FLORA OF BRITISH INDIA.

BY

SIR J. D. HOOKER, C.B., K.C.S.I.

M.D., F.B.S., D.C.L. OXON., LL.D. CANTAB.

COBRESPONDING MEMBER OF THE INSTITUTE OF FRANCE, AND HOW. MEMBER OF THE ASIATIC SOCIETY OF BENGAL.

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1894.

Disperis.

pollinia; anther oblong, obtuse, completely 2-celled; grains of pollinia 3-4seriate, secund on the rachis, cuneiform, caudicles rather long, twisted, glands large naked. Capsule fusiform .- Species 20, Africa and the following.

The above description applies to the two Indian species of this highly interesting genus, the fertilization of which deserves a careful study. The analysis of dried specimens is so difficult that I advance the description of the membrane of the column and its appendages (which differs from that of others) with hesitation.

1. D. zeylanica, Trimen Cat. Pl. Ceyl. 91; lateral sepals concave not waved, petals semilunate obtuse. D. tripetaloides, Lindl. Gen. & Sp. Orchid. 371 (in part); Thwaites Enum. 311; Wight Ic. t. 930 & v. 15.

CEYLON; in the Central Provinces alt. 3-5000 ft., Walker, &c, The MALABAR

& CANARA Ghats, &c., Wight, &c.

Stem 6-10 in. erect from the subglobose tubers, 1-3-leaved. Leaves 3-1 in., distant, amplexicaul, acute. Flowers 1 in. diam., subcorymbosely, spicate; bracts leafy; ovary 1 in., straight; lip included under the hood, erect from the top of the column, 2-partite from a narrow cuneate base, arms falcately recurved, papillose; a pendulous linear appendage, with a rounded dilated papillose apex bearing a central cone, is inserted on the cuneate base of the lip. Capsule 1 in.

2. D. neilgherrensis, Wight Ic. t. 1719; lateral sepals strongly waved, petals lunate cuspidately acuminate. NILGHIRI HILLS, Wight. Larger and stouter than Dezcylanica, with larger reddish white flowers spotted

with crimson; the lateral sepals are free or connate, and pubescent at the base .-Perhaps a form of D. zeylanica. Tribe V. CYPRIPEDIEÆ. (See vol. v. p. 668.)

111. CYPRIPEDIUM, Linn.

Terrestrial herbs, with a leafy stem, plaited leaves, and terminal flowers,

or stemless with distichouse radical coriaceous often tessellately coloured leaves and 1-∞-fld. scapes. Flowers large, solitary or few. Sepals spreading, free on the lateral connate and placed under the lip. Petals free, very various. Lip sessile, side lobes small, spreading or inflexed, midlobe very large saccate, inflated oblong or helmet-shaped. Column short, terete; anthers 2, globose, together with the disciform deflexed stigma hidden under a large disciform staminode; ovary 1 celled .- Species about 40, Europe, temp. and trop. Asia and America.

In describing the Scapigerous species I have largely availed myself of published plates and the description in Veitch's excellent Manual, made from living plants. I have made no attempt to enumerate even the multitude of named hybrid forms that have been produced by crossing the Indian species with one another. systematized in Veitch's Manual, where nearly 50 are assigned to their parents. barbatum alone has been crossed with upwards of 15 other species.

Leaves 2, opposite on the stem, plicate.

1. C. elegans, Reichb. f. in Flora, 1886, 560; villous with cellular hairs, leaves orbicular-ovate or oblong, flowers solitary.

SIKKIM HIMALAYA, alt. 1000 ft., Pantling. EASTERN TIBET; North of Phari, King's Collector.

Stem 1-2 ft. high below the leaves. Leaves 1-2 in. broad. Scape shorter than the leaves; bract elliptic; flower about 1 in. diam .- A very interesting plant, the nearest ally of which is C. japonicum. I have seen only a single small specimen.

- * Leaves several, alternate, plaited.
- 2. C. cordigerum, Don Prodr. 37; sepals and narrower petals spreading ovate-lanceolate acuminate green or white, lip oblong white, staminode ovate- or oblong-cordate. Lindl. Gen. & Sp. Orchid. 527; Done in Jacquem. Voy. Bot. 165, t. 166.

TEMPERATE HIMALAYA; . from Kashmir, alt. 9-11,000 ft., Clarke, to Kumaon, alt. 7-9000 ft., Royle.

Stem 10-24 in., robust or slender, and ovary puberulous. Leaves 3-6 by 2-4 in., approximate or scattered, from nearly orbicular to lanceolate, acute or acuminate. Flower solitary; bract 1-4 in., leafy; sepals 11-2 in., longer than the lip, the connate lateral entire or split at the apex; column yellow. Capsule 11 in., erect, clavate. -As Lindley observes, this is not distinguishable except by colour from the European

C. calceolus, which extends from Britain to Dahuria. It would be well to compare living specimens before uniting them. 3. C. macranthon, Swartz in Act. Holm. 1800, 251; dorsal sepal

much inflated purple, staminode evate-oblong. Lindl. Gen. & Sp. Orchid. 528; in Bot. Reg. t. 1534; Bot. Mag. t. 2938; Reichb. Fl. Exot. ii. t. 16, No. 99; Ic. Fl. Germ. xiii. t. 498; Fl. des Serres, t. 1118; Ill. Hortic. 1857, t. 147; Belg. Hortic. vii. 353, t. 61; Gartenfl. 1863, t. 409; Trans. Russ. Hort. Soc. 1863, t. 135; Orchidoph. 1887, t. 75, f. 1; Ledeb. Fl. Ross. iv. 87.

from linear- to ovate-oblong acute, connate lateral narrower, lip subglobose

ALPINE HIMALAYA; from Garwhal to Sikkim, alt. 11,500-14,000 ft.—DISTRIB Northern and Subarctic Europe and Asia to Japan.

by 3 in., oblong-lanceolate, both white striped with red.

Stem 1-11 ft., usually very stout, pubescent. Leaves 3-6 by 2-4 in., ovate or oblong, acute, puberulous. Flowers 1-2, 11-2 in. diam.; sepals and petals very variable in length and breadth, longer or shorter than the lip, yellowish or greenish with dark purple stains, or all purple; combined lateral acute or bidentate; lip inflated, light or dark purple, mouth small crenate, sides often grooved concentrically.

-In Sikkim specimens gathered by myself, the dorsal sepal is broadly oblong 1 in. long, and the petals as long but narrower and lanceolate, both yellow-green and striped with dark red. VAR. ventricosa; Carrière in Rev. Hortic. 1877, 310; dorsal sepal broader,

and petals usually much longer, often 2 in. long, lip very large 1-11 in. diam. C. ventricosum, Swartz in Act. Holm. 1800, 251; Lindl. Gen. & Sp. Orchid. 529; Sweet Fl. Gard. iv. t. 1; Reichb. Ic. Fl. Germ. xiii. t. 497.—Chumbi, in Tibet, N.E. of Sikkim, King's Collector .- Distrib. Siberia. - In King's Tibetan specimen, of which

he has lent me a drawing, the dorsal sepal is broadly ovate, 11 by \$ in., the petals 2

- ** Leaves radical, distichous, oblong or lorate, coriaceous, not plaited. Scape 1-3-fid., pubescent or villous.
- a. Petals as broad as the dorsal sepal, short, sessile, broadly oblong, margins not undulate nor warted.
- 4. C. concolor, Batem. in Bot. Mag. t. 5513; leaves oblong or linearoblong tessellated, scape short 1-2-fld., sepals suborbicular and ellipticoblong petals yellow ciliate, sac of lip subcylindric, staminode subrhomboidly ovate apiculate. Ill. Hort. 1865, t. 444; Gartenfl. 1874, t. 803; Fl. des Serres, t. 2321; Williams Orchid. Alb. t. 302; Reichb. f. in Gard. Chron. 1865, 626; 1883, i. 19, fig. 3; Veitch Man. 17, with fig.

TENASSERIM; near Moulmein, Parish. UPPER BURMA; in the Shan hills. Prayer .- DISTRIB. Cambodia.

Leaves 3-5 in., crowded, obtuse, pale green above, fascicled with undulate bands of dark green, purple or purple spotted beneath. Scapes 1-2 in. and cymbiform bract dark purple; flowers 2-3 in. diam., pale yellow, sparsely dotted with purple; petals hardly longer than the sepals; lip small, mouth slightly dilated .- Reichb. f. describes (Gard. Chron. 1886, 294) a var. chlorophylla with an interrupted line of purple spots along the midribs of the sepals and petals, and var. sulphurina (l. c. 1888, ii. 264) with unspotted sulphur coloured flowers. Other vars. are tonkinensis, Lindenia, ii. t. 77, and Regneri, Orchidoph. 1886, 226.—The C. Godefroyi of Siam spotted, and a 3-toothed staminode.

is very closely allied, but has dorsal sepals and petals broader than long, copiously 5. C. niveum, Reichb. f. in Gard. Chron. 1869, 1038; Xen. Orchid. ii. 155; leaves linear-oblong tessellated, scape elongate 1-2-fld., sepals orbicular and broadly oblong petals ciliate, sac of lip ovoid mouth contracted, staminode large transversely oblong. Bot. Mag. t. 5922; Ill.

bachia, i. t. 34; Gard. Chron. 1883, ii.; fig. 1. Veitch Man. 39, with fig.; C. concolor, var. nivea, Reichb. f. in Gard. Chron. l. c. STRAITS OF MALACCA; Langkawi Islands, south of Penang .- DISTRIB. Tambilan Island, between Singapore and Borneo, and W. coast of Siam. Leaves 4-6 in., green above with darker blotches, lurid purple beneath. Scape

Hort. 1871, t. 83; Flor. Mag. 1871, t. 543; Jennings Orchid. t. 28; Reichen-

1,-2-fid.; bracts very short; flowers 3 in. diam., pure white more or less dotted with purple; dorsal sepal very broad, stained with purple on the back; petals rather longer, variable in size and breadth; staminode closing the mouth of the lip.

B. Petals as broad as the dorsal sepal or nearly so, spathulate, claired, margins not warted.

6. C. villosum, Lindl. in Gard. Chron. 1854, 125; leaves loriform, not tessellate, scape elongate, villous bract nearly as long as the ovary, dorsal sepal suberect obovate-oblong with the lower margins revolute and spathulate petals ciliate, lip helmet-shaped, staminode obovate base cordate. Ill.

Hort. iv. t. 126; Pescator. t. 48; Fl. des Serres, t. 1475. Lindenia, iii. t. 132; Warner Sel. Orchid. ii. t. 30. Veitch Man. 54, with fig. C. Boxalli, Reichb. f. in Gard. Chron. 1877, i. 367; Ill. Hort. xxvi. 345.

TENASSERIM; Moulmein, alt. 4-5000 ft., Lobb, Parish.

Leaves 10-18 in., green above, paler beneath. Scape 1-fld.; bract spathaceous

and ovary villous; flowers 5-6 in. diam., glossy; dorsal sepal green with brownpurple base and white margins, keel hirsute; petals hirsute towards the base, and lip brownish yellow, mouth and staminode tawny yellow .- C. Boxalli is a var. with black spots on the dorsal sepal and more tessellated petals. Var., aurea (Gard. Chron. 1883, i. 374) has a bright yellow-green dorsal sepal margined with white and golden yellow petals and lip.

7. C. hirsutissimum, Lindl. in Bot. Mag. t. 4990; leaves lorate acute not-tessellate, bract small and flower hirsute, dorsal sepal erect orbicular-ovate obtuse, petals horizontal spathulate claw crisped or undulate, lip helmet-shaped, staminode quadrate angles rounded. Warner Sel. Orchid. i. t. 15; Belg. Hortic. vii. 353, t. 61; Ill. Hort. iv., Misc. 67; Xen. Orchid. ii. 107, t. 132; Rev. Hortic. 1859, 182; Fl. des Serres, t. 1430; Veitch Man. 29, with fig.

KHASIA HILLS; on the Assam face, Simons. Leaves 9-12 in., green. Scape 12 in., green, hairs of bracts and flowers dark purple; flowers 4 in. diam.; dorsal sepal green with a dull purplish spotted disk;

petals nearly as broad as the dorsal sepal, violet-purple, the lower half with green sides and midrib and copious dark spots, and hairs; lip green flushed with dark purple, minutely warted, mouth green within; staminode green, base white.

y. Petals narrower but not much longer than the dorsal sepal, sometimes. warted on the surface, but not on the margins, which are glabrous.

8. C. Drurii, Beddome Ic. Plant. Ind. Or. 23, t. 112; leaves ligulate

glabrous not tessellated, scape tall 1-fld. pubescent, bract much shorter than the ovary, dorsal sepal broadly ovate ciliolate arched, petals linearoblong obtuse surface warted and hirsute towards the base, lip helmetshaped mouth open, staminode subquadrate. Reichb. f. in Gard. Chron. 1876, 68; Xen. Orchid. ii. 223; Ill. Hort. 1877, t. 265; Lindenia, i. t. 6;

Flor. Mag. N. S. t. 425; Veitch Man. 22, with fig.

TRAVANCORE MTs., alt. 5-6000 ft., Drury. Leaves 7-10 in., bright green. Scape 9-12 in. and small obtuse bracts and ovary pubescent; flowers 3 in. diam.; dorsal sepal greenish yellow with a broad dark median band and a dorsal keel with black hairs; lower connate sepals smaller; betals incurved tips rounded, bright ochreous yellow, with a dark median band, warts and hairs blackish; staminode much smaller than the mouth of the lip, which is bright yellow dotted with purple within, and with acute margins.

9. C. insigne, Wall. mss. in Lindl. Coll. Bot. t. 32; leaves ligulate glabrous not tessellated, scapes elongate 1-2-fld., bract equalling the ovary, dorsal sepal large arched orbicular-ovate margins subrecurved, petals linear-oblong glabrous margin undulate, lip broadly helmet-shaped, staminode subquadrate. Lindl. Gen. & Sp. Orchid. 530; Hook. Fl. Exot. t. 34; Lodd. Bot. Cab. t. 1321; Bot. Mag. t. 3412; Williams Orchid. Alb.

iv. t. 155; Griff. Notul. 344; Ic. Pl. Asiat. t. 322; Veitch Man. 32;

KHASIA HILLS, alt. 4-5000 ft., Wallich, &c.

Flore des Serres, 1564.

Leaves 8-12 in., acute, pale green. Scape 12 in., 1-2-fld. and large oblong compressed bracts and ovary pubescent; flowers 4-5 in. diam., glossy; dorsal sepal apple-green, purple-spotted, tip white, lateral smaller, paler; petals rather longer than the sepals, margins subcordate, green with white tips and purple veins; lip broad yellow or green suffused with purple, tawny yellow within; staminode pubescent with a central callus.—The above description is of the wild form; cultivated specimens vary greatly in colour, and have numberless synonyms, the principal given by Veitch are

VAR. Chantinii, Rafar. in Rev. Hort. 1866, 249; 1878, 130, with fig.; dorsal scpal margined with white purple spotted, lower combined sepals longer more acute, petal veined with amber, lip chesnut brown. Fl. des Serrez, xxi. 72; Orchidoph. 1885, 36; Williams Orchid. Alb. vi. t. 278; Gard. Chron. 1882, ii. 717, fig. 127.

VAR. Maulei, Moore in Flor. Mag. 1861, t. 57; flowers larger, margins of dorsal sepal revolute towards the base white at the tip, petals paler, lip longer narrower paler. Fl. des Serres, xv. t. 1564; Gard. Chron. 1882, ii. 716, fig. 126.

VAR. Sanderae; flowers primrose yellow, except the white margins.

Other vars. are aspera; aurea, Fl. & Pomol. 1882, 75, and albo-marginata, Williams Orchid. Alb. v. t. 232, 178. For figures of the flowers of many varieties

see Gard. Chron. 1882, ii. 716, f. 126. 10. C. Spicerianum, Reichb. f. in Gard. Chron. 1880, i. 40, 74, fig. 7; leaves ligulate subscute not tessellated, scape tall 1-2-fid., bracts much shorter than the ovary, dorsal sepal very large erect rhombic-obovate

hirsute sides strongly recurved below, petals shorter deflexed ligulate margins undulate and crisped, lip helmet-shaped mouth dilated, staminode orbicular. Bot. Mag. t. 6490, Ill. Hort. 1883, t. 473; the Garden. 1883, t. 378; Williams Orchid. Alb. 18. t. 119; Belg. Hortic. 1883, 289, t. 18; Orchidoph. 1890, 415; Gard. Chron. 1880, i. 41, f. 7; Veitch Man. 46, with fig.

- ASSAM (Low's and Sander's Collectors).
- Leaves 6-9 in., dark green, margins more or less waved, beneath purple-spotted
- near the base. Scape 9-12 in., siender, pubescent; bract narrow; flowers about 3 in. diam.; dorsal sepal horizontal, sides at the base so stoutly reflexed as to appear clawed, white base purple dotted on a green ground, midline purple; petals shorter than the lip, obtuse, yellow- or olive-green with a red median band and spots; lip brown, tinged with crimson; staminode red, edged with white, base contracted into auricle-like folds.
- 8. Petals narrower than the dorsal sepal, very long in C. Parishii, margins bearded or hirsute and warted.
- 11. C. venustum, Wall. in Bot. Mag. t. 2129; Cat. 7023; leaves
- elliptic-oblong or loriform tessellate, scape 1-2-fld., bracts half as long as the ovary, dorsal sepal broadly ovate or cordate, petals linear-oblong
- bearded sparsely warted, lip subcylindric reticulate, staminode semi-lunate. Lindl. Gen. & Sp. Orchid. 530; Hook. Exot. Flor. t. 35; Bot. Mag. t. 2129; Bot. Reg. t. 788; Reichb. Fl. Exot. 100; Lodd. Bot. Cal. 585; Warner Sel. Orchid. ii. t. 24; Veitch. Man. 53. C. pardinum, Reichb. f. in Gard. Chron. 1869, 554, and 1887, i. 382, fig. 76 (pardinum var.); Flor. Mag.
- N. S. t. 51. TROPICAL SIKKIM HIMALAYA, alt. 3-4000 ft., J. D. H., Clarke. SILHET and Assam, Wallich, Griffith, &c.
- Leaves 4-10 in., dark green, marbled with pale green above and dull purple. beneath. Scape 6-9 in., pubescent; flowers 2-21 in. diam.; dorsal sepal white with dark stripes; petals spreading, subspathulate, green and purplish, warts blackish; lip yellow green, flushed with pink, and with green reticulations, inflexed lobes yellow nearly closing the mouth.-The var. parding has larger flowers, whiter sepals, and larger and more scattered wart on the petals.
- 12. C. Fairieanum, Lindl. in Gard. Chron. 1857, 740; leaves linearoblong or loriform not tessellate, scape slender 1-fld., bracts half as long as the glandular hairy ovary, dorsal sepal large erect suborbicular obtuse, petals linear-lanceolate falcately upcurved margins crisped bearded and with black tubercles, lip slipper-formed pubescent, staminode orbicular with a deep notch and included spur in front. Bot. Mag. t. 5024; Fl. des Serres, t. 1244; Xen. Orchid. ii. 108, t. 133; Orchid. Alb. ii. t. 70; Veitch Man. 24, with fig.
- Assam, Tronson (Ic. in Hort. Calcutt.). Leaves 4-6 in., acute, bright green. Scape 4-6 in., green ; bract green ; ovary purple; flower 21-3 in. diam.; dorsal sepal greenish white with broad purple reticulated nerves, ciliate, margin waved, keel hairy; petals yellow- or greenish-white with purple nerves and margins; lip green with purple veins and spots; staminode deeply notched and 3-fid in front, side lobes acute incurved, midlobe as long, straight acute.
- 13. C. superbiens, Reichb. f. in Bonpland: 1855, 227; in Algem. Gartenzeit, 1856, 323; Xen. Orchid. ii. 9, t. 103; leaves elliptic-oblong tessellate, scape 1-fld., bract much shorter than the ovary, dorsal sepal orbicular-ovate acute, petals broadly linear deflexed fringed with black hairs and warted, lip helmet-shaped, staminode suborbicular notched in Gartenft. 1863, 49; Warner Sel. Orchid. ii. t. 12; Fl. front, base 2-lobed. dcs Serres, t. 1996; Veitch Man. 51, with fig.; Gard. Chron. 1886, ii. 405, f. 83, 84. C. Veitchianum, Ill. Hort. xii. t. 429; De Puydt, Les Orchid.

Frontisp. p. 267; Rev. Hortic. 1871, 595, fig. 78, 79. C. barbatum Veitchii, Fl. des Serres, t. 1453. C. barbatum superbum, Belg. Hortic. 1883, 97.

Crossii.

MALAY PENINSULA; Mt. Ophir, Lobb.

Leaves 5-7 in., pale or dark green with dull blotches. Scape 9-12 in., 1-fld. : flowers ciliolate, 4 in. diam.; dorsal sepal white striped with green; petals longer than the dorsal sepal, white veined with green; lip brownish purple, inflexed, lobes crimson, warted.

14. C. barbatum, Lindl. in Bot. Reg. 1841, Misc. 53; 1842, t. 17; leaves oblong to linear-oblong acute tessellate, scape 1-2-fld. pubescent, bract much shorter than the ovary, dorsal sepal broadly ovate or orbicular acute or obtuse, petals longer linear-oblong spreading and decurved ciliate and with a few black warts along the upper or both margins, lip helmetshaped mouth dilated, staminode hypocrepiform. Bot. Mag. 4234; Fl. des Serres, iii. t. 190, and xviii. t. 1879 (var. grandiflorum); Belgique

Hortic. xxxiii. 96, t. 7; Warner Sel. Orchid. Ser. 3, t. 11 (var. Warneri); Veitch Man. 12. Gard. Chron. 1886, ii. 308, f. 63. C. purpuratum, Wight

Ic. t. 1760 (not of Lindl.). C. Warnerianum, Reichb. f. in Gart. Zeit. 1883, fasc. ix. C. orbum, Reichb. f. in Gard. Chron. 1887, ii. 778. C. Crossii, Belg. Hortic. xv. 227; Veitch Man. 12, with fig.

MALACCA; on Mt. Ophir, Griffith, &c .- DISTRIB. W. PENANG, Maingay. Siam.

Leaves 4-8 in., pale green above with darker oblong spots. Scape 10-12 in.;

flowers 2-3 in. diam.; dorsal sepal folded in the middle, white with purple veins and greenish base, lower connate sepals much narrower; petals greenish brown towards the base, purple towards the tip; lip dark purple. Variable in the size and colour of the flowers. Veitch retains two varieties, 1, Crossii, leaves paler with more scattered deep green spots, under which are C. Warneriana and orba, and 2, Obrieni, with leaves paler, spots smaller, petals and lip deeper coloured .- C. orbum is described as a hybrid by Reichenbach, but Veitch regards it as a synonym of var.

15. C. Parishii, Reichb. f. in Flora, 1869, 322; in Gard. Chron. 1869, 814, with fig.; leaves ligulate 2-fid not tessellated, scape stout 4-7-fld. bracts spathaceous, dorsal sepal suberect broadly elliptic-ovate with the basal margins revolute, petals very long linear pendulous twisted margin sparsely warted below, lip helmet-shaped, staminode obovate-oblong obtusely 2-fid, base spurred: Bot. Mag. t. 5791; Williams Orchid. Alb. ii. t. 86; De Puydt, Orchid. 188; Orchidaph. 1887, t. 91. Ill. Hort. 1875, t. 214: Gard. Chron. 1869, 814; Veitch Man. 41. Selenipedium Parishii,

Rev. Hort. 1885, 132. TENASSERIM; at Moulmein, Parish.

staminode greenish yellow, margins white.

Leaves 9-15 by 11-21 in., glossy green. Scape 12-18 in., pale green, hairy; bracts and hirsute ovary green; flowers 3-4 in. diam.; dorsal sepal arched, keeled, pale. yellow green; petals 4-6 in. long, spreading, at length pendulous, basal half green with pale undulate margin and a few bristly marginal tubercles, the other half dark purple, tip obtuse pubescent; lip green or stained with purple, mouth green within;

112. APOSTASIA, Blume.

Terrestrial herbs, with a short caudex and leafy rigid stems. Leaves narrow, strongly nerved. Flowers small, in terminal or axillary simple or panicled often decurved or deflexed spikes. Sepals, petals and lip all equal and alike, free, spreading or recurved. Ovary very slender, 3-celled. Column short; anthers 2, at the sides of the rostellum, shortly stipitate, narrow, erect, 2-celled, cells parallel; staminode erect, behind the stigma,