

THE GENUS *PLEIONE* D. DON (ORCHIDACEAE) IN INDIA

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A B S T R A C T

The genus *Pleione* D. Don is represented by 6 species in India. *Pleione praecox* (J. E. Sm.) D. Don is the lectotype species.

INTRODUCTION

The genus *Pleione* was established by D. Don in 1825 with two species from Nepal, *P. praecox* and *P. humilis*, which had previously been figured and described by Sir James Smith as species of *Epidendrum*. Lindley (1821, 1830) treated them as *Coelogyne* but again (1854) separated and kept as section of *Coelogyne*. J.D. Hooker (1890) King & Pantling (1898) followed Lindley. The genus was monographically treated by Rolfe (1903), Pfitzer (1907), Hunt & Vosa (1971) and Cribb & al. (1983), Cribb & Butterfield (1988). Hunt & Vosa (1971) recognised only 9 species in the world while Cribb & al. (1983) have recognised 14 species. Recently Zhu & Chen (1998) have included 19 species in the genus. In India the genus is represented by 6 species distributed in N.W. Himalaya, Eastern Himalaya and N. E. India between 600-4200m.

The genus is named after Pleione, mother of the Pleiades (the 7 daughters of Atlas) in the Greek mythology (Schultes & Pease, 1963). The Pleiones commonly called as 'Indian or Nepalese Crocuses' or 'window-sill orchids' are a horticulturally important group of autumn and spring flowering plants. They are found growing in a wide variety of usually well drained habitats, on moss-covered rocks and cliffs or covering the lower part of the trunks of lofty trees sometimes in partial shade or sometimes fully exposed.

Pleione D. Don, Prodr. Fl. Nep. 36. 1825; Syst. Veget. 3. 727. 1826; Lindl. Veg. Kingd. 181. 1847; Pfitzer, Morphol. Stud. Orchid. Blüte 115. fig. 57. 1886 & in Engl. & Prantl., Pflanzenfam. II. 6. 126. 1888; Rolfe, in Orch. Rev. 289. 1903; Pfitz. & Kranz. in Pflanzenr. 32: 124. 1907. *Coelogyne* sect. *Pleione* Lindl. Fol. Orch. 37. 1854; Benth. & Hook. f, Gen. Pl. III. 2. 519. 1883; Hook. f, Fl. Brit. Ind. 5. 828. 1890; King & Pantl. in Ann. Roy. Bot. Gard. Calcutta 8. 139. t. 193-196. 1898.

Epiphytes. Pseudobulbs uninodal, without a creeping rhizome, close, varying in shape and size, sheathed. Leaves deciduous before flowering, 1 or 2, terminal, lanceolate or elliptic-lanceolate, acute, plicate, petioled. Scape from the base of pseudobulbs, the peduncle sheathed at base, 1 or 2 flowered.

Flowers large, spreading, pink or white; bracts convolute, lanceolate; sepals and petals subequal, lanceolate, acute; labellum large, unlobed or obscurely 3-lobed, apex entire or fimbriate, base convolute, disk with fringed lamellae; column long, curved, winged toward apex, undulate; pollinia 4 in 2 pairs, attached by a single 2-lobed appendage; fruits oblong, ridged.

Distribution: Himalaya, N. E. India; Nepal; Myanmar; China; Taiwan; Thailand and Laos.

LECTOTYPE: *Pleione praecox* (J. E. Sm.) D. Don

Key to the species

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|--|--------------------------|
| 1a. Flowering in autumn; pseudobulbs barrel-shaped, abruptly contracted into a beak, often mottled or warted, basal sheaths of the inflorescence warted or partly inflated at length, breaking up into reticulate fibres (Sect. <i>PLEIONE</i>) | .. 2 |
| 1b. Flowering in spring; pseudobulb ovoid to flask-shaped, gradually tapering into a beak, never mottled or warted, basal sheaths of inflorescence smooth tubular, non-inflated at length, breaking up into fibres (Sect. <i>HUMILES</i>) | 4 |
| 2a. Flowers with acuminate segments; lip rounded, entire | 1. <i>P. lagenaria</i> |
| 2b. Flowers with acute or subacute segments; lip fimbriate or undulate | 3 |
| 3a. Basal sheaths of the flowering shoot warty; flowers larger; lip 4.5–6.5 cm long, keels extending up to two thirds of the length of lip | 3. <i>P. praecox</i> |
| 3b. Basal sheaths of the flowering shoot non-warty; flowers smaller; lip 2-3.3 cm long, keels extending up to the apex of lip | 2. <i>P. maculata</i> |
| 4a. Flowers appearing at the same time as young leaves; lip reniform | 5. <i>P. hookeriana</i> |
| 4b. Flowers appearing when no leaves present; lip broadly elliptic | 5 |
| 5a. Disk with incised crested lamellae | 4. <i>P. grandiflora</i> |
| 5b. Disk with barbate keels | 6. <i>P. humilis</i> |

Pleione sect. *Pleione*

Pleione sect. *Dictyopleione* Pfitzer & Kraenzlin in A. Engler, Das Pflanzenreich (IV. 50. II B, 7): Coelogyninae, 121. 1907. Nom. Superfl.

1. ***Pleione lagenaria*** Lindl. in Paxt., Fl. Gard. II. 1. 39. fig. 2. 1851; Veitch, Manual Orch. Pl. I. 56. 1894; Rolfe in Orch. Rev. 11. 290. 1903. *Coelogyne lagenaria* Lindl., Fol. Orch. Coelog. no. 39. 1854; Curtis' Bot. Mag. t. 510. 1867.

Pseudobulbs *ca* 2.5 cm, depressed, broad umbonate with a thick ring and conical top, narrowed at the base, green, mottled with blackish brown. Leaves narrowly oblanceolate, 15-20 cm long. Flowers 5-7 cm across. Bracts short, inflated. Sepals and petals narrowly lanceolate, light purple. Labellum oblong emarginate, rose coloured outside, with purple streaks and blotches inside, white margined, disk yellow and red with 5 mm frimbriate lamellae.

Flowering : October November.

Distribution : India : Meghalaya.

Note: This species was first discovered by Thomas Lobb in 1849 from Khasi Hills distributed in a very limited area. When it was first introduced it had earned the highest repute amongst orchid amateurs for its beautiful flowers. Hunt & Vosa (1971) reduced it into a synonymy of *P. praecox* which differs from it in shape of the pseudobulb and lip having entire margin, with emarginate apex. Cribb & Butterfield (1988) considered *P. lagenaria* as a natural hybrid between *P. praecox* and *P. maculata*. Recent visits to many localities in Khasi hills failed to collect this species.

2. ***Pleione maculata*** (Lindl.) Lindl. in Paxt., Fl. Gard. 2:5. t. 39. 1851; Rolfe in Orch. Rev. 11: 290. 1903; Pfitz. & Kranzl. in Pflanzenreich 32: 127. 1907; Hunt & Vosa in Kew Bull. 25: 430. 1971. *Coelogyne maculata* Lindl., Gen. & Sp. Orch. 43. 1830; in Wall. Pl. as. rar. I. 45. t. 53. 1830; Hook. f., Fl. Brit. India 5:841. 1890; King & Prantl., Ann. Roy. Bot. Gard. Calcutta 8: 140. t. 195. 1898. *Pleione diphylla* Lindl., Paxt., Fl. Gard. 2. 66. 1851. *Coelogyne diphylla* (Lindl.) Lindl., Fol. Orch. Coelog: 15. 1854. *Pleione maculata* (Lindl.) Lindl. var. *virginica* Reichb. f. in Gard. Chron. ser. 3. 682. 1887. *P. maculata* (Lindl.) Lindl. var. *arthuriana* (Reichb. f) Rolfe ex Kranzl. in Engl., Pflanzenr. Orch. Coelog. 32: 128. 1907. (Fig. 1)

Pseudobulbs caespitose, green, purple mottled, covered by fibrous net work of old sheaths with their scattered scale like ramments, apex depressed, 2-leaved. Leaves shortly petioled, lanceolate, acute, 18-22 × 2-3 cm, sheaths few, short tubular, inflated, scape *ca* 2 cm long, 1-flowered. Flowers white, *ca* 6 cm across, bracts convolute, emerginate, enveloping the pedicelled ovary, *ca* 2cm long. Sepals 2.5-4.4 × 1-1.2 cm, oblong-lanceolate, acute. Petals 2.3-4.2 cm oblong lanceolate, acute 5-nerved. Labellum 2-3.3 × 1.5-3 cm, white with purple streaks at base and yellow patches at apex, retuse, disk with 5 ciliate lamellae extending to apex of lip. Column *ca* 2 cm long, winged at apex.

Flowering & Fruiting: October November.

Distribution : India: Arunachal Pradesh, Meghalaya, Manipur, Nagaland, Sikkim; Bhutan, Nepal, Thailand.

Note : This species can be easily identified in vegetative condition by the smooth inflated green sheaths of the young shoot. In Khasi hills some plants are found with the labellum without any purple colouration. The white flower has the normal lemon colour on the front of the labellum.

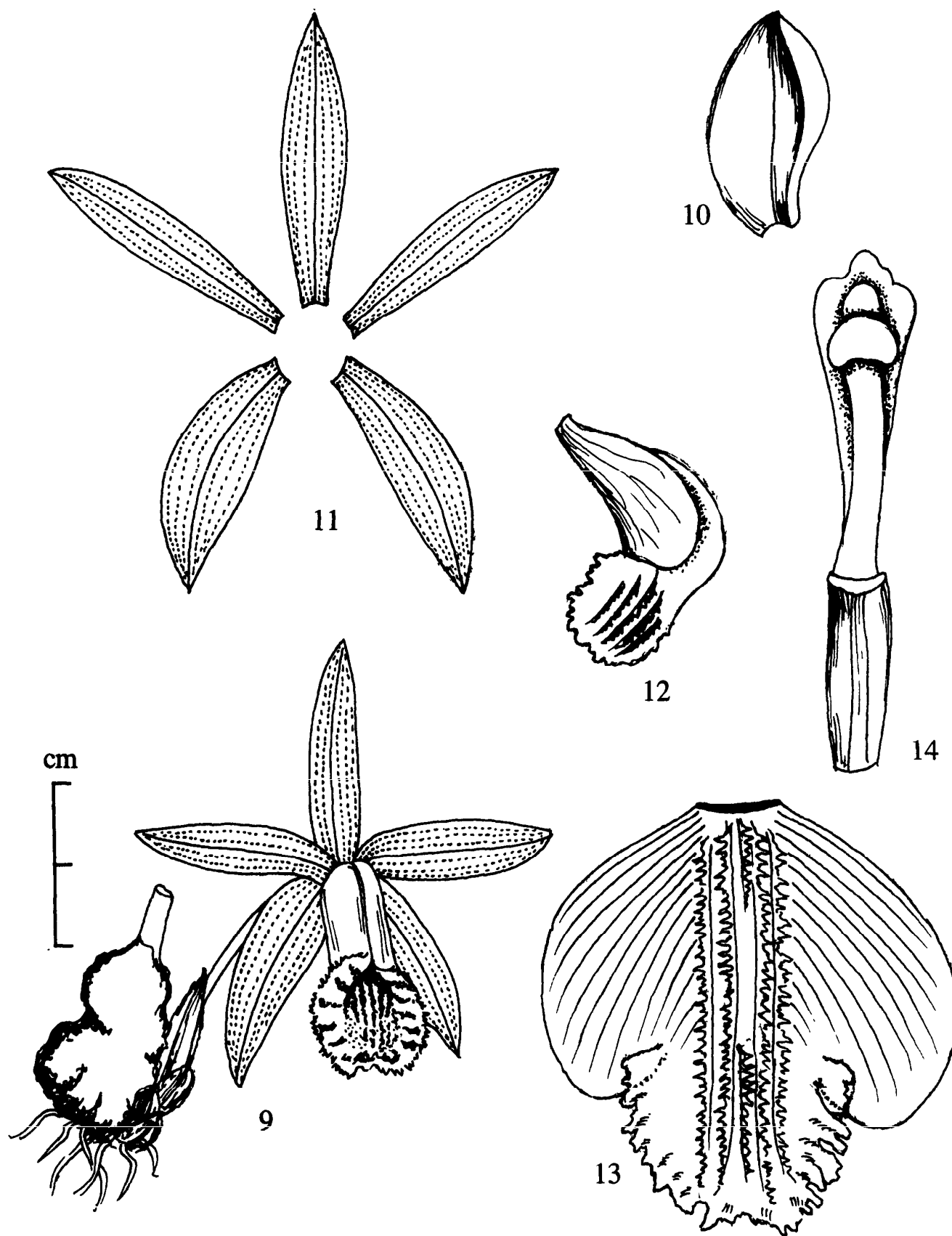


Fig. 1 : *Pleione maculata* (Lindl.) Lindl.

9. the plant; 10. bract; 11. perianth; 12 & 13. lip; 14. column.

3. ***Pleione praecox*** (J. E. Sm.) D. Don, Prodr. Fl. Nep. 37. 1825; Pfitz. & Kranzi. in Pflanzenr. 32: 126. 1907; Hunt & Vosa in Kew Bull. 25: 429. 1971. *Epidendrum praecox* Sm. Exot. Bot. 2: 73. t. 97. 1806. *Cymbidium praecox* (J. E. Sm.) Sm. Rees Cyclop. 10. II. 20. 1808. *Coelogyne praecox* (Sm.) Lindl., Coll. Bot. sub t. 37. 1821. *Pleione praecox* (J. E. Sm.) D. Don var. *birmanica* (Reichb. f) Grant. Orch. Burma 167. 1895. *Pleione praecox* (J. E. Sm.) D. Don var. *sanguinea* (Lindl.) Pfitz. in Pflanzenr. 32. 126. 1907. *Pleione praecox* (J. E. Sm.) D. Don var. *candida* Pfitz. l.c. 1907. (Fig. 2)

Pseudobulbs green, purple mottled, covered by a network of old sheaths, 3-4 × 3-3.5 cm, apex depressed, 2-leaved. Leaves shortly petioled, 10-30 × 5-8 cm, elliptic-lanceolate, acute, plicate, 9-nerved, falling off before flowering. Inflorescence proteranthous, 1-(2)-flowered, 2-6 cm long, basal sheaths warty. Flowers 6-12 cm across, pinkish-purple to light pink or sometimes pure white. Bracts 1.8-2.5 cm long, green, lanceolate, deciduous. Sepals 5.4-7 × 0.8-1.2 cm, oblong-lanceolate, acute, 5-7-nerved. Petals 5.4-7 × 0.8-1.2 cm, oblong-lanceolate, obtuse. Labellum 5.5-6.5 × 3.5-5 cm, funnel shaped, enclosing the column, purple mottled, saccate at base and adnate to the column, unlobed or obscurely 3-lobed, bifid at margin, disk with 3-5 crested lamellae extending up to two-third of the lip. Column 4-5 cm long, winged towards apex, 5-toothed at apex; pollinia 4 in two pairs, attached to the sticky mass, oblong, 3.5 mm, operculum 5 mm. Capsule ellipsoid or obovoid.

Flowering : October November.

Distribution : India: Sikkim, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland; Bhutan, Nepal, China, Myanmar, Thailand.

Note : Colour of the flower is variable, normally it is purplish pink. But sometimes light pink or nearly white or pure white forms are also found in Khasi Hills. Lip of the pure white forms has lemon-yellow or ochre-yellow spots.

Pleione* sect. *Humiles G. Zhu & S.C. Chen, TYPE: *Pleione humilis* (J. E. Sm.) D. Don, Prodr. Fl. Nepal. 37. 1825.

4. ***Pleione grandiflora*** (Rolfe) Rolfe in Orch. Rev. 11. 291. 1903. *Coelogyne grandiflora* Rolfe in J. Linn. Soc. 36: 22. 1903; N.C. Nair, J. Bombay nat. Hist. Soc. 63: 461. (1966) 1967.

Pseudobulbs ovoid to flask-shaped, 3-4 × 1.5-2.2 cm, 1-leaved. Leaves lanceolate, acute, 4-5 cm long. Inflorescence synanthous, 4-5 cm long, 1-flowered; basal sheaths tubular, obliquely truncate, thin, membranous, transparent, equal to pseudobulbs. Flowers white, solitary. Bracts narrowly elliptic, obtuse, persistent. Sepals spreading 3.5-5.5 × 0.6-1.2 cm, oblong lanceolate, obtuse or acute 5-nerved. Petals 3.5-5.5 × 0.5-1.2 cm, oblong-lanceolate, obtuse 3-nerved. Labellum 3.5-6 × 2.2-4.5 cm, broadly elliptic, imarginate, fimbriate, obscurely 3-lobed, streaked and spotted brown inside, disc with 5 incised crested lamellae. Column slender, triangular winged, 2.7 cm long.

Flowering : April May.

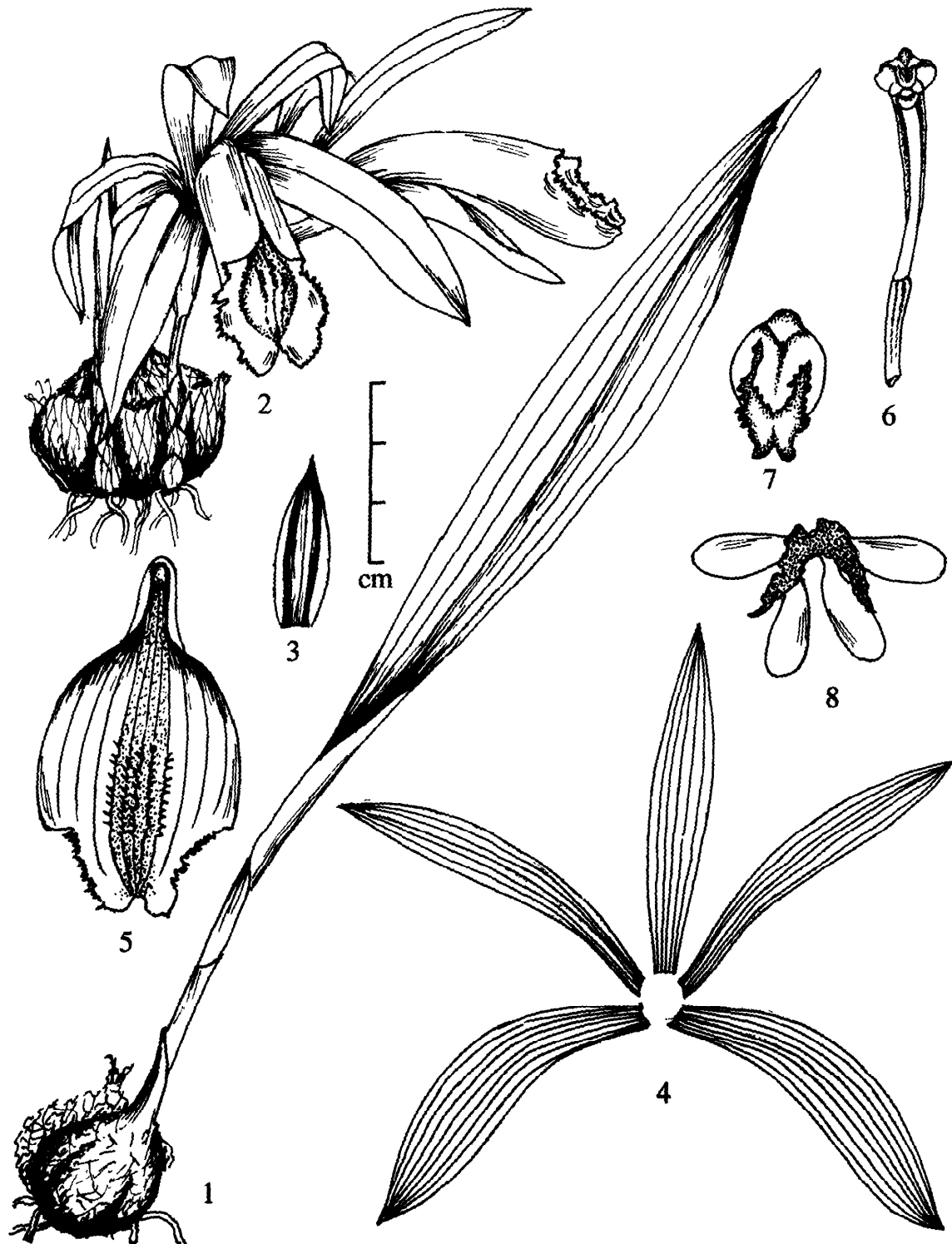


Fig. 2 : *Pleione praecox* (J.E. Sm.) D. Don

1 & 2 the plant; 3. bract; 4. perianth; 5. lip; 6. column; 7. operculum; 8. pollinia.

Distribution : India : Uttar Pradesh (Kumaon); China (Yunnan).

5. ***Pleione hookeriana*** (Lindl.) B.S. Williams, Orch. Grow. Man. ed. 6. 548. 1880; Rolfe in Orch. Rev. 11: 291. 1903; Pfitz. & Kranzl. in Pflanzener. 32: 123. 1907; Hunt & Vosa in Kew Bull. 25: 428. 1971. *Coelogyne hookeriana* Lindl., Fol. Orch. Coelog. 14. 1854; Hook. f, Fl. Brit. India 5: 842. 1890; King & Pantl. Ann. Roy. Bot. Gard. 8: 139. t. 193. 1898. *Pleione hookeriana* (Lindl.) B.S. Williams var. *brachyglossa* (Reichb. f) Rolfe in Orch. Rev. 11. 291. 1903. (Fig. 3)

Pseudobulbs ovoid, 1-2.5 × 0.5-0.9 cm, 1-leafed. Leaves 8-10 × 2.5-3 cm, elliptic-lanceolate, acuminate, membranous, 5-nerved. Inflorescence synanthous, erect, 1-flowered, *ca* 8cm long, sheathed at base, sheaths appressed. Bracts 1.3-1.5 × 0.7-1.0 cm, striated. Flowers *ca* 5 cm across, light pink. Sepals 2.3-3 × 0.6-1.2 cm, narrowly ovate to oblong-lanceolate, the laterals slightly shorter than the dorsal sepal. Petals 2.4-3 × 0.6-1.0cm, oblanceolate, acute. Labellum 2.1-2.8 × 2.2-3.0cm, obscurely 3-lobed, broadly truncate at base, emarginate at apex, white with pale-red-brown blotches, crisped toothed on the margin, disk with 5-7-ciliate lamellae. Column slender 1.5-2 cm long, broadly winged and triangular at apex; operculum 2 mm; pollinia 0.5 mm. Capsules obovoid.

Flowering & Fruiting : May June.

Distribution : India : Uttar Pradesh, Sikkim, Arunachal Pradesh, Meghalaya; Nepal; Bhutan; China.

Note : This species also shows variation in colour, sometimes it is pale pink to pure white. The blotches of the lip also become lighter or lemon-yellow in the alba forms.

6. ***Pleione humilis*** (J. E. Sm.) D. Don. Prod. Fl. Nep. 37. 1825; Rolfe in Orch. Rev. 11. 291. 1903; Pfitz. & Krazl. in Pflanzenr. 32: 121. 1907. *Epidendrum humile* J. E. Sm. Exot. Bot. II. t. 98. 1804. *Coelogyne humilis* (J. E. Sm.) Lindl., Coll. Bot., sub. t. 37. 1821 & Gen. & Sp. Orch. Pl. 43. 1830; Fol. Orchid. Coelog. 41. 1854; Hook. f, Fl. Brit. Ind. 5: 84. 1890; King & Pantl., Ann. Roy. Bot. Gard. 8: 139. t. 194. 1898. *C. humilis* (J. E. Sm.) Lindl. var. *tricolor* Reichb. f in Gard. Chron., ser. 2. 13: 391. 1880. *C. humilis* (J. E. Sm.) Lindl. var. *albata* Reichb. f Gard. Chron. ser. 3. 3: 1888. *Pleione humilis* (J. E. Sm.) D. Don var. *adnata* Pfitz. in Engl. Pflanzenr. Orch. Coelog. 32: 121. 1907. *P. humilis* (J. E. Sm.) D. Don var. *purpurescens* Pfitz. in Engl. Pflanzenr. Orch. Coelog. 32: 122. 1907. *P. humilis* (J. E. Sm.) D. Don var. *pulchella* Coope in Roy. Hort. Dict. Gard. 3: 1606. 1951.

Pseudobulbs ovoid, conical, 4-5 × 1-2 cm, one leafed. Leaves 20-25 × 4-4.5 cm, oblong-ovate, acuminate, membranous, 5-nerved. Inflorescence proteranthous, erect, 1-flowered, rarely 2 flowerd. Flowers 6-7 cm across, white. Sepals 3.5-5 × 1-1.3 cm, lanceolate, subacute. Petals 3.5-5×1-1.2 cm, obovate, obtuse. Labellum 3-3.5 × 2-2.5 cm, cuneate at base, broadly elliptic or obovate, emarginate, fimbriate at margin, speckled with reddish-purple, orange or brown, disk with 5-7 fringed, brown, lamellae, the median shorter. Column 2-2.5 cm long, broadly winged at apex, truncate and toothed; pollinia 0.5 mm, oblong. Capsule obovate.

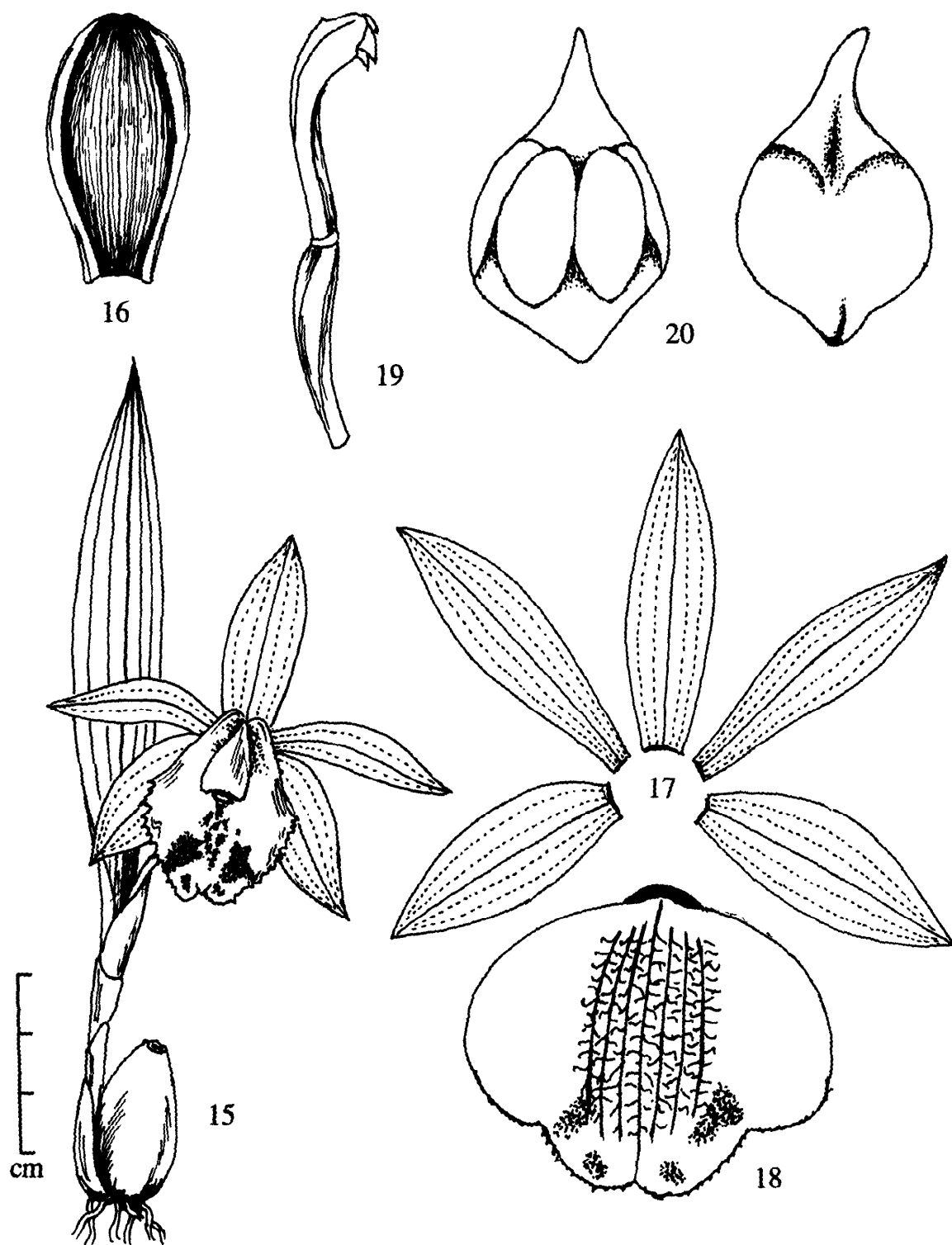
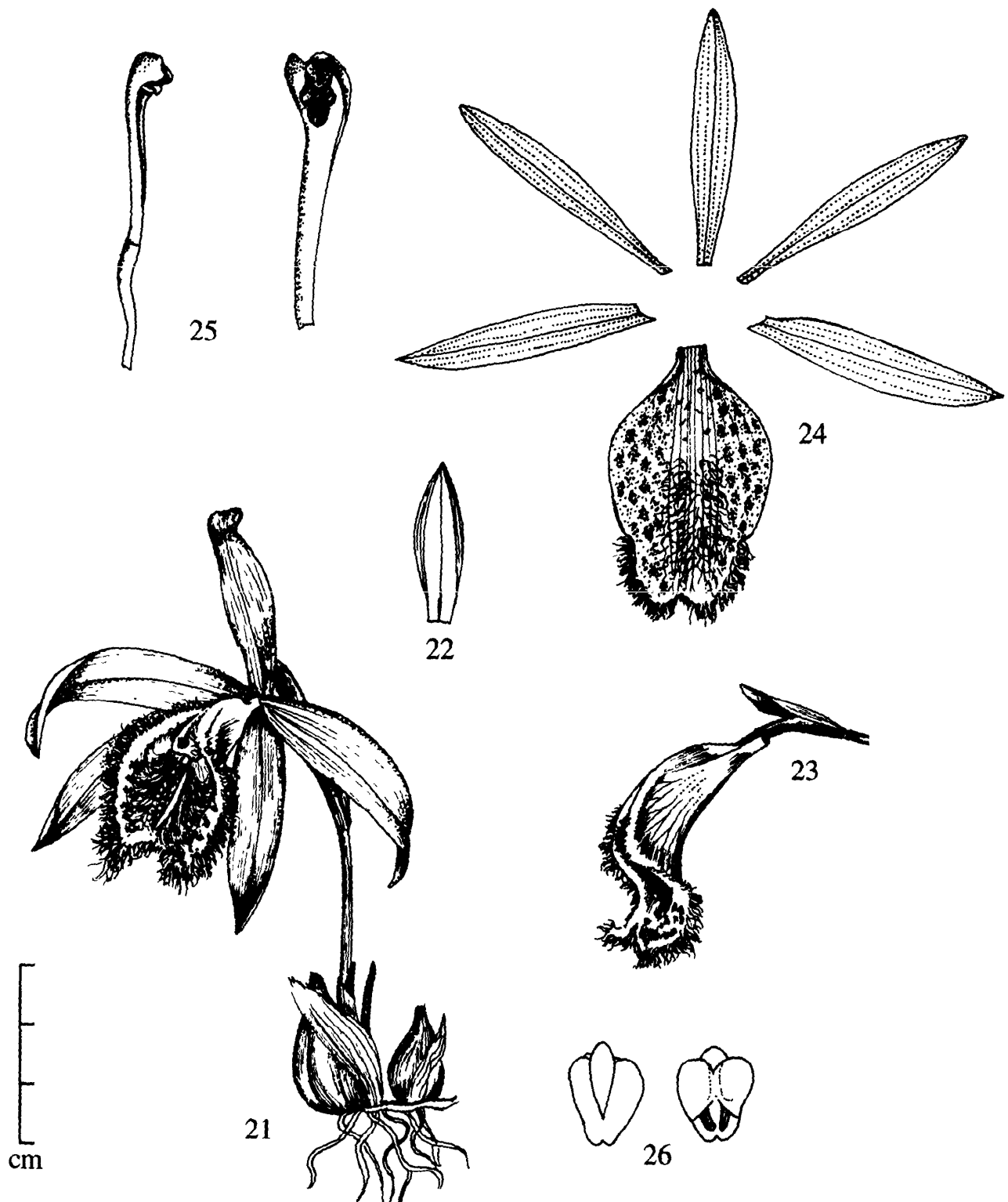


Fig. 3 : *Pleione hookeriana* (Lindl.) B.S. Williams
15. the plant; 16. bract; 17. perianth; 18. lip; 19. column; 20. operculum.

Fig. 4 : *Pleione humilis* (J.E. Sm.) Don

21. the plant; 22. bract; 23. lip; 24. perianth; 25. column; 26. operculum.

Flowering & Fruiting : March May.

Distribution : India: Sikkim, Arunachal Pradesh, Manipur, Meghalaya; Nepal, Bhutan.

Note : The species produces minute bulbils at the apex of the older leafless pseudobulbs due to which the species can be easily identified in the field. The colouration of the lip varies from yellow to orange or red-purple.

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REFERENCES

- CHOWDHURY, H.J. Orchid Flora of Arunachal Pradesh. Dehradun. 1998.
- CRIBB, P. J., C.Z. TANG AND I. BUTTERFIELD. The genus *Pleione*. *Curtis Bot. Mag.* 184, 3: 93-147. 1983.
- AND I. BUTTERFIELD. The genus *Pleione*. Royal Botanic Gardens, Kew, 1988.
- DON, D. *Prodromus Florae Nepalensis*, London, 1825.
- DUTHIE, J. F. The Orchids of North Western Himalaya, *Ann. Roy. Bot. Gard. Calcutta* 9, 1906.
- DEVA, S. AND H. B. NAITHANI. Orchids of Western Himalaya. 345-351. 1986.
- HUNT, P. F. AND G. VOSA. The Cytology and Taxonomy of the genus *Pleione* D. Don (Orchidaceae). *Kew Bull.* 25, 3: 423-432. 1971.
- LINDLEY, J. *Collectanea Botanica* sub 1. 37. 1821.
- The genera and species of Orchidaceous Plants. London, 1830-40.
- *Folia orchidacea. Coelogyne*. London. 1854.
- *Nomenclator botanicus* 2: 754. Theodori Fischeri, Cassellis, 1874.
- PFITZER, E. AND F. KRANZLIN. *Pleione* D. Don. In: A Engler, *Das Pflanzenreich* N. 50 (Heft 32): 119-129. Wilhelm Engelmann, Berlin, 1907.
- ROLFE, R. A. The genus *Pleione*. *Orch. Rev.* 11: 289-220. 1903.
- SCHLECHTER, R. Die Gattung *Pleione* und ihre Arten. *Orchis* 8: 72-80. 1914.
- SEIDENTADEN, G. Orchid genera in Thailand. *Opera Botanica* 89:77-79.1886.
- ZHU, GUANGHUA AND SHINGCHI, CHEN. *Humiles*, a new section of *Pleione* (Orchidaceae). *Novon* 8: 461 463, 1998.

भारत में जीनस प्लिओन डी डॉन (आर्किडेसी)

संध्याज्योति फूकन

सार संक्षेप

जीनस प्लिओन डी. डॉन के भारत में 6 जातियां प्रतिनिधित्व करती हैं। प्लिओन प्रेकाक्स (जे. इ. एस. एम.) डी. डॉन लेक्टोटाइप जाति है।