

139. DENDROBIUM Swartz, *Nova Acta Regiae Soc. Sci. Upsal.*, ser. 2, 6: 82. 1799, nom. cons.

石斛属 shi hu shu

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Herbs epiphytic, lithophytic, or less often terrestrial, polymorphic, deciduous or evergreen. Stems either: 1) rhizomatous, 2) erect and many noded, 3) erect and 1-noded or several noded from a many-noded rhizome, or 4) without a rhizome, new stems of many nodes arising from base of old ones; 1 or 2(–500) cm, tough or fleshy, 1 to several internodes swollen at or near base or along entire length to form canelike pseudobulbs, ± covered with sheathing leaf bases and cataphylls, often turning yellow when dried. Leaves 1 to many, alternate, apical or distichous along stem, linear, lanceolate, oblong, or ovate, sometimes subterete or terete, papery to rigid and leathery, sometimes with black or brown trichomes especially on sheath, base articulate and often with clasping sheaths, apex usually 2-lobed or emarginate. Inflorescences lateral, generally distal, in some sections pseudoterminal, 1- to many flowered, usually racemose, erect, horizontal, or pendulous; floral bracts usually insignificant. Flowers extremely variable in color and shape, often showy, very small to large, resupinate or not resupinate, usually spreading, ephemeral or long-lived. Sepals similar, free, short to filiform; lateral sepals adnate to elongated column foot and part of lip to form a mentum, 0.1–3 cm. Petals free, margin entire to fimbriate; lip entire to distinctly 3-lobed, base joined to column foot, sometimes narrowly clawed at base, sometimes forming a closed spur with lateral sepals to which it may be joined laterally for a short distance; disk with 1 to several keels, sometimes verrucose-papillose, calli rarely present, sometimes with a transverse basal ridge. Column short, stout; foot long, sometimes with a protuberance adaxially; apical stelidia obscure to distinct; viscidium present; pollinia 4 in appressed pairs, waxy, ovate or oblong, naked, i.e., without caudicles or stipes.

About 1,100 species: India across to Japan, south to Malaysia and Indonesia, east to Australia, New Guinea, and the Pacific islands; 78 species (14 endemic) in 14 sections in China.

See the monograph by Seidenfaden (*Opera Bot.* 83: 1–295. 1985) and the book by H. P. Wood (*Dendrobiums*. 2006).

Key to sections

- 1a. Stems with up to 4 internodes near base swollen and fleshy to form distinct fusiform pseudobulbs, upper part of stem thin and wiry; flowers ephemeral 12. *D.* sect. *Crumenata* (p. 395)
- 1b. Stems uniformly thick, fleshy or not, or fusiform, ovoid, or clavate; flowers ephemeral to long-lived.
 - 2a. Stems uniformly narrow, often wiry, internodes never fleshy or swollen.
 - 3a. Leaves leathery or thinly leathery, dorsiventral, grasslike 1. *D.* sect. *Grastidium* (p. 372)
 - 3b. Leaves thick and fleshy, cylindrical, subcylindric, or laterally compressed and shortly ensiform.
 - 4a. Leaves laterally compressed and shortly ensiform, 5–6 mm wide; mentum 5–7 mm 13. *D.* sect. *Aporum* (p. 396)
 - 4b. Leaves subulate-cylindric or subcylindric, 1.5–3 mm wide; flowers pale yellow, large; dorsal sepal ca. 12 mm; mentum ca. 20 mm 14. *D.* sect. *Strongyle* (p. 397)
 - 2b. Stems with most internodes fleshy and swollen.
 - 5a. Leaf sheaths, sometimes also leaf blade and inflorescence, with blackish or dark brown hairs 10. *D.* sect. *Formosa* (p. 391)
 - 5b. Leaf sheaths, leaf blades, and inflorescences glabrous.
 - 6a. Leaf sheaths insignificant; stems fusiform to clavate, swollen, often angled, sometimes compressed, with 1–5 ± sheathless leaves clustered at apex; flowers mostly in pendulous, many-flowered racemes from upper nodes 2. *D.* sect. *Densiflora* (p. 374)
 - 6b. Leaf sheaths distinct, often covering most of internodes; otherwise without above combination of characters.
 - 7a. Inflorescences several, lateral or subterminal on current year's stem; flowers several, small; lip 3-lobed; stems often tufted, often small 11. *D.* sect. *Stachyobium* (p. 393)
 - 7b. Inflorescences lateral, usually on leafless stems, pendulous or vertical on stem, most often with a short peduncle; flowers most often solitary or few, sometimes fascicled, rarely many on a longer raceme; plants often rather large and robust.
 - 8a. Mid-lobe of lip hairy.
 - 9a. Mid-lobe of lip fringed 7. *D.* sect. *Stuposa* (p. 389)
 - 9b. Mid-lobe of lip downy.
 - 10a. Inflorescences many per stem, few flowered; flowers mostly purple or white, less often yellow; lip usually with expanded mid-lobe 3. *D.* sect. *Dendrobium* (p. 376)
 - 10b. Inflorescences few, distal, often only 1 per stem, many flowered; flowers usually yellow; lip expanded 4. *D.* sect. *Holochrysa* (p. 384)

- 8b. Mid-lobe of lip glabrous.
 - 11a. Flowers usually with a short, saccate mentum.
 - 12a. Inflorescences 1(or 2)-flowered, on leafy stems; dorsal sepal ca. 8 mm; mid-lobe of lip with distinct keels 5. *D. sect. Distichophylla* (p. 388)
 - 12b. Inflorescences 2–6-flowered, on leafless stems; dorsal sepal 13–20 mm; mid-lobe of lip without keels 6. *D. sect. Breviflora* (p. 388)
 - 11b. Flowers with a long narrow mentum; lip with a long narrow claw.
 - 13a. Lip abruptly broadened from a narrow claw, not forming a spurlike structure with column foot; mentum pointing away from ovary 8. *D. sect. Calcarifera* (p. 390)
 - 13b. Lip gradually broadened over its length, with a narrow base that forms a spurlike structure (closed spur) with column foot; mentum held parallel to ovary 9. *D. sect. Pedilonum* (p. 390)

Key to species

- 1a. Leaf sheaths insignificant; inflorescence pendulous, arising from leaf axil near stem apex; flowers yellow or white tinged with yellow, never with green.
 - 2a. Stems 1-leaved, 4-angled.
 - 3a. Inflorescence much longer than stem, many flowered; stems to 10 cm; adaxial surface of lip with only base and center pubescent, margin glabrous 7. *D. lindleyi*
 - 3b. Inflorescence shorter or slightly longer than stem, 1–3-flowered; stems 3(–5) cm; entire adaxial surface of lip pubescent 8. *D. jenkinsii*
 - 2b. Stems 2–5-leaved, terete or laterally compressed, sometimes with many angles or ridges.
 - 4a. Sepals and petals white; stem with many ridges; leaves usually 1.5–2 cm apart; inflorescence dense; lip entire, orange 12. *D. thyrsoflorum*
 - 4b. Sepals and petals yellow.
 - 5a. Inflorescence dense; dorsal sepal ca. 1.5 cm; petal margin finely dentate; upper side of lip rather long ciliate, more sparsely so toward edges; leaves borne close together on a many-angled stem; floral bracts to ca. 2.4 cm 11. *D. densiflorum*
 - 5b. Inflorescence lax; dorsal sepal 1.8–2 cm.
 - 6a. Stems distinctly laterally compressed, clavate; petal margin entire; lip margin minutely erose to ciliate-hairy 9. *D. sulcatum*
 - 6b. Stems not laterally compressed, thickly fusiform, with many ridges; petal margin minutely dentate; lip margin undulate 10. *D. chrysotoxum*
 - 1b. Leaf sheaths distinct; inflorescence and flowers without above combination of characters.
 - 7a. Leaves and leaf sheaths with dark hairs, at least when young.
 - 8a. Mentum saccate, 4–13 mm.
 - 9a. Sepals and petals white.
 - 10a. Lip with mid-lobe reflexed, yellow to orange, lateral lobes bright red, disk with 5 irregularly papillate ridges; stems obovoid to nearly globose 58. *D. bellatulum*
 - 10b. Lip not reflexed, white with darker throat, disk with 3 granulate lamellae 59. *D. christyanum*
 - 9b. Sepals and petals yellow; stems 5–21 cm.
 - 11a. Stems 5–11 cm, 12–15 mm in diam.; dorsal sepal strongly keeled abaxially; ovary prominently 3-ribbed; mentum ca. 4 mm 60. *D. trigonopus*
 - 11b. Stems to 21 cm, 3–4 mm in diam.; dorsal sepal not keeled; ovary rounded; mentum 10–13 mm 61. *D. sinense*
 - 8b. Mentum narrowly conic (shaped like a candle snuffer), 15–30 mm, forming spur.
 - 12a. Ovary 3-ribbed; spur ± curved, often sigmoid 64. *D. cariniferum*
 - 12b. Ovary terete or somewhat rounded-clavate; spur straight.
 - 13a. Petals broadly ovate, ca. 40 × 32 mm, much wider than sepals 63. *D. wattii*
 - 13b. Petals oblong, lanceolate, or oblong-elliptic, 15–20 × 4–10 mm, narrower than sepals or nearly equally wide.
 - 14a. Flower opening widely; petals and sepals nearly equal in width; sepals dorsally keeled 65. *D. williamsonii*
 - 14b. Flower narrowly tubular; stem pendulous; petals narrower than sepals; sepals thickened along dorsal midvein, but not alate 62. *D. longicornu*
 - 7b. Leaves and leaf sheaths glabrous.
 - 15a. Stem with a few internodes near base swollen into a spindle-shaped pseudobulb, remainder of stem narrowly cylindrical or laterally compressed.
 - 16a. Leaves leathery, dorsiventrally compressed 71. *D. crumenatum*
 - 16b. Leaves fleshy, laterally compressed or cylindrical.
 - 17a. Leaves laterally compressed and shortly ensiform, base 3–4 mm wide 72. *D. equitans*

- 17b. Leaves terete, cylindric, or subterete.
 18a. Leaves terete, 1.5–2.5 mm wide at base; lip mid-lobe papillose 73. *D. exile*
 18b. Leaves slender, hairlike, less than 1 mm wide 74. *D. pseudotenellum*
- 15b. Stem without any group of swollen internodes, uniformly narrowly cylindric or laterally compressed.
 19a. Leaves thick and fleshy, cylindric, subcylindric, or laterally compressed and ensiform.
 20a. Leaves subcylindric, almost subulate or laterally compressed and shortly ensiform, 1–4 mm wide; flowers white or pale yellow, lip spotted yellow; mentum 1–2 cm.
 21a. Leaves ensiform; flowers large; mentum to 2 cm; lip with 2(–4) thickened raised veins, densely papillose distally 77. *D. parciflorum*
 21b. Leaves almost subulate; flowers smaller; mentum less than 1 cm; lip smooth 78. *D. hainanense*
 20b. Leaves laterally compressed and broadly ensiform, 5–6 mm wide; flowers very small, white, lip tinged with red, or pale yellowish white; mentum 5–7 mm.
 22a. Stems to 60 cm, leaves smaller toward stem apex; flowers in groups of 2 or 3 along terminal part of stem 75. *D. spatella*
 22b. Stems to 23 cm, leaves uniform along stem; flowers subterminal 76. *D. terminale*
- 19b. Leaves flat with distinct abaxial and adaxial surfaces.
 23a. Leaves elliptic, subcordate and clasping at base, distichous, connivent to one another; flowers borne on leafy stems; sepals and petals reflexed 52. *D. ellipsophyllum*
 23b. Leaves not as above.
 24a. Stem evenly narrowly cylindric (internodes never swollen), surface glossy, rigid; leaves narrow, grasslike; inflorescence 1- or 2-flowered.
 25a. Flowers white; inflorescences axillary along lower part of leafless stem, without protective sheaths 39. *D. leptocladum*
 25b. Flowers yellow or yellowish green; inflorescence axillary along leafy stem, emerging from a protective sheath and piercing subtending sheath, appearing opposite next proximal leaf.
 26a. Lip entire, spatulate or narrowly lanceolate; sepals and petals obtuse to rounded 1. *D. salaccense*
 26b. Lip distinctly or indistinctly 3-lobed; sepals and petals long acuminate.
 27a. Flowers not opening widely; lip rhombic, mid-lobe ovate-triangular, margin fimbriate, disk pubescent 2. *D. furcatopedicellatum*
 27b. Flowers opening fully; lip not as above, disk glabrous.
 28a. Lip mid-lobe ovate, long acuminate, margin undulate 3. *D. somae*
 28b. Lip mid-lobe oblong, obtuse, margin not noticeably undulate 4. *D. luzonense*
- 24b. Stems cylindric or compressed, sometimes upper part thickened and clavate, internodes swollen or not, with longitudinal stripes or ribs, sometimes entirely enclosed in leaf sheaths, fleshy; leaves grasslike or not.
 29a. Plants short, grasslike; inflorescences borne laterally from leaf axils, usually from distal nodes on current year's mature stem, nearly erect and parallel to stem, with many small flowers; sepals less than 2 mm wide.
 30a. Lip entire, elliptic 66. *D. porphyrochilum*
 30b. Lip 3-lobed.
 31a. Inflorescence ca. as long as leaves; lip pale green, suborbicular 69. *D. compactum*
 31b. Inflorescence longer than leaves.
 32a. Lateral lobes of lip entire or slightly inconspicuously toothed 70. *D. sinominutiflorum*
 32b. Lateral lobes of lip with comblike teeth.
 33a. Base of sepals and petals with purplish red venation, entire lip deep purplish violet 67. *D. strongylanthum*
 33b. Sepals and petals white or yellow, lateral lobes of lip purplish violet 68. *D. monticola*
- 29b. Plants tall, not grasslike; inflorescence exserted, but never erect and parallel to stem, with a few to many medium-sized to large flowers; sepals more than 3 mm wide.
 34a. Mentum long, spurlike or tubular.
 35a. Flowers white with pale purple veins; stems often branched 56. *D. chameleon*
 35b. Flowers pale to dark purple; stems unbranched 57. *D. goldschmidtianum*
 34b. Mentum short and broadly blunt.
 36a. Lip saclike or slipperlike, margin strongly involute.
 37a. Stems cylindric; leaf 10–15 cm; inflorescence to 10-flowered; dorsal sepal 24–35 mm 42. *D. moschatum*
 37b. Stems strongly compressed; leaf 6–8 cm; inflorescence 1-flowered; dorsal sepal ca. 16 mm 43. *D. menglaense*
 36b. Lip not saclike or slipperlike, margin spreading to recurved.

- 38a. Lip boat-shaped or subglobose, mid-lobe deflexed, acuminate.
 39a. Stems swelling toward apex from a narrow basal portion; column foot ca. 2.5 mm, much shorter than column proper; lip hypochile much larger than epichile, deeply concave, subglobose, with orbicular sides embracing column, entire inner surface finely ciliate, epichile triangular-acute, inner surface glabrous, ecallose 53. *D. hercoglossum*
 39b. Stems ± of equal width, not swollen distally; column foot ca. 10 mm, much longer than column proper; lip hypochile reduced to a neck, epichile cymbiform, finely pubescent at apex and along median line, glabrous toward margin, with a large glossy basal central callus 54. *D. aduncum*
 38b. Lip not as above.
 40a. Flowers white, lip with a yellow patch; sepals ca. 8 mm; lip conspicuously 3-lobed, margin finely toothed above middle, front margin densely long ciliate-hairy; inflorescence 2-flowered 55. *D. stuposum*
 40b. Flowers often not white; sepals more than 10 mm; lip entire or inconspicuously 3-lobed, adaxial surface usually papillose to pubescent, sometimes with a callus near base but without any other ornaments; inflorescences 1–4-flowered.
 41a. Sepals and petals pale yellow, creamy yellow, or golden yellow, never tinged with purple or any other color except on lip Key 2
 41b. Sepals and petals purplish red, white, or pale yellowish green, turning pale or creamy yellow, apex often purplish red Key 3

Key 2

- 1a. Upper part of stem often branched; leaves linear, less than 7 mm wide, retuse; petals clavate, cordate-mucronate 40. *D. hancockii*
 1b. Stem unbranched; leaves more than 1 cm wide, apex acute, not retuse or bilobed; petals not clavate.
 2a. Inflorescences subumbellate, almost sessile, 2–6-flowered; lip disk with 2 purplish red spots 14. *D. chrysanthum*
 2b. Inflorescences racemose or 1-flowered.
 3a. Stems often with thickened middle and distal internodes, sometimes fusiform or slightly clavate; lip rounded.
 4a. Lip with 1 transversely lunate deep purple spot, margin compoundly fimbriate 47. *D. fimbriatum*
 4b. Lip with 2 chestnut spots, margin slightly erose 48. *D. gibsonii*
 3b. Stems cylindrical, of even width, never swollen.
 5a. Inflorescences on leafy stems; lip golden yellow; peduncle perpendicular to stem; petals golden yellow, entire.
 6a. Inflorescence 2–7-flowered; lip ± reniform-rounded, with 2 purple spots 37. *D. hookerianum*
 6b. Inflorescence 1- or 2-flowered; lip rounded, without purple spots.
 7a. Flowers solitary in leaf axil, waxy when dry; lip ovate-rhombic, without any stripes 41. *D. lohohense*
 7b. Inflorescences 1- or 2-flowered, very rarely solitary, racemose or subumbellate; flowers not waxy when dry 51. *D. henryi*
 5b. Inflorescences on leafless stems.
 8a. Floral bracts cymbiform, 15–30 mm; peduncle sheaths 5–20 mm.
 9a. Stem clavate; inflorescences stiffly arching, to 7-flowered; lip with a central maroon spot 45. *D. denneanum*
 9b. Stem linear; inflorescences erect, 1 or 2(or 3)-flowered; lip uniformly yellow with purplish lines toward base.
 10a. Inflorescence ca. 1 cm; floral bracts membranous, white, 12–13 mm 44. *D. chryseum*
 10b. Inflorescence ca. 6 cm; floral bracts thickly papery, pale purplish, 15–20 mm 46. *D. jiajiangense*
 8b. Floral bracts ovate, 2–5 mm; peduncle 3–10 mm.
 11a. Flowers creamy yellow or pale yellow; lip ovate-lanceolate, margin entire 13. *D. heterocarpum*
 11b. Flowers golden yellow; lip relatively wider, margin erose, undulate, or long fimbriate.
 12a. Lip subreniform, with purplish red stripes near base, margin erose or undulate.
 13a. Stem ± compressed fusiform, 8–15 × ca. 1.5 cm; lip margin undulate; inflorescences always 1 per node 49. *D. capillipes*
 13b. Stem cylindrical, 50–100 × 0.3–0.6 cm; lip margin erose; inflorescences often 2 per node 50. *D. dixanthum*
 12b. Lip suborbicular or ovate-triangular, uniformly golden yellow, margin with branched fimbriae.
 14a. Petal margin densely long ciliate; lip suborbicular, margin with short branched fimbriae 6. *D. harveyanum*
 14b. Petal margin entire; lip ovate-triangular, strongly plumose with long branched fimbriae especially along apical margin 5. *D. brymerianum*

Key 3

- 1a. Stem nodes and internodes swollen, at least on branches, sometimes moniliform.
- 2a. Stems slender, multi-branched, nodes and internodes swollen and moniliform; leaves less than 5 mm wide, distal on branches 15. *D. falconeri*
- 2b. Stems often stout, unbranched; leaves more than 5 mm wide.
- 3a. Peduncle with sheaths 2–3 cm; flowers white, stained purplish red at apex; lip retuse, disk yellow with 2 dark purple spots 16. *D. wardianum*
- 3b. Peduncle at base with sheaths 3–6 cm; flowers not as above.
- 4a. Floral bracts ovate, 5–6 mm; inflorescences subterminal from a leafy stem; flowers white with roseate tips; lip disk golden yellow below middle, with several purplish red stripes at base on either side; individual internodes swollen and obconic 19. *D. findlayanum*
- 4b. Floral bracts broadly ovate, 7–10 mm; inflorescences on leafless stems; flowers white with pale purple or purplish red tips.
- 5a. Stem nodes ± swollen, but not moniliform; lip disk at center with a pale yellow lunate spot, both sides of base with several purplish red stripes 17. *D. gratiosissimum*
- 5b. Nodes and internodes swollen, moniliform; lip disk below middle with golden yellow spot, base without purplish red stripes 18. *D. pendulum*
- 1b. Stem nodes and internodes not swollen.
- 6a. Stem often narrow in lower part, wider distally; leaf apex unequally bilobed.
- 7a. Lip broadly ovate, much larger than petals 28. *D. nobile*
- 7b. Lip broadly oblong, ca. as large as petals or smaller 29. *D. linawianum*
- 6b. Stem usually evenly cylindrical, becoming narrower distally.
- 8a. Sheaths on internodes with green and white stripes; flowers pale purplish red; lip suborbicular, pale purplish red above middle, golden yellow below middle 26. *D. crepidatum*
- 8b. Sheaths on internodes without green and white stripes.
- 9a. Sepals and petals uniformly purple or purplish red.
- 10a. Lip margin entire, only minutely hairy; sepals ca. 3.5 cm; lip blade broadly ovate, purplish red at edge, disk with 1 deep purple spot below middle surrounded by a white circle 27. *D. lituiflorum*
- 10b. Lip margin fimbriate-hairy; sepals ca. 2.7 cm; lip blade rhombic-orbicular, disk with deep purple spots on either side which coalesce 20. *D. parishii*
- 9b. Sepals and petals white, yellowish green, or pale yellow, sometimes tinged with purplish red at apex only.
- 11a. Stems clambering, limp, and pendulous, branching distally; flowers solitary, borne on a leafy stem (but leaves often variably deciduous); sepals and petals white or white tinged with pale purplish red; sepals 1.7–2 cm; petals entire; lip golden yellow, with margin pale purplish red 21. *D. loddigesii*
- 11b. Stems not as above; inflorescence 1–3(–6)-flowered, on leafless stems.
- 12a. Lip fimbriate, compoundly ciliate; sepals and petals white with purplish red tip; lip reniform-orbicular, white tinged with purplish red at apex, lip disk with a yellow spot on either side 22. *D. devonianum*
- 12b. Lip not fimbriate, compoundly ciliate; otherwise without above combination of characters.
- 13a. Floral bracts 10–12 mm, papery; anther cap with dense long crystal-like papillae; sepals and petals white, usually with a pale purple blotch toward tip; lip orange-yellow tinged with purplish red at apex 25. *D. crystallinum*
- 13b. Floral bracts 2–8 mm, membranous; anther cap glabrous or finely papillate; sepals and petals white, apex pale purplish red; sepals 2.3–3 cm; lip suborbicular, with purplish red stripes at base on either side, apex pale purplish red, disk yellow.
- 14a. Petals conspicuously wider than sepals; flowers pink; stem often slender; peduncle short, arising from nodes 23. *D. cucullatum*
- 14b. Sepals and petals nearly equal in width or petals wider; flowers white, pink, yellowish, greenish, or brown; stem robust or slender.
- 15a. Sepals and petals nearly equal in width; flowers pink; stem robust; peduncle inconspicuous, arising from a cymbiform channel on nodes 24. *D. polyanthum*
- 15b. Petals usually wider than sepals; flowers white, pale pink, yellowish, greenish, or brown; stem slender.
- 16a. Mentum ca. 1 cm, tubular; sepals and petals not spreading; lip densely curled pale yellow villous on disk, margin fimbriate 38. *D. xichouense*
- 16b. Mentum 5–8 mm, rounded to conic; sepals and petals spreading to recurved; lip with disk glabrous or with purplish hairs, margin entire.
- 17a. Bracts without reddish brown mottling; stems 1.5–11 cm; sepals and petals uniformly pale pink or yellowish white with pale pink apex.
- 18a. Stems 6–11 cm, cylindrical, distinctly flexuous; sepals and petals yellowish white with pale pink apex, lip with purple at base and along margin and apex 35. *D. flexicaule*

- 18b. Stems 1.5–3 cm, fusiform-obovoid; sepals and petals uniformly pale lilac-pink, lip with 2 yellowish patches on either side 36. *D. wangliangii*
- 17b. Bracts with transverse reddish brown mottling at base or near middle; stems to 60 cm (rarely less than 10 cm in dwarf plants of *D. moniliforme*); sepals and petals uniformly white, yellowish green, or brown.
- 19a. Sepals and petals recurved, revolute, brown 32. *D. fanjingshanense*
- 19b. Sepals and petals spreading, ± flat, white or pale greenish cream.
- 20a. Dorsal sepal 3–4 cm, lanceolate; lip 2.3–2.5 cm, pale yellow, rarely white; stems 40–70 cm; petals lanceolate 31. *D. okinawense*
- 20b. Dorsal sepal much shorter, 1.5–2.5 cm, ovate-oblong or lanceolate; lip 1.2–2 cm, varying in color; stems 10–40 cm; petals lanceolate, subelliptic, oblong, or ovate-oblong.
- 21a. Flowers white, lip white with a green spot in gullet, or tinged pale rose, usually with a distal purple crescent 30. *D. moniliforme*
- 21b. Flowers whitish to yellowish or yellowish to greenish, sometimes tinted pink, lip not as above, without a green spot in gullet.
- 22a. Inflorescence (1–)3–8-flowered; flowers yellowish to greenish, never tinted pink; anther cap cream, sometimes with purple tip 33. *D. catenatum*
- 22b. Inflorescence 1–3-flowered; flowers whitish to yellowish, often tinted pink; anther cap wholly bright purple 34. *D. scoriarum*

1. *Dendrobium* sect. *Grastidium* (Blume) Blume, Tab. Pl. Jav. Orchid. ad t. 4. 1825.

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Grastidium Blume, Bijdr. 333. 1825.

Stems glossy, narrowly cylindrical, rigid, leafy, continuing to lengthen for many years. Leaves grasslike (in Chinese species). Inflorescences axillary, emerging from a protective bract and piercing subtending sheath, appearing opposite next proximal leaf, new lateral inflorescence buds usually progressing distally, one at each node, allowing gregarious blooming at any season; a small but conspicuous pair of convex, indurate, laterally compressed sheaths penetrating enclosing sheath, shielding buds; each inflorescence flowering once, usually producing a pair of flowers. Flowers resupinate or not resupinate, ephemeral, stellate, usually facing one another, or sometimes in parallel or opposite directions. Sepals and petals often filiform. Mentum inconspicuous, decurved, conic. Lip 3-lobed or entire, ornamented with ridges that fragment distally into irregular calli or excrescences.

About 200 species: from NE India and Sri Lanka east to Australia and Tahiti, with a well-marked center of diversity in New Guinea; four species (two endemic) in China.

1. *Dendrobium salaccense* (Blume) Lindley, Gen. Sp. Orchid. Pl. 86. 1830.

竹枝石斛 zhu zhi shi hu

Grastidium salaccense Blume, Bijdr. 333. 1825; *Callista intermedia* (Teijsmann & Binnendijk) Kuntze; *C. salaccense* (Blume) Kuntze; *Dendrobium bambusifolium* E. C. Parish & H. G. Reichenbach; *D. cathcartii* J. D. Hooker; *D. haemoglossum* Thwaites; *D. intermedium* Teijsmann & Binnendijk.

Stem erect, tough, bamboolike, cylindrical, to 1 m, 3–4 mm in diam., unbranched, with many nodes, internodes 2–2.5 cm, enclosed in leaf sheaths. Leaves arranged in 2 rows, narrowly lanceolate, ca. 15 × 2 cm, base contracted into a sheath, acuminate toward apex, apex ± hooked on one side; sheaths articulate at junction with blade. Inflorescence emerging through sheaths, apparently leaf-opposed, 1–4-flowered; peduncle very short, base with 2 or 3 bracts; floral bracts pale brown, shell-like, ca. 3 mm. Pedicel and ovary yellowish green, ca. 1.7 cm, slender. Flowers spreading, small; sepals and petals yellowish brown, lip purple, column and anther cap yellow. Dorsal sepal subelliptic, 8–9 × 3.5–4(or more) mm, 9-veined, obtuse to rounded; lateral sepals obliquely ovate-lanceolate, nearly as large as dor-

sal sepal, base adnate to column foot, apex obtuse to rounded; mentum ca. 6 mm. Petals suboblong, ca. as long as dorsal sepal, but slightly narrower, 3-veined, marginal veins branched, apex obtuse to rounded; lip obovate-elliptic, ca. 12 × 5 mm, ad-axial surface with 1 central yellow ridge, with a long tapelike callus near apex, rounded, mucronate. Column ca. 4 mm; anther cap conic.

Epiphytic on tree trunks in forests, lithophytic on rocks in open forests; 600–1000 m. Hainan, SE Xizang (Mêdog), S Yunnan (Mengla) [Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

2. *Dendrobium furcatopedicellatum* Hayata, Icon. Pl. Formosan. 4: 39. 1914.

双花石斛 shuang hua shi hu

Grastidium furcatopedicellatum (Hayata) Rauschert.

Stem erect, cylindrical, 30–40 cm or longer, ca. 2 mm in diam., upper part with opposite leaves, internodes 3–5 cm. Leaves linear, ca. 11 × 0.4 cm, leathery, 3-veined, base slightly contracted and then dilated into sheath, apex acuminate; leaf sheath tubular, ca. 3.5 cm, tightly embracing internodes. Inflorescence umbellate, lateral, 2-flowered, spreading at right

angle outward; peduncle ca. 13 mm, with 1 or 2 basal sheaths. Pedicel and ovary ca. 1 cm. Flowers opening slightly, pale yellow; sepals with purple spots on both sides at middle. Sepals narrowly lanceolate, ca. 3 cm, base ca. 3.5 mm wide; mentum ca. 5 mm, ± curved. Petals ca. as long as sepals, but relatively narrow; lip 3-lobed; lateral lobes erect, small, obtuse; mid-lobe triangular-lanceolate, somewhat large, 1–1.5 cm, margin fimbriate-toothed, apex recurved; disk pubescent.

- Mountain forests. C and S Taiwan.

3. *Dendrobium somae* Hayata, Icon. Pl. Formosan. 6: 71. 1916 [*“somai”*].

小双花石斛 xiao shuang hua shi hu

Grastidium somae (Hayata) Rauschert.

Stems clustered, erect, cylindric, 60–100 cm, slender, 2–2.5 mm in diam., internodes 1–3 cm. Leaves alternate along upper part of stem, narrowly lanceolate, 7–10 × 0.5–0.6 (or more) cm, base contracted and enlarged into sheath, apex acuminate; leaf sheath tubular, tightly embracing stem, jointed at junction with leaf blade. Inflorescence umbellate, lateral on leafy stems, 2-flowered; peduncle ca. 4 mm, with 1 basal sheath 1–1.7 cm. Flowers spreading; sepals and petals yellowish green, lip yellow. Dorsal sepal narrowly lanceolate, 13–17 × 2.5–3.5 (or more) mm, 7-veined, long acuminate; lateral sepals similar but base oblique and adnate to column foot; mentum 4–6 mm. Petals linear, 13–15 × 1–2 (or more) mm, 3-veined, long acuminate; lip ovate, 13–14 × 5–6.5 (or more) mm, 3-lobed above middle; lateral lobes erect, oblong-triangular, acute; mid-lobe ovate, ca. 6 × 4 mm, long acuminate; disk glabrous, with 3 parallel stripes; mid-lobe veins forming fimbriate ridged projections. Column ca. 3 mm.

- Tree trunks in mountain forests; 500–1500 m. Taiwan (Hengchun, Taibei, Taidong).

4. *Dendrobium luzonense* Lindley, Edwards’s Bot. Reg. 30(Misc.): 54. 1844.

吕宋石斛 lü song shi hu

Grastidium luzonense (Lindley) M. A. Clements & D. L. Jones.

Stems tufted, stiff, straight, to 7.5 cm, ca. 2.7 mm in diam., greenish brown, leafy in upper part, internodes 2.5–3.5 cm, loosely covered with leaf sheaths. Leaves linear, ca. 9 × 0.9 cm, base contracted, articulated with tubelike sheath, apex acuminate. Inflorescences lateral on leafy part of stem, 2-flowered, sessile. Pedicel and ovary ca. 1.1 cm. Flowers yellowish, lip brownish, central part yellow, glabrous, ca. 1.6 cm wide. Dorsal sepal oblong, ca. 9 × 4 mm, apex revolute; lateral sepals ca. 9 mm, ca. 7 mm wide at base, ± recurved; mentum ca. 4 mm. Petals oblong-lanceolate, ca. 8 × 3 mm, acute; lip 3-lobed, ca. 8.5 mm, glabrous, central part slightly ridged, basal part clawed and connate with column foot; mid-lobe oblong, 4–4.5 × ca. 3.5 mm, obtuse; lateral lobes triangular or toothlike, ca. 2 mm, acute. Column ca. 3 × 2 mm; foot ca. 4 mm; pollinia oblong.

2. *Dendrobium* sect. *Densiflora* Finet, Bull. Mus. Hist. Nat. (Paris) 9: 295. 1903.

顶叶组 ding ye zu

Epiphytic on tree trunks and branches in forest bordering a creek; ca. 400 m. Taiwan (Taidong) [Philippines].

This species was first recorded from China by W. M. Lin, T. C. Hsu, and T. P. Lin (Taiwania 52: 284–286. 2007).

Callista Loureiro.

Roots smooth. Stems pseudobulbous, generally compressed clavate or fusiform, often stout, with longitudinal ridges, distal internodes and sheaths reduced, carrying fewer but larger leaves, new shoots starting unpredictably and growing rapidly. Leaves clustered at stem apex, lasting several years; blade leathery, not decurrent at base. Inflorescence usually pendulous, borne from leaf axils near apex of penultimate and older stems, up to 60-flowered. Flowers yellow or white tinged with yellow, never tinged with green.

About 14 species: China, India, Indochina, Myanmar, Thailand; eight species in China.

5. *Dendrobium brymerianum* H. G. Reichenbach, Gard. Chron., n.s., 2: 323. 1875.

长苏石斛 chang su shi hu

Callista brymeriana (H. G. Reichenbach) Kuntze.

Stems erect or decumbent, usually 20–30 cm, often with 2 internodes dilated at middle and fusiform, to 11 mm in diam., base and upper part 3–5 mm in diam., unbranched, with several nodes, internodes 2.5–3 cm, ± longitudinally ridged, pale yellow tinged with dirty black when dry. Leaves often 3–5, on upper part of stem, narrowly oblong, 7–13.5 × 1.2–2.2 cm, leathery, base slightly contracted and with clasping sheath, apex acuminate. Inflorescence a raceme arising laterally on leafless previous year's stem, suberect, 1- or 2-flowered; peduncle 1–4 cm; basal sheaths 4 or 5, overlapping, shortly tubular, membranous, basal ones shortest, ca. 2 mm, longer distally; floral bracts ovate-lanceolate, 7–12 mm, membranous, apex subobtuse. Pedicel and ovary to 5 cm. Flowers spreading, slightly thickly textured, golden yellow; column yellow, white on upper sides; anther cap pale yellowish white. Dorsal sepal oblong-lanceolate, ca. 25 × 8 mm, 7-veined, obtuse; lateral sepals sublanceolate, ca. 25 × 8 mm, base oblique, apex acute; mentum ca. 3 mm, shortly obtuse. Petals oblong, ca. 25 × 7 mm, 7-veined, entire, obtuse; lip ovate-triangular, ca. 20 × 15 mm, adaxially densely pubescent, base shortly clawed, margin shortly fimbriate below middle, above middle (especially at apex) with long and branched fringes, apical fringe longer than lip, apex slightly obtuse. Column ca. 3 mm; anther cap narrowly conic, ca. 5 mm, densely finely papillate, front margin slightly irregular. Capsule narrowly cylindrical, ca. 1.7 × 1 cm, 6-ribbed.

Epiphytic on tree trunks at forest margins; 1100–1900 m. S Yunnan [Laos, Myanmar, N Thailand, N Vietnam].

6. *Dendrobium harveyanum* H. G. Reichenbach, Gard. Chron., n.s., 19: 624. 1883.

苏瓣石斛 su ban shi hu

Callista harveyana (H. G. Reichenbach) Kuntze.

Stems fusiform, usually curved, 8–16 cm, 8–12 mm in diam., rigid, unbranched, with 3–9 nodes, internodes 1.5–2.5 cm, with many twisted longitudinal ridges, brownish yellow when dry, glossy. Leaves often 2 or 3, on upper part of stem, ascending, oblong or narrowly oval-oblong, 10.5–12.5 × 1.6–2.6 cm, leathery, base contracted, with clasping leathery sheath, apex acute. Inflorescence subterminal on previous year's or older leafy stem, pendulous, 3.5–9 cm, slender, laxly few flowered; peduncle with basal sheaths 3 or 4, ovate; floral bracts ovate-triangular, ca. 1 mm. Pedicel and ovary ca. 2.5 cm. Flowers spreading, thinly textured, golden yellow. Dorsal sepal lan-

ceolate, ca. 12 × 5–6 (or more) mm, 5- or 6-veined, slightly obtuse; lateral sepals ovate-lanceolate, ca. 12 × 7 mm, 7-veined, apex slightly obtuse; mentum subglobose, ca. 3 mm. Petals oblong, ca. 12 × 7 mm, 3-veined, margin densely long fimbriate, apex obtuse; lip suborbicular, concave, ca. 2 cm wide, base narrowed into a short claw, margin compoundly fimbriate; disk densely shortly villous. Column ca. 4 mm; anther cap subconic, ± glabrous, front margin irregularly dentate, apex obtuse.

Epiphytic on tree trunks in open forests; 1100–1700 m. S Yunnan (Mengla) [Myanmar, N Thailand, Vietnam].

7. *Dendrobium lindleyi* Steudel, Nomencl. Bot., ed. 2, 1: 490. 1840.

聚石斛 ju shi hu

Dendrobium aggregatum Roxburgh, Fl. Ind., ed. 1832, 3: 477. 1832, not Kunth (1816); *Callista aggregata* Kuntze; *D. alboviride* Hayata var. *majus* Rolfe; *D. lindleyi* var. *majus* (Rolfe) S. Y. Hu; *Epidendrum aggregatum* Roxburgh ex Steudel.

Stems pseudobulbous, dense or tufted, fusiform or ovoid-cylindric, ± laterally compressed, 1–5 cm, 5–15 mm in diam., with 2–5 nodes, contracted at base, internodes 1–2 cm, with 4 ribs, pale yellowish brown and glossy when dry, with white membranous sheaths. Leaf usually solitary, oblong, 3–8 × 0.6–3 (or more) cm, leathery, base contracted, not decurrent into clasping sheaths, margin ± undulate, apex obtuse and emarginate. Inflorescence subterminal, to 27 cm, much longer than leaves, laxly several to more than 10-flowered; floral bracts narrowly ovate-triangular, ca. 2 mm. Pedicel and ovary yellowish green, tinged with pale purple, 6–30 mm. Flowers spreading, thinly papery, orange. Dorsal sepal ovate-lanceolate, ca. 20 × 7–8 (or more) mm, slightly obtuse; lateral sepals nearly equal to dorsal sepal; mentum subglobose, ca. 5 mm. Petals broadly elliptic, ca. 2 × 1 cm, bluntly rounded; lip transversely oblong or subreniform, usually ca. 1.5 × 2 cm, each side embracing column below middle, entire, often emarginate; disk densely pubescent below middle. Column short and thick, ca. 4 mm; anther cap subglobose, glabrous, front margin irregular.

Epiphytic on trees in sunny open forests; below 1000 m. Guangdong, Guangxi, SW Guizhou, Hainan (Ce He) [Bhutan, India, Laos, Myanmar, Thailand, Vietnam].

8. *Dendrobium jenkinsii* Wallich ex Lindley, Edwards's Bot. Reg. 25: ad t. 37. 1839.

小黄花石斛 xiao huang hua shi hu

Callista aggregata Kuntze var. *jenkinsii* (Wallich ex Lindley) Brieger; *Dendrobium aggregatum* Roxburgh var. *jenkinsii* (Wallich ex Lindley) King & Pantling; *D. marseillei*

Gagnepain.

Stems pseudobulbous, aggregated, appressed to substrate, ovoid, compressed, 1–2.5 cm, 4-angled, ridged, with 2 or 3 nodes, 1-leaved. Leaf apical, 1–3 × 0.5–0.8 cm. Inflorescence lateral from pseudobulb, shorter than or nearly as long as stem, 1–3-flowered; peduncle ca. 1.4 cm, glabrous; floral bracts lanceolate, 15–25 × 4–5.5 mm, membranous, acute. Pedicel and ovary 4–5 cm, slender. Flowers ca. 4 cm, uniformly yellow-orange. Dorsal sepal oblong-elliptic, 10–12 × 5–6 mm, 5-veined, obtuse; lateral sepals narrowly ovate-elliptic, 13–14 × 4–5 mm, 5-veined, apex obtuse; mentum 4–5 mm wide. Petals elliptic-ovate to orbicular, 1–1.6 × 0.5–0.9 cm, 5-veined; lip transversely obcordate, 1.5–2.2 × 1.7–2.8 cm (when spread out), adaxial surface pubescent centrally, entire, erose. Column ca. 6 mm, thick.

Open forests; 700–1300 m. S Yunnan [Bhutan, NE India, N Laos, Myanmar, N Thailand, N Vietnam].

9. *Dendrobium sulcatum* Lindley, Edwards's Bot. Reg. 24: ad t. 65. 1838.

具槽石斛 *ju cao shi hu*

Callista sulcata (Lindley) Kuntze.

Stem pseudobulbous, erect, clavate, compressed, narrowed toward base, 24–38 cm, 3–4 mm in diam. below, 1–2.5 cm in diam. at widest point, grooved, unbranched, nodes several, with longitudinal stripes, internodes 2–5 cm, with a membranous sheath, yellowish brown and glossy when dry. Leaves 3 or 4, subterminal, sessile, distichous, broadly elliptic to elliptic-ovate, 18–21 × ca. 4.5 cm, papery, apex acute. Inflorescence axillary, adjacent to leaf, subdensely 5–10-flowered; peduncle 2.5–3 cm, rachis short; basal sheaths 3 or 4, overlapping at base, distant above, ovate, 3.5–5 × 2–3 mm, membranous, 3-veined, subacute; floral bracts ovate, 3–4 × 2–3 mm, membranous, 3-veined, apex acute. Pedicel and ovary ca. 2.5 cm, slender. Flowers thin, uniformly golden yellow, lip with red-purple markings or stripes at base. Dorsal sepal oblong, ca. 25 × 9 mm, 5- or 6-veined, apex subacute; lateral sepals nearly equal to dorsal sepal; mentum conic, ca. 5 mm, broad and obtuse. Petals subobovate, ca. 24 × 11 mm, 5-veined, base contracted into a short claw, margin entire, apex acute; lip suborbicular to wedge-shaped, incurved, 18–20 × ca. 20 mm, adaxial surface densely pubescent near margin, base shortly clawed, margin minutely erose to ciliate-hairy, apex emarginate. Column ca. 5 mm; anther cap backward and forward compressed, subglobose or conic, glabrous, front margin ± irregular, apex emarginate.

Epiphytic on tree trunks in dense forests; 700–800 m. S Yunnan (Mengla) [NE India, N Laos, Myanmar, N Thailand].

10. *Dendrobium chrysotoxum* Lindley, Edwards's Bot. Reg. 33: ad t. 19. 1847.

鼓槌石斛 *gu chui shi hu*

Callista chrysotoxa (Lindley) Kuntze; *Dendrobium chrysotoxum* var. *delacourii* Gagnepain.

Stem pseudobulbous, erect, fusiform, 6–30 cm, 1.5–5 cm in diam. at middle, with 2–5 internodes, with many bluntly

rounded ridges, golden yellow when dry. Leaves 2–5, subterminal, oblong, to 19 × 2–3.5 cm or wider, leathery, base contracted, not decurrent into clasping sheaths, apex acute and hooked. Inflorescence subterminal, ascending or slightly pendulous, to 20 cm, laxly many flowered; peduncle and rachis stout, basal sheaths 4 or 5; floral bracts ovate-lanceolate, 2–3 mm, membranous, apex acute. Pedicel and ovary to 5 cm. Flowers slightly fragrant, thickly textured, golden yellow, lip deeper golden yellow with red stripes on each side at base, anther cap pale yellow. Dorsal sepal oblong, 12–20 mm, 5–9 mm wide at middle, 7-veined, slightly obtuse; lateral sepals nearly equal to dorsal sepal; mentum subglobose, ca. 4 mm wide. Petals ob-lanceolate, ca. as long as dorsal sepal, ca. 2 × as wide as sepals, ca. 10-veined, margin minutely dentate, apex rounded; lip nearly reniform-orbicular, ca. 20 × 23 mm, adaxially densely pubescent, margin undulate, apex shallowly bilobed; disk often V-shaped, raised, sometimes with U-shaped chestnut spots. Column ca. 5 mm; anther cap tower-shaped.

Epiphytic on tree trunks in sunny evergreen broad-leaved forests, lithophytic on rocks in open forests; 500–1600 m. S and W Yunnan [NE India, Laos, Myanmar, Thailand, Vietnam].

11. *Dendrobium densiflorum* Wallich, Pl. Asiat. Rar. 1: 34. 1830.

密花石斛 *mi hua shi hu*

Callista densiflora (Wallich) Kuntze; *Dendrobium clavatum* Roxburgh (1832), not Wallich ex Lindley (1852).

Stems strongly clavate, swollen, ± pseudobulbous at base, 25–40 cm, to 2 cm in diam., internodes clavate, expanding to a swollen node, obscurely 4-angled, sometimes ridges inconspicuous, yellow, pale brown and glossy when dry, sheathless. Leaves 3 or 4, subterminal, oblong-lanceolate, 8–17 × 2.6–6 cm, leathery, base not decurrent into clasping sheath, apex acute. Inflorescence subterminal, pendulous, densely many flowered; peduncle with 2–4 sheaths at base; rachis 6–16 cm; floral bracts broadly oblong or obovate, 12–15 × 6–10 (or more) mm, membranous, strongly ca. 10-veined, revolute, obtuse. Pedicel and ovary whitish green, 2–2.5 cm. Flowers spreading, 3–4 cm in diam.; sepals and petals pale yellow, lip golden yellow, column and anther cap orange-yellow. Dorsal sepal ovate, 17–21 × 8–12 (or more) mm, 5-veined, obtuse; lateral sepals nearly as large as dorsal sepal, ovate-lanceolate, 5- or 6-veined, apex subacute; mentum subglobose, ca. 5 mm wide. Petals suborbicular, 15–20 × 11–15 mm, with 3 main veins and many secondary veins, base contracted into a short claw, margin erose above middle; lip orbicular-rhombic, 17–22 × up to 22 mm, both surfaces densely lanate above middle, shortly clawed, both sides embracing column below middle, apex rounded. Column ca. 4 mm; anther cap compressed subglobose or conic, front margin truncate, finely notched.

Epiphytic on tree trunks in evergreen broad-leaved forests, lithophytic on rocks in mountain valleys; 400–1000 m. N Guangdong, Guangxi, Hainan, SE Xizang [Bhutan, NE India, Myanmar, Nepal, N Thailand].

S. Y. Hu (Quart. J. Taiwan Mus. 26: 151. 1973) misidentified material of this species as *Dendrobium amabile* (Loureiro) O'Brien.

Seidenfaden (Opera Bot. 83: 23. 1985) included *Dendrobium guibertii* Carrière (Rev. Hort. 48: 431. 1876), from N Thailand, in the synonymy of *D. densiflorum*. However, H. P. Wood (Dendrobiums, 637–638. 2006) maintained it as a distinct, late-flowering (July–August) species, conceding that its true distribution remains unclear because of prevalent misidentification. A brief description is provided here for comparison with *D. densiflorum*. Stem clavate, to 80 cm, 4-grooved. Leaves 3–5, usually 4, ca. 10.5 × 5.5 cm. Inflorescence pendulous, 22–30 cm, developing very rapidly, with buds packed together, as in *D. densiflorum*, up to 60-flowered. Flowers ca. 4 cm in diam., sepals and petals pale yellow, lip deeper yellow.

12. *Dendrobium thyrsoiflorum* H. G. Reichenbach ex André, Ill. Hort. 22: 88. 1875.

球花石斛 qiu hua shi hu

Callista thyrsoiflora (H. G. Reichenbach ex André) M. A.

Clements; *Dendrobium densiflorum* Wallich var. *alboluteum* J. D. Hooker; *D. galliceanum* Linden.

Stems erect or ascending, cylindric, 12–46 cm, stout, 7–16 mm in diam., base contracted and narrowly cylindric, with several nodes, with several longitudinal ridges, yellowish brown and glossy. Leaves 3 or 4 on upper part of stem, alternate, oblanceolate, 9–16 × 2.4–5 cm, leathery, base not decurrent into clasping sheaths, but narrowed into a stalk ca. 6 mm, apex acute. Inflorescence arising laterally on previous year's leafy stem, pendulous, 10–16 cm, densely many flowered; peduncle with 3 or 4 papery basal sheaths; floral bracts pale white, obovate, 10–15 × 5–13 (or more) mm, papery, with several veins, not convolute when dry, apex bluntly rounded. Pedicel and ovary with pale white stripes tinged with purple, 2.5–3 cm. Flowers spreading, thin; sepals and petals white, sometimes flushed pink especially abaxially, lip golden yellow, column white, foot pale yellow, anther cap white. Dorsal sepal ovate, ca. 15 × 8 mm, 5-veined, entire, obtuse; lateral sepals slightly obliquely ovate-lanceolate, ca. 17 × 7 mm, 5-veined, entire, obtuse; mentum subglobose, ca. 4 mm wide. Petals suborbicular, ca. 14 × 12 mm, 7-veined with many secondary veins, base with claw ca. 2 mm, margin irregularly finely toothed above base, apex bluntly rounded; lip suborbicular to triangular, ca. 15 × 19 mm, abaxially sparsely pubescent, adaxially densely pubescent, bluntly rounded, base with claw ca. 3 mm; claw ornamented with a ligulate structure; column foot ca. 4 mm; anther cap compressed, conic.

Epiphytic on tree trunks in mountain forests; 1100–1800 m. SE Yunnan [NE India, Laos, Myanmar, N Thailand, Vietnam].

3. *Dendrobium* sect. *Dendrobium*

石斛组 shi hu zu

Roots smooth. Stem erect or pendulous, tall, leafy stems swollen or fusiform, many species deciduous, fleshy or slightly so, evenly swollen and cylindric or with some internodes swollen and fusiform, often longitudinally ridged when dry, leafy. Leaf blade dorsiventral, base decurrent, forming clasping sheaths. Inflorescences numerous, short, few-flowered racemes, lateral, often distal. Flowers opening simultaneously, large, pink to purple or white, rarely yellow, lip with a contrasting disk, mentum short, in most species enclosing nectary formed by matching cavities in column foot and base of lip, nectar present in a few species, lip entire or sometimes inconspicuously 3-lobed, surface tomentose-downy (velvety).

About 54 species: mostly Himalayan, from India through China to Japan, also Indonesia, Malaysia, and New Guinea, with one species extending to Australia; 27 species (six endemic) in China.

13. *Dendrobium heterocarpum* Wallich ex Lindley, Gen. Sp. Orchid. Pl. 78. 1830.

尖刀唇石斛 jian dao chun shi hu

Callista aurea (Lindley) Kuntze; *C. heterocarpa* (Wallich ex Lindley) Kuntze; *Dendrobium atractodes* Ridley; *D. aureum* Lindley; *D. minahassae* Kraenzlin.

Stems often ascending, ± clavate, 5–27 cm, 1–1.5 cm in diam., thickly fleshy, base contracted, thickened toward apex, unbranched, with several ± swollen nodes, internodes 2–3 cm, golden yellow when fresh, sulfur-yellow tinged with dirty black when dry. Leaves oblong-lanceolate, usually 7–10 × 1.2–2 cm, leathery, base with clasping sheath, apex acute or slightly obtuse; leaf sheath papery. Inflorescence a raceme arising from apical part of deciduous old stem, 1–4-flowered; peduncle 2–3 mm; basal sheaths 2 or 3, membranous; floral bracts pale white,

broadly ovate, 4–9 mm, membranous, apex obtuse. Pedicel and ovary ca. 2 cm. Flowers scented, spreading; sepals and petals silver-white or creamy yellow, lateral lobes of lip yellow with red striation, mid-lobe silver or creamy yellow, column white, purplish red on sides, yellow on inner surface, foot yellow. Dorsal sepal oblong, 27–30 × ca. 8 mm, 5-veined, apex obtuse; lateral sepals obliquely ovate-lanceolate, ca. as large as dorsal sepal, main veins 7, secondary veins many, base slightly oblique, apex subacute; mentum conic, ca. 7 mm. Petals ovate-oblong, 25–28 × 9–10 (or more) mm, main veins 5, secondary veins many, margin entire, apex acute; lip ovate-lanceolate, nearly as long as sepals, inconspicuously 3-lobed; lateral lobes erect, middle part downcurved, adaxially with dense, short, reddish brown hairs, margin entire; mid-lobe acute. Column ca. 3 mm, front (adaxial surface) base slightly dilated; anther cap conic, ca. 2.5 mm, densely finely papillate, front margin dentic-

ulate.

Epiphytic on tree trunks in open forests; 1500–1800 m. S and W Yunnan [Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam].

14. *Dendrobium chrysanthum* Wallich ex Lindley, Edwards's Bot. Reg. 15: ad t. 1299. 1829.

束花石斛 shu hua shi hu

Callista chrysantha (Wallich ex Lindley) Kuntze; *Dendrobium chrysanthum* var. *anophthalma* H. G. Reichenbach; *D. chrysanthum* var. *microphthalma* H. G. Reichenbach.

Stems pendulous or curving, cylindric, 50–200 cm, stout, 5–15 mm in diam., upper part sometimes upcurved, fleshy, unbranched, with many nodes, internodes 3–4 cm, pale yellow or yellowish brown when dry. Leaves distichous along entire stem, oblong-lanceolate, usually 13–19 × 1.5–4.5 cm, papery, base sheathing, apex acuminate; leaf sheath papery, sheath mouth often open cupular when dry, often pale white. Inflorescences (apparently) leaf-opposed, lateral, on upper part of mature leafy stems, fasciculate, almost sessile, 2–6-flowered; floral bracts ovate-triangular, ca. 3 mm, membranous. Pedicel and ovary slightly compressed, 3.5–6 cm, ca. 2 mm in diam. Flowers thickly textured, yellow, lip disk with a chestnut blotch on either side. Dorsal sepal ± concave, oblong or elliptic, 15–20 × 9–11 (or more) mm, 7-veined, apex obtuse; lateral sepals slightly concave, obliquely ovate-triangular, 15–20 × 10–12 mm, 7-veined, base slightly oblique and broad, apex obtuse; mentum ca. 4 mm, broad and obtuse. Petals slightly concave, obovate, 16–22 × 11–14 (or more) mm, 7-veined, margin entire or sometimes finely erose, apex rounded; lip concave, reniform or transversely oblong, ca. 18 × 22 mm, abaxially densely barbellate except for middle, adaxially densely barbellate, base abruptly contracted into short claw, with an oblong callus, margin entire, apex rounded; disk with a broad and thick ridge extending from base to middle. Column ca. 4 mm, foot ca. 6 mm; anther cap conic, ca. 2.5 mm, nearly glabrous, front margin nearly entire. Capsule elongate, cylindric, ca. 7 × 1.5 cm.

Epiphytic on tree trunks in dense forests, lithophytic on wet rocks in valleys; 700–2500 m. W Guangxi, S Guizhou, SE Xizang, S Yunnan [Bhutan, N India, Laos, Myanmar, Nepal, N Thailand, Vietnam].

Z. H. Tsi and S. C. Chen (Acta Phytotax. Sin. 33: 291. 1995) named Chinese material of this species as "*Dendrobium ochreatum* Lindley" (in Wallich, Numer. List, no. 7410. 1832), which is a nomen nudum and therefore was not validly published.

15. *Dendrobium falconeri* Hooker, Bot. Mag. 82: ad t. 4944. 1856.

串珠石斛 chuan zhu shi hu

Callista falconeri (Hooker) Kuntze; *Dendrobium erythroglossum* Hayata.

Stems pendulous, cylindric, 30–40 cm or longer, slender, 2–3 mm in diam., fleshy, many branched, often swollen at branched nodes and moniliform, internodes often dilated above middle, to 3.5 cm on main stem, to 1 cm on branches, brownish yellow when dry, sometimes tinged with dirty black. Leaves often 2–5, alternate on upper part of branches, narrowly lanceo-

late, 5–7 × 0.3–0.7 (or more) cm, leathery, base sheathing, apex obtuse or acute and slightly hooked; leaf sheath usually pale pink, tubular, papery. Inflorescences lateral, 1-flowered from each peduncle (occasionally a second peduncle arising creating a 2-flowered inflorescence); peduncle 5–15 mm, slender; basal sheaths 1 or 2, tubular, membranous; floral bracts white, ovate, 3–4 mm, membranous. Pedicel green; ovary yellowish green with purplish red spots, ca. 1.5 cm, slender. Flowers spreading, large, thinly textured; sepals pale purple or red with deep purple tip, petals white with purple apex, lip white with purple tip, yellow on both sides at base, disk with a deep purple blotch, column foot pale red, anther cap creamy white. Dorsal sepal ovate-lanceolate, 30–36 × 7–8 (or more) mm, 8- or 9-veined, base slightly contracted, apex acuminate; lateral sepals ovate-lanceolate, ca. as large as dorsal sepal, 8- or 9-veined, base oblique, apex acuminate; mentum subglobose, ca. 6 mm. Petals ovate-rhombic, 29–33 × 14–16 mm, main veins 5 or 6, secondary veins many, base cuneate, apex subacute; lip ovate-rhombic, ca. as long as petals but much wider, adaxially densely barbellate, margin denticulate, apex obtuse or slightly acute. Column ca. 2 mm; foot ca. 6 mm; anther cap subconic, ca. 2 mm, densely bristly, front margin lacerate, apex broadly obtuse and concave.

Lithophytic on rocks in valleys or epiphytic on tree trunks in dense forests; 800–1900 m. E and N Guangxi (Lingchuan, Lingui), SE Hunan (Zixing), W Taiwan (Jiayi to Miaoli), SE to W Yunnan [Bhutan, NE India, Myanmar, N Thailand, Vietnam].

The Taiwanese form has consistently concolorous flowers with pink sepals and petals.

16. *Dendrobium wardianum* Warner, Select Orchid. Pl. 1: t. 19. 1862.

大苞鞘石斛 da bao qiao shi hu

Callista wardiana (Warner) Kuntze.

Stems pendulous, cylindric, 11–50 cm, 5–10 mm or more in diam., fleshy, with many swollen nodes, upper part ± upcurved, internodes 2–2.5 cm, pale yellow when dry. Leaves oblong, 8–11 × 1.5–1.8 (or more) cm, leathery, base with clasping sheath, apex slightly obtuse and hooked on one side; leaf sheath papery when dry, sheath mouth open cupular. Inflorescence on old leafless stems, 1- or 2-flowered; peduncle 3–5 mm; basal sheaths 2 or 3, pale white when dry, broadly ovate, 3–5 mm, papery, obtuse; floral bracts broadly ovate, 7–10 mm, papery, apex obtuse. Pedicel and ovary pale purple, ca. 2 cm. Flowers fragrant, spreading, papery; sepals and petals white with pale purple tips, lip with many purplish red stripes on each side, disk with a pale yellow transverse semilunar central blotch, column white, front side with purple stripes, anther cap white. Dorsal sepal ovate-lanceolate, 23–25 × 7–8 (or more) mm, 7-veined, apex acute or slightly obtuse; lateral sepals suborbicular, equal in size, 7-veined, base oblique, apex acute; mentum subglobose, small, ca. 3 mm. Petals obliquely ovate, 23–25 × 13–14 mm, main veins 5, secondary veins many, base contracted into a short claw, margin entire, apex obtuse; lip nearly broadly obovate, ca. 23 × 20 mm, adaxially densely barbellate, base cuneate, margin ciliate, apex rounded. Column ca. 4 mm; anther cap subconic, densely finely papillate, front margin irregularly den-

tate. Capsule ovoid, ca. 3×1.3 – 1.6 cm.

Epiphytic on tree trunks in open forests; 1300–1900 m. SE to W Yunnan [?Bhutan, NE India, Myanmar, N Thailand, N Vietnam].

17. *Dendrobium gratosissimum* H. G. Reichenbach, Bot. Zeitung (Berlin) 23: 99. 1865.

杯鞘石斛 bei qiao shi hu

Callista boxallii (H. G. Reichenbach) Kuntze; *C. gratosissima* (H. G. Reichenbach) Kuntze; *Dendrobium boxallii* H. G. Reichenbach; *D. bullerianum* Bateman.

Stems pendulous, cylindric, to 50 cm, ca. 5 mm in diam., fleshy, with many swollen nodes, upper part \pm upcurved, internodes 2–2.5 cm, pale yellow when dry. Leaves oblong, 8 – 11×1.5 – 1.8 (or more) cm, leathery, base with clasping sheath, apex slightly obtuse and hooked on one side; leaf sheath papery when dry, sheath mouth open cupular. Inflorescence on old leafless stems, 1- or 2-flowered; peduncle 3–5 mm; basal sheaths 2 or 3, pale white when dry, broadly ovate, 3–5 mm, papery, obtuse; floral bracts broadly ovate, 7–10 mm, papery, apex obtuse. Pedicel and ovary pale purple, ca. 2 cm. Flowers fragrant, spreading, papery; sepals and petals white with pale purple tips, lip with many purplish red stripes on each side, disk with a pale yellow transverse semilunar central blotch, column white, front side with purple stripes, anther cap white. Dorsal sepal ovate-lanceolate, 23 – 25×7 – 8 (or more) mm, 7-veined, apex acute or slightly obtuse; lateral sepals suborbicular, equal in size, 7-veined, base oblique, apex acute; mentum subglobose, small, ca. 3 mm. Petals obliquely ovate, 23 – 25×13 – 14 mm, main veins 5, secondary veins many, base contracted into a short claw, margin entire, apex obtuse; lip nearly broadly obovate, ca. 23×20 mm, adaxially densely barbellate, base cuneate, margin ciliate, apex rounded. Column ca. 4 mm; anther cap subconic, densely finely papillate, front margin irregularly dentate. Capsule ovoid, ca. 3×1.3 – 1.6 cm.

Epiphytic on tree trunks in open forests; 800–1700 m. S Yunnan [NE India, Laos, Myanmar, N Thailand, Vietnam].

18. *Dendrobium pendulum* Roxburgh, Fl. Ind., ed. 1832, 3: 484. 1832.

肿节石斛 zhong jie shi hu

Callista crassinodis (Benson ex H. G. Reichenbach) Kuntze; *C. pendula* (Roxburgh) Kuntze; *Dendrobium crassinode* Benson ex H. G. Reichenbach.

Stems ascending or pendulous, cylindric, usually 22–40 cm, 1–1.6 cm in diam., fleshy and thick, unbranched, moniliform with many swollen nodes, internodes 2–2.5 cm, pale yellow tinged with gray when dry. Leaves oblong, 9 – 12×1.7 – 2.7 cm, leathery, base with clasping sheath, apex acute; leaf sheath thinly leathery, sheath mouth \pm open when dry. Inflorescences often arising from upper part of deciduous stems, 1–3-flowered; peduncle somewhat thick and short, 2–5 mm; basal sheaths 1 or 2, tubular, ca. 6 mm; floral bracts pale white, broadly ovate, ca. 8 mm, papery, apex obtuse. Pedicel yellowish green; ovary pale purplish red, 3–4 cm. Flowers scented, spreading, large, waxy when dry; sepals and petals white, tipped purplish red, men-

tum purplish red, lip white, golden yellow below middle, upper part purplish red. Dorsal sepal oblong, ca. 30×10 mm, 5-veined, acute; lateral sepals similar in size and shape, 5-veined, base slightly oblique, apex acute; mentum subconic, ca. 5 mm. Petals broadly oblong, ca. 30×15 mm, 6-veined, secondary veins many, base subcuneately narrowed, margin denticulate, apex obtuse; lip suborbicular, ca. 25 mm, very shortly clawed, both sides embracing column below middle, margin ciliate, both surfaces pubescent. Column ca. 4 mm, lower part enlarged, abaxially slightly finely papillate; anther cap subconic, finely papillate-hairy, apex slightly narrowed and subtruncate and eroded.

Epiphytic on tree trunks in open forests; 1000–1600 m. S Yunnan [NE India, Laos, Myanmar, N Thailand, Vietnam].

19. *Dendrobium findlayanum* E. C. Parish & H. G. Reichenbach, Trans. Linn. Soc. London 30: 149. 1874 [“*findleyanum*”].

棒节石斛 bang jie shi hu

Callista findlayana (E. C. Parish & H. G. Reichenbach) Kuntze.

Stems erect or ascending, ca. 20 cm, 7–10 mm in diam., unbranched, with several nodes, internodes compressed clavate or clavate, 3–3.5 cm, base often with persistent papery leaf sheaths. Leaves alternate on upper part of stem, lanceolate, 5.5 – 8×1.3 – 2 cm, leathery, base with clasping sheath, apex slightly obtuse and unequally bilobed. Inflorescences from old stems after leaves have fallen, 2-flowered; peduncle 6–16 cm; basal sheaths ca. 5 mm, membranous; floral bracts ovate-triangular, ca. 6 mm, membranous. Pedicel and ovary pale rose, 5–6 cm. Flowers spreading; sepals and petals white with roseate tip, lip base roseate, with purplish red stripes on both sides, disk golden yellow at center, column with purplish red stripes at front, anther cap white. Dorsal sepal oblong-lanceolate, 35 – $37 \times$ ca. 9 mm, 5-veined, subobtuse to acute; lateral sepals ovate-lanceolate, 35 – $37 \times$ ca. 9 mm, 5-veined, apex subacute; mentum subcylindric, ca. 5 mm. Petals broadly oblong, 35 – $37 \times$ ca. 18 mm, 5-veined, base shortly clawed, apex acute; lip suborbicular, concave, ca. 24 mm wide, densely pubescent, acute. Column ca. 8 mm; anther cap bluntly rounded.

Epiphytic on tree trunks in open forests; 800–900 m. S Yunnan (Mengla) [N Laos, Myanmar, N Thailand].

This species was named after its collector, Mr. James Findlay (E. C. Parish in F. Mason, Burmah, ed. [4], 2: 159. 1883). The spelling used in the protologue must therefore be treated as an orthographical error.

20. *Dendrobium parishii* H. G. Reichenbach, Bot. Zeitung (Berlin) 21: 236. 1863.

紫瓣石斛 zi ban shi hu

Callista parishii (H. G. Reichenbach) Kuntze; *Dendrobium polyphlebium* H. G. Reichenbach.

Stems ascending or pendulous, cylindric, usually 10–30 cm or longer, stout, 1–1.3 cm in diam., upper part \pm curved, unbranched, with several nodes, internodes to 4 cm. Leaves narrowly oblong, 7.5 – 12.5×1.6 – 1.9 cm, leathery, apex obtuse and unequally bilobed; leaf sheath white, membranous. Inflo-

rescence lateral on old leafless stem, 1–3-flowered; peduncle 3–5 mm; basal sheaths 3 or 4, overlapping, short; floral bracts ovate-lanceolate, ca. 7 mm, acute. Pedicel and ovary 4–5 cm. Flowers spreading, large, thin, purplish red, disk with a deep purple blotch on either side, column white, anther cap purple. Dorsal sepal obovate-lanceolate, ca. 27×7 mm, 5-veined, apex obtuse; lateral sepals ovate-lanceolate, ca. as long as dorsal sepal and slightly narrower, 5-veined, apex acuminate; mentum narrowly conic, ca. 6 mm, obtuse. Petals broadly elliptic, slightly shorter but much wider than sepals, 5-veined, base shortly clawed, margin ciliate or denticulate, apex acute; lip rhombic-orbicular, ca. 20×16 mm, both surfaces densely pilose, shortly clawed, claw with a raised notched ridge on front, both sides embracing column below middle, margin densely ciliate, apex acute. Column ca. 7 mm; anther cap conic, surface papillate, front margin irregularly denticulate.

Guizhou (Xingyi), SE Yunnan (Wenshan) [NE India, Laos, Myanmar, Thailand, Vietnam].

21. *Dendrobium loddigesii* Rolfe, Gard. Chron., ser. 3, 2: 155. 1887.

美花石斛 mei hua shi hu

Callista loddigesii (Rolfe) Kuntze; *Dendrobium loddigesii* var. *album* Tang & F. T. Wang.

Stems often pendulous, cylindrical, 10–45 cm, slender, ca. 3 mm in diam., soft, sometimes branched, with many nodes, internodes 1.5–2 cm, golden yellow when dry. Leaves alternate along entire stem, ligulate, oblong-lanceolate, or slightly obliquely oblong, usually $2\text{--}4 \times 1\text{--}1.3$ cm, leathery, base sheathing, apex acute and slightly hooked; leaf sheath membranous, veins raised into a lattice when dry; sheath mouth often open when dry. Inflorescence lateral on upper part of old leafy stem, 1- or 2-flowered; peduncle 2–3 mm; basal sheaths 1 or 2, cupular, short, membranous; floral bracts ovate, ca. 2 mm, membranous, apex obtuse. Pedicel and ovary 2–3 cm. Flowers pale pink or purplish red, adaxial surface of lip golden yellow at center, pale purplish red on edge, column white, front lateral sides with red stripes, anther cap white. Dorsal sepal ovate-oblong, $17\text{--}20 \times 7$ mm, 5-veined, apex acute; lateral sepals lanceolate, $17\text{--}20 \times 6\text{--}7$ (or more) mm, 5-veined, base oblique, apex acute; mentum subglobose, ca. 5 mm. Petals elliptic, ca. as long as dorsal sepal, 8–9 (or more) mm, 3–5-veined, margin entire, apex slightly obtuse; lip suborbicular, 17–20 mm in diam., both surfaces densely pubescent, margin shortly fimbriate, apex emarginate. Column ca. 4 mm; anther cap subconic, densely finely papillate-hairy, front margin irregularly dentate.

Epiphytic on tree trunks in mountain forests, lithophytic on rocks in forests; 400–1500 m. Guangdong (Hong Kong, Luofu Shan), Guangxi, SW Guizhou, Hainan (Baisha), S Yunnan (Mengla, Simao) [Laos, N Vietnam].

22. *Dendrobium devonianum* Paxton, Paxton's Mag. Bot. 7: 169. 1840.

齿瓣石斛 chi ban shi hu

Callista devoniana (Paxton) Kuntze; *C. moulmeinensis* (E. C. Parish ex J. D. Hooker) Kuntze; *Dendrobium devonianum*

var. *rhodoneurum* H. G. Reichenbach; *D. moulmeinense* E. C. Parish ex J. D. Hooker; *D. pulchellum* Roxburgh ex Lindley var. *devonianum* (Paxton) H. G. Reichenbach.

Stems pendulous, cylindrical, 50–70(–100) cm, slender, 3–5 mm in diam., slightly fleshy, unbranched, with many nodes, internodes 2.5–4 cm, often pale brown tinged with dirty black when dry. Leaves narrowly ovate-lanceolate, $8\text{--}13 \times 1.2\text{--}2.5$ cm, leathery, base with clasping sheath, apex long acuminate; leaf sheath often with purplish red dots, papery when dry. Inflorescences often several, on old leafless stems, 1- or 2-flowered; peduncle green, ca. 4 mm; basal sheaths 2 or 3, dry, membranous; floral bracts ovate, ca. 4 mm, membranous, apex subacute. Pedicel and ovary green, tinged with brown, 2–2.5 cm. Flowers scented, spreading, thinly textured; dorsal sepal white, upper part tinged with purplish red, veins purple, lip white, front purplish red, with purplish red stripes on both sides below middle, disk with a yellow spot on either side, column white, both front sides with purple stripes, anther cap white. Dorsal sepal ovate-lanceolate, ca. 25×9 mm, 5-veined, apex acute; lateral sepals similar in size and shape, but base slightly oblique; mentum subglobose, ca. 4 mm. Petals ovate, ca. 26×13 mm, 3-veined, lateral main veins often branched, base shortly clawed, margin shortly fimbriate, apex subacute; lip suborbicular, ca. 3 cm, base shortly clawed, margin compound fimbriate, adaxially densely barbellate. Column ca. 3 mm; anther cap subconic, densely finely papillate, front margin irregularly dentate, apex slightly concave.

Epiphytic on tree trunks in thick mountain forests; ca. 1900 m. NW Guangxi (Longlin), SW Guizhou (Luodian, Xingyi), SE Xizang (Médog), SE to W Yunnan [Bhutan, NE India, Myanmar, N Thailand, Vietnam].

23. *Dendrobium cucullatum* R. Brown, Bot. Reg. 7: ad t. 548. 1821.

兜唇石斛 dou chun shi hu

Dendrobium pierardii Roxburgh ex J. D. Hooker; *D. pierardii* var. *cucullatum* (R. Brown) J. D. Hooker.

Stems pendulous, cylindrical, 30–60(–90) cm, slender, 4–7(–10) mm in diam., fleshy, unbranched, with many nodes, internodes 2–3.5 cm. Leaves lanceolate or ovate-lanceolate, $6\text{--}8 \times 2\text{--}3$ cm, leathery, base sheathing, apex acuminate; leaf sheath pale white when dry, papery, sheath mouth open cupular. Inflorescences multiple, on deciduous or leafy old stems, very short, 1–3-flowered; peduncle 2–5 mm; basal sheaths 3 or 4, 2–3 mm, membranous; floral bracts pale white, ovate, ca. 3 mm, membranous, apex acute. Pedicel and ovary deep brown, tinged with green, 2–2.5 cm. Flowers spreading, pendulous; sepals and petals white tinged with pale purplish red or distal part pale purplish red, lip with purplish red striation on both sides at base, pale yellow above middle, pale pink below middle, column white with red stripes on both front sides, anther cap white. Dorsal sepal sublanceolate, ca. $23 \times 5\text{--}6$ (or more) mm, 5-veined, apex subacute; lateral sepals similar in size and shape, 5-veined, base oblique, apex acute; mentum narrowly conic, ca. 5 mm, obtuse. Petals elliptic, ca. $23 \times 9\text{--}10$ (or more) mm, 5-veined, margin entire, apex obtuse; lip broadly obovate or suborbicular, $25\text{--}26 \times 25$ mm, laterally embracing column and

trumpet-shaped, both surfaces densely pubescent, base narrowly clawed, margin irregularly denticulate. Column ca. 3 mm; anther cap subconic, densely finely papillate-hairy, front margin broadly emarginate. Capsule narrowly obovoid, ca. 4 × 1.2 cm, with a stalk 1–1.5 cm.

Epiphytic on tree trunks in open forests, lithophytic on rocks in mountain valleys; 400–1500 m. NW Guangxi, SW Guizhou (Xingyi), SE to W Yunnan [Bhutan, India, Laos, Malaysia, Myanmar, Nepal, Vietnam].

Some early authors identified material of *Dendrobium cucullatum* as *D. aphyllum* (Roxburgh) C. E. C. Fischer (*Limodorum aphyllum* Roxburgh), but Christenson & H. P. Wood (Orchids 72: 775. 2003) showed Roxburgh's plant to be *D. macrostachyum* Lindley, not *D. cucullatum*.

24. *Dendrobium polyanthum* Wallich ex Lindley, Gen. Sp. Orchid. Pl. 81. 1830.

报春石斛 bao chun shi hu

Callista cretacea (Lindley) Kuntze; *C. primulina* (Lindley) Kuntze; *Dendrobium cretaceum* Lindley; *D. nobile* Lindley var. *pallidiflorum* Hooker; *D. primulinum* Lindley.

Stems pendulous, cylindrical, usually 20–35 cm, stout, 8–13 mm in diam., fleshy, unbranched, deciduous, with many nodes, internodes 2–2.5 cm. Leaves alternate along entire stem, lanceolate or ovate-lanceolate, 8–10.5 × 2–3 cm, papery, apex obtuse and unequally bilobed; leaf sheath papery or membranous. Inflorescence arising from old stems after leaves have fallen, 1–3-flowered; peduncle penetrating 2 sheaths, cymbiform-concave, ca. 2 mm; basal sheaths 3 or 4, 2–3 mm, membranous; floral bracts pale white, ovate, 5–9 mm, membranous, apex obtuse. Pedicel and ovary yellowish green, 2–2.5 cm. Flowers spreading, pendulous; sepals and petals pale roseate or white (*D. cretaceum*), lip pale yellow with pale roseate tip, disk with purplish red stripes, column white, anther cap purple. Dorsal sepal narrowly lanceolate, ca. 30 × 6–8 (or more) mm, 3–5-veined, subacute; lateral sepals similar in size and shape, 3–5-veined, base oblique, apex subacute; mentum narrowly conic, ca. 5 mm, obtuse. Petals narrowly oblong, ca. 30 × 7–9 mm, 3–5-veined, margin entire, apex obtuse; lip broadly obovate, shorter than wide, ca. 35 mm wide, both sides embracing column in lower half, both surfaces densely pubescent, margin irregularly denticulate. Column ca. 3 mm; anther cap elliptic-conic, densely papillate-hairy, front margin broadly emarginate, apex ± concave.

Epiphytic on tree trunks in open forests; 700–1800 m. S Yunnan [N India, Laos, Myanmar, Nepal, Thailand, Vietnam].

25. *Dendrobium crystallinum* H. G. Reichenbach, Gard. Chron. 1868: 572. 1868.

晶帽石斛 jing mao shi hu

Callista crystallina (H. G. Reichenbach) Kuntze; *Dendrobium crystallinum* var. *hainanense* S. J. Cheng & C. Z. Tang.

Stems erect or ascending, cylindrical, 60–70 cm, 5–7 mm in diam., slightly fleshy, unbranched, with many nodes, internodes 3–4 cm. Leaves oblong-lanceolate, 9.5–17.5 × 1.5–2.7 cm, leathery, with several dorsiventrally raised veins, base with

clasping sheath, apex long acuminate. Inflorescences several, arising from apex of old deciduous stems, 1- or 2-flowered; peduncle short, 6–8 mm; basal sheaths 3 or 4, 3–5 mm; floral bracts pale white, oblong, 1–1.5 cm, membranous, apex acute. Pedicel and ovary 3–4 cm. Flowers spreading, large; sepals and petals creamy white, upper part purplish red, lip orange, upper part purplish red. Dorsal sepal narrowly oblong-lanceolate, ca. 3.2 × 0.7 cm, 5-veined, acuminate; lateral sepals similar in size, 5-veined, base slightly oblique, apex acuminate; mentum narrowly conic, ca. 4 × 2 mm. Petals oblong, ca. 32 × 12 mm, 7-veined, margin ± undulate, apex acute; lip suborbicular, ca. 25 mm, both surfaces densely pubescent, margin entire. Column ca. 4 mm; anther cap narrowly conic, densely white crystalline papillate, front margin irregularly dentate. Capsule elongate, cylindrical, ca. 6 × 1.7 cm.

Epiphytic on tree trunks at forest margins or in open forests; 500–1700 m. Hainan, S Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

26. *Dendrobium crepidatum* Lindley & Paxton, Paxt. Fl. Gard. 1: 63. 1850.

玫瑰石斛 mei gui shi hu

Callista crepidata (Lindley & Paxton) Kuntze; *C. lawiana* (Lindley) Kuntze; *Dendrobium lawianum* Lindley.

Stems pendulous, green, cylindrical, usually 30–40 cm, stout, ca. 1 cm in diam., fleshy, base slightly contracted, unbranched, with many nodes, internodes 3–4 cm, with green and white-striped sheaths, purplish bronze when dry. Leaves narrowly lanceolate, 5–10 × 1–1.25 cm, subleathery, base with clasping sheath, apex acuminate; leaf sheath membranous. Inflorescence arising from old stems after leaves have fallen, very short, 1–4-flowered; peduncle ca. 3 mm; basal sheaths 3 or 4, scarious; floral bracts ovate, ca. 4 mm, apex acute. Pedicel and ovary pale purplish red, ca. 3.5 cm. Flowers spreading, thick, sometimes cleistogamous; sepals and petals white, pale purple above middle, waxy when dry, lip pale purplish red above middle, golden yellow below middle, column white, front with 2 purplish red stripes. Dorsal sepal subelliptic, ca. 21 × 10 mm, 5-veined, obtuse; lateral sepals ovate-oblong, nearly as large as dorsal sepal, 5-veined, midvein on abaxial surface ± keeled, base oblique, apex obtuse; mentum subglobose, small, ca. 5 mm. Petals broadly obovate, ca. 21 × 12 mm, 5-veined, rounded; lip orbicular or broadly obovate, length subequal to width, ca. 2 cm, both sides embracing column below middle, adaxially densely pubescent. Column ca. 3 mm; anther cap subconic, front margin denticulate, apex narrowed and arching forward.

Epiphytic on tree trunks in open forests, lithophytic on rocks in mountain valleys; 1000–1800 m. SW Guizhou, S Yunnan [Bhutan, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

27. *Dendrobium lituiflorum* Lindley, Gard. Chron. 1856: 372. 1856.

喇叭唇石斛 la ba chun shi hu

Callista lituiflora (Lindley) Kuntze; *Dendrobium hanburyanum* H. G. Reichenbach.

Stems pendulous, cylindrical, 30–40 cm or longer, 7–10 mm

in diam., slightly fleshy, unbranched, with many nodes, internodes 3–3.5 cm. Leaves narrowly oblong, 7.5–18 × 1.2–1.5 (or more) cm, leathery, base sheathing, apex acuminate and slightly hooked on one side. Inflorescences many, arising from old leafless stems, 1- or 2-flowered; peduncle nearly perpendicular to stem, 5–10 mm; basal sheaths 3 or 4, pale white, to 1.5 cm, papery, apex obtuse; floral bracts pale white, ovate, 1–13 mm, apex subacute. Pedicel and ovary ca. 2.5 cm. Flowers spreading, purple, large, membranous; inner surface of lip with a deep purple spot surrounded by a white circle. Dorsal sepal oblong-lanceolate, ca. 35 × 7 mm, 7-veined, apex acute; lateral sepals similar to dorsal sepal and equal in size, 7-veined, base slightly oblique; mentum subglobose, ca. 4 mm. Petals subelliptic, ca. 40 × 15 mm, 7-veined, margin entire, apex acute; lip subobovate, shorter than petals, embracing column on both sides and trumpet-shaped below middle, adaxially densely barbellate, margin irregularly denticulate. Column ca. 4 mm, base dilated; anther cap conic, finely papillate, front margin entire, apex ± truncate and concave.

Epiphytic on tree trunks in broad-leaved forests; 800–1600 m. SW and W Guangxi, SW Yunnan (Zhenkang) [NE India, Laos, Myanmar, Thailand, Vietnam].

28. *Dendrobium nobile* Lindley, Gen. Sp. Orchid. Pl. 79. 1830.

石斛 shi hu

Callista nobilis (Lindley) Kuntze; *Dendrobium coerulescens* Wallich ex Lindley; *D. formosanum* (H. G. Reichenbach) Masamune; *D. lindleyanum* Griffith; *D. nobile* var. *absoluteum* Huyen & Averyanov; *D. nobile* var. *formosanum* H. G. Reichenbach; *D. nobile* f. *nobilis* (H. G. Reichenbach) M. Hiroe; *D. nobile* var. *nobilis* H. G. Reichenbach.

Stems erect, cylindrical, 10–60 cm, stout, to 1.3 cm in diam., fleshy, base conspicuously contracted, unbranched, with many, sometimes slightly swollen, nodes, internodes 2–4 cm, golden yellow when dry. Leaves oblong, 6–11 × 1–3 cm, leathery, base with clasping sheath, apex obtuse and unequally bilobed. Inflorescences arising from old stems before or after leaves have fallen, 2–4 cm, 1–4-flowered; peduncle 5–15 mm; basal sheaths several, tubular; floral bracts ovate-lanceolate, 6–13 mm, membranous, apex acuminate. Pedicel and ovary pale purple, 0.3–0.6 cm. Flowers large, all parts white, tinged with pale purple at apex, sometimes entirely pale purplish red, with purplish red striation on either side at base of lip, or lip disk with a central purplish red spot, sometimes white, column green, anther cap purplish red. Dorsal sepal oblong, 25–35 × 10–14 mm, 5-veined, apex obtuse; lateral sepals similar, 5-veined, base oblique, apex acute; mentum conic, ca. 6 mm. Petals ± obliquely broadly ovate, 25–35 × 18–25 mm, main veins 3, secondary veins many, base shortly clawed, margin entire, apex obtuse; lip broadly ovate, 25–35 × 22–32 mm, both surfaces densely pubescent, base shortly clawed, embracing column below middle, margin shortly ciliate, apex obtuse. Column ca. 5 mm, base slightly dilated; anther cap conic, densely finely papillate, front margin with irregular sharp teeth.

Epiphytic on tree trunks in mountain forests, lithophytic on rocks in mountain valleys; 500–1700 m. NE to W Guangxi, Guizhou, Hainan (Baisha), Hong Kong, W Hubei (Yichang), S Sichuan, Taiwan, SE

Xizang (Médog), Yunnan [Bhutan, India, Laos, Myanmar, Nepal, N Thailand, Vietnam].

29. *Dendrobium linawianum* H. G. Reichenbach, Ann. Bot. Syst. 6: 284. 1861.

矩唇石斛 ju chun shi hu

Callista linawiana (H. G. Reichenbach) Kuntze; *Dendrobium alboviride* Hayata.

Stems erect, cylindrical, somewhat compressed, usually 25–30 cm, stout, 1–1.5 cm in diam., unbranched, lower part narrowed, with several nodes, internodes slightly obconic, 3–4 cm, longitudinally grooved, yellowish brown when dry. Leaves oblong, 4–7(–10) × 2–2.5 cm, leathery, base dilated into clasping sheaths, apex obtuse and unequally bilobed. Inflorescence from old leafless stems, 2–4-flowered; peduncle 7–8 mm; basal sheaths 2 or 3, tubular, short; floral bracts ovate, 3–4 mm, apex acute. Pedicel and ovary to 5 cm; ovary slightly arcuate. Flowers spreading, large, white, sometimes upper part purplish red; lip white, upper part purplish red, disk with purplish red stripes on each side at base, anther cap white. Dorsal sepal oblong, 22–35 × 7.5–9.5 (or more) mm, 5-veined, slightly obtuse; lateral sepals ± obliquely oblong, ca. as large as dorsal sepal, 5-veined, base oblique, apex slightly obtuse; mentum narrowly conic, ca. 8 mm. Petals elliptic, 22–35 mm, much broader than sepals, shortly clawed, obtuse; lip broadly oblong, ca. as large as petals or slightly smaller, both sides embracing column below middle, adaxially densely pubescent, shortly clawed, both lateral margins denticulate below middle, front reflexed, obtuse. Column ca. 4 mm, foot ca. 8 mm; anther cap glabrous.

• Epiphytic on tree trunks in mountain forests; 400–1500 m. E Guangxi (Jinxu), Taiwan.

30. *Dendrobium moniliforme* (Linnaeus) Swartz, Nova Acta Regiae Soc. Sci. Upsal., ser. 2, 6: 85. 1799.

细茎石斛 xi jing shi hu

Epidendrum moniliforme Linnaeus, Sp. Pl. 2: 954. 1753; *Callista candida* (Wallich ex Lindley) Kuntze; *C. japonica* (Blume) Kuntze; *C. moniliformis* (Linnaeus) Kuntze; *C. spathacea* (Lindley) Kuntze; *Dendrobium candidum* Wallich ex Lindley; *D. castum* Bateman ex H. G. Reichenbach; *D. crispulum* Kimura & Migo; *D. heishanense* Hayata; *D. japonicum* (Blume) Lindley; *D. kosepangii* C. L. Tso; *D. kwangtungense* C. L. Tso; *D. monile* (Thunberg) Kraenzlin; *D. nienkui* C. L. Tso; *D. spathaceum* Lindley; *D. taiwanianum* S. S. Ying; *D. tosaense* Makino var. *chingshuishanianum* S. S. Ying; *D. wilsonii* Rolfe; *D. yunnanense* Finet; *D. zonatum* Rolfe; *E. monile* Thunberg, nom. illeg. superfl.; *Limodorum monile* Thunberg, nom. illeg. superfl.; *Onychium japonicum* Blume.

Stems erect, cylindrical, usually 10–30 cm or longer, slender, 3–6 mm in diam., with many nodes, internodes 1.5–2.5 cm, golden yellow or yellow tinged with dark gray when dry. Leaves several, often alternate on stem above middle, lanceolate, oblong, or narrowly oblong, 3–5(–7) × 0.5–1.2(–1.5) cm, base decurrent into clasping sheaths, apex obtuse and slightly unequally bilobed. Inflorescences 1 to several, borne above middle of deciduous or leafy old stem, usually 1–3-flowered;

peduncle 3–5 mm; floral bracts pale white, tinged with brown spots, ovate, 3–7(–8) × 2–3(or more) mm, dry, membranous, apex obtuse or acuminate. Pedicel and ovary white, 1–3 cm, slender. Flowers sometimes fragrant, yellowish green, creamy white, or white tinged with pale purplish red; lip white, pale yellowish green, or greenish white, spots tinged with pale brown or purplish red to pale yellow, often with a purplish red, pale brown, pale yellow, or yellowish green central spot near base of mid-lobe, column white, foot often with purplish red stripes at base, anther cap white or pale yellow. Sepals and petals similar, ovate-oblong, oblong-lanceolate, or ovate-lanceolate, (10–)13–40 × (1.5–)3–10 mm, 5- or 6-veined, apex acute, acuminate, or obtuse; lateral sepals oblique and adnate to column foot; mentum conic or subglobose, 4–15 × ca. 5 mm, obtuse. Petals subelliptic, (23–)25–40 × 10–15 mm, 5- or 6-veined, acute; lip ovate-lanceolate in outline, slightly shorter than sepal, base cuneate, distinctly or inconspicuously 3-lobed; lateral lobes subrounded, erect, embracing column, margin entire or irregularly toothed; mid-lobe ovate to ovate-lanceolate, glabrous, base often with an elliptic callus, margin entire, apex acute or slightly obtuse; disk densely pubescent between 2 lateral lobes. Column 3–4 mm, foot ca. 1.5 cm, glabrous or sometimes hairy; anther cap conic, sometimes densely finely papillate, apex unlobed.

Epiphytic on tree trunks in broad-leaved forests, lithophytic on rocks in forests and cliffs in valleys; 600–3000 m. SW Anhui, N and SE Fujian, S Gansu, N and SW Guangdong, N Guangxi, E Guizhou, Henan, Hunan, Jiangxi, Shaanxi, S Sichuan, Taiwan, NW to SE Yunnan, N Zhejiang [Bhutan, NE India, Japan, Korea, Myanmar, Nepal, N Vietnam].

Dendrobium moniliforme var. *malipoense* L. J. Chen & Z. J. Liu (J. Wuhan Bot. Res. 26: 358. 2008), described from Yunnan (Malipo), is said to differ in its very small, fusiform stems 4–6 cm, inflorescence axis 1–2 cm, dorsal sepal narrowly oblong, and lip with three lamellae. However, H. P. Wood is skeptical that the taxon is really distinct from typical *D. moniliforme*.

31. *Dendrobium okinawense* Hatusima & Ida, J. Geobot. 18: 77. 1970.

琉球石斛 liu qiu shi hu

Stems slender, terete, pendulous, 40–70 cm, 4–7 mm in diam., leafy in upper part, internodes cylindrical, 2–5 cm, yellowish green. Leaves linear-lanceolate, 5.5–10 × 0.6–0.8 cm, base rounded, apex acute to obtuse. Inflorescences borne from upper nodes of stem, 1–3-flowered, often 2-flowered; floral bracts 2 or 3, imbricate, ovate-triangular, 3–6 mm. Flowers usually pale yellow, 3–4 cm wide. Dorsal and lateral sepals lanceolate, 3–4 cm × 3.5–4 mm, acute; mentum 9–12 mm. Petals lanceolate, 3–4 cm, clawed, acute; lip oblong-lanceolate, ca. 2.5 cm, acute; disk with 2 central keels on basal portion, pilose. Column ca. 2 mm, foot 8–10 mm, concave; anther cap cucullate, ca. 1.5 mm.

Epiphytic in broad-leaved forests; 900–1200 m. Taiwan (Taidong) [Japan].

This species was first recorded from China by S. W. Chung and S. Y. Lu (Taiwania 52: 106–112. 2007).

32. *Dendrobium fanjingshanense* Z. H. Tsi ex X. H. Jin & Y. W. Zhang, Acta Phytotax. Sin. 39: 269. 2001.

梵净山石斛 fan jing shan shi hu

Stems clustered, cylindrical, 35–60 cm, slender, 2–5 mm in diam., internodes green or pale yellowish green with white membranous leaf sheaths, grooved and angular. Leaf blade linear or linear-lanceolate, 6–8 × 0.9–1.2 cm, leathery or thinly leathery, base narrowed into amplexicaul sheath, apex obtuse or obliquely retuse; leaf sheath with raised veins. Inflorescence lateral on previous year's leafless stem, ascending, to 6 cm, 1- or 2(or 3)-flowered; peduncle 2.5–3 cm; basal sheaths 3 or 4, cupular or tubular, pale purplish, 4–15 mm, thickly papery, with raised veins; floral bracts pale purplish, cymbiform, 15–20 × ca. 5 mm, thickly papery, obtuse. Pedicel and ovary 1–2.5 cm. Flowers scented, spreading, golden yellow; base of lip purple striate, disk sometimes golden yellow spotted, anther cap white. Dorsal sepal oblong or oblong-elliptic, 24–26 × 10–11 mm, 6- or 7-veined, obtuse; lateral sepals shorter and narrower, 6- or 7-veined, base slightly oblique, apex obtuse; mentum conic, 3–4 mm. Petals broadly elliptic or ovate, 14–22 × 11–17 mm, 3-veined, lateral major veins branched, apex rounded; lip broadly ovate, 17–21 × 21–22 mm, adaxially densely tomentose, with claw 3–4 mm, margin irregularly denticulate. Column 4–5 mm, foot ca. 3 mm; anther cap conic, front margin toothed.

• Epiphytic on tree trunks; 800–1500 m. Guizhou.

33. *Dendrobium catenatum* Lindley, Gen. Sp. Orchid. Pl. 84. 1830.

黄石斛 huang shi hu

Callista stricklandiana (H. G. Reichenbach) Kuntze; *Dendrobium funiushanense* T. B. Chao, Zhi X. Chen & Z. K. Chen; *D. huoshanense* C. Z. Tang & S. J. Cheng; *D. officinale* Kimura & Migo; *D. pere-fauriei* Hayata; *D. stricklandianum* H. G. Reichenbach; *D. tosaense* Makino; *D. tosaense* var. *pere-fauriei* (Hayata) Masamune.

Stems erect or pendulous, cylindrical, 3–35(–60) cm, slender, 2–7 mm in diam., sometimes to 18 mm in diam. above base, unbranched, with many nodes, internodes (0.3–)1.3–4 cm, pale yellowish green, sometimes with pale purplish red dots, pale yellow when dry. Leaves often 2–5 along upper part of stem, ligulate-oblong or oblong-lanceolate, 3–21 × 0.5–1.5 cm, papery, base slightly oblique and decurrent into clasping sheaths, margin and midvein often tinged with pale purple, apex obtuse and ± hooked, subacute, or slightly unequally bilobed; leaf sheath often with purple spots, upper margin separate from stem and open when old, with a deep green split. Inflorescences 1–3 from leafy or old leafless stems, (1–)3–8-flowered; peduncle 2–10 mm; rachis upcurved, 2–4 cm; basal sheaths 1–4, ovate-lanceolate, 3–4 mm, papery, apex acute; floral bracts pale white, sometimes tinged with chestnut, narrowly lanceolate or ovate, 3–7 mm, dry, membranous, apex obtuse or acute. Pedicel and ovary yellowish green, 2–4 cm. Flowers spreading; sepals and petals yellowish green, pale yellowish white, or white, often turning creamy yellow later, mentum white tinged yellowish green, lip white or pale yellow, with a reddish or reddish brown transverse mark, with a green or yellow basal callus, with purplish red stripes on both sides below middle, disk with a pur-

plish red transverse spot above middle, column greenish white or yellowish green, with a purple spot on each side at apex, foot yellowish green with purplish red stripes, middle with an eggplant-purple spot, anther cap cream-colored, sometimes with a purple tip. Dorsal sepal ovate-oblong or ovate-lanceolate, 12–17 × 4–7 mm, 3–5-veined, acute or slightly obtuse; lateral sepals obliquely ovate-triangular or falcate-lanceolate, ca. as long as dorsal sepal, 10–13 mm wide at base, 3–5-veined, apex obtuse or acute; mentum subrectangular to conic, 5–7 × to ca. 6 mm, rounded. Petals oblong or ovate-oblong, 12–16 × 4–7 (or more) mm, 5–7-veined, apex obtuse or acute; lip elliptic-rhombic, broadly ovate, or ovate-lanceolate, 13–17 × 8–11 (or more) mm, slightly cuneate at base, entire or obscurely 3-lobed, middle recurved, margin ± undulate, apex acute; disk densely finely papillate-hairy or pilose, medially with a low thickening, terminating at ca. middle. Column 2–4 mm, foot 0.7–1 cm, upper part with lax purple-tipped hairs, apex purplish red, strongly thickened at point of attachment to lip; anther cap narrowly subelliptic, ovate-triangular, or ovate-conic, 1.5–3 mm, nearly glabrous, apex subacute and bilobed, lobes sharply toothed.

Lithophytic in moderately damp mountains; ca. 1600 m. SW Anhui (Dabie Shan), W Fujian (Ninghua), NW Guangxi (Tian'e), Sichuan, Taiwan, SE Yunnan, E Zhejiang (Tiantai, Xianju, Yinxian) [Japan].

34. *Dendrobium scoriarum* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 13: 201. 1921.

广西石斛 guang xi shi hu

Dendrobium guangxiense S. J. Cheng & C. Z. Tang; *D. mitrifolium* Averyanov (2000), not J. J. Smith (1910).

Stems erect, slender, to 60 cm, 2–3 mm in diam. Leaves oblong, 4–4.5 × 1–1.5 cm, leathery, base sheathing. Inflorescences on old leafless stems, 1–3-flowered. Pedicel and ovary ca. 2.5 cm. Flowers whitish to yellowish, tinted pink, lip pale yellow flushed purple at base, with a purple transverse mark, anther cap wholly bright purple. Dorsal sepal ovate-lanceolate, ca. 15 mm, 5-veined, acute; lateral sepals ca. 16 mm, ca. 13 mm wide at base, 5-veined, subacute. Petals lanceolate, ca. 14 × 6 mm, very thin textured, subacute; lip 3-lobed, ca. 12 mm, ca. 9 mm wide at middle, margins serrulate, minutely pubescent near base; lateral lobes orbicular, ca. 4 mm in diam.; mid-lobe similar to lateral lobes, broadly ovate, ca. 6 mm, apex acute; disk ca. 4 mm, with central, ± square, swollen callosity. Column short.

Lithophytic on rocks or epiphytic on trees; ca. 1500 m. Guangxi, Yunnan [Vietnam].

35. *Dendrobium flexicaule* Z. H. Tsi, S. C. Sun & L. G. Xu, Bull. Bot. Res., Harbin 6(2): 113. 1986.

曲茎石斛 qu jing shi hu

?*Dendrobium henanense* J. L. Lu & L. X. Gao.

Stems cylindrical, slightly upcurved, 6–11 cm, 2–3 mm in diam., unbranched, with several nodes, internodes 1–1.5 cm, pale brownish yellow when dry. Leaves 2–4, alternate on upper part of stem, oblong-lanceolate, ca. 3 × 0.7–1 (or more) cm, subleathery, base decurrent into clasping sheaths, apex obtuse and slightly hooked. Inflorescences on old stems after leaves have fallen, 1- or 2-flowered; peduncle 1–2 cm, ca. 1 mm in diam.; basal sheaths 3 or 4, 2–4 mm, membranous; floral bracts

pale white, ovate-triangular, ca. 3 mm, apex acute. Pedicel and ovary yellowish green, tinged with pale purple, 3–4.5 cm. Flowers spreading; dorsal sepal yellowish green abaxially, upper part slightly tinged with pale purple; lateral sepals yellowish green, upper distal margins tinged with pale purple, mentum yellowish green; petals: lower part yellowish green, upper part pale purple; lip pale yellow, front margin pale purple, margin purple below middle, disk with a large purple flabellate blotch at middle front part, callus yellow; column yellowish green, stelia purple at base on outside, foot with 2 rounded purple spots, lower part yellowish green, apex purple, anther cap creamy white. Dorsal sepal oblong, ca. 28 mm, ca. 8 mm wide at middle, 5-veined, apex obtuse; lateral sepals obliquely ovate-lanceolate, ca. as long as dorsal sepal and broader, 5-veined, obtuse; mentum conic, ca. 8 × 10 mm, nearly rounded. Petals elliptic, ca. 25 mm, ca. 13 mm wide at middle, 5-veined, apex obtuse; lip broadly ovate, ca. 17 × 14 mm, adaxially densely pubescent, rear part with a saddle-shaped callus, base cuneate, margin inconspicuously 3-lobed, apex acute. Column ca. 3 mm, foot ca. 10 mm, sparsely covered with bifid hairs, upper part of hairs purple; column teeth 2, deltoid; anther cap subrhombic, ca. 2.5 mm, basal front margin with irregular teeth, apex deeply bilobed, lobes sharply toothed.

• Lithophytic on rocks in mountain valleys; 1200–2000 m. Henan, Hubei (Shennongjia), E Hunan (Heng Shan), SC Sichuan (Ganluo).

36. *Dendrobium wangiianii* G. W. Hu, C. L. Long & X. H. Jin, Bot. J. Linn. Soc. 157: 217. 2008.

王氏石斛 wang shi shi hu

Stems in 2 ranks along creeping rhizome, fusiform or slightly obovoid, 1.5–3 cm, to ca. 8 mm in diam., unbranched, with 3–6 nodes, internodes 0.2–0.8 cm, leaf sheaths membranous. Leaves 2–4, elliptic, 1–2 × 0.5–0.8 cm, apex acute; leaf sheath tightly embracing stem, membranous, white. Inflorescences on old leafless stems, 1-flowered; peduncle 0.4–0.7 cm; floral bracts ca. 1 mm. Pedicel and ovary 1.5–2 cm. Sepals and petals lilac-pink, lip white, lilac toward tip, with 2 greenish yellow patches on either side. Dorsal sepal ovate-elliptic, ca. 16 mm, ca. 4 mm wide at base, ca. 6 mm wide above, 5-veined, apex acute; lateral sepals obliquely triangular-oblong, ca. 20 × 6 mm, 5-veined, apex acute and slightly revolute; mentum sacate, ca. 5 × 4 mm, rounded. Petals elliptic, ca. 17 × 9 mm, 5-veined, margin slightly revolute, irregularly minutely toothed toward apex, apex obtuse; lip broadly obovate to flabellate, 20–22 × 15–18 mm, base cuneate, margin undulate; disk densely pubescent. Column 2–3 mm; stelia obtusely triangular, very short; foot ca. 5 mm; anther cap conic, ca. 2 mm, basal front margin 2-lobed, lobes obtusely triangular, irregularly toothed, apex and back 2-lobed, lobes rounded, finely verruculose. Capsule 1–1.5 × 0.5–0.8 cm.

• Epiphytic on deciduous *Quercus yunnanensis* in mixed deciduous and evergreen forests dominated by *Quercus*; ca. 2200 m. N Yunnan.

37. *Dendrobium hookerianum* Lindley, J. Proc. Linn. Soc., Bot. 3: 8. 1858.

金耳石斛 jin er shi hu

Callista hookeriana (Lindley) Kuntze; *Dendrobium fimbratum* Hooker var. *bimaculosum* Tang & F. T. Wang.

Stems pendulous, cylindric, 30–80 cm, 4–7 mm in diam., rigid, unbranched, with many nodes, internodes 2–5 cm, pale yellow when dry. Leaves alternate along entire stem, ovate-lanceolate or oblong, 7–17 × 2–3.5 cm, leathery, base slightly contracted and dilated into sheaths, upper part asymmetric, apex long acute; leaf sheath tightly embracing stem. Inflorescences 1 to several, along distal part of current season's mature leafy stems, 4–10 cm, laxly 2–7-flowered; peduncle 2.5–5 cm, often spreading outward at 90° angle to stem; basal sheaths 3 or 4, overlapping, lowermost shortest, upper longest; floral bracts ovate-lanceolate, 4–6 mm, apex acute. Pedicel and ovary 3–4 cm. Flowers spreading, thinly textured, golden yellow, disk with a purple blotch on each side. Dorsal sepal elliptic-oblong, 24–35 × 9–16 mm, 7-veined, acute; lateral sepals oblong, 24–35 × 9–16 (or more) mm, 7-veined, base oblique, apex subobtuse or acute; mentum conic, ca. 8 mm. Petals oblong, 24–35 × 10–18 (or more) mm, 7-veined, margin entire, apex subobtusate; lip suborbicular, 20–30 mm wide, adaxially densely pubescent, base shortly clawed, claw with a callus, margin compound fimbriate. Column ca. 4 mm, upper part enlarged; anther cap conic, glabrous, front margin denticulate.

Lithophytic on rocks in mountain valleys, epiphytic on tree trunks in mountain forests; 1000–2300 m. SE Xizang, W Yunnan [E and NE India].

H. P. Wood (Dendrobiums, 641. 2006) considered *Dendrobium hookerianum* to be on the borderline between *D.* sect. *Dendrobium* and *D.* sect. *Holochrysa*.

38. *Dendrobium xichouense* S. J. Cheng & C. Z. Tang, Acta Bot. Yunnan. 6: 280. 1984 [“*xichouensis*”].

西畴石斛 xi chou shi hu

Stems clustered, cylindric, equally thick above and below, upper part ± upcurved, 10–13 cm, ca. 4 mm in diam., unbranched, with many nodes, internodes 1–2 cm, enclosed in leaf sheaths that turn grayish white when mature. Leaves oblong or oblong-lanceolate, to 4 × ca. 1 cm, leathery, base with clasping sheath, apex obtuse and unequally bilobed. Inflorescence arising laterally on previous year's leafless stem, ca. 2 cm, 1- or 2-flowered; floral bracts small. Pedicel and ovary yellowish green, ca. 6 mm. Flowers fragrant, not spreading; sepals

and petals white, slightly tinged with pink, mentum pale yellowish green, lip white, disk yellow. Dorsal sepal suboblong, ca. 12 × 4 mm, apex acute; lateral sepals similar in size; mentum narrowly tubular, ca. 10 mm. Petals obovate-rhombic, slightly shorter than dorsal sepal, ca. 4 mm wide; lip subovate, ca. 16 mm, ca. 9 mm wide at most, base clawed, apex obtuse, lateral margins upcurved below middle, margin fimbriate; disk densely curled pale yellow villous.

• Epiphytic on tree trunks in mountain forests on limestone; ca. 1900 m. SE Yunnan (Xichou).

The present authors have not seen the type specimen (at IBSC). This treatment is based on the protologue.

39. *Dendrobium leptocladum* Hayata, Icon. Pl. Formosan. 4: 43. 1914.

菱唇石斛 ling chun shi hu

Dendrobium tenuicaule Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 316. 1911, not J. D. Hooker (1890), nor Ridley (1899); *Grastidium leptocladum* (Hayata) Rauschert.

Stem pendulous, narrowly cylindric, 20–50 cm, ca. 1.5 mm in diam., usually branched, internodes 1.5–2 cm. Leaves linear or grasslike, 5–10 × 2.5–5 (or more) cm, base sheathing, with joint at junction with leaf blade, apex acute; leaf sheath persistent, tightly embracing stem. Inflorescence on lower part of leafless stem, 1- or 2-flowered. Pedicel and ovary 6–10 mm. Flowers half opening, snow-white. Dorsal sepal elliptic, ca. 12 × 4 mm, apex acute; lateral sepals obliquely ovate-lanceolate, ca. as long as dorsal sepal, 4–6 (or more) mm, base oblique, apex acute; mentum long and narrow, ca. 4 mm. Petals narrowly elliptic, ca. 12 × 3.5 mm, apex acute; lip rhombic, 14–15 × 7–8 (or more) mm, adaxial surface with curly hairs in center above middle, base contracted into a claw, margin inconspicuously 3-lobed; disk with 1 longitudinally compressed, thick central ridge. Column ca. 1 mm, foot ca. 5 mm, anther cap subrounded.

• Epiphytic on tree trunks in mountain forests, lithophytic on rocky cliffs in mountain valleys; 600–1600 m. Taiwan (Nantou, Taidong).

4. *Dendrobium* sect. *Holochrysa* Lindley, J. Proc. Linn. Soc., Bot. 3: 7. 1858.

寡花组 gua hua zu

Roots smooth. Stems tall, leafy, uniformly swollen, fusiform, or tapered, semideciduous. Inflorescences a subterminal, multi-flowered (to 10-flowered) raceme borne on leafless penultimate stems or older stems, generally distal, arching. Flowers usually yellow (pink or orange in *Dendrobium moschatum*), creamy white with pink stripes, lip with dark spots [in *D. pulchellum* Roxburgh ex Lindley]; some species or varieties have a single or double maroon blotch on lip.

About 14 species: Himalayas, India to Taiwan and Indochina, one species extending to Indonesia; 12 species (three endemic) in China.

40. *Dendrobium hancockii* Rolfe, J. Linn. Soc., Bot. 36: 11. 1903.

细叶石斛 xi ye shi hu

Dendrobium odiosum Finet.

Stems erect, cylindric or sometimes with several nodes dilated and fusiform above base, to 80 cm, 2–20 mm in diam.,

rigid, usually branching, internodes to 4.7 cm, with longitudinal channels or stripes, deep yellow or orange when dry, glossy. Leaves often 3–6, alternate on main stem and upper part of branches, linear, 2.5–7 × 0.3–0.6 (or more) cm, with leathery sheaths at base, apex obtuse and unequally bilobed. Inflorescence 1–2.5 cm, 1- or 2-flowered raceme; peduncle 5–10 mm; floral bracts ovate, ca. 2 mm, membranous, apex acute. Pedicel and ovary pale yellowish green, 12–15 mm; ovary slightly

dilated; many clones ± cleistogamous. Normal flowers slightly fragrant, spreading, thickly textured; sepals and petals golden yellow, lip golden yellow, lateral lobes with a few red striations inside, disk often pale green. Dorsal sepal ovate-elliptic, (10–)18–24 × (3.5–)5–8 mm, 7-veined, apex acute; lateral sepals ovate-lanceolate, ca. as long as dorsal sepal, but slightly narrower, 7-veined, apex acute; mentum broadly conic, ca. 5 mm. Petals obliquely obovate or subelliptic, ca. as long as dorsal sepal and broader, 7-veined, apex acute; lip 10–20 mm long and wide, with a basal callus, middle 3-lobed; lateral lobes embracing column, ± subrounded, apex rounded; mid-lobe suboblate or ensiform-rounded, acute; disk with short, dense papillae between lateral lobes and extending to mid-lobe. Column ca. 5 mm, base slightly dilated, foot ca. 6 mm; column teeth subtriangular, apex short and obtuse; anther cap obliquely conic, surface smooth, front with 3 ridges, front margin denticulate.

Epiphytic on tree trunks in mountain forests, lithophytic on rocks in mountain valleys; 700–1500 m. S Gansu, NW Guangxi, S Guizhou, Henan, SE Hubei, SE Hunan, Shaanxi, S Sichuan, NE and SE Yunnan [N Vietnam].

One of us (H. P. Wood, *Dendrobiums*, 638. 2006) has noted that the sectional placement of *Dendrobium hancockii* remains unclear. In addition, two entities are being offered as *D. hancockii* in the horticultural trade, both often mislabeled “*D. hainanense*.” One, true *D. hancockii*, has leaves linear, retuse, ca. 3 cm × 3 mm; petals clavate; and lip inrolled with clear lateral lobes. The other, an undescribed taxon, has leaves lanceolate, ca. 15 cm × 3 mm; sepals and petals narrower and pointed; and lip flat, cordate, with lateral lobes indistinct.

41. *Dendrobium lohohense* Tang & F. T. Wang, *Acta Phytotax. Sin.* 1: 82. 1951.

罗河石斛 *luo he shi hu*

Stems cylindrical, to 80 cm, 3–5 mm in diam., slightly rigid, with many nodes, internodes 13–23 mm, upper nodes bearing roots and new shoots (keikis), golden yellow when dry, with several longitudinal ridges. Leaves borne in 2 rows, oblong, 3–4.5 × 0.5–1.6 (or more) cm, leathery, with clasping sheaths at base, apex acute; sheath sparsely clasping when dry, sheath mouth often open. Inflorescences 1-flowered, arising laterally on top of stem or axillary, erect; peduncle absent; floral bracts broadly ovate, small, ca. 3 mm, waxy, apex acute. Pedicel and ovary to 15 mm; ovary often clavate. Flowers spreading, waxy yellow, slightly fleshy. Dorsal sepal elliptic, ca. 15 × 9 mm, 7-veined, bluntly rounded; lateral sepals obliquely elliptic, slightly longer than dorsal sepal, but relatively narrow, 7-veined, obtuse; mentum subglobose, ca. 5 mm. Petals elliptic, ca. 17 × 10 mm, 7-veined, bluntly rounded; lip entire, obovate, ca. 20 × 17 mm, base cuneate and both sides embracing column, front margin irregularly denticulate. Column ca. 3 mm, apex with 2 teeth on either side; anther cap subspherical, glabrous, margin denticulate, apex subtruncate and reflexed upward. Capsule elliptic-globose, ca. 4 × 1.2 cm.

• Mountain valleys, lithophytic on rocks at forest margins; 1000–1500 m. Chongqing, N Guangdong, SE Guangxi, W Guizhou, W Hubei, Hunan, SE Yunnan.

One of us (H. P. Wood) notes that the plant described in the protologue of *Dendrobium lohohense* is very similar to *D. henryi*, and the two taxa may be conspecific.

42. *Dendrobium moschatum* (Buchanan-Hamilton) Swartz, *Neues J. Bot.* 1: 94. 1805.

杓唇石斛 *shao chun shi hu*

Epidendrum moschatum Buchanan-Hamilton in Symes, *Embassy Ava*, 478. 1800; *Callista calceolaria* (Carey ex Hooker) Kuntze; *C. moschata* (Buchanan-Hamilton) Kuntze; *Cymbidium moschatum* (Buchanan-Hamilton) Willdenow; *Dendrobium calceolaria* Carey ex Hooker; *D. cupreum* Lindley; *D. moschatum* var. *cupreum* (Lindley) H. G. Reichenbach; *D. moschatum* var. *unguipetalum* I. Barua; *Thicuania moschata* (Buchanan-Hamilton) Rafinesque.

Stems erect, cylindrical, to 1 m, stout, 6–8 mm in diam., rigid, unbranched, with many nodes, internodes ca. 3 cm. Leaves alternate along upper part of stem, oblong to oval-lanceolate, 10–15 × 1.5–3 cm, leathery, base with clasping papery sheaths, apex acuminate or unequally bilobed. Inflorescences racemose, on old leafless stems, pendulous, ca. 20 cm, laxly several to more than 10-flowered; peduncle ca. 5 cm; basal sheaths 4, overlapping, cupular; floral bracts oblong, 12–20 × 3–5 (or more) mm, leathery, apex obtuse. Pedicel and ovary to 5 cm. Flowers deep yellow [or pink or white with rose tips], disk with a pale purplish brown blotch on either side, column yellow, anther cap purple. Dorsal sepal oblong, 24–35 × 11–14 mm, 6- or 7-veined, apex obtuse; lateral sepals oblong, 24–35 × 9–10 (or more) mm, 5-veined, base slightly oblique, apex slightly acute; mentum conic, short and wide, ca. 6 mm. Petals obliquely broadly ovate, 26–35 × 17–23 mm, 7-veined, apex obtuse; lip rounded, slipperlike, ca. 24 × 22 mm, abaxially glabrous, adaxially densely pubescent, margin involute and cucullate. Column ca. 4 mm, foot ca. 4 mm; anther cap conic, adaxially glabrous, front margin irregularly denticulate.

Epiphytic on tree trunks in open forests; ca. 1300 m. S and W Yunnan [Bhutan, N India, Laos, Myanmar, Nepal, Thailand, Vietnam].

Plants from China and Thailand, including the type of *Dendrobium cupreum*, are ± yellow-flowered and thus differ from plants from the rest of the range, including the type of *D. moschatum*, which has pink or white flowers with rose tips. This might well deserve formal taxonomic recognition.

43. *Dendrobium menglaense* X. H. Jin & H. Li, *Ann. Bot. Fenn.* 43: 296. 2006 [“*menglaensis*”].

勐腊石斛 *meng la shi hu*

Stems ± clustered, compressed, 10–20 cm, to 7 mm wide, at apex ca. 1.5 mm in diam., often branching from upper nodes, internodes 2–2.5 cm, enclosed by persistent leaf sheaths. Leaf apparently solitary, subterminal, lanceolate, 6–8 × ca. 1.5 cm, apex unequally acuminate. Inflorescence from apex of previous year’s leafy or deciduous stem, ca. 1 cm, 1-flowered; bract ovate, ca. 2 mm. Pedicel and ovary ca. 2 cm. Flowers yellow, lip golden yellow with purple blotch near center of epichile, column yellow, anther cap white. Dorsal sepal elliptic, ca. 16 × 8 mm, 7-veined, acute; lateral sepals obliquely elliptic, ca. 20 × 9 mm, 7-veined; mentum oblong, short and wide, ca. 7 × 5 mm. Petals narrowly ovate, ca. 15 × 8 mm, 7-veined; lip slipper-shaped, ca. 20 × 8 mm, with incurved margin; hypochile ca. 5 × 5 mm; lateral lobes inrolled, entire; epichile ca. 15 × 8 mm, apex 2-lobed. Column ca. 4 mm, adaxially hairy, foot ca. 9 mm.

• Lithophytic or rarely epiphytic, on limestone; ca. 1200 m. S Yunnan (Mengla).

This species is known only from a single population with only ca. 50 plants.

44. *Dendrobium chryseum* Rolfe, Gard. Chron., ser. 3, 3: 233. 1888.

线叶石斛 xian ye shi hu

Aporum rivesii (Gagnepain) Rauschert; *Callista aurantiaca* Kuntze; *Dendrobium aurantiacum* H. G. Reichenbach (1887), not (F. Mueller) F. Mueller (1870); *D. aurantiacum* var. *zhaojunense* (S. C. Sun & L. G. Xu) Z. H. Tsi; *D. chryseum* var. *bulangense* G. X. Ma & J. Xu; *D. clavatum* Wallich ex Lindley var. *aurantiacum* Tang & F. T. Wang; *D. flaviflorum* Hayata; *D. rivesii* Gagnepain; *D. rolfei* A. D. Hawkes & A. H. Heller; *D. tibeticum* Schlechter; *D. zhaojunense* S. C. Sun & L. G. Xu.

Stems cylindric, usually 25–35 cm, slender, 2–4 mm in diam., unbranched, with many nodes, internodes 2.5–4 cm, pale yellow or yellowish brown when dry. Leaves linear or narrowly oblong, 8–10 × 0.4–1.4 cm, leathery, base sheathing, apex obtuse and emarginate or sometimes subacute and obliquely hooked; leaf sheath tightly embracing stem. Inflorescence lateral on old leafless stem, ca. 1 cm, usually 1 or 2(or 3)-flowered; peduncle suberect, ca. 0.5 cm; basal sheaths 3 or 4, overlapping, pale white, cupular or tubular, papery, basal ones short, distally elongate, 5–20 mm; floral bracts pale white, cymbiform, 12–13 × ca. 5 mm, membranous, apex obtuse. Pedicel and ovary ca. 3 cm. Flowers spreading, ca. 6.5 cm wide, concolorous yellow, center a darker shade, occasionally with large purple spots on sepals and petals and a purple spot on lip disk, inner surface of lip sometimes with several red stripes. Dorsal sepal oblong-elliptic, 23–25 × 11–14 mm, 5-veined, obtuse; lateral sepals slightly obliquely oblong, ca. as long as dorsal sepal or slightly narrower, 5-veined, apex obtuse; mentum conic, ca. 6 mm. Petals elliptic or broadly elliptic-obovate, 24–26 × 14–17 mm, 3-veined, lateral major veins branched, apex obtuse; lip suborbicular, ca. 25 × 22 mm, adaxially densely pilose, both sides embracing column below middle, claw ca. 3 mm, margin irregularly denticulate, disk without markings. Column ca. 4 mm, foot ca. 3 mm; anther cap narrowly conic, ca. 4 mm, glabrous, apex subtruncate. Fl. May–Jun. $2n = 38$.

Epiphytic on tree trunks in high-mountain broad-leaved forests; 1700–2600 m. C Sichuan (Ebian, Emei Shan), Taiwan, NW to SE Yunnan [NE India, Myanmar].

Dendrobium chryseum has been more widely known as *D. aurantiacum* H. G. Reichenbach but that name is illegitimate because it is a later homonym. Plants from 1700–1800 m in C and S Sichuan and Yunnan with pale purple markings on the sepals and a purple spot on the lip disk have been referred to *D. aurantiacum* var. *zhaojunense*.

Seidenfaden (Opera Bot. 83. 1985) united two distinct entities under *Dendrobium chryseum*, namely *D. chryseum* and *D. denneanum* (see below).

45. *Dendrobium denneanum* Kerr, J. Siam Soc., Nat. Hist. Suppl. 9: 229. 1933.

叠鞘石斛 die qiao shi hu

Callista clavata Kuntze; *Dendrobium aurantiacum* H. G. Reichenbach var. *denneanum* (Kerr) Z. H. Tsi; *D. clavatum* Wallich ex Lindley (1852), not Roxburgh (1832).

Stems robust, to 47 cm, more than 4 mm in diam. Leaves oblanceolate, to 11 × 1.8–4.5 cm. Inflorescences subapical on leafless penultimate and older stems, stiffly arching, 5–14 cm, to 7-flowered; floral bracts prominent, 1.8–3 cm. Flowers ca. 5 cm wide, orange-yellow, lip with a maroon center or large purple spots on adaxial surface; many clones ± cleistogamous.

Epiphytic on tree trunks in open forests; 600–2500 m. W Guangxi, S Guizhou, Hainan (Bawangling), NW to SE Yunnan [India, Laos, Myanmar, Nepal, Thailand, Vietnam].

46. *Dendrobium jiajiangense* Z. Y. Zhu, S. J. Zhu & H. B. Wang, Bull. Bot. Res., Harbin 28: 385. 2008.

夹江石斛 jia jiang shi hu

Stems clustered, cylindric, 35–60 cm, slender, 2–5 mm in diam., internodes green or pale yellowish green with white membranous leaf sheaths, grooved and angular. Leaf blade linear or linear-lanceolate, 6–8 × 0.9–1.2 cm, leathery or thinly so, base narrowed into amplexicaul sheath, apex obtuse or obliquely retuse; leaf sheath with raised veins. Inflorescence lateral on previous year's leafless stem, ascending, to 6 cm, 1 or 2(or 3)-flowered; peduncle 2.5–3 cm; basal sheaths 3 or 4, pale purplish, cupular or tubular, thickly papery, 4–15 mm, with raised veins; floral bracts pale purplish, cymbiform, 15–20 × ca. 5 mm, thickly papery, apex obtuse. Pedicel and ovary 1–2.5 cm. Flowers scented, spreading, golden yellow, base of lip purple striate, disk sometimes golden yellow spotted, anther cap white. Dorsal sepal oblong or oblong-elliptic, 24–26 × 10–11 mm, 6- or 7-veined, apex obtuse; lateral sepals shorter and narrower, 6- or 7-veined, base slightly oblique, apex obtuse; mentum conic, 3–4 mm. Petals broadly elliptic or ovate, 14–22 × 11–17 mm, 3-veined, lateral major veins branched, apex rounded; lip broadly ovate, 17–21 × 21–22 mm, adaxially densely tomentose, with claw 3–4 mm, margin irregularly denticulate. Column 4–5 mm, foot ca. 3 mm; anther cap conic, front margin toothed.

• 1000–1300 m. Sichuan.

This species is known to us only from the protologue.

47. *Dendrobium fimbriatum* Hooker, Exot. Fl. 1: ad t. 71. 1823.

流苏石斛 liu su shi hu

Callista fimbriata (Hooker) Kuntze; *C. oculata* (Hooker) Kuntze; *Dendrobium fimbriatum* var. *oculatum* Hooker; *D. paxtonii* Paxton.

Stems rigid, decumbent or pendulous, cylindric or sometimes slightly fusiform above base, 50–100 cm, stout, 8–12(–20) mm in diam., unbranched, with many nodes, internodes 3.5–4.8 cm, longitudinally grooved, pale yellow or pale yellowish brown when dry. Leaves oblong or oblong-lanceolate, 8–15.5 × 2–3.6 cm, leathery, with tightly clasping leathery sheaths at base, apex acute, sometimes slightly bilobed. Inflorescences racemose, 5–15 cm, laxly 6–12-flowered; peduncle

2–4 cm; rachis thin, ± curved; basal sheaths several, overlapping, tubular, basal one shortest, ca. 3 mm, terminal ones to 10 mm, membranous; floral bracts ovate-triangular, 3–5 mm, membranous, apex acute. Pedicel and ovary pale green, 2.5–3 cm. Flowers slightly fragrant, spreading, thinly textured; sepals and petals golden yellow, lip a deeper hue, with purplish red stripes on either side at base, disk with a lunate transverse deep purple marking. Dorsal sepal oblong, 13–18 × 6–8 (or more) mm, 5-veined, margin entire, apex obtuse; lateral sepals ovate-lanceolate, ca. as long as dorsal sepal and slightly narrower, 5-veined, base oblique, margin entire, apex obtuse; mentum rotund, ca. 3 mm. Petals oblong-elliptic, 12–19 × 7–10 (or more) mm, 5-veined, margin slightly erose, apex obtuse; lip suborbicular, 15–20 mm, adaxially densely pubescent, base narrowed into a claw ca. 3 mm, margin compound fimbriate. Column ca. 2 mm, foot ca. 4 mm; anther cap conic, glabrous, front margin denticulate.

Epiphytic on tree trunks in dense forests, lithophytic on damp rocks in mountain valleys; 600–1700 m. NW to S Guangxi, S Guizhou, S Yunnan [Bhutan, India, Myanmar, Nepal, Thailand, Vietnam].

48. *Dendrobium gibsonii* Lindley, Paxton's Mag. Bot. 5: 169. 1838.

曲轴石斛 qu zhou shi hu

Callista binocularis (H. G. Reichenbach) Kuntze; *C. gibsonii* (Lindley) Kuntze; *Dendrobium binoculare* H. G. Reichenbach; *D. fimbriatum* Hooker var. *gibsonii* (Lindley) Finet; *D. fuscatum* Lindley.

Stems oblique or pendulous, cylindrical, 35–100 cm, 7–8 mm in diam., rigid, upper part sometimes slightly curved, unbranched, with many nodes, internodes 2.4–3.4 cm, with longitudinal grooves, pale yellow when dry. Leaves oblong or sub lanceolate, 10–15 × 2.5–3.5 cm, leathery, base with papery sheaths, apex acute. Inflorescence apical on old leafless stem, often pendulous, 15–20 cm, sparsely several to 10- or more flowered; peduncle 1–2 cm; rachis dark purple, often flexuous; basal sheaths 4 or 5, overlapping, tubular or cupular, basal ones ca. 3 mm, upper ones to 1 cm, papery; floral bracts lanceolate, concave, cymbiform, 5–7 mm, apex acute. Pedicel and ovary 2.5–3.5 cm. Flowers spreading, orange, disk with a rounded chestnut or deep purple blotch on each side, anther cap pale yellow. Dorsal sepal elliptic, 14–16 × 10–11 (or more) mm, 7-veined, apex obtuse; lateral sepals oblong, 14–16 × 9–10 (or more) mm, 7-veined, apex obtuse; mentum subglobose, ca. 4 mm. Petals subelliptic, 14–16 × 8–9 (or more) mm, 5-veined, margin entire, apex obtuse; lip subreniform, ca. 15 × 17 mm, adaxially densely finely papillate, base clawed, margin shortly fimbriate, apex emarginate. Column ca. 3 mm, foot ca. 3 mm; anther cap nearly subglobose, glabrous, front margin slightly erose.

Epiphytic on tree trunks in open forests; 800–1000 m. Guangxi (Lingyun), S Yunnan [Bhutan, NE India, Myanmar, Nepal, N Thailand, Vietnam].

49. *Dendrobium capillipes* H. G. Reichenbach, Gard. Chron. 1867: 997. 1867.

短棒石斛 duan bang shi hu

Callista capillipes (H. G. Reichenbach) Kuntze.

Stems nearly compressed fusiform, 8–15 cm, at middle ca. 1.5 cm in diam., fleshy, unbranched, with many obtuse longitudinal ridges and few internodes. Leaves 2–4, near apex of stem, narrowly oblong, usually 10–12 × 1–1.5 cm, leathery, base dilated into clasping sheaths, apex slightly obtuse and obliquely emarginate. Inflorescences from old leafless stems, suberect, 12–15 cm, laxly 2- to several flowered; peduncle with 2 or 3 sheaths at base, membranous; floral bracts pale white, ovate, small, ca. 5 × 3 mm, apex acute. Pedicel and ovary pale yellowish green, ca. 2 cm. Flowers spreading; sepals and petals golden yellow, lip a deeper hue, with purplish red stripes, column golden yellow. Dorsal sepal ovate-lanceolate, ca. 12 mm, ca. 5 mm wide at middle, 3-veined, apex acute; lateral sepals nearly equal in size to dorsal sepal; mentum oblong, ca. 4 mm, obtuse-rounded. Petals ovate-elliptic, ca. 15 × 9 mm, 4-veined, apex slightly obtuse; lip subensiform, ca. 20 × 25 mm, both surfaces densely pubescent, embracing column on both sides at base, margin undulate, apex emarginate. Column ca. 4 mm; anther cap ± tower-shaped, front margin subtruncate and notched; clinandrium broad, both lateral upper margins irregularly notched.

Epiphytic on tree trunks in evergreen broad-leaved forests; 900–1500 m. S Yunnan [NE India, Laos, Myanmar, Nepal, Thailand, Vietnam].

A related Indochinese species, *Dendrobium braianense* Gagnepain (Bull. Mus. Natl. Hist. Nat., sér. 2, 10. 436. 1938), originally described from Vietnam and treated in synonymy under *D. capillipes* by Seidenfaden (Opera Bot. 114: 229. 1992), is a showier, more floriferous plant. This entity reappeared in markets in Thailand in the 1990s and was treated as a distinct species by H. P. Wood (Dendrobiums, 599–600. 2006), with *D. capillipes* var. *elegans* H. G. Reichenbach and *D. ejirii* T. Yukawa in synonymy. H. P. Wood believes that *D. braianense* may not occur in China, although he included Yunnan within its distribution in his book (loc. cit.: 600). A brief description is provided here for comparison with *D. capillipes*: stem pseudobulbous, slightly clavate, to 17 × 1.5 cm, variably deciduous; leaf ca. 10 × 2.5 cm; inflorescences borne on last year's leafy or leafless stems, sometimes on older stems; racemes lateral, up to 3 per stem, arching, up to 7-flowered (bloom may repeat at a different node); flowers ca. 4 cm in diam.; anther cap pointed.

50. *Dendrobium dixanthum* H. G. Reichenbach, Gard. Chron. 1865: 674. 1865.

黄花石斛 huang hua shi hu

Callista dixantha (H. G. Reichenbach) Kuntze.

Stems erect or pendulous, cylindrical, 50–100 cm, slender, 3–6 mm in diam., unbranched, deciduous, with many nodes, internodes 2.5–3 cm, with many longitudinal ridges, pale yellow when dry. Leaves ovate-lanceolate, 8–11 (–13) × ca. 1 cm, leathery, base with clasping sheath, apex long acuminate. Inflorescences often 2–4, from old leafless stems, 2–5-flowered; peduncle 1–2 cm, slender; basal sheaths 2 or 3, short, membranous; floral bracts ovate, ca. 2 mm, membranous, acute. Pedicel and ovary ca. 2 cm, slender. Flowers spreading, thinly textured, deep yellow, lip with purplish red stripes on either side at base. Dorsal sepal oblong-lanceolate, ca. 23 × 6 mm, 5-veined, apex acute; lateral sepals equal in size to dorsal sepal, base slightly

oblique; mentum subcylindric, ca. 4 mm. Petals suboblong, ca. 23 × 10 mm, 5-veined, base contracted, margin irregularly denticulate, apex acute; lip suborbicular, ca. 22 × 25 mm, adaxially densely barbellate, margin erose, apex emarginate. Column very short, ca. 5 mm, foot ca. 4 mm; anther cap conic, densely finely papillate, front margin irregularly dentate, apex obtuse. Capsule narrowly cylindric, 6–7 × 0.5–0.6 cm, with a stalk ca. 1 cm.

Epiphytic on tree trunks in mountain forests; 800–1200 m. S Yunnan [Laos, Myanmar, Thailand].

This species was misidentified by S. C. Chen and Z. H. Tsi (Orchids China, 156. 1998) as *Dendrobium moulmeinense* (a synonym of *D. devonianum* in the present treatment).

51. *Dendrobium henryi* Schlechter, Repert. Spec. Nov. Regni Veg. 17: 67. 1921.

疏花石斛 shu hua shi hu

Dendrobium daoense Gagnepain; *D. evaginatum* Gagnepain; *Grastidium daoense* (Gagnepain) Rauschert.

Stems ascending or pendulous, cylindric, 30–80 cm, 5–8 mm in diam., unbranched, with many nodes, internodes 3–4.5 cm, pale yellow when dry. Leaves oblong or oblong-lanceolate, 8.5–11 × 1.7–3 cm, leathery, base contracted and dilated into

sheaths, apex acuminate or acute; leaf sheath tightly embracing stem, papery, sheath mouth often open when dry. Inflorescence on middle part of old leafy or leafless stems, 1- or 2-flowered; peduncle nearly perpendicular to stem, 1.5–2.5 cm; basal sheaths 3 or 4, tubular, 2–3 mm, membranous; floral bracts ovate-triangular, 6–9 mm, papery, apex obtuse. Pedicel and ovary ca. 2 cm. Flowers fragrant, thinly textured, golden yellow. Dorsal sepal ovate-oblong, 23–30 × 10–12 (or more) mm, 7-veined, with many transverse veins, apex obtuse; lateral sepals ovate-lanceolate, 23–30 × 10–12 (or more) mm, apex acuminate; mentum broadly conic, ca. 5 mm, apex rounded. Petals slightly obliquely broadly ovate, slightly shorter than sepal, but relatively wide, 7-veined, with many secondary veins, base shortly clawed, apex acute; lip suborbicular, 2–3 cm, base with a claw ca. 3 mm, both sides embracing column, margin irregularly denticulate; disk concave, densely finely papillate. Column ca. 3 mm; anther cap conic, ca. 2 mm, densely finely papillate, front margin ± irregularly serrate.

Epiphytic on tree trunks in mountain forests, lithophytic on damp rocks in mountain valleys; 600–1700 m. C and N Guangxi, SW Guizhou, S Hunan, S Yunnan [Thailand, N Vietnam].

H. P. Wood (Dendrobiums, 640. 2006) tentatively placed *Dendrobium henryi* in *D.* sect. *Holochrysa*.

5. *Dendrobium* sect. *Distichophylla* J. D. Hooker, Fl. Brit. India 5: 711. 1890 [*“Distichophyllae”*].

心叶组 xin ye zu

Roots smooth. Stem evenly swollen, cylindric, leafy, usually tall, in some species deciduous. Leaves closely spaced, distichous, in 2 rows, usually short, stiffly textured, base cordate, clasping, and decurrent into sheaths. Inflorescences borne at each node on recent and older leafy stems, 1- to several flowered. Flowers solitary, leaf opposed, resupinate or not resupinate, usually white, medium-sized, shortly pedicellate. Sepals and petals sometimes reflexed; mentum straight, narrowly saccate, its elements fused distally into a spur.

About 30 species: Himalayas to Oceania, most in Indonesia; one species in China.

52. *Dendrobium ellipsophyllum* Tang & F. T. Wang, Acta Phytotax. Sin. 1: 81. 1951.

反瓣石斛 fan ban shi hu

Distichorchis ellipsophylla (Tang & F. T. Wang) M. A. Clements.

Stems erect or ascending, cylindric, ca. 50 cm, ca. 5 mm in diam., uniformly thick, with longitudinal ribs, unbranched, with many nodes, internodes ca. 2 cm, enclosed in leaf sheaths. Leaves alternate and dense along whole stem, elliptic, 4–5 × 1.5–1.9 (or more) cm, base cordate, clasping and decurrent into sheaths tightly embracing stem, apex obtuse and unequally 2-lobed. Inflorescences many, (apparently) leaf-opposed, 1-flowered; floral bracts small. Pedicel and ovary bent downward, ca. 2 cm, slender. Flowers scented, white, disk yellow above mid-

dle, keels brownish purple. Dorsal sepal reflexed, ovate-oblong, ca. 8 × 5 mm, apex acute; lateral sepals reflexed, oblong-lanceolate, ca. 8 × 5 mm, apex acute; mentum angulate, ca. 7 mm. Petals recurved, narrowly lanceolate, ca. 7 × 4 mm, apex acute; lip larger than sepals, fleshy, 3-lobed, ± decurved and folded along axis; lateral lobes deltoid, small, ca. 2 mm, acute; mid-lobe nearly transversely oblong or rounded, somewhat large, ca. 10 × 15 mm, subtruncate and broadly emarginate, central part of disk with 3 keeled ridges.

Epiphytic on tree trunks in broad-leaved mountain forests; ca. 1100 m. SE Yunnan (Menghai, Mengla) [Cambodia, Laos, Myanmar, Thailand, Vietnam].

This species was misidentified by Z. H. Tsi (Acta Phytotax. Sin. 18: 434. 1980) as *Dendrobium revolutum* Lindley.

6. *Dendrobium* sect. *Breviflora* J. D. Hooker, Fl. Brit. India 5: 711. 1890 [*“Breviflores”*].

瘦轴组 shou zhou zu

Roots smooth. Stem erect or pendulous, tall, slender or slightly swollen, leafy, semideciduous, sometimes growing for 2 years. Inflorescences lateral, short, often distal, pendulous, borne on bare penultimate leads, few flowered, flowers sometimes clustered; peduncle and rachis thin and rigid. Flowers small, pink, white, or brownish. Mentum saccate, with an expanded cavity. Lip concave, cymbiform, entire, interior often shortly hairy.

About seven species: Himalayas, some species extending through Indochina and Malaysia to the Philippines; two species in China.

53. *Dendrobium hercoglossum* H. G. Reichenbach, Gard. Chron., n.s., 25: 487. 1886.

重唇石斛 chong chun shi hu

Callista annamensis Kraenzlin; *C. hercoglossa* (H. G. Reichenbach) Kuntze; *C. vexans* (Dammer) Kraenzlin; *Dendrobium hercoglossum* var. *album* S. J. Cheng & C. Z. Tang; *D. poilanei* Guillaumin; *D. vexans* Dammer; *D. wangii* C. L. Tso.

Stems pendulous, pale yellow when dry, cylindrical or sometimes thickened from base to upper part, usually 8–40 cm, 2–5 mm in diam., with few to many nodes, internodes 1.5–2 cm. Leaves narrowly oblong or oblong-lanceolate, 4–10 × 0.4–0.8(–1.4) cm, leathery, with tightly clasping sheaths at base, apex obtuse and unequally bilobed. Inflorescences often several, arising from old leafless stems, 2- or 3-flowered; peduncle green, 6–10 mm; rachis sometimes slightly upcurved, 1.5–2 cm, thin and weak, base with 3 or 4 short tubular sheaths; floral bracts ovate-lanceolate, small, 3–5 mm, dry membranous, apex acute. Pedicel and ovary pale pinkish red, 1.2–1.5 cm. Flowers spreading; sepals and petals pale pink, lip white, epichile pale pink, column white, anther cap purple. Dorsal sepal ovate-oblong, 13–18 × 5–8(or more) mm, 7-veined, apex acute; lateral sepals slightly obliquely ovate-lanceolate, ca. as large as dorsal sepal, 7-veined, apex acuminate; mentum very short. Petals obovate-oblong, 12–15 × 4.5–7(or more) mm, 3-veined, apex acute; lip erect, ca. 1 cm, with epichile and hypochile; hypochile subglobose, inner surface densely barbellate, apex densely shortly fimbriate; epichile deltoid, relatively small, glabrous, apex acute. Column ca. 4 mm, lower part enlarged, foot ca. 2 mm, column teeth deltoid, apex slightly obtuse; anther cap subspherical, densely finely papillate, front margin erose.

Epiphytic on tree trunks in dense mountain forests, lithophytic on damp rocks in valleys; 600–1300 m. SW Anhui (Huo Shan), SW Guangdong (Xinyi), Guangxi, SW Guizhou, Hainan, Hunan (Jianghua), S Jiangxi, SE Yunnan [Laos, Malaysia, Thailand, Vietnam].

7. *Dendrobium* sect. *Stuposa* Kraenzlin in Engler, Pflanzenz. 45(IV. 50. II. B. 21): 55. 1910.

叉唇组 cha chun shi hu

Roots smooth. Stem ± pendulous, tall, slightly swollen, leafy, semideciduous. Inflorescences few, short, distal, borne on penultimate stems; rachis and peduncle thin and soft, few flowered. Flowers relatively small, white. Sepals less than 1 cm; mentum broadly conic, without a saccate cavity; lip apex 3-lobed, front margin with dense, long cottony hairs.

About six species: Himalayas to Malesia; one species in China.

55. *Dendrobium stuposum* Lindley, Edwards's Bot. Reg. 24(Misc.): 52. 1838.

叉唇石斛 cha chun shi hu

Callista flavidula (Ridley ex J. D. Hooker) Kuntze; *C. stuposa* (Lindley) Kuntze; *Dendrobium exsculptum* Teijsmann & Binnendijk; *D. flavidulum* Ridley ex J. D. Hooker; *D. pristinum* Ames; *D. sphegidoglossum* H. G. Reichenbach.

Stems cylindrical, 5–30 cm, 3–6 mm in diam., lower part narrowed, with 5–17 nodes, internodes 1.5–2.5 cm, with many

54. *Dendrobium aduncum* Wallich ex Lindley, Edwards's Bot. Reg. 28(Misc.): 58. 1842.

钩状石斛 gou zhuang shi hu

Callista adunca (Wallich ex Lindley) Kuntze; *Dendrobium aduncum* var. *faulhaberianum* (Schlechter) Tang & F. T. Wang; *D. faulhaberianum* Schlechter.

Stems pendulous, sometimes upper part ± curved, pale yellow when dry, cylindrical, 50–100 cm, 2–5 mm in diam., unbranched, with many nodes, internodes 3–3.5 cm. Leaves oblong or narrowly elliptic, 7–10.5 × 1–3.5 cm, with clasping sheaths at base, apex acute. Inflorescences often several, arising from upper part of deciduous or leafy old stem; rachis ± porrect, 1.5–4 cm, slender, sparsely 1–6-flowered; peduncle 5–10 mm, base with 3 or 4 membranous sheaths 2–3 mm; floral bracts ovate-lanceolate, 5–7 mm, membranous, acute. Pedicel and ovary ca. 1.5 cm. Flowers spreading; sepals and petals pale pink, lip white, callus green, column white, anther cap deep purple. Dorsal sepal oblong-lanceolate, 16–20 × ca. 7 mm, 5-veined, apex acute; lateral sepals obliquely ovate-triangular, ca. as long as or slightly broader than dorsal sepal, 5-veined, apex acute; mentum jarlike, ca. 1 cm. Petals oblong, 14–18 × ca. 7 mm, 5-veined, apex acute; lip concave, cymbiform, broadly ovate when spread, 15–17 mm, claw ca. 5 mm, adaxially densely white barbellate except for claw and both sides of disk, with a square callus near base, apex abruptly contracted, recurved-caudate. Column ca. 4 mm, lower part enlarged, apex with auriculate column teeth on both sides, front densely purple crinite, foot ca. 1 cm long and wide, bent forward, inner surface sometimes sparsely hairy; anther cap nearly subglobose, densely papillate-hairy, front margin irregularly dentate, apex slightly concave.

Epiphytic on tree trunks in mountain forests; 700–1000 m. Guangdong, Guangxi, SW Guizhou, SE Hainan, NE Hunan (Taoyuan), SE Yunnan (Maguan) [Bhutan, NE India, Myanmar, Thailand, Vietnam].

longitudinal ridges. Leaves narrowly oblong-lanceolate, 4–7.5 × 0.4–1.5(or more) cm, leathery, base with clasping sheath, apex slightly obtuse and hooked on one side. Inflorescence apical on old leafless stem, 1–2.5 cm, 2- or 3-flowered; peduncle 10–15 mm, ca. 1 mm in diam.; rachis thin and soft; basal sheaths 3 or 4, broadly cupular; floral bracts oblong, 5–9 × 2.5–3(or more) mm, papery, obtuse. Pedicel and ovary 0.6–1.1 cm, slender. Flowers small, white. Dorsal sepal oblong, ca. 8 × 3 mm, 5-veined, midvein prominent, apex subacute; lateral sepals obliquely ovate-lanceolate, larger than dorsal sepal, 5-veined, midvein abaxially winged especially below middle, apex sub-

acute; mentum conic, ca. 4 mm. Petals obovate-elliptic, ca. 8 × 3 mm, 5-veined, margin near apex sometimes laxly shortly ciliate, apex obtuse; lip obovate-triangular, ca. 9 mm, base cuneate, apex 3-lobed; lateral lobes ovate-triangular, margin with dense, matted, long white cottony hairs, apex sharply toothed; mid-lobe ovate-triangular, margin similarly hairy, obtuse; disk

densely villous, with a broadly keeled rib extending from base to apex, apex thickened. Column short; column teeth triangular, acute.

Epiphytic on tree trunks in open and mountain forests; ca. 1800 m. S Yunnan [Bhutan, NE India, Indonesia, Malaysia, Myanmar, Philippines, Thailand].

8. *Dendrobium* sect. *Calcarifera* J. J. Smith, Bull. Dépt. Agric. Indes Néerl. 15: 14. 1908.

长爪石斛组 *chang zhao shi hu zu*

Roots verrucose in most species. Stems often pendulous, slender or fusiform, leafy, semideciduous, often pseudoindefinite (growing more than 1 year). Inflorescences multiple short lateral racemes borne on penultimate and older leafless canes, usually pendulous, in some species geotropic, flowers facing horizontally. Flowers medium-sized to rather large, opening widely, mostly purple, pink, or white. Pedicel inserted at a right angle to mentum. Mentum elongated and narrow, sometimes angled or curled, nectar copious in most species. Lip usually entire, expanded; disk with grooves, ridges, or rarely hairs; claw usually containing a small retrorse spur overhanging nectary. Pollinia usually light colored, shiny.

About 90 species: India to the Philippines, mostly in Indonesia and the Philippines; one species in China.

56. *Dendrobium chameleon* Ames, Orchidaceae 2: 174. 1908.

长爪石斛 *chang zhao shi hu*

Dendrobium longicalcaratum Hayata; *D. randaiense* Hayata; *Pedilonum longicalcaratum* (Hayata) Rauschert.

Stems pendulous, to 60 cm, thicker from base, multi-branched, each branch ca. 15 cm, with many nodes, internodes obconic-cylindric, ca. 1 cm, ca. 5 mm in diam. Leaves lanceolate or oblong-lanceolate, 3–3.5 × 0.6–1.5 (or more) cm, base contracted and enlarged into sheaths, apex acuminate or sometimes unequally bilobed; leaf sheath tightly embracing stem. Inflorescences lateral on previous year's leafless stems, 1–3 cm, 1–4-flowered; floral bracts ovate-triangular, ca. 6 × 5 mm, 3-

veined, acute. Pedicel and ovary ca. 1.5 cm. Flowers pale green, turning white, tinged with purple or with green veins. Dorsal sepal oblong, 15–18 × 7–8 (or more) mm, apex subacute; lateral sepals obliquely ovate-oblong, nearly as long as dorsal sepal, base oblique and relatively wide; mentum tubular, ca. 15 mm, 4–6 mm wide, obtuse. Petals obliquely oblong, 14–17 × ca. 5 mm, apex obtuse; lip narrowly pandurate, spatulate, ca. 33 × 6–7 (or more) mm, narrowly clawed, connate to mentum at base, with 2 fleshy papillae in front of claw. Column ca. 3 mm, foot to 18 mm; anther cap subglobose.

Epiphytic on tree trunks in mountain forests, lithophytic on rocky cliffs in mountain valleys; 500–1200 m. Taiwan [Philippines].

9. *Dendrobium* sect. *Pedilonum* (Blume) Blume, Tab. Pl. Jav. Orchid. ad t. 4. 1825.

距囊组 *ju nang zu*

Pedilonum Blume, Bijdr. 320. 1825.

Stem cylindric, stout, fleshy, semideciduous, usually pseudoindefinite (growing more than 1 year), internodes not swollen or obconic-cylindric. Inflorescences condensed racemes, often multiple, borne on penultimate and older leads. Sepals and petals relatively short. Mentum parallel to ovary, allowing flowers to face in all directions, prominent, usually straight, narrowly tubular, broad, fused distally into a closed spur, with a transverse constriction or kink partially obstructing entry into large saccate nectary containing abundant nectar. Lip entire, unexpanded, scoop-shaped, glabrous, unadorned. Pollinia usually dark colored, dull.

About 52 species: mostly in Indonesia and Papua New Guinea, extending to the Philippines and Samoa; one species in China.

57. *Dendrobium goldschmidtianum* Kraenzlin, Repert. Spec. Nov. Regni Veg. 7: 40. 1909.

红花石斛 *hong hua shi hu*

Dendrobium irayense Ames & Quisumbing; *D. miyakei* Schlechter; *D. pseudohainanense* Matsumura; *D. victoria-reginae* Loher var. *miyakei* (Schlechter) T. S. Liu & H. J. Su; *Pedilonum goldschmidtianum* (Kraenzlin) Rauschert; *P. miyakei* (Schlechter) Rauschert.

Stems erect or pendulous, cylindric, sometimes middle part thickened and slightly fusiform, 40–60 cm, 5–10 mm in diam., base contracted, unbranched, with many nodes, internodes obconic-cylindric, 1–2 cm. Leaves lanceolate or ovate-

lanceolate, 6–10 × 1.2–2 cm, leathery, apex acuminate; leaf sheath green, tinged with red, tightly embracing stem. Inflorescences multiple, lateral on usually bare penultimate and older leads, tufted, 5–25 mm, densely 6–10-flowered; floral bracts ovate-lanceolate, ca. 3 × 2.5 mm, membranous, apex acute. Pedicel and ovary brownish green, ca. 1.3 cm. Flowers not opening widely; sepals, petals, and lip bright red, column yellow, foot yellowish green, anther cap yellow. Dorsal sepal elliptic, ca. 10 × 5 mm, 5-veined, apex obtuse; lateral sepals obliquely ovate, ca. as large as dorsal sepal, 5-veined, base oblique, apex acute; mentum narrowly conic, ca. 1 cm. Petals obliquely obovate-oblong, ca. as long as dorsal sepal or slightly narrower, 3-veined, base contracted, apex acute; lip spatulate, 15–22 × 7–8.5 (or more) mm, base narrowly clawed, margin en-

tire, apex slightly obtuse. Column ca. 2 mm, foot ca. 1 cm; anther cap conic, front margin finely papillate-hairy.

200–400 m. S Taiwan (Lan Yu) [Philippines].

Matsumura and Hayata (J. Coll. Sci. Imp. Univ. Tokyo 22: 408. 1908) misidentified this species as *Dendrobium hainanense* Rolfe, belonging to section *Strongyle*.

10. Dendrobium sect. **Formosa** (Bentham & J. D. Hooker) J. D. Hooker, Fl. Brit. India 5: 710. 1890 [*“Formosae”*].

黑毛组 hei mao zu

Dendrobium ser. *Formosa* Bentham & J. D. Hooker, Gen. Pl. 3: 500. 1883 [*“Formosae”*].

Roots smooth. Stems linear, mostly tall, stout, usually evergreen, new sheaths (and sometimes leaves) black- or brown hirsute, hairs deciduous when old. Flowers large, usually white, rarely yellow or with a contrasting lip. Mentum prominent, usually straight, conic, elements fused distally into a spur, nectar present in some species. Lip 3-lobed, crest usually finely hairy, often with multiple low keels, blade glabrous.

About 51 species: Himalayas to Indonesia and Philippines; eight species (one endemic) in China.

Reviewer L. Averyanov notes that *Dendrobium chapaense* Averyanov (Rheedea 16: 3. 2006), described from N Vietnam, also occurs in China. However, the present authors could not substantiate this record because they found no relevant specimens.

58. Dendrobium bellatulum Rolfe, J. Linn. Soc., Bot. 36: 10. 1903.

矮石斛 ai shi hu

Stems erect or ascending, fusiform or shortly clavate, short and stout, 2–5 cm, 3–18 mm in diam., with many longitudinal ridges, unbranched, with 2–5 nodes, internodes 5–10 mm. Leaves 2–4, subterminal, ligulate, ovate-lanceolate, or oblong, 1.5–4 × 1–1.3(or more) cm, leathery, both surfaces and leaf sheaths densely shortly black hairy at least when young, base decurrent forming clasping sheaths, apex obtuse and unequally bilobed. Inflorescences usually solitary, subterminal on latest or older mature leads, 1–3-flowered; peduncle 2–3 mm; rachis 5–7 mm; floral bracts ovate-lanceolate, 7–10 mm, membranous. Pedicel and ovary ca. 2.5 cm. Flowers spreading, white, mid-lobe of lip golden yellow, inner surface of lateral lobes red. Dorsal sepal ovate-lanceolate, ca. 25 × 10 mm, 7-veined, apex acute; lateral sepals obliquely ovate-lanceolate, ca. 25 × 10 mm, 7- or 8-veined, apex acute; mentum broadly conic, ca. 10 mm. Petals oblanceolate, ca. as long as and wider than dorsal sepal, 5-veined, rounded; lip subpandurate, ca. 30 mm, apex 3-lobed; lateral lobes nearly subovate; mid-lobe subreniform, shallowly bilobed, bent downward; disk irregularly papillate, with 5 irregularly papillate ridges. Column ca. 5 mm; anther cap conic, densely papillate.

Epiphytic on tree trunks in open forests; 1200–2100 m. S Yunnan [NE India, Laos, Myanmar, Thailand, Vietnam].

59. Dendrobium christyanum H. G. Reichenbach, Gard. Chron., n.s., 1: 178. 1882.

毛鞘石斛 mao qiao shi hu

Dendrobium margaritaceum Finet.

Stems erect, subclavate to fusiform, 2–4[–8] cm, 6–9 mm in diam., unbranched, with few nodes. Leaves 2 or 3, subterminal, long-lasting, ovate-lanceolate or oblong, 3–4(–4.5) × ca. 1 cm, abaxial surface and sheath with black hairs, apex obtuse and unequally 2-lobed. Inflorescences subterminal, 1- or 2-flowered. Flowers spreading, white, lip with orange center. Dorsal sepal ovate to ovate-lanceolate, ca. 20 × 8–10 mm,

acute; lateral sepals similar to dorsal sepal; mentum broadly conic, ca. 10 mm. Petals elliptic-oblong, ca. 20 mm, subacute; lip ca. 25 mm, margin undulate, apex 3-lobed; mid-lobe emarginate at apex; disk with 3 granulose lamellae.

Epiphytic at forest margins; 800–1200 m. Yunnan [Thailand, Vietnam].

The altitudinal range is based on records from Vietnam.

The Chinese material has shorter and relatively broader stems than material from elsewhere.

60. Dendrobium trigonopus H. G. Reichenbach, Gard. Chron., ser. 3, 2: 682. 1887.

翅梗石斛 chi geng shi hu

Callista trogonopus (H. G. Reichenbach) Kuntze; *Dendrobium velutinum* Rolfe.

Stems clustered, golden yellow when dry, fusiform or sometimes clavate, 5–11 cm, 12–15 mm in diam. at middle, thick and fleshy, unbranched, with 3–5 nodes, internodes ca. 2 cm. Leaves 3 or 4, subterminal, oblong, 8–9.5 × 1.5–2.5(or more) cm, thickly leathery, abaxially sparsely black hairy on midvein, midvein concave adaxially, with short clasping sheaths, apex acute. Inflorescences 1 or 2, distal on latest or older mature leafy pseudobulbs, arcuate, 2- or 3-flowered; peduncle 1–4 cm; floral bracts ovate-triangular, ca. 5 mm, fleshy, apex acute. Pedicel and ovary yellowish green, 3–4 cm; ovary triquetrous. Flowers nodding, thick; sepals and petals waxy yellow, lip yellow, disk tinged with pale green. Dorsal and lateral sepals subsimilar, narrowly lanceolate, ca. 30 × 10 mm, strongly keeled, both margins ascending above middle, midvein on abaxial surface slightly raised and wing-shaped, apex acute; lateral sepals with base only partly adnate to column foot; mentum subglobose, ca. 4 mm. Petals ovate-oblong, ca. 25 × 11 mm, 8-veined, apex acute; lip erect, nearly parallel to column, ca. 25 mm, base shortly clawed, apex 3-lobed; lateral lobes embracing column, subobovate, upper margin denticulate, apex rounded; mid-lobe orbicular, smaller than width between 2 lateral lobe apices; disk densely papillose. Column ca. 6 mm, upper margin of teeth with several shallow indentations; anther cap conic, ca. 5 mm, glabrous.

Epiphytic on tree trunks in mountain forests; 1100–1600 m. S Yunnan [Laos, Myanmar, N Thailand, Vietnam].

61. *Dendrobium sinense* Tang & F. T. Wang, Acta Phytotax. Sin. 12: 41. 1974.

华石斛 hua shi hu

Stems erect or arcuate, ascending, cylindrical, slender, occasionally dilated and clavate distally, to 21 cm, 3–4 mm in diam., unbranched, with many nodes, internodes 1.5–3 cm. Leaves several, distichous, usually alternate along upper part of stem, ovate-oblong, 6–11 × 2.5–4.5 (or more) cm, with black hairs on both surfaces when young, hairs often deciduous when old, base decurrent and forming clasping sheaths, apex obtuse and unequally bilobed; leaf sheaths with thick black hairs when young. Flowers solitary on upper portion of leafy stem; floral bracts ovate-lanceolate, 6–7 mm, abaxially densely black hairy, acute. Pedicel and ovary 1.5–2.5 cm; base with 2 or 3 unequal sheaths; ovary slightly clavate. Flowers yellow, apex of lip mid-lobe purplish red, lamellae red. Dorsal sepal ovate, ca. 20 × 7–9 (or more) mm, 5-veined, apex acute; lateral sepals obliquely triangular-lanceolate, upper margin ca. as long as dorsal sepal, wider than dorsal sepal, 7-veined; mentum broadly conic, ca. 13 mm. Petals subelliptic, slightly longer and broader than dorsal sepal, 7-veined, apex slightly obtuse; lip obovate in outline, to 3.5 cm, 3-lobed; lateral lobes subflabellate, embracing column; mid-lobe obovate, bilobed, smaller than width between 2 lateral lobes; disk with 5 crestlike central lamellae. Column ca. 5 mm, teeth triangular, large; anther cap subobovoid, apex slightly bilobed, finely papillate.

• Epiphytic on tree trunks in open and mountain forests; ca. 1000 m. Hainan.

62. *Dendrobium longicornu* Lindley, Gen. Sp. Orchid. Pl. 80. 1830.

长距石斛 chang ju shi hu

Callista longicornu (Lindley) Kuntze; *Dendrobium bulleyi* Rolfe; *D. flexuosum* Griffith; *D. hirsutum* Griffith; *D. longicornu* var. *hirsutum* (Griffith) J. D. Hooker.

Stems clustered, pendulous, cylindrical, 7–35 cm, 2–4 mm in diam., slightly rigid, unbranched, with many nodes, internodes 2–4 cm. Leaves several, narrowly lanceolate, 3–7 × 0.5–1.4 (or more) cm, leathery, both surfaces and leaf sheaths with blackish brown rigid hairs, base decurrent forming clasping sheaths, apex acuminate, unequally laterally bilobed. Inflorescence subterminal, 1–3-flowered; peduncle ca. 5 mm; basal sheaths 3 or 4, 2–5 mm; floral bracts ovate-lanceolate, 5–8 mm, abaxially dark brown hairy, apex acute. Pedicel and ovary nearly cylindrical, 2.5–3.5 cm. Flowers pendulous, pointing downward, cylindrical, white, lip with central part of disk orange. Dorsal sepal ovate, 15–20 × ca. 7 mm, 7-veined, midvein slightly keeled abaxially, apex acute; lateral sepals obliquely ovate-triangular, ca. as long as dorsal sepal near column side, ca. 9 mm wide at middle, 7-veined, midvein slightly keeled abaxially, apex acute; mentum long and narrow, straight, forming spur, slightly shorter than pedicel and ovary. Petals oblong or lanceolate, 15–20 × 4(–7) mm, 5-veined, margin irregularly denticulate, apex acute; lip subobovate or rhombic,

apex nearly 3-lobed; lateral lobes subobovate, overarching column, 2 lateral lobes farther apart than width of mid-lobe; mid-lobe shallowly bilobed, margin undulate and irregularly toothed, sometimes fimbriate; disk sparsely fimbriate-lacerate along veins, central part with 3 or 4 longitudinal keeled ridges. Column ca. 5 mm, teeth triangular; anther cap nearly flatly conic, front margin densely barbate, apex subtruncate.

Epiphytic on tree trunks in mountain forests; 1200–2500 m. S Guangxi (Shangsi), SE Xizang, NW to SE Yunnan [Bhutan, NE India, Myanmar, Nepal, N Vietnam].

63. *Dendrobium wattii* (J. D. Hooker) H. G. Reichenbach, Gard. Chron., ser. 3, 4: 725. 1888.

高山石斛 gao shan shi hu

Dendrobium cariniferum H. G. Reichenbach var. *wattii* J. D. Hooker, Bot. Mag. 109: ad t. 6715. 1883; *Callista wattii* (J. D. Hooker) Kuntze.

Stems sometimes curved, cylindrical, equally thick above and below, 12–60 cm, 4–9 mm in diam., rigid, unbranched, with many nodes, internodes 3–5 cm, with longitudinal ribs. Leaves several to 10, along middle and upper part of stem, oblong, 5–9 × 1–2 cm, leathery, abaxially black hirsute when young, base decurrent forming clasping sheaths, apex obtuse and slightly unequally 2-lobed; leaf sheath densely black hirsute. Inflorescence apical on leafy stem, 1- or 2-flowered; peduncle ca. 5 mm; basal sheaths 3 or 4, broadly ovate, 5–10 mm; floral bracts triangular, 7–13 × 6–7 (or more) mm, abaxially with dense black rigid hairs, apex acute. Pedicel and ovary 3–4 cm. Flowers spreading, usually less than 3 cm in diam., white, lip with yellow veins on lateral lobes, disk with a yellow patch. Dorsal sepal oblong, ca. 24 × 7–10 (or more) mm, 5- or 6-veined, apex acute; lateral sepals obliquely lanceolate, upper margin ca. as long as dorsal sepal, lower margin 40–50 × 8–11 (or more) mm, 7- or 8-veined, apex acute; mentum long and narrow, straight, ca. 25 mm, forming spur. Petals oblanceolate, ca. 40 × 32 mm, 7- or 8-veined, bluntly rounded and mucronate; lip ca. 35 mm, less than 30 mm wide across lateral lobes when flattened; lateral lobes obovate, embracing column, front margin slightly undulate; mid-lobe orbicular, 11–15 mm wide, margin irregularly serrate, truncate, usually minutely mucronate, with only an indistinct sinus; disk with a broad median callus splitting into 4 or 5 parallel small keeled ridges extending from base of lip to base of mid-lobe. Column ca. 6 mm; teeth triangular, ca. 2 mm; anther cap subspherical, front margin denticulate, apex slightly concave.

Epiphytic on tree trunks in dense forests; ca. 2000 m. S Yunnan (Jinghong, Mengla) [NE India, Myanmar, N Thailand, Vietnam].

This species has been misidentified as *Dendrobium infundibulum* Lindley (e.g., in FRPS 19: 131. 1999), which was originally described from Myanmar (Moulmein).

64. *Dendrobium cariniferum* H. G. Reichenbach, Gard. Chron. 1869: 611. 1869.

翅萼石斛 chi e shi hu

Callista carinifera (H. G. Reichenbach) Kuntze.

Stems golden yellow when dry, cylindrical or sometimes enlarged and fusiform, 10–28 cm, ca. 15 mm in diam. at mid-

dle, fleshy and thick, unbranched, with more than 6 nodes, internodes 1.5–2 cm. Leaves several, distichous, oblong or ligulate-oblong, to 11 × 1.5–4 cm, leathery, abaxial surface and leaf sheaths densely black hirsute, base decurrent forming clasping sheaths, apex obtuse and slightly unequally bilobed. Inflorescences subterminal, 1- or 2-flowered; peduncle 5–10 mm, basal sheaths 3 or 4; floral bracts ovate, 4–5 mm, acute. Pedicel and ovary ca. 3 cm; ovary tricarinate. Flowers orange-scented, spreading, thickly textured; ovary yellowish green, sepals pale yellowish white, mentum pale yellow tinged orange-red, petals white, lateral lobes of lip orange-red, mid-lobe yellow, disk reddish orange, column white tinged reddish orange, anther cap white. Sepals dorsally carinate; dorsal sepal ovate-lanceolate, ca. 25 × 9 mm, apex acute; lateral sepals obliquely ovate-triangular, nearly as large as dorsal sepal; mentum angulate, decurved near apex or sigmoid, ca. 20 mm, forming spur. Petals oblong-elliptic, ca. 20 × 10 mm, 5-veined, acute; lip trumpet-shaped, 3-lobed; lateral lobes subobovate, embracing column, front margin denticulate; mid-lobe nearly transversely oblong, front margin irregularly notched, apex concave; disk shortly fimbriate along veins. Column ca. 7 mm; anther cap subspherical, front margin densely papillate-hairy. Capsule ovoid, to 3 cm in diam.

Epiphytic on tree trunks in mountain forests; 1100–1700 m. S Yunnan [NE India, Laos, Myanmar, N Thailand, Vietnam].

65. *Dendrobium williamsonii* J. Day & H. G. Reichenbach, Gard. Chron. 1869: 78. 1869.

11. *Dendrobium* sect. *Stachyobium* Lindley, Edwards's Bot. Reg. 30(Misc.): 55. 1844.

草叶组 cao ye zu

Roots smooth. Stems usually multiple, generally fusiform, fleshy, leafy, embraced by gibbous sheaths. Inflorescences often multiple, pseudoterminal, occasionally proteranthous (*Dendrobium porphyrochilum*), racemose, multi-flowered, borne on current year's leafy lead, arising from lateral, usually distal nodes, suberect, parallel to stem. Flowers small, usually white. Lip 3-lobed, margin often crisped or pectinate; disk with broad, thick fleshy ridges.

About 39 species: S India and Sri Lanka, Himalayas through Myanmar and Thailand to Indochina, one outlying species in Indonesia (Java); five species (one endemic) in China.

66. *Dendrobium porphyrochilum* Lindley, J. Proc. Linn. Soc., Bot. 3: 18. 1858.

单萼草石斛 dan ting cao shi hu

Callista porphyrochila (Lindley) Kuntze; *Dendrobium caespitosum* King & Pantling.

Stems erect, cylindric or narrowly fusiform, 1.5–4 cm, 2–4 mm in diam., fleshy, base slightly contracted, becoming narrowed toward apex above middle, with several internodes, current ones enclosed in leaf sheaths. Leaves 3 or 4, distichous, alternate, narrowly oblong, to 4.5 × 0.6–1 (or more) cm, papery, base contracted and enlarged into sheaths, apex acute and unequally bilobed; leaf sheath gibbous, herbaceous. Inflorescences solitary, proteranthous, apparently terminal, nodding, much taller than leaves, to 8 cm, with several to more than 10 small flowers; floral bracts narrowly lanceolate, ca. 9 × 1 mm, ca. as long as or longer than pedicel and ovary, apex acuminate. Pedicel and ovary hairlike, ca. 8 mm. Flowers scented, not resupinate, spreading, thin, golden yellow, or sepals and petals pale green with red veins, lip deep purplish brown, margin pale

黑毛石斛 hei mao shi hu

Callista williamsonii (J. Day & H. G. Reichenbach) Kuntze.

Stems cylindric, sometimes swollen and fusiform, to 20 cm, 4–6 mm in diam., unbranched, with several nodes, internodes 2–3 cm, golden yellow when dry. Leaves several, usually alternate on upper part of stem, oblong, 7–9.5 × 1–2 cm, leathery, with dense black rigid hairs especially on sheaths, base decurrent forming clasping sheaths, apex obtuse and unequally bilobed. Inflorescences subterminal, 1- or 2-flowered; peduncle 5–10 mm; basal sheaths 3 or 4, short; floral bracts ovate, ca. 5 mm, papery, acute; ovary not carinate. Flowers spreading; sepals and petals pale yellow or white, lip pale yellow or white, disk tinged with tangerine. Dorsal sepal narrowly ovate-oblong, 25–34 × 6–9 (or more) mm, narrowly keeled abaxially, 5-veined, acuminate; lateral sepals similar to dorsal sepal but oblique at base, 5-veined; mentum rigid, straight, 15–20 mm, forming spur. Petals similar to sepals; lip ca. 2.5 cm, 3-lobed; lateral lobes embracing column, subobovate, front margin slightly undulate; mid-lobe suborbicular or broadly elliptic, margin undulate, apex acute; disk sparsely shortly fimbriate along veins. Column ca. 6 mm; anther cap broadly conic, front margin densely shortly barbate.

Epiphytic on tree trunks in forests; ca. 1000 m. N Guangxi, Hainan (Wuzhi Shan), SE and W Yunnan [NE India, Myanmar, Vietnam].

green, column white tinged with purple. Dorsal sepal narrowly ovate-lanceolate, 8–9 mm, 1.8–2 mm wide at base, 3-veined, caudate-acuminate; lateral sepals narrowly lanceolate, ca. as long as dorsal sepal and slightly broader, 3-veined, base oblique, apex acuminate; mentum subglobose, small. Petals narrowly elliptic, 6.5–7 × ca. 1.8 mm, apex acute; lip subrhombic or elliptic, concave, ca. 5 × 2 mm, entire, subacute; disk with 3 ± thickened central longitudinal ridges. Column ca. 1 mm, base dilated, foot ca. 1.4 mm; anther cap subglobose, glabrous.

Epiphytic on tree trunks in mountain forests, lithophytic on rocks in forests; ca. 2700 m. N Guangdong (Liannan), W Yunnan (Tengchong) [Bhutan, NE India, Myanmar, Nepal, N Thailand, N Vietnam].

67. *Dendrobium strongylanthum* H. G. Reichenbach, Gard. Chron., n.s., 9: 462. 1878.

梳唇石斛 shu chun shi hu

Callista strongylantha (H. G. Reichenbach) Kuntze; *Dendrobium ctenoglossum* Schlechter.

Stems erect, cylindric or \pm narrowly fusiform, 3–27 cm, with sheath 4–10 mm in diam., fleshy, many noded, current ones enclosed in leaf sheaths, previous year's stems golden yellow. Leaf blade distichous, alternate on entire stem, oblong, 4–10 \times 1.7 cm, thin, base dilated into gibbous sheaths, apex acute and unequally bilobed; leaf sheaths sparsely clasping when dry, herbaceous, sheath mouth obliquely truncate. Inflorescences 1–4, subterminal or lateral on upper part of stem, suberect, to 13 cm, much taller than leaves, densely 20- or more flowered; rachis slender; floral bracts ovate-lanceolate, 2–4 mm, apex acuminate. Pedicel and ovary ca. 5 mm. Flowers yellowish green, sepals purplish red at base, petals pale yellowish green with purplish red stripes, lip violet, column pale purple. Dorsal sepal narrowly ovate-lanceolate, ca. 11 \times 2 mm, 3-veined, long acuminate; lateral sepals falcate-lanceolate, to 14 \times ca. 4.3 mm, 4- or 5-veined, base oblique, abruptly contracted above middle, apex caudate; mentum broadly conic, ca. 4 mm. Petals ovate-lanceolate, slightly smaller than dorsal sepal, 3-veined, apex acute; lip ca. 8 \times 4 mm, 3-lobed above middle; lateral lobes ovate-triangular, margin with comb-shaped teeth, apex sharply toothed; mid-lobe triangular, margin wrinkled and crestlike, apex acute; disk with 2 or 3 lamellate ridged projections, ridges thickly fleshy, terminating at base of mid-lobe, apex enlarged. Column subterete, ca. 2 mm, foot margin densely finely papillate; anther cap subglobose, front margin lacerate.

Epiphytic on tree trunks in mountain forests; 1000–2100 m. Hainan (Bawangling), S and W Yunnan [Myanmar, N Thailand, N Vietnam].

68. *Dendrobium monticola* P. F. Hunt & Summerhayes, *Taxon* 10: 110. 1961.

藏南石斛 zang nan shi hu

Callista alpestris Kuntze; *Dendrobium alpestre* Royle (1839), not Swartz (1799); *D. pusillum* D. Don (1825), not Kunth (1815); *D. roylei* A. D. Hawkes & A. H. Heller.

Stems erect or ascending, to 10 cm, becoming narrower from base, fleshy, current ones enclosed in leaf sheaths, with several nodes, internodes ca. 1 cm. Leaves distichous along whole stem, narrowly oblong, 5–6 cm (or more) \times 3.5–4.5 mm, thinly leathery, base dilated into gibbous sheaths, apex acute and unequally slightly bilobed; leaf sheaths loosely embracing stem, lowermost largest, uppermost smaller, sheath mouth obliquely truncate. Inflorescences 1–4, subterminal or arising from upper part of current year's leafy stems, suberect or nodding, 2.5–5 cm, several flowered; floral bracts narrowly ovate, 2–3 mm, acute. Pedicel and ovary ca. 5 mm, slender. Flowers spreading, white, lateral lobes of lip with purplish red stripes, disk white with purplish red stripes, column foot with purplish red spots. Dorsal sepal narrowly oblong, (5–)7–9 \times 1.5–1.8 (or more) mm, 3-veined, acuminate; lateral sepals falcate-lanceolate, 7–9 \times ca. 3.5 mm, 3-veined, base oblique, abruptly contracted above middle and acute; mentum broadly conic. Petals narrowly oblong, 6–8 \times ca. 1.8 mm, 1–3-veined, acuminate; lip subelliptic, 5.5–6.5 \times 3.5–4.5 (or more) mm, shortly clawed, slightly crispate at middle, 3-lobed above middle; lateral lobes erect, margin comb-shaped, apex attenuate and sharply dentate;

mid-lobe ovate-triangular, margin cristate-corrugate, acute, reflexed; disk central part with 2 or 3 lamellate ridged projections, ridges thickly fleshy, extending from base of lip to base of mid-lobe, apex slightly enlarged. Column ca. 3 mm, middle part stout, to 1 mm wide, upper part without conspicuous teeth, foot ca. 5 mm, margin densely finely papillate; anther cap subglobose, front margin slightly dentate.

Lithophytic on rocks in mountain valleys; 1700–2200 m. SW Guangxi (Napó), S Xizang (Gyirong, Nyalam) [N India, Laos, Nepal, N Thailand, N Vietnam].

Material of this species has been named as *Dendrobium eriflorum* Griffith (*Orchids China*, 155. 1998).

69. *Dendrobium compactum* Rolfe ex W. Hackett, *Gard. Chron.*, ser. 3, 36: 400. 1904.

草石斛 cao shi hu

Dendrobium wilmsianum Schlechter.

Stems cylindric, \pm fusiform, 1.5–3 cm, 4–5 mm in diam., fleshy, with 3–6 nodes, current ones enclosed in leaf sheaths, previous year's naked stems golden yellow. Leaves 2–5, distichous, alternate, lowermost smaller than upper, oblong, 1–2.5 \times 0.4–0.6 cm or more, herbaceous, base dilated into sheaths, apex obtuse and unequally bilobed; leaf sheaths obliquely drum-shaped, papery, loosely clasping; sheath mouth obliquely truncate. Inflorescences 1–5, subterminal or lateral on upper part of current year's stem, erect, usually 1–2 cm, not exceeding leaves, 3–6-flowered; floral bracts ovate-lanceolate, 2–3 \times ca. 1 mm, 1-veined, acute. Pedicel and ovary ca. 4 mm. Flowers spreading, white, lip pale green. Dorsal sepal ovate-oblong, ca. 4 \times 1.8 mm, 3-veined, acute; lateral sepals obliquely triangular-lanceolate, ca. 4 \times to 3.5 mm, 3- or 4-veined, base oblique, apex acute; mentum conic. Petals suborbicular, ca. 4 \times 1.7 mm margin slightly undulate, apex acute; lip suborbicular, ca. 5 \times 4 mm, inconspicuously 3-lobed; lateral lobes subrounded, margin finely toothed above middle; mid-lobe broadly ovate-triangular, margin cristate-corrugate, apex mucronate; disk with fleshy ridges combined by 2 or 3 lamellae, apex slightly narrowed. Column ca. 2 mm, upper part enlarged; anther cap broadly conic, front margin slightly notched. Capsule ovoid, ca. 5 mm in diam., with 3 ribs.

Epiphytic on tree trunks in broad-leaved forests; 1600–1900 m. S Yunnan [Myanmar, N Thailand].

70. *Dendrobium sinominutiflorum* S. C. Chen, J. J. Wood & H. P. Wood, **nom. nov.**

勐海石斛 meng hai shi hu

Replaced synonym: *Dendrobium minutiflorum* S. C. Chen & Z. H. Tsi, *Bull. Bot. Res.*, Harbin 9(2): 27. 1989, not *Dendrobium minutiflorum* Kraenzlin in Sarasin & Roux, *Nova Caledonia, Bot.* 1: 84. 1914, nor *Dendrobium minutiflorum* Gagnepain, *Bull. Mus. Natl. Hist. Nat.*, sér. 2, 21: 741. 1950.

Stems narrowly ovoid or \pm fusiform, 1.5–3 cm, with leaf sheaths 4–5 mm in diam., with 3 or 4 nodes, current ones enclosed in leaf sheaths. Leaves usually 2 or 3, narrowly oblong, 1.5–5.5 \times 0.4–0.7 cm or wider, leathery, base dilated into leaf

sheaths, apex obtuse and unequally 2-lobed; leaf sheaths pale white when dry, obliquely drum-shaped, loosely clasping, papery; sheath mouth obliquely truncate. Inflorescences 1–3, subterminal or lateral on upper part of current year's stem, 2–4 cm, several flowered; rachis slender, ca. 0.5 mm in diam.; floral bracts ovate, ca. 3 × 1 mm, membranous, acute. Pedicel and ovary ca. 4 mm. Flowers spreading, greenish white or pale yellow. Dorsal sepal narrowly ovate, ca. 6.5 × 2.5 mm, 5-veined, acute; lateral sepals ovate-triangular, ca. 6.5 × 5 mm, 5-veined, base oblique, apex acute; mentum oblong, ca. 5 mm, obtuse. Petals oblong, ca. 6 × 2 mm, 3-veined, apex acute; lip

suboblong, ca. 5 × 4 mm, 3-lobed above middle; lateral lobes with margin entire or inconspicuously toothed, apex sharply dentate; mid-lobe transversely oblong, margin ± crisped, apex emarginate; disk with 3 lamellae combined into a broadly thickened fleshy ridge, ridge apex terminating at base of mid-lobe. Column short and thick, ca. 2 mm, base dilated; anther cap with apical margin slightly lacerate. Capsule obovoid, nearly equal in length and width, ca. 7 mm, with 3 ribs.

• Epiphytic on tree trunks in open forests; 1000–1400 m. S Yunnan (Menghai, Mengla).

12. *Dendrobium* sect. *Crumenata* Pfitzer in Engler & Prantl, Nat. Pflanzenfam. 2(6): 174. 1889.

基肿组 *ji zhong zu*

Ceraia Loureiro.

Roots smooth. Stems tufted, in most species shoot with 3 zones: pseudobulbous, leafy, and flowering, with leaves reduced to scales; fusiform swollen basal portion formed by 1–3 internodes, covered with sheaths and located directly above or several internodes above rhizome; growth continuing in second year; in *Dendrobium crumenatum*: stem flowering after 2 years; thereafter distal stem may branch and continue growth, with branches flowering. Leaves terete, laterally flattened, conduplicate, or canaliculate. Inflorescences multiple, in most species: borne along leafless distal stem, rarely along a fully leafy stem; each compressed into a peduncle, producing 1 or 2 flowers at once in bursts over more than one season (gregarious blooming and ephemeral). Flowers usually white, sometimes yellowish or pink. Mentum prominent, straight or decurved, often saccate, containing a gland near apex of column foot. Lip 3-lobed, lateral lobes vertical, disk often with keels sometimes hairy.

About 76 species: from Thailand to Malaysia through Indonesia and the Philippines to Australia, Fiji, and Guam; four species in China.

71. *Dendrobium crumenatum* Swartz, J. Bot. (Schrader) 2: 237. 1799.

木石斛 *mu shi hu*

Aporum crumenatum (Swartz) Brieger; *A. kwashotense* (Hayata) Rauschert; *Callista crumenata* (Swartz) Kuntze; *Ceraia parviflora* (Ames & C. Schweinfurth) M. A. Clements; *Dendrobium crumenatum* var. *parviflorum* Ames & C. Schweinfurth; *D. kwashotense* Hayata; *D. schmidianum* Kraenzlin; *Oncidium crumenatum* (Swartz) Blume.

Stems slightly compressed, cylindrical, 40–70 cm, upper part slender, with 3 or 4 internodes dilated and fusiform above base, dilated portion of stem to 2 cm in diam., often with longitudinal ridges. Leaves distichous on middle part of stem, ovate-oblong, ca. 6 × 2.5 cm, leathery, with clasping sheaths at base, apex obtuse and unequally bilobed. Inflorescences arising from distal leafless part of stem, usually solitary; floral bracts elliptic, ca. 6 × 2.5 mm. Pedicel and ovary pale red, ca. 1.5 cm. Flowers lasting for 1 day, initiated 9 days after a rapid temperature drop, strongly fragrant, spreading; sepals and petals white or sometimes tipped pink, lip white, keels yellow, column and anther cap white. Dorsal sepal ovate-lanceolate, 17–22 × ca. 5 mm, slightly obtuse; lateral sepals obliquely ovate-lanceolate, slightly larger than dorsal sepal; mentum narrowly conic, to 15 mm. Petals obovate-oblong, 17–20 × to 7 mm, subacute; lip 24–25 × 13–18 (or more) mm, 3-lobed; lateral lobes erect, subobovate, subtruncate; mid-lobe obovate, ca. 12 × 10 mm, margin crenulate and crisped, mucronate; disk with 5 keeled ridges with denticulate margin. Column ca. 3 mm.

Taiwan (Lu Dao) [Cambodia, India (Andaman Islands), Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam].

72. *Dendrobium equitans* Kraenzlin in Engler, Pflanzenr. 45(IV. 50. II. B. 21): 228. 1910.

燕石斛 *yan shi hu*

Aporum equitans (Kraenzlin) Brieger; *Ceraia batanensis* (Ames & Quisumbing) M. A. Clements; *C. equitans* (Kraenzlin) M. A. Clements; *Dendrobium batanense* Ames & Quisumbing.

Stems erect, cylindrical, compressed, to 40 cm, 1 or 2 internodes above base dilated and fusiform, 2–3 cm. Leaves distichous, ascending, laterally compressed and dagger-shaped, 4–7 cm × 3–4 (or more) mm, fleshy, base with tightly clasping fleshy sheaths, apex acute. Inflorescence axillary in distal leaf axil; floral bracts sheathlike, ca. 4 mm, membranous. Pedicel and ovary ca. 1 cm. Flowers usually solitary, each lasting 1 or 2 days, not opening widely, creamy white, disk yellow in center. Dorsal sepal ovate-lanceolate, ca. 15 mm, ca. 3.5 mm wide at middle, acute; lateral sepals obliquely ovate-lanceolate, nearly as long as dorsal sepal, base oblique; mentum angulate, 8–10 mm. Petals obovate-lanceolate, nearly as large as dorsal sepal, 3-veined, apex acute; lip obovate, ca. 18 mm, ca. 9 mm wide at middle, 3-lobed above middle, base cuneate; lateral lobes erect, subobovate, front margin denticulate; mid-lobe orbicular or transversely oblong, margin lacerate or fimbriate, apex rounded; disk densely finely papillate-hairy. Column ca. 2 mm; anther cap subquadrate, glabrous.

Epiphytic on tree trunks in forests; 100–300 m. S Taiwan (Lan Yu) [Philippines].

This species has been misidentified in Taiwan as *Dendrobium ventricosum* Kraenzlin (e.g., in Fl. Taiwan. 5: 969. 1978).

73. *Dendrobium exile* Schlechter, Repert. Spec. Nov. Regni Veg. 2: 85. 1906.

景洪石斛 jing hong shi hu

Ceraia exilis (Schlechter) M. A. Clements.

Stems erect, upper part branched, cylindric, to 50 cm, slender, ca. 3 mm in diam., 2 or 3 internodes above base dilated and fusiform; dilated portion of stems ca. 4.5 cm, ca. 8 mm in diam., fleshy, with 4 ribs, with pale white membranous sheaths when young, reddish brown and glossy when old. Leaves often alternate on upper part of branches, erect, terete, 2.5–6 × 1.5–2.5 (or more) cm, base with leathery sheaths, apex acute. Inflorescence axillary on leafy older stems, 1-flowered, up to 4 flowers open at once per stem; floral bracts ovate, ca. 2 mm. Pedicel and ovary ca. 1 cm, slender. Flowers spreading, white, inner surface of lip lateral lobes with a few pale purple spots, disk yellow. Dorsal sepal sub lanceolate, ca. 17 × 2.5 mm, 5-veined, long acuminate; lateral sepals similar to and ca. as large as dorsal sepal; mentum rigid, ca. 1 cm, acute. Petals similar to sepals, ca. 17 × 1.5 mm, 3-veined; lip cuneate at base, 3-lobed above middle; lateral lobes obliquely subovate-triangular, front margin undulate, apex obtuse; mid-lobe narrowly oblong, margin undulate, apex acute; disk sparsely villous, with 3 thick and stout keeled ridges from base to apex. Column ca. 2 mm, foot with a basal callus; anther cap conic. Capsule fusiform, ca. 4 × 0.6 cm.

Epiphytic on tree trunks in open forests; 600–800 m. S Yunnan (Jinghong, Mengla) [Thailand, Vietnam].

13. *Dendrobium* sect. *Aporum* (Blume) Blume, Tab. Pl. Jav. Orchid. ad t. 4. 1825.

剑叶组 jian ye zu

Aporum Blume, Bijdr. 334. 1825; *Macrostomium* Blume.

Roots smooth. Stems wiry, not swollen; shoot possibly requiring 2 years to mature; distal stem position varying. Leaves laterally compressed, distichous, glossy when dry, equitant, rigid, succulent, shortly gladiate, base oblique and relatively wide. Inflorescence position varying, lateral or subterminal, in some species borne on a specialized, leafless terminal extension of stem (pseudoraceme); flowers usually opening one at a time in succession. Flowers small, generally white, sometimes yellowish, rarely purple. Lip with an expanded mid-lobe, lateral lobes usually present, rarely vestigial; disk often callose.

About 56 species: mainly in Indonesia, Malaysia, and the Philippines, outlying species extending to Nepal and New Guinea, at low elevations; two species in China.

75. *Dendrobium spatella* H. G. Reichenbach, Hamburger Garten-Blumenzeitung 21: 298. 1865.

剑叶石斛 jian ye shi hu

Aporum banaense (Gagnepain) Rauschert; *A. spatella* (H. G. Reichenbach) M. A. Clements; *Callista spatella* (H. G. Reichenbach) Kuntze; *Dendrobium acinaciforme* Roxburgh var. *minus* Tang & F. T. Wang; *D. banaense* Gagnepain.

Stems erect, compressed trilateral, to 60 cm, ca. 4 mm in diam., base contracted, becoming slender distally, unbranched, with many nodes, internodes ca. 1 cm. Leaves distichous, ascending, slightly sparsely overlapping or alternate, laterally compressed and dagger-shaped, 2.5–4 × 0.4–0.6 (or more) cm, thickly leathery or fleshy, base dilated into sheaths tightly embracing stem, grading into sheaths distally, apex acute. Inflorescences lateral along leafless pseudoraceme; floral bracts ca. 1 mm. Pedicel and ovary ca. 6 mm. Flowers very small, white,

74. *Dendrobium pseudotenellum* Guillaumin, Bull. Mus. Natl. Hist. Nat., sér. 2, 36: 697. 1965.

针叶石斛 zhen ye shi hu

Ceraia pseudotenella (Guillaumin) M. A. Clements.

Stems erect, rigid, slender, basal 2 internodes swollen to forming fusiform pseudobulb, others cylindric, 30–43 cm, ca. 2 mm in diam., unbranched, with many nodes, internodes 1–3.5 cm, yellowish brown when dry, glossy. Leaves sparsely distichous, ascending, subterete, slender, 3–9 cm, less than 1 mm wide, fleshy, base with tightly clasping sheaths, apex acute. Peduncle ca. 2 mm; basal sheaths 4 or 5, overlapping; floral bracts ovate, ca. 1.5 mm, acute. Pedicel and ovary ca. 5 mm, slender. Flowers very small, thin, white. Dorsal sepal oblong, ca. 6 × 2.2 mm, 3-veined, obtuse; lateral sepals obliquely ovate-triangular, much larger than dorsal sepal, base very oblique, apex slightly acute; mentum narrowly conic, ca. 9 mm, obtuse. Petals oblong, ca. 6 × 2 mm, 3-veined, obtuse; lip obovate, ca. 11 × 7 mm, margin lacerate-fimbriate, apex 3-lobed; lateral lobes erect; mid-lobe nearly transversely oblong, apex concave; disk with 3 central ridged projections, dilated into plicate ridges at base of mid-lobe. Column ca. 2 mm, foot ca. 8 mm, with a basal callus; anther cap nearly glabrous, apex subtruncate.

Epiphytic on tree trunks in mountain forests; ca. 900 m. S Yunnan (Mengla) [Vietnam].

lip tinged with red. Dorsal sepal subovate, 3–5 × 1.6–2 (or more) mm, 3-veined, obtuse; lateral sepals obliquely ovate-triangular, 3.5–6 mm, 5-veined, base very oblique, margin close to column, apex acute; mentum 5–7 mm, narrow. Petals oblong, ca. as long as dorsal sepal, but narrower, bluntly rounded; lip adnate to column foot at apex, subspatulate, 8–10 × 4–6 (or more) mm, front margin with bluntly rounded teeth, rounded; disk with 3–5 central ridged projections. Column very short; anther cap slightly toothed along apical margin. Capsule elliptic, 4–7 mm.

Epiphytic on tree trunks at forest margins, lithophytic on rocks in forests; 200–300 m. S Fujian (Nanjing), SW Guangxi (Daxin), Hainan (Baoting, Ledong, Sanya), Hong Kong, S Yunnan [Bhutan, Cambodia, NE India, Laos, Myanmar, Thailand, Vietnam].

This species has been misidentified as *Dendrobium acinaciforme* Roxburgh (e.g., in FRPS 19: 142. 1999), which is in fact a native of Ambon Island in Maluku, Indonesia.

76. *Dendrobium terminale* E. C. Parish & H. G. Reichenbach, Trans. Linn. Soc. London 30: 149. 1874.

刀叶石斛 dao ye shi hu

Aporum terminale (E. C. Parish & H. G. Reichenbach) M. A. Clements; *A. verlaquii* (Costantin) Rauschert; *Callista terminalis* (E. C. Parish & H. G. Reichenbach) Kuntze; *Dendrobium verlaquii* Costantin.

Stems erect, sometimes upper part branched, compressed trilobate, 10–23 cm, with leaf sheaths ca. 5 mm in diam., base contracted, with many nodes, internodes ca. 1 cm. Leaves distichous, sparsely overlapping, ascending, laterally compressed and dagger-shaped, 3–4 × 0.6–1 (or more) cm, thickly leathery or fleshy, apex acute. Inflorescence subterminal; pe-

duncle very short; basal sheaths several, membranous; floral bracts small. Pedicel and ovary ca. 7 mm, slender. Flowers small, pale yellowish white. Dorsal sepal ovate-oblong, 3–4 × ca. 1.4 mm, 3-veined, subacute; lateral sepals obliquely ovate-triangular, ca. 4 mm, 3- or 4-veined, base very oblique, margin close to column, apex acute; mentum narrowly long, ca. 7 mm. Petals oblong, ca. 10 × 15 mm, 1-veined, apex subobtusely; lip adnate to apex of column foot, subspatulate, ca. 10 × 7 mm, adaxially with thickened callus or crestlike protrusion near apex, front margin undulate, apex 2-lobed. Column ca. 1 mm; anther cap truncate and denticulate at apical margin.

Epiphytic on tree trunks at forest margins, lithophytic on rocks in mountain valleys; 800–1100 m. S Yunnan (Mengla) [NE India, Malaysia, Myanmar, Thailand, Vietnam].

14. *Dendrobium* sect. *Strongyle* Lindley & Paxton, Paxt. Fl. Gard. 1: 134. 1850.

圆柱叶组 yuan zhu ye zu

Roots smooth. Stem erect or pendulous, glossy when dry, wiry, not swollen, compressed cylindrical, rigid, leafy throughout or with a pseudoraceme. Leaves well spaced, lax and alternate, normally terete, subcylindric, or subulate-cylindric, fleshy. Inflorescences borne on leafy stem or pseudoraceme; flowers small, borne one at a time in succession, lasting a few days to ca. 10 days.

About 20 species: India to S China and New Guinea; two species (one endemic) in China.

77. *Dendrobium parviflorum* H. G. Reichenbach ex Lindley, J. Proc. Linn. Soc., Bot. 3: 4. 1858.

少花石斛 shao hua shi hu

Aporum jenkinsii Griffith; *Callista jenkinsii* (Griffith) Kuntze.

Stems erect or ascending, compressed cylindrical, 10–37 (–45) cm, 2–7 mm in diam., rigid, sometimes branched, with many nodes, internodes clavate, 1–2 cm, with longitudinal ribs, yellow when dry, glossy. Leaves distichous, recurved above middle, laterally compressed and subcylindric, ensiform, 1.7–3 × 0.1–0.4 (or more) cm, thickly fleshy, base dilated into clasping sheaths, apex acute or obtuse. Inflorescences bearing flowers successively one at a time from bundle of bracts, lateral on old leafy stem, 2–4 mm; basal sheaths 3 or 4, large; floral bracts ovate, 1–2 mm, membranous. Pedicel and ovary 6–15 mm, slender. Flowers fragrant, spreading, thinly textured, white or pale yellow, adaxial surface of lip with yellow spots. Dorsal sepal ovate to oblong, 3.3–12 × 2.5–5 mm, 7-veined, slightly obtuse or acute; lateral sepals ovate-triangular, ca. as long as dorsal sepal, 3.5–8 mm wide, 7- or 8-veined, base very oblique, apex acute; mentum bent forward, 10–20 × ca. 10 mm. Petals narrowly oblong to oblong, ca. 12 × 3 mm, 3-veined, obtuse or acute; lip spatulate to obovate-triangular, 15–25 × 7–10 mm, front margin undulate, emarginate; central part of disk with 2 (–4) thickened raised veins terminating below lip apex, densely papillose near apex. Column 1–3 mm, foot 1–2 cm.

On trees in open forests, on trunks of *Podocarpus* in forests; ca. 1500 m. S Yunnan (Jinghong) [NE India, Laos, Thailand, Vietnam].

P. Ormerod (pers. comm.) questions the identity of the Chinese material, which might prove to be different from true *Dendrobium parviflorum*.

78. *Dendrobium hainanense* Rolfe, Bull. Misc. Inform. Kew 1896: 193. 1896.

海南石斛 hai nan shi hu

Aporum hainanense (Rolfe) Rauschert.

Stems rigid, ascending, compressed cylindrical, slightly falcate, 10–30 (–45) cm, 2–3 mm in diam., not branched, with many nodes, leafy throughout, internodes slightly clavate, ca. 1 cm. Leaf blade subcylindric, almost subulate, slender, 2–2.5 (–5.5) × 0.1–0.3 cm, thickly fleshy, apex obtuse. Inflorescence arising from upper part of leafless stem, usually 1-flowered; floral bract ovate, ca. 1 mm, membranous. Pedicel and ovary ca. 6 mm, slender. Flower small, white with yellow spot on disk of lip. Dorsal sepal ovate, 3.3–4 × ca. 2.5 mm, 3-veined, apex subobtusely; lateral sepals ovate-triangular, 3.3–4 × ca. 3.5 mm, 3-veined, base oblique, apex acute; mentum ca. 10 mm. Petals narrowly oblong, 3.3–4 × ca. 1 mm, 1-veined, apex acute; lip obovate-triangular, ca. 15 × 7 mm, base clawed, apical margins undulate, apex emarginate; disk smooth. Column 1–1.5 mm, with a foot ca. 1 cm; anther cap semiglobose, glabrous. Fl. Sep–Oct.

• On tree trunks in broad-leaved forests; 1000–1700 m. Hainan.

Material in cultivation labeled “*Dendrobium hainanense*” with uniformly bright yellow flowers is incorrectly named; see the comment under *D. hancockii* (p. 385).

