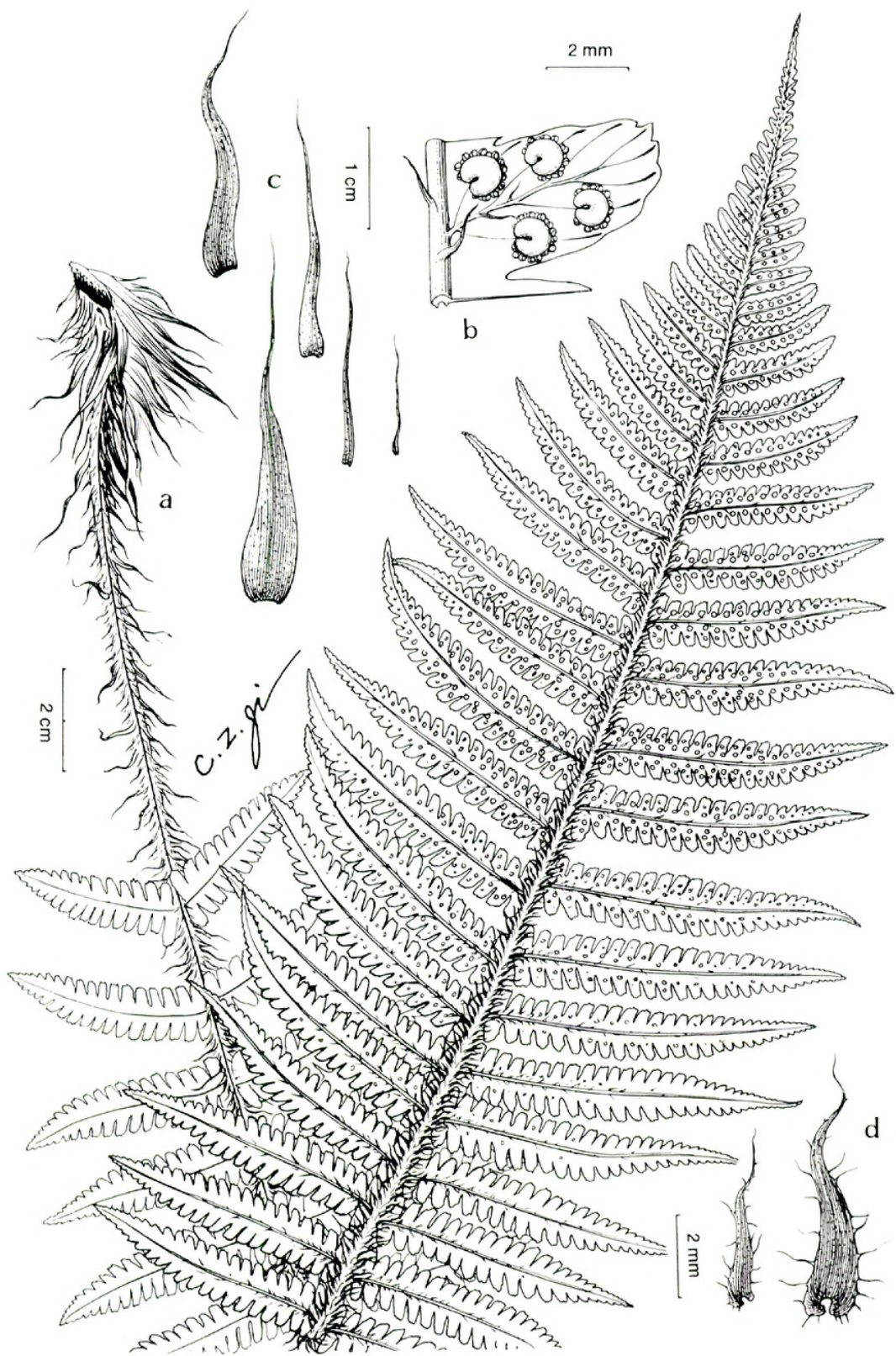


FIGURE 1. *Dryopteris kweichowicola*: a, frond; b, pinnule; c, scales from rhizome; d, scales from stipe.



fimbriate; leaf blade lanceolate, 35–50 cm long, 12–15 cm wide, gradually narrowed toward base, acuminate at apex, bipinnate; pinnae 25 to 30 pairs, patent, the lowest ones slightly reflexed and much shortened, the middle ones lanceolate, 7–8 cm long, 1–1.3 cm wide, sessile, with base truncate, apex short-acuminate, pinnule segments ca. 20 pairs (these patent, oblong, ca. 5–6 mm long, 2–3 mm wide, the apex blunt, with 3 to 5 teeth, the veins 4- to 6-jugate, oblique, simple or forked). Sori 2 to 4 pairs per segment near margin; indusium brown, persistent.

TYPE. China, Guizhou Province, Jiangkou Xian, vicinity of Jinding along the crest of the Fanjing Shan mountain range, elev. ca. 2200 m, growing at base of old wall in moist situation, 27 August 1986, *Sino-Amer. Guizhou Bot. Exped. 451* (holotype, PE; isotypes, A, CAS, HGAS, TI).

ADDITIONAL SPECIMENS EXAMINED. **China.** GUIZHOU PROVINCE: without further locality, *S. W. Teng* 51367 (PE), 51368 (PE); Jiangkou Xian, by small stream, 1700 m alt., *Z. S. Zhang et al.* 402211 (PE).

This species is very similar to *Dryopteris wallichiana* in the shape of the fronds. The essential difference between the two is in the position of the sori: in the former they are near the margins of the segments, while in the latter they are near the costae.

**Gastrochilus nanus** Z. H. Tsi, sp. nov.

FIGURE 2.

Species *Gastrochilus toramani* (Makino) Schltr. et *G. raraensis* Fukuyama affinis, ab illis floribus sine punctis purpureis; forma epichilii et petalorum; hypochilo cylindrico-subcylindrico differt.

Epiphytic. Stems creeping, 3–4 cm long, with thick and slightly flexed roots. Leaves many, distichous, alternate, closely arranged, spreading, somewhat fleshy, elliptic-oblong, 8–10 mm long, 5–6 mm wide, apex acute, base jointed to sheaths, green with purple spots on both surfaces. Inflorescence leaf opposed, suberect-patent, 6–11 mm long, bearing 5 or 6 subumbellately arranged flowers; peduncle slightly fleshy, gradually thickened from base to apex, with tubular sheath near base; floral bracts with purple spots, somewhat fleshy, ovate-triangular, ca. 1–1.3 mm long, apex acute; ovary greenish, 4–5 mm long, slightly angled; flowers spreading, greenish; sepals and petals somewhat fleshy, apex obtuse, 1-veined; dorsal sepal elliptic, concave, 2.2 mm long, 1.2 mm wide, the lateral pair  $\pm$  oblique-oblong, as long as dorsal one; petals oblong, smaller than sepals; labellum adnate to lower half of column, obscurely 3-lobed; lateral lobes of hypochile small, suberect, triangular, villous internally; epichile membranous, patent, reniform, ca. 2 mm long, 2.5 mm wide at base, subtruncate, apex notched, edge and upper surface densely pubescent, with olivaceous, thickened patch in disc; spur straight, nearly parallel to pedicel, cylindrical, 2.8–3 mm long, ca. 1 mm broad,  $\pm$  contracted in middle, apex broadly rounded; column thick, ca. 0.5 mm long; anther hemispherical, abruptly contracted into triangular, acute apex; rostellum bifid; pollinia 2, globose, attached by linear caudicle to incrassate, oblong, apically bifid gland.

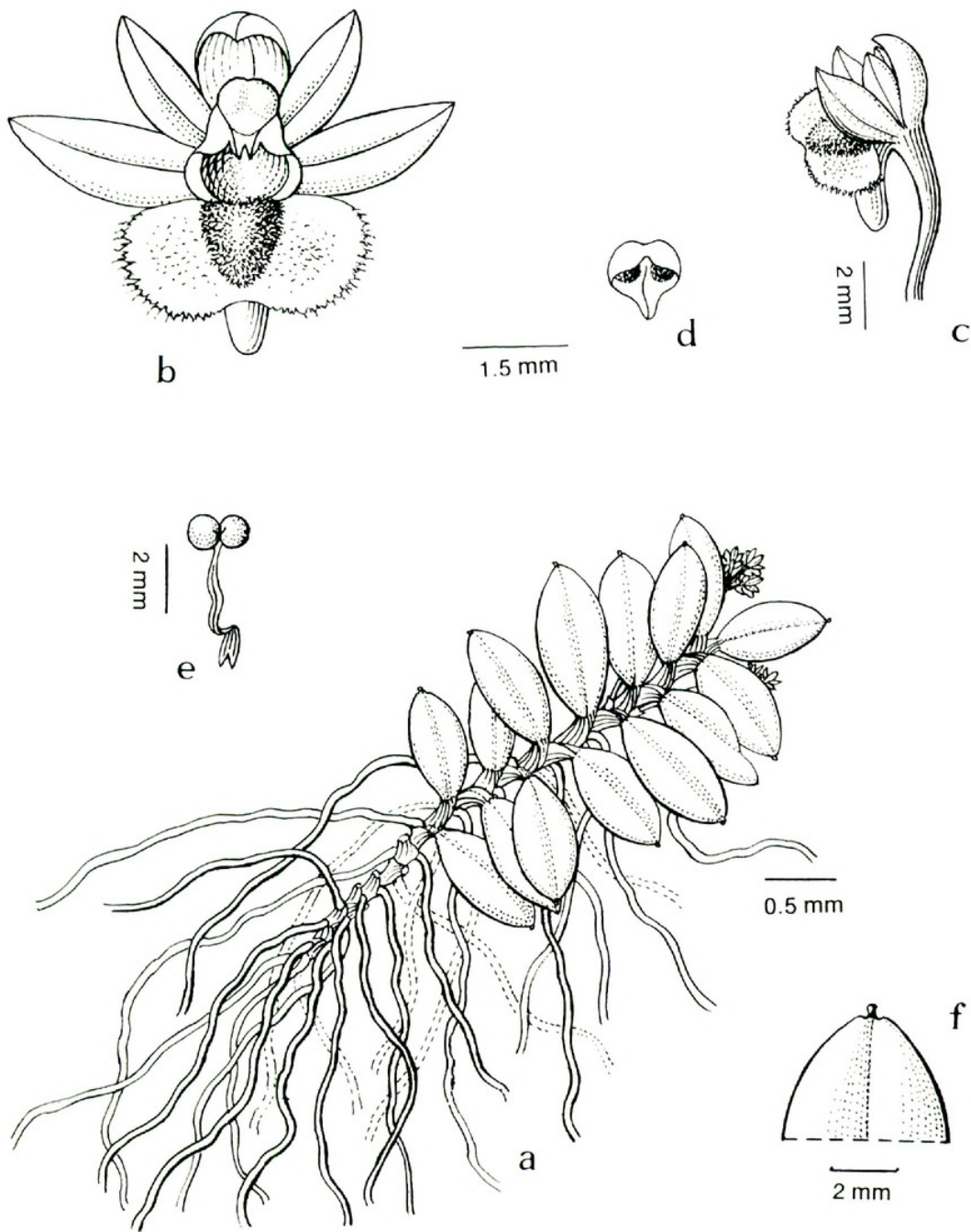


FIGURE 2. *Gastrochilus nanus*: a, habit; b, flower, front view; c, flower, side view; d, operculum; e, stipe; f, leaf tip.

TYPE. China, Guizhou Province, Jiankou Xian, Yuao, in the valley of the Heiwan River, elevation ca. 1000 m, 26 August 1986, *Sino-Amer. Guizhou Bot. Exped.* 407 (holotype, PE; isotypes, A, HGAS).

*Gastrochilus nanus* is allied to *G. toramanus* and *G. raraensis*, but it differs from the former in having a reniform epichile and oblong petals and from the



latter in having smaller greenish flowers with a cylindrical to subcylindrical, vertical hypochile and differently shaped petals.

***Rubus fanjingshanensis* L. T. Lu, sp. nov.**

FIGURE 3.

Species ab *R. treutleri* J. D. Hooker, foliis 3–5-lobatis, lobis terminalibus apice acutis, lateralibus obtusis, margine irregulariter grosse-serratis; stipulis angustioribus, 10–15 mm longis, palmatis partitis, lobis linearibus vel lineari-lanceolatis, sepalis internis late-ovatis vel ovato-lanceolatis; externis foliolis, margine dissectis, lobulis lanceolatis, differt.

Small, trailing shrub; branches terete, the older ones dark brown, the young shoots brown or brownish, villous, with thin acicular prickles slightly dilated at base intermixed with stipitate glands. Stipules free, 1.4–1.8 cm long, 1–1.4 cm wide, villous and glandular-hairy on both surfaces, palmately parted, the lobes lanceolate or triangular-lanceolate, 3–7 mm long, 1.3–3 mm wide. Leaves with petiole 4–8 cm long, long-hairy and with acicular prickles and stipitate glands intermixed; blade orbicular or nearly orbicular, 7–11 cm long, 6.5–11 cm wide, 5- (rarely 7-)lobed, the lobes obtuse to rounded with terminal one slightly longer than or equal to lateral ones, base deeply cordate, margins irregularly serrulate, apex obtuse, upper surface dark green, lower surface paler, both surfaces adpressed-villous but lower surface more densely so, veins glabrescent and sparsely hairy at maturity, midrib and lateral veins on lower surface with acicular prickles and sometimes also sparse stipitate glands. Inflorescences and flowers not seen; infructescences terminal short racemes, 4–5 cm long, or fascicles in axils of the leaves; rachises, fruiting pedicels, and calyces covered with long hairs and acicular prickles, sometimes with sparse stipitate glands intermixed; fruiting pedicels 8–11 mm long; bracts resembling stipules, but smaller; calyx cup shaped; sepals 5, broadly ovate-lanceolate to oblong-ovate, 8–14 mm long, 4–6 mm wide, the outer ones usually wider, dissected at apex or in upper part, with lobes linear to linear-lanceolate, 2–5 mm long, 1–1.5 mm wide, apex caudate; persistent stamens numerous, 3–4 mm long, filaments somewhat broadened at base, anthers globose or short-oblong; persistent pistils numerous, glabrous; torus elevated, long-hairy. Fruits aggregates consisting of many united drupelets, subglobose, 7–10 mm in diameter, red, glabrous, crowned with persistent calyx; stones subreniform, 1.5–2.5 mm long, 1–1.8 mm wide, distinctly rugose. Fruiting in August and September.

TYPE. China, Guizhou Province, Jiangkou Xian, vicinity of Jinding along the crest of the Fanjing Shan mountain range, elev. 2000–2300 m, 28–29 August 1986, *Sino-Amer. Guizhou Bot. Exped.* 634 (holotype, PE; isotypes, A, CAS, HGAS, TI).

*Rubus fanjingshanensis* is apparently related to *R. treutleri*, but the latter differs markedly in having leaves 3- to 5-lobed, with the terminal lobe acute at the apex, the lateral ones obtuse, and the margins irregularly and minutely serrate; narrower, fimbriate stipules 10–15 mm long, with linear to linear-lanceolate lobes; and sepals ovate to ovate-lanceolate, the outer ones foliose and dissected with lanceolate lobes.



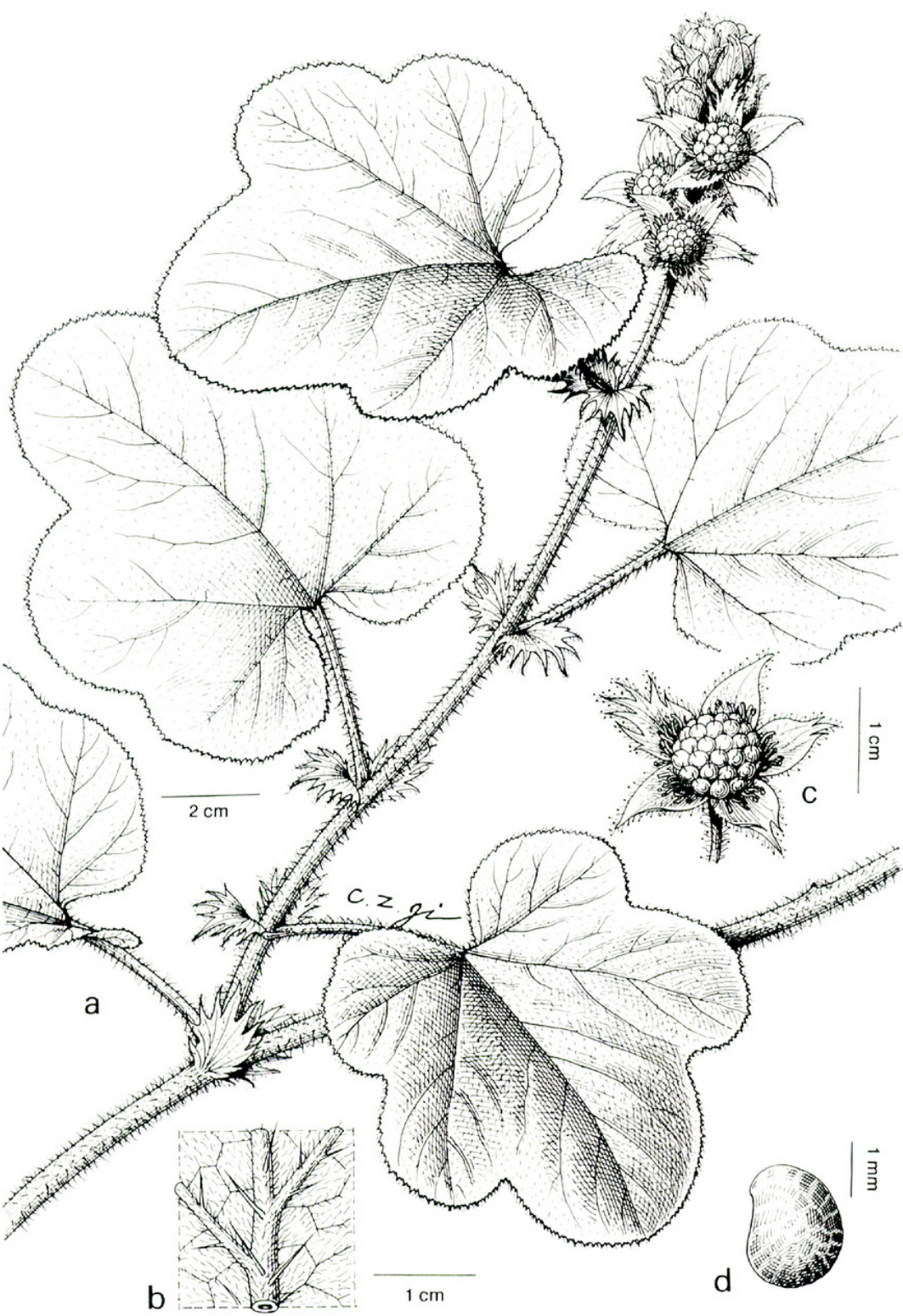


FIGURE 3. *Rubus fanjingshanensis*: a, upper portion of branch; b, lower leaf surface; c, fruit; d, seed.

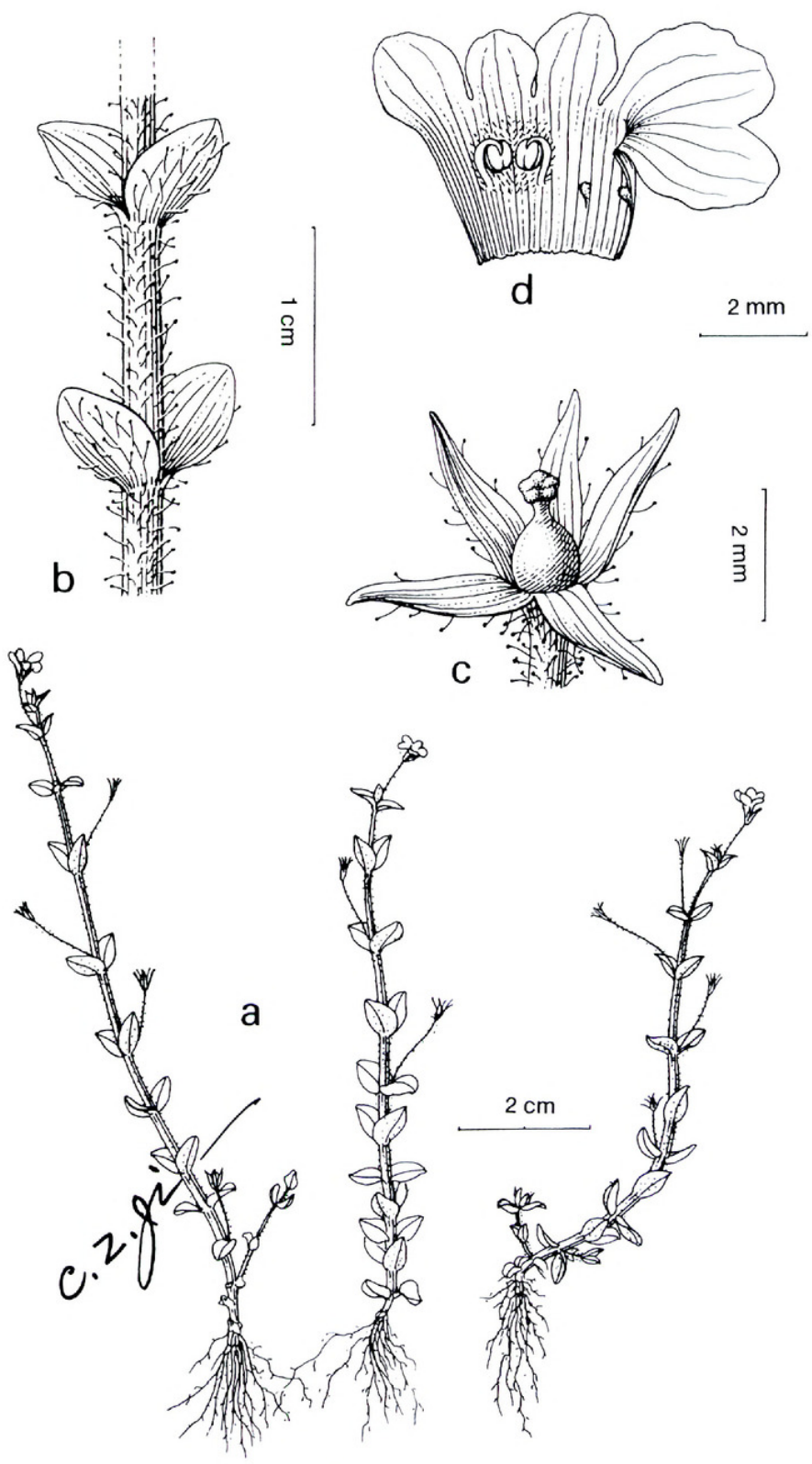


FIGURE 4. *Deinostema adenocaulon*: a, habit; b, portion of stem showing glandular hairs; c, immature capsule; d, flower opened to show attachment of stamens and callosities on inner surface of corolla tube.



***Sabia swinhoei*** Hemsley ex Forbes & Hemsley var. ***parvifolia*** Y. H. Xiang & Q. H. Chen, var. nov.

A typo pedunculis pedicellisue brevioribus, 2–3 mm longis, foliis minoribus, 3–5 cm longis, 1–1.8 cm latis differt.

Leaves ovate or elliptic to sub lanceolate, 3–5 cm long, 1–1.8 cm wide, base acute to subrounded, apex acute to acuminate, upper surface glabrous except for pubescent midrib, lower surface  $\pm$  lax-pubescent, lateral nerves 5 to 7 pairs; petiole 2–3 mm long, densely pubescent. Cymes solitary, axillary; peduncles 3 mm long; pedicels 2 mm long. Drupelets obovoid-compressed, turning red at maturity.

TYPE. China, Guizhou Province, Jiangkou Xian, Daiyeng along the Kaitu River on SW side of Fanjing Shan mountain range, elevation ca. 800 m, *Sino-Amer. Guizhou Bot. Exped. 1082* (holotype, HGAS; isotypes, A, CAS, PE).

The variety differs from the typical one in having much shorter cymes and smaller leaves.

***Deinostema adenocaulon*** (Maxim.) Yamaz.

FIGURE 4.

*Deinostema* Yamaz., separated from *Gratiola* L., in which it was once placed, by its ebracteolate calyx, valvate (vs. imbricate) calyx lobes in bud, and pilose (vs. glabrous) anthers (Ohwi, 1965), and from *Dopatrium* Hamilton ex Benthham by its bilocular (vs. unilocular) ovary (Yamazaki, 1953), is a genus of two species restricted to wet places in eastern Asia. The most widespread species, *Deinostema violacea* (Maxim.) Yamaz., ranges from Honshu, Shikoku, Kyushu, and the Ryukyu Islands in Japan, as well as Korea (Ohwi, 1965) and the northeastern provinces of China, to Jiangsu on the Asian mainland (Hong, 1979). *Deinostema adenocaulon* was previously known from only Honshu, Shikoku, and Kyushu in Japan and from Cheju-do at the southern tip of the Korean peninsula (Ohwi, 1965; Park, 1974). The specimens from northeastern Guizhou, Jiangkou Xian, SE side of the Fanjing Shan mountain range along the Heiwan River in the vicinity of the Ecology Station of the Guizhou Academy of Sciences, 30 August 1986, *Sino-Amer. Guizhou Bot. Exped. 598* (A, CAS, GIB, PE, TI), were collected approximately 1800 km from the nearest previously known populations in Korea. In Guizhou the plants were abundant in a fallow paddy field with *Microcarpaea minima* (Konig) Merr., *Eleocharis congesta* D. Don, *Eriocaulon sieboldianum* Sieb. & Zucc., and *Rotala mexicana* Champ. & Schldl.

#### ACKNOWLEDGMENTS

We wish to thank Bruce Bartholomew and Stephen A. Spongberg, of the United States, and Qianhai Chen, Sizhao Fang, Jin-gen Qi, Yuling Tu, Yinghai Xiang, and Tsun-shen Ying, of China, all of whom participated in the fieldwork in northeastern Guizhou Province, China, in 1986, and Gustavo Romero and Rolla Tryon for reviewing the manuscript. We are particularly grateful to the





Boufford, David E., Ji, Zhanhe, and Wang, Peishan. 1990. "Additions to the Flora of China." *Journal of the Arnold Arboretum* 71(1), 119–127.

<https://doi.org/10.5962/bhl.part.24928>.

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