

163. CLEISOSTOMA Blume, Bijdr. 362. 1825.

隔距兰属 *ge ju lan shu*

Chen Xinqi (陈心启 *Chen Sing-chi*); Jeffrey J. Wood

Sarcanthus Lindley (1826), not Lindley (1824).

Herbs, epiphytic or rarely lithophytic, monopodial, small to medium-sized. Stems erect or pendulous, rarely creeping, long or short, rigid, branched or unbranched, many noded. Leaves few to many, distichous, dorsiventrally flattened or terete, base usually jointed and sheathing, apex bilobed or acute. Inflorescence racemose or paniculate, lateral, axillary or opposite leaves, erect, horizontal, or pendulous, few to many flowered; floral bracts small, much shorter than pedicel and ovary. Flowers small, ± fleshy. Sepals free, usually spreading. Petals free, often smaller than sepals; lip adnate to column by its base or back margins of lateral lobes, immovable, spurred at base, 3-lobed; disk often with longitudinal lamellae or ridges; spur conic, cylindric, or saccate, often longitudinally septate inside, rarely septum reduced to a narrow keel, usually with a callus on back wall and often with outgrowths on front wall closing entrance. Column short, stout, foot short; rostellum small; pollinia 4, appearing as 2 unequal masses, waxy, subglobose, with a common stipe and a solitary small and subglobose to broad and horseshoe-shaped viscidium.

About 100 species: Sri Lanka, India, mainland SE Asia, Malaysia, and Indonesia to the Philippines, New Guinea, Pacific islands, and Australia; 16 species (four endemic) in China.

- 1a. Leaves cylindric or subcylindric, terete, 2–3 mm in diam.
 - 2a. Leaves 6–11 cm.
 - 3a. Column with apical stelia, glabrous; stipe broadly ovate-triangular or miter-shaped; viscidium crescent-shaped 12. *C. williamsonii*
 - 3b. Column without stelia, densely hairy at base in front; stipe nearly suborbicular; viscidium U-shaped 15. *C. simondii*
 - 2b. Leaves 17–33 cm.
 - 4a. Stipe nearly square; viscidium large, wider than stipe, U-shaped 16. *C. nangongense*
 - 4b. Stipe ovate-lanceolate; viscidium small, nearly as wide as stipe, suborbicular.
 - 5a. Back wall callus inside spur bilobed 13. *C. fuerstenbergianum*
 - 5b. Back wall callus inside spur stellate, with thickened ridges adaxially 14. *C. filiforme*
- 1b. Leaves dorsiventrally flattened, more than 4 mm wide.
 - 6a. Stipe not linear, base geniculate-folded; viscidium large, crescent-shaped, U-shaped, or saddle-shaped.
 - 7a. Mid-lobe of lip obtuse, entire, without apical bristles or tails 11. *C. paniculatum*
 - 7b. Mid-lobe of lip acuminate or acute, with 2 apical bristles or 2 tails.
 - 8a. Inflorescence longer than leaves, branched; sepals and petals ca. 1 cm 9. *C. birmanicum*
 - 8b. Inflorescence shorter than leaves, unbranched; sepals or petals ca. 6 mm 10. *C. striatum*
 - 6b. Stipe linear or slightly clavate, base not folded; viscidium very small, suborbicular.
 - 9a. Leaves acute and unlobed at apex.
 - 10a. Stems more than 20 cm; anther cap beaked at apex 6. *C. rostratum*
 - 10b. Stems 1–3 cm; anther cap not beaked at apex.
 - 11a. Back wall callus inside spur T-shaped, almost as long as wide (apical part) 7. *C. longioperculatum*
 - 11b. Back wall callus inside spur not T-shaped, conspicuously longer than wide 8. *C. menghaiense*
 - 9b. Leaves obtuse and unequally bilobed at apex.
 - 12a. Stems stout, 2–2.5 cm in diam.; leaves 3–4 cm wide 1. *C. racemiferum*
 - 12b. Stems ca. 1.5 cm in diam.; leaves 1.3–2.4 cm wide.
 - 13a. Stipe slightly clavate.
 - 14a. Flowers yellow; lateral lobes of lip subquadrate, nearly as long as mid-lobe; anther cap long beaked at apex 2. *C. medogense*
 - 14b. Flowers purplish red; lateral lobes of lip triangular, shorter than mid-lobe; anther cap not beaked at apex 3. *C. linearilobatum*
 - 13b. Stipe linear.
 - 15a. Stems less than 10 cm; flowers golden yellow with red stripes 4. *C. parishii*
 - 15b. Stems more than 20 cm; flowers yellowish green 5. *C. uraiense*

1. *Cleisostoma racemiferum* (Lindley) Garay, Bot. Mus. Leaf. 23: 173. 1972.

大叶隔距兰 *da ye ge ju lan*

Saccolabium racemiferum Lindley, Gen. Sp. Orchid. Pl. 224. 1833; *Aerides racemifera* (Lindley) Wallich ex J. D. Hooker; *Gastrochilus racemifer* (Lindley) Kuntze; *Sarcanthus pallidus* Lindley; *S. racemifer* (Lindley) H. G. Reichenbach; *S.*

yunnanensis Schlechter.

Stems erect, 5–20 cm, stout, 2–2.5 cm in diam., branching. Leaves distichous, flat, lorate, ca. 29 × 3–4 cm, obtuse and unequally bilobed. Inflorescence axillary, longer than leaves, many branched, laxly many flowered; floral bracts ovate-lanceolate, small, 1–2 mm. Flowers: sepals and petals yellow with brownish red spots, lip white; pedicel and ovary ca. 4 mm. Dorsal sepal suboblong, concave, ca. 3.5 × 2.5 mm, obtuse; lateral sepals slightly obliquely oblong, ca. 3.5 × 3 mm, base adnate to column foot, apex rounded. Petals oblong, ca. 3 × 2 mm, obtuse; lip lateral lobes erect, deltoid; mid-lobe spreading, deltoid, obtuse, with a keel running down to spur linking to rudimentary septum; spur conic, 2–2.5 mm; back wall callus inside spur ovate-triangular, base with papillate hairs, slightly bilobed. Column ca. 2.5 mm, winged; rostellum triangular; stipe narrowly lorate, margin inflexed; viscidium suborbicular, small; anther cap beaked at apex. Fl. Jun. $2n = 38$.

Epiphytic on tree trunks in open forests; 600–1800 m. S and W Yunnan [Bhutan, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

2. *Cleisostoma medogense* Z. H. Tsi, Acta Phytotax. Sin. 23: 387. 1985.

西藏隔距兰 xi zang ge ju lan

Stems erect, ca. 2 cm, ca. 5 mm in diam. Leaves twisted, flat, narrowly oblong, ca. 15 × 1.3–1.5 cm, acutely bilobed. Inflorescences 1 or 2, arising from base of stem, shorter than or nearly as long as leaves, branched or unbranched, many flowered; peduncle with 2 or 3 tubular sheaths; floral bracts ovate-triangular, ca. 1 mm, acute. Flowers yellow; pedicel and ovary ca. 4 mm. Sepals similar, ovate-elliptic, concave, ca. 3.2 × 2.5 mm, obtuse. Petals slightly falcate-oblong, narrower than sepals, obtuse; lip lateral lobes erect, subquadrate, apical margin irregularly incised; mid-lobe subtriangular, obtuse; spur straight, narrowly conic, ca. 3 mm, rounded, interior with a subtriangular, glabrous callus on back wall, without a distinct septum; anther cap long beaked at apex; stipe ± clavate, margin inflexed; viscidium suborbicular, small. Fl. May.

• Epiphytic on tree trunks in broad-leaved evergreen forests; 800–900 m. SE Xizang.

3. *Cleisostoma linearilobatum* (Seidenfaden & Smitinand) Garay, Bot. Mus. Leaflet. 23: 172. 1972.

隔距兰 ge ju lan

Sarcanthus linearilobatus Seidenfaden & Smitinand, Orchids Thailand 4(2): 684. 1965; *Cleisostoma sagittiforme* Garay; *Ormerodia linearilobata* (Seidenfaden & Smitinand) Szlachetko; *O. sagittata* (King & Pantling) Szlachetko; *S. sagittatus* King & Pantling.

Stems erect, 2–4 cm. Leaves flat, narrowly oblong, 5–18 × 1–2 cm, leathery, obtuse and unequally bilobed. Inflorescence pendulous, longer than leaves, branching, laxly many flowered; peduncle ca. 1.5 mm in diam., with 3 or 4 short sheaths below middle; floral bracts ovate-triangular, small, ca. 1 mm, acute. Flowers purplish red, small; pedicel and ovary ca. 5 mm. Dorsal sepal oblong, cymbiform, ca. 3 × 1.5 mm, obtuse; lateral sepals

slightly obliquely ovate, ca. 3 × 1.5 mm, obtuse. Petals ± falcate-oblong, ca. 2.5 × 1.5 mm, obtuse; lip lateral lobes erect, deltoid, acute; mid-lobe sagittate-triangular, apex obtuse, with 2 backward triangular basal lobules on either side, with a longitudinal ridge; spur horn-shaped, ca. 5 mm, apex obtuse, inside longitudinally septate; back wall callus in interior of spur well spaced from septum, 3-lobed; lateral lobules small; mid-lobule laterally compressed, oblong, center slightly concave, base slightly bilobed; anther cap broadly emarginate; stipe ca. 0.8 mm, narrowly cuneate; viscidium suborbicular. Fl. May–Sep.

Epiphytic on tree trunks in broad-leaved evergreen forests or in open forests along valleys; 900–1600 m. S Yunnan [Bhutan, NE India, Thailand].

4. *Cleisostoma parishii* (J. D. Hooker) Garay, Bot. Mus. Leaflet. 23: 173. 1972.

短茎隔距兰 duan jing ge ju lan

Sarcanthus parishii J. D. Hooker, Bot. Mag. 86: ad t. 5217. 1860.

Stems 1–6 cm, stout. Leaves twisted, distichous, rather close, flat, linear-lorate, 6–20 × 0.6–2.4 cm, slightly fleshy or thickly leathery, unequally bilobed. Inflorescence racemose or paniculate, borne from middle or lower part of stem, much longer than leaves, laxly many flowered; peduncle purplish brown; floral bracts ovate-triangular, small, 1–2 mm, acute. Flowers opening widely, whitish, tinged with purple, column pale purple; pedicel and ovary purplish brown, ca. 1 cm. Dorsal sepal suboblong, ca. 4 × 1.5–2 mm, obtuse; lateral sepals slightly oblique ovate, ca. 4 × 2 mm, base adnate to column foot. Petals similar to dorsal sepal, smaller, obtuse; lip lateral lobes erect, suborbicular, bilobed; mid-lobe deltoid, ± fleshy, acute, with 2 basal backward lobules; spur horn-shaped, ca. 3 mm, apex obtuse, inside longitudinally septate; back wall callus 3-lobed, T-shaped; lateral lobules short, stout; mid-lobule narrowed toward base, with a central longitudinal groove, base slightly bilobed and densely papillate-hairy. Column ca. 2 mm; anther cap not narrowed toward apex; stipe threadlike; viscidium suborbicular, very small. Fl. Apr–May.

Epiphytic on tree trunks in broad-leaved evergreen forests; ca. 1000 m. N Guangdong, SW Guangxi, Hainan [Myanmar].

5. *Cleisostoma uraiense* (Hayata) Garay & H. R. Sweet, Orchids S. Ryukyu Islands, 156. 1974.

绿花隔距兰 lu hua ge ju lan

Sarcanthus uraiensis Hayata, Icon. Pl. Formosan. 8: 130. 1919; *Cleisostoma viridescens* (Fukuyama) Garay; *S. viridescens* Fukuyama.

Stems erect or pendulous, 20–40 cm, 4–6 mm in diam., many leaved. Leaves distichous, linear or narrowly oblong, 10–20 × 1.2–2 cm, obtuse and unequally bilobed. Inflorescence lateral, opposite to leaves, longer or shorter than leaves, unbranched or with short branches, many flowered; floral bracts deltoid, small, ca. 1 mm. Flowers yellowish green, slightly fleshy; pedicel and ovary 3–5 mm. Dorsal sepal subelliptic or obovate-oblong, concave, ca. 4 × 2.5 mm, obtuse; lateral sepals similar to dorsal sepal, concave. Petals obliquely oblong, 2.5–

3.5 × ca. 1.2 mm, obtuse; lip thickly fleshy, base spurred, 3-lobed; lateral lobes erect, falcate-triangular, small; mid-lobe suborbicular, ca. 1 mm; spur ca. 2 mm, front wall callus large, glabrous, slightly septate. Column ca. 2 mm; anther cap slightly narrowed toward apex; stipe slender; viscidium suborbicular. Fl. Apr–Sep.

Epiphytic on tree trunks in forests; ca. 200 m. S Taiwan [Japan (Ryukyu Islands), Philippines].

6. *Cleisostoma rostratum* (Loddiges ex Lindley) Garay, Bot. Mus. Leaflet 23: 174. 1972.

尖喙隔距兰 jian hui ge ju lan

Sarcanthus rostratus Loddiges ex Lindley, Coll. Bot. ad t. 39B. 1826; *Cleisostoma fordii* Hance; *S. fordii* (Hance) Rolfe.

Stems subterete, 20–45 cm, ca. 5 mm in diam., sometimes branched, with many nodes, internodes 2–3 cm. Leaves distichous, flat, narrowly lanceolate, 9–15 × 7–13 mm, leathery, acute. Inflorescences several, opposite to leaves, arising from upper part of stem, ascending, shorter than leaves, unbranched, laxly many flowered; floral bracts ovate-triangular, ca. 1 mm. Flowers opening widely, sepals and petals yellowish green with purplish red stripes, lip purple-red; pedicel and ovary ca. 5 mm. Dorsal sepal subelliptic, cymbiform, 5–5.5 × 2–2.5 mm, acute; lateral sepals slightly obliquely obovate, 5–5.5 × 2.5–3 mm, obtuse. Petals suboblong, ca. 4 × 2 mm, obtuse; lip lateral lobes erect, subtriangular, apex abruptly contracted and subulate; mid-lobe narrowly ovate-lanceolate, slightly fleshy, acuminate; spur somewhat funnel-shaped, straight, ca. 5 mm, attenuate toward end, obtuse, slightly septate; back wall callus oblong, central part longitudinally concave, base shallowly bilobed and glabrous. Column ca. 2 mm; rostellum ca. 1.3 mm; anther cap beak ca. 1.5 mm; stipe slender, apical part slightly enlarged; viscidium suborbicular, very small. Fl. Jul–Aug. $2n = 38$.

Epiphytic on tree trunks in broad-leaved evergreen forests or on branches in thickets, lithophytic on rocks in limestone areas; 300–1800 m. Guangxi, S Guizhou, Hainan, Hong Kong, S and SE Yunnan [Cambodia, Laos, Thailand, Vietnam].

“*Vanda rostrata*” (Loddiges, Bot. Cab. 11: ad t. 1008. 1825) is a nomen nudum and was therefore not validly published.

7. *Cleisostoma longioperculatum* Z. H. Tsi, Guihaia 15: 108. 1995.

长帽隔距兰 chang mao ge ju lan

Stems erect, ca. 2 cm, unbranched. Leaves 4 or 5, subbasal, distichous, flat, linear or narrowly oblong, ± V-shaped-conduplicate, ca. 7 × 0.5 cm, fleshy, subacute. Inflorescence lateral, arching, racemose, laxly several flowered; floral bracts ovate-triangular, ca. 1.5 mm, acute. Flowers opening widely, slightly fleshy; pedicel and ovary ca. 6 mm. Dorsal sepal subspatulate or obliquely obovate, ca. 4 × 2 mm, acute; lateral sepals similar to dorsal sepal, obtuse. Petals oblong, ca. 3.5 × 1.3 mm, obtuse; lip lateral lobes suberect, deltoid, apical margin ± incurved; mid-lobe slightly thickened, deltoid, concave, obtuse; spur somewhat horn-shaped, ca. 4 mm, obtuse, interior longitudinally septate, with a back wall callus; callus T-shaped, base slightly bilobed and densely minutely papillate-hairy. Col-

umn ca. 1.5 mm; anther cap ca. 2 mm, truncate; pollinia pyriform, with clavate stipe and suborbicular small viscidium. Fl. Jun.

• Epiphytic on tree trunks in mixed forests; ca. 700 m. S Yunnan.

8. *Cleisostoma menghaiense* Z. H. Tsi, Bull. Bot. Res., Harbin 3(4): 76. 1983.

勐海隔距兰 meng hai ge ju lan

Stems erect, 2–3 cm, unbranched. Leaves 5 or 6, distichous, subbasal, flat, linear or narrowly oblong, basal half V-shaped-conduplicate, 8–14 × 0.4–0.8 cm, fleshy, acute. Inflorescence arising from near base of stem, pendulous, longer than leaves, branched or unbranched, laxly many flowered; floral bracts ovate-triangular, ca. 1 mm, acute. Flowers opening widely, pale yellow, thickly textured, lateral lobes of lip lilac; pedicel and ovary ca. 5 mm. Dorsal sepal elliptic, cymbiform, ca. 3.5 × 2 mm, subrounded; lateral sepals slightly oblique, obovate, ca. as large as dorsal sepal, obtuse. Petals obliquely suboblong, ca. 3 × 1.5 mm, obtuse; lip lateral lobes erect, deltoid; mid-lobe deltoid, ca. 2.5 mm, slightly fleshy, acute; spur somewhat horn-shaped, ca. 4 mm, apex obtuse, interior longitudinally septate, with a back wall callus; callus 3-lobed, laterally compressed, base shallowly bilobed and slightly papillate-hairy; mid-lobe oblong and concave in center. Column ca. 2 mm; rostellum small; anther cap ca. 2 mm; stipe slightly clavate, short, narrow; viscidium suborbicular. Fl. Jul–Oct.

• Epiphytic on tree trunks at forest margins; 700–1200 m. S and SE Yunnan.

9. *Cleisostoma birmanicum* (Schlechter) Garay, Bot. Mus. Leaflet 23: 170. 1972.

美花隔距兰 mei hua ge ju lan

Echioglossum birmanicum Schlechter, Notizbl. Bot. Gart. Berlin-Dahlem 8: 125. 1922; *Sarcanthus birmanicus* (Schlechter) Seidenfaden & Smitinand; *S. ophioglossa* Guillaumin.

Stems erect, elongate, 8–9 cm, stout, ca. 6 mm in diam., unbranched, with many leaves and verrucose roots. Leaves narrowly lanceolate, ca. 15 × 1.5 cm, thickly fleshy, obtuse and unequally bilobed. Inflorescence lateral, arching, longer than leaves, branching, many flowered; floral bracts ovate-triangular, 2–3 mm, thickly textured, obtuse. Flowers widely opening, fleshy, sepals and petals purplish brown with yellowish green margins and midvein, lip white, column purple; pedicel and ovary purplish brown, ca. 1 cm. Dorsal sepal elliptic, ca. 12 × 5 mm, obtuse; lateral sepals obliquely ovate, ca. 9 × 6 mm, obtuse. Petals subfalcate-oblong, ca. 10 × 4.5 mm, obtuse; lip lateral lobes erect, falcate-lanceolate, acute; mid-lobe triangular, ca. 6 mm wide, acute and deeply divided into 2 tails; spur subconic, straight, ca. 5 × 2 mm, apex obtuse, interior longitudinally septate, with a back wall callus; callus hollow, subtriangular, base slightly bilobed and densely minutely papillate. Column ca. 4 mm, stout; anther cap truncate and broadly emarginate; stipe deltoid, small; viscidium crescent-shaped or saddle-shaped, large. Fl. Apr–May.

Hainan [Myanmar, Thailand, Vietnam].

10. *Cleisostoma striatum* (H. G. Reichenbach) N. E. Brown, Suppl. Johnson's Gard. Dict. 901. 1882.

短序隔距兰 duan xu ge ju lan

Echioglossum striatum H. G. Reichenbach, Gard. Chron., n.s., 12: 390. 1879; *Cleisostoma brevipes* J. D. Hooker; *Raciborskanthos striatus* (H. G. Reichenbach) Szlachetko; *Sarcanthus brevipes* (J. D. Hooker) J. J. Smith; *S. striatus* (H. G. Reichenbach) J. J. Smith.

Stems cylindrical, to 30 cm, ca. 7 mm in diam., internodes ca. 2 cm, many leaved. Leaves flat, narrowly oblong-lanceolate, usually 7–11 × ca. 1.5 cm, fleshy, acute. Inflorescence arising from middle or above on stem, pendulous, axillary, 2–6 cm, unbranched, densely many flowered; peduncle with several, fleshy, scalelike sheaths; floral bracts broadly ovate, 2–3 mm, fleshy. Flowers opening widely, fleshy; sepals and petals orange-yellow with purple stripes, lip yellowish, mid-lobe purple; pedicel and ovary longer than floral bracts. Dorsal sepal suboblong, cymbiform, ca. 6 × 3 mm, obtuse; lateral sepals slightly oblique, ovate, ca. as large as dorsal sepal. Petals suboblong, ca. 5 × 2.5 mm, obtuse; lip lateral lobes falcate-triangular, acute; mid-lobe sagittate-triangular, fleshy, narrowed and deeply divided into 2 tails, with 2 backward triangular basal lobules, adaxially with a longitudinal fleshy lamella; spur perpendicular to ovary, short, interior longitudinally septate, with a back wall callus; callus entire, laterally compressed, basal half triangular and papillate. Column ca. 3 mm; rostellum ligulate, fleshy, extending beyond column wing; anther cap elongate, broadly emarginate; stipe oblanceolate, geniculate-folded at base, margin revolute; viscidium crescent-shaped, large. Fl. Jun. $2n = 38$.

Epiphytic on tree trunks in broad-leaved evergreen forests; 500–1600 m. SW Guangxi, Hainan, SE to W Yunnan [NE India, Malaysia (Peninsular), Thailand, Vietnam].

11. *Cleisostoma paniculatum* (Ker Gawler) Garay, Bot. Mus. Leaf. 23: 173. 1972.

大序隔距兰 da xu ge ju lan

Aerides paniculata Ker Gawler, Bot. Reg. 3: ad t. 220. 1817; *Cleisostoma cerinum* Hance; *C. formosanum* Hance; *C. fuscomaculatum* (Hayata) Garay; *C. unciferum* (Schlechter) Garay; *Garayanthus fuscomaculatus* (Hayata) Szlachetko; *G. paniculatus* (Ker Gawler) Szlachetko; *Sarcanthus cerinus* (Hance) Rolfe; *S. formosanus* (Hance) Rolfe; *S. fuscomaculatus* Hayata; *S. paniculatus* (Ker Gawler) Lindley; *S. uncifer* Schlechter; *Vanda paniculata* (Ker Gawler) R. Brown.

Stems erect, compressed terete, elongate, more than 20 cm, usually 5–8 mm in diam., sometimes branching, many leaved. Leaves distichous, flat, narrowly oblong or linear, 10–25 × 0.8–2 cm, leathery, ± conduplicate at base, unequally bilobed, sometimes mucronate in sinus. Inflorescence axillary, much longer than leaves, many branched, many flowered; floral bracts ovate, ca. 2 mm. Flowers opening widely; sepals and petals yellowish green abaxially, purplish brown adaxially, margins and midvein yellow, lip yellow; pedicel and ovary ca. 1 cm. Dorsal sepal suboblong, concave, ca. 4.5 × 2 mm, obtuse; lateral sepals obliquely oblong, ca. 4.5 × 2.5 mm, base adnate to

column foot. Petals slightly smaller than sepals; lip with lateral lobes erect, deltoid, relatively small, apex obtuse, proximal margin sometimes ± thickened-callose; mid-lobe fleshy, apex upcurved and incurved-beaked, with 2 basal backward subulate lobules, adaxially with a ridge highly raised at apex; spur straight, ca. 4.5 mm, apex obtuse, interior usually septate, with a back wall callus; callus rectangular, longitudinally concave at center, base slightly bilobed and densely papillate-hairy. Column stout; anther cap truncate, incised; stipe short, broad, geniculate-folded at base; viscidium crescent-shaped or saddlelike, large. Fl. May–Jun. $2n = 38, 42$.

Epiphytic on tree trunks in broad-leaved evergreen forests, lithophytic on rocks along wooded valleys; 200–1300 m. N Fujian, S Guangdong, Guangxi, Hainan, E Jiangxi, S and SW Sichuan, Taiwan, SE Xizang [Vietnam].

12. *Cleisostoma williamsonii* (H. G. Reichenbach) Garay, Bot. Mus. Leaf. 23: 176. 1972.

红花隔距兰 hong hua ge ju lan

Sarcanthus williamsonii H. G. Reichenbach, Gard. Chron. 1865: 674. 1865; *Cleisostoma elongatum* (Rolfe) Garay; *C. hongkongense* (Rolfe) Garay; *Echioglossum williamsonii* (H. G. Reichenbach) Szlachetko; *S. elongatus* Rolfe; *S. hongkongensis* Rolfe.

Plants often pendulous. Stems to 70 cm, rather slender, 3–4 mm in diam., branched or unbranched, many leaved, internodes 1–2.5 cm. Leaves straight or slightly arching, terete, usually 6–10 cm × 2–3 mm, obtuse. Inflorescence lateral, ascending, longer than leaves, usually branched, densely many flowered; floral bracts ovate-lanceolate, ca. 2 mm. Flowers opening widely, pink, lip deep purple-red; pedicel and ovary ca. 5 mm, slender. Dorsal sepal ovate-elliptic, cymbiform, ca. 2.2 × 1.5 mm, rounded; lateral sepals obliquely ovate-elliptic, ca. 2.5 × 1.5 mm, base adnate to column foot, obtuse. Petals oblong, ca. 2.2 × 1 mm, obtuse; lip lateral lobes erect, ligulate-oblong, obtuse, ± incurved; mid-lobe narrowly ovate-triangular, fleshy, adaxially with a ridge raised and triangular near spur entrance; spur globose, ca. 2 mm in diam., slightly laterally compressed, concave, interior inconspicuously septate, with a back wall callus; callus 3-lobed, T-shaped; lateral lobules nearly horn-shaped, slightly recurved; mid-lobule shallowly bilobed at base and densely papillate-hairy. Column ca. 2 mm; anther cap truncate, broadly emarginate; stipe broadly ovate-triangular or miter-shaped; viscidium nearly crescent-shaped. Fl. Apr–Jun. $2n = 38$.

Epiphytic on tree trunks in forests, lithophytic on rocks along wooded valleys; 300–2200 m. Guangdong, Guangxi, SW Guizhou, Hainan, SE to W Yunnan [Bhutan, NE India, Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

13. *Cleisostoma fuerstenbergianum* Kraenzlin, Repert. Spec. Nov. Regni Veg. 7: 39. 1909.

长叶隔距兰 chang ye ge ju lan

Cleisostoma flagellare (Schlechter) Garay; *C. flagelliforme* (Rolfe ex Downie) Garay; *Sarcanthus flagellaris* Schlechter; *S. flagelliformis* Rolfe ex Downie; *S. fuerstenbergianus* (Kraenzlin) J. J. Smith.

Stems erect or arching, more than 50 cm, rather slender, 4–5 mm in diam., branched or unbranched, laxly many leaved, internodes 3–4 cm. Leaves secund, terete, ca. 25 cm × 2–3 mm, fleshy, obtuse. Inflorescence lateral, ascending, to 20–24 cm, usually shorter than leaves, unbranched or rarely branched, laxly many flowered; peduncle 2–4 cm; floral bracts narrowly ovate-lanceolate, ca. 2 mm, membranous. Flowers: sepals and petals yellow with purplish brown stripes, lip white, proximal margin of lateral lobes purple; pedicel and ovary ca. 1 cm. Dorsal sepal ovate-elliptic, cymbiform, 4.5–5 × ca. 2 mm, obtuse; lateral sepals suboblong, 4.5–5 × ca. 2.5 mm, base adnate to column foot. Petals narrowly oblong, ca. 4 × 1.5 mm, obtuse; lip lateral lobes erect, deltoid, falcate, incurved, proximal margin inflexed; mid-lobe sagittate-triangular, subfleshy, with an adaxial ridge; spur subglobose, concave, 2–3 mm in diam., interior septate, with a 3-lobed back wall callus; lateral lobules triangular, slightly recurved; mid-lobule nearly as long as lateral lobules, slightly concave at center, base densely papillate-hairy. Column ca. 3 mm; rostellum small; anther cap truncate; stipe ovate-lanceolate; viscidium suborbicular, wider than stipe. Fl. May–Jun. *2n* = 38.

Epiphytic on tree trunks in broad-leaved evergreen forests; 700–2000 m. SW Guizhou, S and W Yunnan [Cambodia, Laos, Thailand, Vietnam].

14. *Cleisostoma filiforme* (Lindley) Garay, Bot. Mus. Leaflet 23: 171. 1972.

金塔隔距兰 jin ta ge ju lan

Sarcanthus filiformis Lindley, Edwards's Bot. Reg. 28 (Misc.): 61. 1842.

Plants pendulous. Stems more than 60 cm, rather slender, 3–4 mm in diam., branched or unbranched, laxly many leaved, internodes 4–6 cm. Leaves terete, to 33 cm × 2–2.5 mm, slender, fleshy, obtuse. Inflorescences 1 or 2, lateral, usually opposite to leaves, shorter than or sometimes nearly as long as leaves, branched or unbranched, densely many flowered; floral bracts narrowly ovate-lanceolate, ca. 2 mm. Flowers opening widely, sepals and petals yellowish green, with purplish brown stripes, lip with white lateral lobes and purple-red mid-lobe, column yellow; pedicel and ovary 4–5 mm, slender. Dorsal sepal ovate-elliptic, cymbiform, ca. 4 × 2 mm, obtuse; lateral sepals suboblong, ca. 4 × 2.5 mm, base adnate to column foot. Petals suboblong, much smaller than sepals, obtuse; lip lateral lobes erect, deltoid, obtuse and incurved, proximal margin inflexed; inflexed part square; mid-lobe sagittate-triangular, ca. 2 mm, with 2 basal backward narrow lobules, adaxially with longitudinal ridges triangularly thickened halfway; spur broadly conic, dorsiventrally compressed, concave, ca. 3 × 2 mm, interior inconspicuously septate, with a back wall callus; callus nearly stellate, triangularly thickened at center, base densely papillate-hairy. Column ca. 2 mm; anther cap elongate and triangular toward apex; stipe ovate-lanceolate, apical margin revolute; viscidium suborbicular, small. Fl. Sep–Oct. *2n* = 38.

Epiphytic on tree trunks in broad-leaved evergreen forests; 400–1000 m. SW Guangxi, Hainan, S Yunnan [NE India, Myanmar, Nepal, Thailand, Vietnam].

15. *Cleisostoma simondii* (Gagnepain) Seidenfaden, Dansk Bot. Ark. 29(3): 66. 1975.

毛柱隔距兰 mao zhu ge ju lan

Plants often ascending. Stems to 50 cm, rather slender, ca. 4 mm in diam., usually branched, many leaved, internodes 1–2.5 cm. Leaves terete, 7–11 cm × ca. 3 mm, slender, fleshy, obtuse. Inflorescence lateral, ascending, longer than leaves, unbranched or sometimes shortly branched, many flowered; floral bracts ovate, ca. 2 mm, membranous. Flowers yellowish green with purplish red veins, subfleshy; lip mid-lobe purple-red or yellowish white; pedicel and ovary 7–10 mm. Sepals oblong, 6–7 × 3–4 mm, rounded; lateral sepals slightly oblique, basally with 1/2 width adnate to column foot. Petals similar to sepals and smaller, obtuse; lip lateral lobes erect, deltoid; mid-lobe ovate-triangular, thickly fleshy, apex acute, base with a central triangular projection; spur subglobose, laterally compressed, ca. 4 mm in diam., apex concave, interior distinctly septate, with a back wall callus; callus either 3-lobed and T-shaped or subquadrate; mid-lobe subcuneate, centrally slightly concave, base shallowly bilobed and densely papillate-hairy. Column ca. 3 mm, densely white hairy at base in front; rostellum broadly triangular; anther cap slightly elongate and subtruncate at apex; stipe nearly suborbicular, base folded; viscidium saddlelike, large. Fl. Sep.

Epiphytic on tree trunks or lithophytic on rocks in forests or in open forests along rivers; 500–1200 m. Fujian, S Guangdong, Hainan, S Yunnan [NE India, Laos, Thailand, Vietnam].

- 1a. Mid-lobe of lip purple-red; back wall callus inside spur T-shaped 15a. var. *simondii*
- 1b. Mid-lobe of lip yellowish white; back wall callus inside spur subquadrate 15b. var. *guangdongense*

15a. *Cleisostoma simondii* var. *simondii*

毛柱隔距兰(原变种) mao zhu ge ju lan (yuan bian zhong)

Vanda simondii Gagnepain, Bull. Mus. Natl. Hist. Nat., sér. 2, 22: 628. 1951; *Cleisostoma teres* Garay; *Echioglossum simondii* (Gagnepain) Szlachetko; *Sarcanthus teretifolius* (Lindley) Lindley; *V. teretifolia* Lindley.

Mid-lobe of lip purple-red; spur with a T-shaped back wall callus.

Epiphytic on tree trunks in open forests along rivers; ca. 1000 m. S Yunnan [NE India, Laos, Thailand, Vietnam].

15b. *Cleisostoma simondii* var. *guangdongense* Z. H. Tsi, Bull. Bot. Res., Harbin 3(4): 84. 1983.

广东隔距兰 *guang dong ge ju lan*

Mid-lobe of lip yellowish white; spur with a subquadrate back wall callus.

• Epiphytic on tree trunks or lithophytic on rocks in broad-leaved evergreen forests; 500–600 m. Fujian, S Guangdong, Hainan.

16. *Cleisostoma nangongense* Z. H. Tsi, Bull. Bot. Res., Harbin 9(2): 26. 1989.

南贡隔距兰 *nan gong ge ju lan*

Plants pendulous. Stems more than 40 cm, slender, ca. 3 mm in diam., branched or unbranched, many leaved, internodes ca. 2 cm. Leaves subterete, to 17 cm × ca. 3 mm, slender, channeled adaxially, fleshy, apex acuminate. Inflorescence lateral, usually unbranched, many flowered; peduncle ca. 4 cm; rachis pale purple, ca. 6 cm, slender; floral bracts ovate, ca. 1 mm, membranous, obtuse. Flowers opening widely, ± fleshy; sepals and petals yellowish green, tinged with purple, lip, column, and anther cap yellowish white; pedicel and ovary yellowish green, tinged with purple, 6–7 mm. Dorsal sepal ovate-elliptic, concave, ca. 5 × 3.5 mm, margin irregularly denticulate, apex obtuse; lateral sepals slightly oblique, oblong, ca. 5 × 4 mm, margin often sparsely denticulate, apex obtuse. Petals obliquely ovate-oblong, ca. 4.5 × 2 mm, margin irregularly denticulate, apex obtuse; lip lateral lobes subtriangular, apex incurved, proximal margin inflexed and square in shape, with a horn-shaped appendage near apex; mid-lobe sagittate-triangular, thickly fleshy, obtuse, with a circular basal callus; spur dorsiventrally compressed, subtruncate, ca. 4 × 3 mm, front surface with a channel, interior conspicuously septate, back wall callus 3-lobed; callus T-shaped; lateral lobules adnate to wall; mid-lobule slightly concave centrally, with 2 recurved basal lobules. Column ca. 3 mm; rostellum short; anther cap slightly elongate, truncate; stipe nearly suborbicular; viscidium saddlelike, large. Fl. Jun.

• Epiphytic on tree trunks in broad-leaved evergreen forests; ca. 1700 m. S Yunnan.

