Orchids in Assam, India: The Genus *DENDROBIUM* Swartz

Khyanjeet Gogoi¹, Raju Das², Samuel Rai³ and Rajendra Yonzone⁴

¹The Orchid Society of Eastern Himalaya, Regional Orchid Germplasm Conservation & Propagation Centre (Assam Circle) Daisa Bordoloi Nagar, Talap, Tinsukia- 786156, Assam, India  
²Nature’s Foster, P. Box 41, Shastri Road, P.O. Bongaigaon, 783380, Assam, India 
³Cinchona and Other Medicinal Plants, Mungpoo, Darjeeling, W. B., India  
⁴Dept. of Botany, St. Joseph's College, P.O. North Point -734104, District Darjeeling, W. B., India

¹Corresponding author e-mail: khyanjeetgogoi@gmail.com

ABSTRACT

Assam, the second largest state of North-East India, is a treasure trove of orchids. In an orchid flora of Assam 53 species of *Dendrobium* were recorded during an intensive survey during 1996-2012. The present paper deals with *Dendrobium* species diversity and distribution in Assam. This attempt is the first step to correct taxonomic identifications; to work out currently accepted botanical names with flowering periods, habitats, and the distribution of the genus *Dendrobium* within this area. This paper also briefly describes and illustrates different species of *Dendrobium* available in Assam.

**Key words:** Orchid, Dendrobium, Assam, Enumeration.

INTRODUCTION

In terms of the number of species, the orchid family is the largest of the angiosperm flora. In India it is mainly distributed in the Eastern Himalayas along with the country’s northeastern region. A huge number of orchids are found in India, and this numerical strength in terms of species varies from 800 to 1500, making India one of the richest orchid floras in tropical Asia (Kumar and Manilal, 1990; Dressler, 1981; Santapau and Henry, 1973). In the recent past, from statistical analyses of the angiospermic flora, it has been revealed that the orchid family, Dendrobium, is one of the most important and interesting epiphytic groups of orchids known for their beautiful and long-lasting flowers of diverse morphological features.

*Dendrobium* Sw. is one of the three largest orchid genera containing approximately 1197 species (Cribb & Govaerts, 2005) as well as one of the most important genera in commercial horticulture. The genus Dendrobium was established in 1799 by O. Swartz in *Nova Acta Regiae Societatis Scientiarum Upsaliensis* (Chen et al., 2009) and is widely distributed throughout India across to Japan, south to Malaysia and Indonesia, east to Australia, New Guinea, and the Pacific islands (Chen et al., 2009). In India, it is the second largest genus among the orchid family and is represented by 103 species distributed in the Eastern Himalayas, Western Himalayas, Western Peninsular area, and Andaman and Nicobar Island (Misra, 2007) out of which 77 species are from northeastern region (Singh et al., 2001) and nearly 53 species grow in Assam. *Dendrobium assamicum* Chowdhury was reported from Assam in 1988 and it has been already declared as extinct due to habitat destruction.

There are few comprehensive accounts on *Dendrobium*, therefore, a survey on biodiversity of *Dendrobium*, its distribution and its present status has been done for the study and assessment of its present status in Assam.

Study Area

Assam bears a separate identity phytogeographically and represents different types of plant communities. It extends between the latitudes of 24°8’ N - 28°2’ N and longitudes of 89°42’ E - 96° E. The T-shaped state is sprawled in an area of 78,438 km². It is bordered by the Indian states of Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, and West Bengal. Assam shares its international borders with Bhutan and Bangladesh. Assam is to be found in the central part of North-East India. It is connected to the rest of the country through a narrow strip known as Chicken’s Neck in West Bengal. Its unique ecosystem favors luxurious growth of plants considered as Nature’s reservoir of plants resources. Almost all varieties of plants relating to different climatic conditions are found in the state where orchids are a major component of vegetation.

According to the State of Forest Report 1997 of Forest Survey of India, the forest cover of Assam, excluding grasslands stands at 24,459 sq. km. Owing to the location in the sub-tropical zone and the prevalence of the Monsoon climate, the landmass of Assam possesses mainly evergreen, semi-evergreen and deciduous trees. However, depending upon the intensity of precipitation, humidity and temperature, the forests are classified as wet or dry. Variation occurs in growth of different species of trees in different parts of the state due to different soil and ground water regimes and other geographical factors. The general trend of change in the forest type on the basis of predominant plant species from Western Assam to the East is moist deciduous, semi-evergreen, evergreen and rain forest respectively. The vegetation cover found in Assam can be classified as Evergreen/semi-evergreen Forest 9797.69 sq. km; deciduous forest 4537.33 sq. km.; Degraded Forest 2137.64 sq. km.; and Grassland 2369.18-19631.85 sq. km.

Climate

The climate of Assam is typically ‘tropical monsoon rainfall’ type, with a high level of humidity and heavy rainfall. Since the state of Assam is known to have maximum amount of rainfall, the temperatures never go beyond the standard 35°C to 38°C. It has a moderate climate with warm summers and mild winters. In the monsoon season, the whole state comes alive with the beauty of nature. Climatic variations can be seen regionally. On the one hand, the hilly regions of Assam experience a suitable sub-alpine climatic condition while on the other hand, the
plain lands of the state go through excessively humid weather.

There are four distinct seasons in Assam - summer, monsoon, autumn and winter.

Summers: The summer season in Assam starts from the month of March and extends till the end of June. The season is characterized by extreme humidity and frequent showers. The average temperature during this time of the year is between 35°C and 38°C.

Monsoons: This season brings relief from the scorching heat of the summers. The average annual rainfall in the state is around 70 inches in the West and around 120 inches in the East.

Winters: The winter season in Assam is basically characterized by scanty rainfall and misty mornings and afternoons. It starts in November and continues till the month of February. The average temperature during this time of the year is around 6°C to 8°C.

Spring and Autumn: In Assam, in the spring (March-April) and autumn (September-October) seasons, receives moderate temperature and rainfall, and is neither too cold nor too hot.

MATERIALS AND METHODS

The intensive field survey work was carried out during 2006-2012 and covered all the seasons of the year in all parts of the forest areas of Assam. Collected orchid specimens along with Dendrobium species were made into standard mounted herbarium sheets following the procedure of Jain and Roa, 1977. The authors have done photographs and sketches of orchid species available from the region. The specimens were identified, described, and nomenclature checked with the help of the literatures of Hooker, 1890; King and Pantling, 1898; Seidenfaden, 1962; Deva & Nathani, 1968; Deorani & Nathani, 1995; Chen et al., 2009; Pradhan, 1979; Pearce and Cribb, 2002; Mishra, 2007; Lucksom, 2007; Chowdhery, 1998, and specimens authentication was done in the herbarium of the Department of Botany, Guwahati University and BSI Shillong (Assam herbarium).

Taxonomic studies


Fig. 1. Figures of flowers, intact.

Fig. 2. Figures of flowers, perigynous images.


Fig. 3. Figures of flowers, labella.
RESULTS AND ENUMERATION OF SPECIES

*Dendrobium acinaciforme* Roxb., Fl. Ind. ed. 1832, 3: 487 (1832); Hook. f., Fl. Brit. Ind. 5: 723 (1890); Pradhan, Indian Orchid-II, 344 (1979); Barua, Orch. Fl. Kamrup dist. 151 (2001); Chowdhry, Orch. Fl. Arunachal Prad., 283 (1998); Mishra, Orch. India, 291 (2007). [Fig. 5]


Stem 10–30 cm long, compressed; leaves 3.5–5 × 0.6–0.8 cm, lanceolate, distichous, fleshy; inflorescence racemose, flowers solitary, yellowish-white, small, about 1 cm long.

*Flowering*: June – August.

*Habitat*: Epiphyte on tree trunk in dense humid evergreen forest.

*Distribution*: India, China, Thailand, Cambodia, Vietnam and Malaysia.

*Fig. 5. Dendrobium acinaciforme* Roxb., 1832.

*Dendrobium aduncum* Lindl., Edwards's Bot. Reg. 28 (Misc.): 58 (1842); Hook. f., Fl. Brit. Ind. 5: 730 (1890); Pradhan Ind. Orchid-II, 324 (1979); Chowdhry, Orch. Fl. Arunachal Prad., 283 (1998); Mishra, Orch. India, 291 (2007). [Fig. 6]


Plant pendulous. Pseudobulbs, cylindric, 50–100 cm, with many nodes. Leaves many, oblong or narrowly elliptic, 5–7.5 × 1–1.8 cm, linear lanceolate, acute acuminate. Inflorescences often several, zigzag, each racem of 4–9 flowers. Flowers 1.2–2 cm across, pale purple; sepals and petals pale pink, lip white, callus green, column white, anther cap deep purple.

*Flowering*: May–June.

*Habitat*: Epiphyte on a small tree trunk in dense humid evergreen forest.

*Distribution*: N.E. India, Bhutan, Burma, China, Thailand, Vietnam.

*Fig. 6. Dendrobium aduncum* Lindl., 1842.
Dendrobium amoenum Wall. ex Lindl., Gen. Sp. Orchid. Pl.: 78 (1830); Hook. f., Fl. Brit. Ind. 5: 738 (1890); Pradhan, Indian Orchid-Pl., 315 (1979); Chowdhry, Orch. Fl. Arunachal Prad., 283 (1998); Mishra, Orch. India, 291 (2007). \[Fig. 7\]


Epiphytic or lithophytic. Stem 30–75 cm long, slender, slightly thickened at nodes, pendulous.

Leaves 5–12 × 0.7–2.2 cm, oblong-oblanceolate, acute. Inflorescence many, 0.3–3 cm long, fasciculate, from nodes of leafless stem. Flowers 3–4.2 cm across, white with sepals and petals tipped with purple, fragrant.

Flowering: May–June.

Habitat: Epiphyte on a small tree trunk in dense humid evergreen forest.

Distribution: India, Bhutan and Nepal.

Dendrobium amplum Lindl. in N. Wallich, Pl. Asiat. Rar. 1: 25 (1830); Hook. f., Fl. Brit. Ind. 5: 711 (1890). \[Fig. 8\]


Plants ovoid or elliptic, 20–50 × 7–20 mm, 2-leaved, enclosed in membranous sheaths. Leaf elliptic or oblong-lanceolate, 6–22.5 × 5.5 cm, leathery. Inflorescence much shorter than leaves, 1-flowered. Flowers spreading, yellowish green, spotted with deep brown, large.

Flowering: November.

Habitat: Epiphytic on tree trunks in tropical and subtropical forest.

Distribution: China, Bhutan, NE India, Myanmar, Nepal, Thailand, Vietnam.

Dendrobium anceps Sw., Kongl. Vetensk. Acad. Nya Handl. 21: 246 (1800); Hook. f., Fl. Brit. Ind. 5: 724 (1890); Pradhan, Indian Orchid-Pl., 344 (1979); Chowdhry, Orch. Fl. Arunachal Prad. 287 (1998); Barua, Orch. Fl. Kamrup dist. 154 (2001); Mishra, Orch. India, 292 (2007). \[Fig. 9\]


Ditulima anceps (Sw.) Raf., Fl. Tellur. 4: 41 (1838).

Plants small to large sized, pendulous. Stem flattened, zigzag, up to 50 cm long. Leaf 2.5–4.5 × 0.6–1.3 cm, many, fleshy, deciduous, distichous, ovate-lanceolate, acute. Inflorescence short, terminal and lateral. Flowers yellowish-green, small, single, fleshy, fragrant, arising from in between the leaf axils.

Flowering: April–July.

Habitat: Growing Lithophytic on rocks or epiphytic on tree trunks in tropical and subtropical valleys.

Distribution: India, Bangladesh, Nepal, Bhutan, Andaman Islands, Myanmar, Thailand, Laos, Cambodia and Vietnam.


Plants small to medium sized. Stem slender, lightly swollen above the base. Leaf 3–12, linear to oblong, widely spaced. Inflorescence short, arising from the upper nodes. Flowers solitary, white with yellow.

Flowering: April–May.

Habitat: Epiphytic on tree trunks in tropical and subtropical forest.

Distribution: India (Assam), Bangladesh, Burma, southwestern Thailand and Vietnam.

Dendrobium aphyllum (Roxb) Fisher, in Gamble, Fl. Press. Madras 3: 1416 (1928); Hook. f., Fl. Brit. Ind. 5: 738 (1890); Chowdhry, Orch. Fl. Arunachal Prad. 287 (1998); Pradhan, Indian Orchid-Pl., 321 (1979); Barua, Orch. Fl. Kamrup Dist; 169 (2001); Mishra, Orch. India, 292 (2007). \[Fig. 10\]


Dendrobium pierardii Roxb. ex Hook., Exot. Fl. 1: t. 9 (1822).

Plants with pseudobulbs, 60–120 cm long, pendulous, leafless when flowering. Leaves deciduous, sessile, sheathing, internode 3–4 cm. Flowers 1–3 each node, pale rose, 4.5–5 cm across; lip pubescent, orbicular at the base, shortly convolute-
ciliate, pale yellow with radiating streaks at the base.

Flowering: April – May.

Habitat: Epiphyte in mixed deciduous forest or open forest.

Distribution: India, Nepal, Bhutan, Burma, China, Thailand, Cambodia, Vietnam, Peninsular Malaysia.

*Dendrobium bensoniae*

Rchb.f., Bot. Zeitung (Berlin) 25: 230 (1867);
Hook. f., Fl. Brit. Ind. 5: 739 (1890);
Pradhan, Indian Orchid-II, 314 (1979);


Pseudobulb yellow, fleshy, erect or pendulous, cylindrical, 30 – 75 cm long. Leaves linear, lanceolate or oval, leathery, deciduous, 5 cm long. Inflorescences 1 or 2 arising from the upper nodes of leafless stems, 1 – 3 flowered, racemose. Flowers 5 – 6 cm across, fragrant, sepals and petals white or cream, lip white with orange disk and two dark large black-purple spots at the base, orbicular, tomentose.

Flowering: April-May.

Habitat: Epiphytic on tree trunks in lowland and sub-montane moist forests.

Distribution: NE India, Burma and possibly Thailand.

*Dendrobium bicameratum*

Lindl., Edwards's Bot. Reg. 25 (Misc.): 59 (1839);
Hook. f., Fl. Brit. Ind. 5: 729 (1890);
Chowdhry, Orch. Fl. Arunachal Prad., 287 (1998);
Pradhan, Indian Orchid-II, 323 (1979);
Mishra, Orch. India, 292 (2007). [Fig. 11]


Pseudobulb yellow, fleshy, erect or pendulous, cylindrical, 30 – 75 cm long. Leaves linear, lanceolate or oval, leathery, deciduous, 5 cm long. Inflorescences 1 or 2 arising from the upper nodes of leafless stems, 1 – 3 flowered, racemose. Flowers 5 – 6 cm across, fragrant, sepals and petals white or cream, lip white with orange disk and two dark large black-purple spots at the base, orbicular, tomentose.

Flowering: April-May.

Habitat: Epiphytic on tree trunks in lowland and sub-montane moist forests.

Distribution: NE India, Burma and possibly Thailand.

*Dendrobium chrysanthum*

Wall. ex Lindl., Edwards's Bot. Reg. 15: t. 1299 (1830);
Hook. f., Fl. Brit. Ind. 5: 747 (1890);
Chowdhry, Orch. Fl. Arunachal Prad., 290 (1998);
Pradhan, Indian Orchid-II, 322 (1979);
Mishra, Orch. India, 292 (2007). [Fig. 12]


Stems pendulous or curving, cylindric, 50 – 200 cm, stout, fleshy. Leaves oblong-lanceolate, usually 13 – 19 × 1.5 – 4.5 cm, papery, acuminate. Inflorescences leaf-opposed, lateral, 2 – 6 flowered. Flowers thickly textured, yellow, lip disk with a chestnut blotch on either side.

Flowering: April-May

Habitat: Epiphytic on tree trunks in dense forests, lithophytic on wet rocks in valleys.


*Dendrobium chryseum*

Rolfe, Gard. Chron., III, 3: 233 (1888);
Hook. f., Fl. Brit. Ind. 5: 748 (1890);


Stems cylindric, usually 25 – 35 cm, slender. 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. Inflorescence lateral on old leafless stem, 1 cm usually 1 or 2 flowered. Flowers spreading, 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. 

**Flowering:** May–June.

**Habitat:** Epiphytic on tree trunks in high-mountain broad-leaved forests.

**Distribution:** NE India, Myanmar, China.

*N.B.* *Dendrobium chryseum* has been more widely known as *D. aurantiacum* H. G. Reichenbach.


Stem pseudobulbous, erect, fusiform, 6–30 cm. Leaves 2–5, subterminal, oblong, to 19 × 2–3.5 cm or wider, leathery, base contracted, apex acute and hooked. Inflorescence subterminal, ascending or slightly pendulous, to 20 cm, laxly many flowered. Flowers slightly fragrant, thickly textured, golden yellow, lip deeper golden yellow with red stripes on each side at base, anther cap pale yellow.

**Flowering:** April–June

**Habitat:** Epiphytic on tree trunks in sunny evergreen broad-leaved forests, lithophytic on rocks in open forests.

**Distribution:** China, NE India, Laos, Myanmar, Thailand, Vietnam.


Epiphytic, stem short, tufted, suberect to pendulous, terete, striated, 40–45 cm long, many noded, covered with a papery sheath, slender, pendulous, internodes striate. Leaves 5–9, oblong to narrowly lanceolate, acute. Flowers in pairs from the nodes, white tinged with lilac, waxy; lip simple, white with a large yellow blotch.

**Flowering:** March–April.

**Habitat:** Epiphytic on tree trunk in forest along a small stream.

**Distribution:** India, Nepal, Bhutan, Myanmar, Thailand, Cambodia, Vietnam, Borneo.


**Flowering:** November–January.

**Habitat:** Epiphyte on tree trunk.

**Distribution:** India (Assam, Darjeeling).

*Dendrobium densiflorum* Wallich, Pl. Asiat. Rar. 1: 34 (1830); Hook. f., Fl. Brit. Ind. 5: 748 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 295 (1998); Pradhan, Indian Orchid-II, 305 (1979); Barua, Orch. Fl. Kamrup dist. 165 (2001); Mishra, Orch. India, 292 (2007). [Fig. 16]

*Dendrobium clavatum* Roxb., Fl. Ind. ed. 1832, 3: 481 (1832).

Stems strongly clavate, swollen, 25–40 cm. Leaves 3 or 4, subterminal, oblanceolate, 8–17 × 2.6–6 cm, leathery, base not decurrent into clasping sheath, apex acute. Inflorescence subterminal, pendulous, densely many flowered. Flowers spreading, 3–4 cm across; sepals and petals pale yellow, lip golden yellow, column and anther cap orange-yellow.

**Flowering:** April-July

**Habitat:** Epiphytic on tree trunks in evergreen broad-leaved forests, lithophytic on rocks in mountain valleys.

**Distribution:** China, Bhutan, NE India, Myanmar, Nepal, northern Thailand.

**Dendrobium devonianum** Paxton, Paxton's Mag. Bot. 7: 169 (1840); Hook. f., Fl. Brit. Ind. 5: 743 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 298 (1998); Pradhan, Indian Orchid-II, 318 (1979); Mishra, Orch. India, 292 (2007). [Fig. 17]


Stems pendulous, cylindric, 50–90 cm, slender, 3–5 mm in diam., slightly fleshy. Leaves narrowly ovate-lanceolate, 8–13 × 1.2–2.5 cm, leathery, base with clasping sheath, apex long acuminate. Inflorescences often several, 1- or 2-flowered. 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.

**Flowering:** March-June

**Habitat:** Epiphytic on tree trunks in thick mountain forests.

**Distribution:** China, Bhutan, NE India, Myanmar, northern Thailand, Vietnam.

**Dendrobium eriiflorum** Griff., Ic. Pl. Asiat. 3: 316 (1851); Hook. f., Fl. Brit. Ind. 5: 715 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 298 (1998); Pradhan, Indian Orchid-II, 338 (1979); Mishra, Orch. India, 293 (2007). [Fig. 18]


Epiphyte. Stem 7.5–20.5 cm long, erect, clustered, fleshy at the base, covered with sheaths. Leaves many, 4–8 × 0.5–1 cm, deciduous, linear-lanceolate, acute. Inflorescence erect to arching, 4–8 cm long, laxly, 6–10 flowered. Flowers 1.5–2 cm across, greenish white.

**Flowering:** August-October.

**Habitat:** Epiphytic on tree trunks in subtropical forests.

**Distribution:** India, Nepal, Bhutan, Myanmar and Malaysia.

**Dendrobium falconeri** Hook., Bot. Mag. 82: t. 4944 (1856); Hook. f., Fl. Brit. Ind. 5: 742 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 298 (1998); Pradhan, Indian Orchid-II, 318 (1979); Mishra, Orch. India, 298 (2007). [Fig. 19]


Epiphyte. Stem 30–90 cm long, beaded, pendent, slender, swollen at nodes, bearing many branchlets, internodes ribbed. Leaves few, 5–10 × 0.15–0.4 cm, linear, many nerved. Inflorescence fasciculate, lateral, arising from nodes, 1 or rarely 2 flowered. Flowers 5–7.5 cm across, spreading, pale yellow.

**Flowering:** April-May.

**Habitat:** Epiphytic on tree trunks in forests.

**Distribution:** India, Bhutan, China and Myanmar.
**Dendrobium farmeri** Paxton, Paxton's Mag. Bot. 15: 241 (1849); Hook. f., Fl. Brit. Ind. 5: 750 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 298 (1998); Pradhan, Indian Orchid-II, 306 (1979); Mishra, Orch. India, 293 (2007). [Fig. 20] 


Epiphyte. Stem 15–45 cm long, clavate, 4–5 angled erect, narrowed towards slender base. Leaves 2–3, sub-terminal, 8–20×3.2–5.9 cm, ovate-lanceolate to elliptic lanceolate, acute coriaceous, many nerved. Inflorescence 10–20 cm long, axillary, decurved, pendent, many flowered. Flowers 4–5 cm across, pale mauve, turning into pure white at maturity. 

Flowering: April–May. 

Habitat: Epiphytic on tree trunks forests.


**Dendrobium fimbriatum** Hook., Exot. Fl. 1: t. 71 (1823); Hook Fl. Brit. Ind. 5, 745 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 301 (1998); Pradhan, Ind. Orchid-II, 309 (1979); Barua, Orch. Fl. Kamrup Dist., 163 (2001); Mishra, Orch. India, 293 (2007). [Fig. 21] 


Epiphytic, Stems rigid, decumbent or pendulous, cylindric or sometimes slightly fusiform above base, 75–150 cm long, stout. Leaves several, lanceolate, acuminate, gradually tapering to an acute apex, 10–15×1.5–2.8 cm, leathery. Inflorescences racemose, racemes on leafy or leafless stem, lateral, pendulous, subapical, 15–20 cm long, 8–12 flowers each. Flowers 4–5 cm across, sepals and petals golden yellow, lip yellow, with purplish red stripes at base, disk with a deep purple marking. 

Flowering: March – May. 

Habitat: Epiphyte in mixed deciduous forest, also in humid evergreen forest.

Distribution: India, Nepal, Bhutan, Burma, China, Thailand, Vietnam.

**Key to the varieties of D. fimbriatum**

1a. Lip with a dark maroon blotch, var. *oculatum.*

1b. Lip without a dark maroon blotch, var. *fimbriatum.*

1a. var. *oculatum* Hook. f. Fl. Brit. India 5, 745 (1890). [Fig. 21] 

Flowers yellow or bright orange yellow, lip with dark maroon blotch.

1b. var. *fimbriatum*; in Chowdhary, Orch. Fl. Arunachal Prad., 301 (1998). [Fig. 22] 

Flowers bright orange yellow, lip without a dark maroon blotch.

**Dendrobium formosum** Roxb. ex Lindl. in Wall., Pl. Asiat. Rar. 1: 34, t. 39 (1830); Hook. f., Fl. Brit. India 5: 721 (1890); Chowdhry, Orch. Fl. Arunachal Prad., 301 (1998); Pradhan, Indian Orchid-II, 328 (1979); Barua, Orch. Fl. Kamrup dist. 168 (2001); Mishra, Orch. India, 293 (2007). [Fig. 23] 


Stems terete, thick, ridged, erect (pointed upwards), woody, sheathed, swollen at the base tapering towards tip. Leaves oblong, obliquely subacute, margined, sessile, distichous 2–2.9 × 0.5–0.9 cm. Inflorescence towards the tip 3–4 flowered. Flowers fragrant, 5–9 cm across, white; lip with large central yellowish-orange blotch. 

Flowering: June – July.

Habitat: Epiphyte in tropical forest. Uncommonly found in some isolated patches in dense forested areas.

Distribution: India, Nepal, Bhutan, Bangladesh, Myanmar, Thailand, Vietnam.

---

Fig. 20a. *Dendrobium farmeri* Paxton., 1849.

Fig. 21. *D. fimbriatum* var. *oculatum.*

Fig. 22. *D. fimbriatum* var. *fimbriatum.*

Fig. 23. *D. formosum* Roxb. ex Lindl., 1830.

_Flickingeria fugax_ (Rchb.f.) Seidenf., Dansk Bot. Ark. 34: 46 (1980). [Fig. 24]

Epiphyte, 70–80 cm long, pendulous; rhizomes creeping; stems woody, polished; pseudobulbs at irregular distance on stems, fusiform, 4–6 cm long. Leaves solitary, terminal, narrowly oblong, 10–20 × 2–3 cm sessile. Flowers white, 1 or 2, arising at the base of leaf, 3–3.5 cm across, fugacious.

**Flowering:** March–October.

**Habitat:** Epiphyte in humid evergreen forest, mixed deciduous forest.

**Distribution:** China, Bhutan, northeastern India, Myanmar, Thailand and Vietnam.


Epiphytic or Epilithic. Pseudobulbs 60–120 cm long. Slender, tapering upwards. Leaves several, 6.5–15.5 × 2.5–5 cm, ovate-lanceolate to lanceolate, shortly acuminate. Inflorescence 9–20 cm long, pendulous. Flowers 3–4 cm across, orange-yellow.

**Flowering:** May–August.

**Habitat:** Epiphyte in humid evergreen forest, mixed deciduous forest.

**Distribution:** India, Bhutan, Myanmar, Thailand and Nepal.

**Dendrobium griffithianum** Lindl., Edward’s Bot. Reg. 21: t. 1756 (1835); Hook. f., Fl. Brit. Ind. 5: 749 (1890); Mishra, Orch. India, 293 (2007).


Stems 30.5–45.5 cm long, 4 angled, elongate, calvate-fusiform, thicker towards the apex, deeply sulcate, to 5 noded, shiney, yellow. Leaves 2 to 3, apical, leathery, oblong-lanceolate, shortly petiolate, acute. Inflorescence 15–25 cm long, suberect to pendant, loosely many flowered. Flowers 4.5–6 cm across, long-lasting, yellow.

**Flowering:** April–May

**Habitat:** Epiphytic, high up on trees.

**Distribution:** India (Assam), Myanmar, and Thailand.

---


Stems often ascending, 5–27 cm, thickly fleshy, base contracted, thickened toward apex. Leaves oblong-lanceolate, usually 7–10 × 1.2–2 cm, leathery, apex acute or slightly obtuse. Inflorescence a raceme arising from apical part of deciduous old stem, 1–4 flowered. 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.

**Flowering:** April–May

**Habitat:** Epiphytic on trees in sunny open forests.

**Distribution:** China, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam.


**Dendrobium chrysotis** Rchb. f., Gard. Chron. 1870: 1311 (1870).


Stems pendulous, cylindric, 30–80 cm, rigid. Leaves alternate along entire stem, ovate-lanceolate or oblong, 7–17 × 2–3.5 cm, leathery, acute. Inflorescences 1 to several, along distal part of current season’s mature leafy stems, 4–10 cm, laxly 2–7 flowered. Flowers spreading, thinly textured, golden yellow, disk with a purple blotch on each side.

**Flowering:** August–September.

**Habitat:** Lithophytic on rocks in mountain valleys, epiphytic on tree trunks in mountain forests.

**Distribution:** China and India.

---

Paper to be concluded next issue.