The Genus Orchidantha (Lowiaceae)

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1. Historical Account

This genus was based on the species *Orchidantha borneensis*, described by N. E. Brown in 1886, from a cultivated plant. Only two days later appeared Scortechini’s description of *Lowia longiflora*, a new genus and species from Perak. The two species are quite distinct, but certainly congeneric. In 1893 Ridley published another generic name *Protamomum* for a third species, *P. maxillarioides*, which he found in Pahang. When describing the latter, and knowing of Scortechini’s species (though apparently not that of N. E. Brown) Ridley recognized that *Lowia* and *Protamomum* should belong to a distinct family, which he named Lowiaceae, but no formal description was given. The family is near Musaceae, agreeing with *Musa* in having five stamens with a distinctive large petal on the same radius as the missing stamen, but in other ways is very different from *Musa*. In his monograph of Musaceae K. Schumann (1900) formally established a subfamily Lowioideae. The family name Lowiaceae did not receive a latin description until Nakai published one in his conspectus of Scitamineae (Nakai 1941); his description is based on Ridley, and is in part inaccurate, in part very vague, and is quite inadequate to characterize the family though it formally validates the name.

In 1924 appeared the fourth volume of Ridley’s Flora of the Malay Peninsula, in which two species of *Orchidantha* are described. One of these was called *O. longiflora*, but the species described was different from Scortechini’s. Henderson found Scortechini’s species again in Perak and published a description of it as a new species *O. calcaria* in 1933, recognizing that it was distinct from Ridley’s description and not having seen Scortechini’s original one.

In 1944 I studied plants of all three Malayan species in cultivation in the Botanic Gardens, Singapore, and wrote descriptions, discovering the confusion about the name *O. longiflora*: I also examined the branching of the inflorescence in these plants, which had not previously been described. My observations were however not published.
In 1955 Irwin Lane published a paper in which he discussed the distinctions between genera in Musaceae (in Schumann's broad sense of the family) and gave reasons for the family status of Lowiaceae. In this paper he published the first description of the branching of the inflorescence in *Orchidantha*, agreeing with my own observations. He also noted that the extension of the ovary, to which the floral parts are attached, is solid, not tubular as described by Ridley (N. E. Brown had also noted this in 1886).

In 1959 Tomlinson published detailed observations on the anatomy of Musaceae and allied families, giving new evidence for the distinctness of Lowiaceae, and in 1962 a discussion on the inter-relationships of all the families of Scitamineae (or Zingiberales). These observations were the basis of his account of the group of families (and others) in 1969. Both Lane and Tomlinson referred to Nakai's publication above-mentioned, but cited it inaccurately.

In 1961 Larsen published descriptions of two new species of *Orchidantha*, from Thailand and Laos, with illustrations. His diagram of the branching of the inflorescence of *O. laotica* does not agree with my observations and those of Lane.

In 1969 Dr. Hsuan Keng published observations on plants of *O. longiflora* in cultivation in Singapore, with drawings and a photograph. He stated that the labellum remained rigid for only 6–8 hours, "then turned yellow and curled up and withered immediately afterwards". My observations on plants of *O. fimbriata* and *O. maxillarioides* (which had flowers on longer inflorescences than shown by Dr. Keng) were that the flowers lasted two days in an expanded condition, though they were limp on the second day. There is an inaccuracy in Dr. Keng's floral diagram (fig. 1 g) which shows the missing stamen on the radius of the dorsal sepal; it should be on the radius of the labellum, its position thus agreeing with the missing stamen in *Musa*.

The following account of the general morphology of *Orchidantha* is based on my own observations of living plants in Singapore. Following it is a key to all known species, based partly on Larsen's observations, and a description of each species, those of Malaya being dealt with in detail, the rest more briefly. At least one more species exists in Borneo; a specimen of this (Keith 10013, Kabili Forest Reserve; Sandakan) bearing a fruit but no flowers, is in the Singapore herbarium.

*Literature cited above*


2. Description of the genus

Leaf-bearing stems are short, erect or suberect, often bearing lateral branches so that the plants are tufted; each branch bears first a short 2-kneed prophyll backing the axis from which it arises. Roots are relatively thick; air-canals are present, but not conspicuous as they are in Musa. Leaves are 2-ranked, their petioles rather long with sheathing bases which are very close together on the stem; leaf-blades are long-elliptic, smooth, often with crisped edges, the lateral veins at a very small angle to the midrib so that they appear to run longitudinally, joined across by close rather regular fine cross-veins which are conspicuous in dried leaves but not in living ones.
Inflorescences are terminal on short leafy branches of the stem: they persist for a long time, sometimes after the leaves below them have died. There is no main inflorescence-axis bearing primary bracts, as in all other Scitamineae; the whole inflorescence is a series of monochasial cymes. The basic unit of branching has at its base a 2-keeled prophyll and then three bracts and a terminal flower-bud; the distal bract enfolds the flower-bud and has no bud in its axil; the next lower bract encloses a bud which will produce the next branch of the monochasial cyme; the basal bract encloses a bud which does not immediately develop but may later form the beginning of a new branch-system of the inflorescence. An old inflorescence shows a succession of scars where the flowers have fallen, with two bract-scars between each (the scar of the basal 2-keeled prophyll is not very distinct). The flower-scars are in two longitudinal rows not far apart; thus the cyme is near to being a cincinnus. The bracts are all tubular at the base, and their exact orientation is not easy to establish.

*Flower-structure.* Flowers last one or two days after opening. The inferior ovary has an apical prolongation which bears the floral parts. This prolongation was called a calyx-tube by Ridley but is solid; in its centre is a small strand of delicate tissue connecting the base of the style with the axis of the ovary. The three *sepals* are narrow, with almost parallel sides and short tips; they are slightly fleshy and become limp on the second day. The *petals* are arranged as in an orchid, two small lateral ones and a much larger labellum at the base of the flower. The lateral petals are little longer than the stamens and form with the base of the labellum (which overlaps them but is not joined to them) a short tube around the stamens. The labellum is usually about as long as the sepals, the basal apart (claw) being narrow and the apical part (blade) being much wider than the sepals; it is at first firm and slightly fleshy with a slimy surface, on the second day putrescent except for the base. The five *stamens* are of simple structure, opening inwards, in a close semicircle around the style and facing the labellum. (Larsen mentions a staminode replacing the sixth stamen, but I did not note this, nor does it appear in Ridley's or Larsen's drawings). The *style* is slender, about as long as the stamens; the concave 3-lobed stigma faces the labellum, its lobes variously toothed or fringed and joined at the base to form a shallow cup with raised tumid edges, open towards the labellum; the backs of the stigmatic lobes (which show in a front view of the flower) are polished, not receptive.

The *ovary*, sheathed by the floral bract, is trilocular with axile placentation and many small ovules. The *fruit* is a loculicidal capsule which bears at its tip the shrivelled basal part of the prolongation of the ovary. Lane states that there is a joint between the sterile tip of the ovary proper and the extension bearing the floral parts, but I did not notice this. The *seeds* are hairy, much as in the genus *Globba* (Zingiberaceae) and have a fleshy aril consisting of a few long lobes (not mentioned nor figured by Ridley though present in his specimen now at Kew).
3. Species, Key and Descriptions

Style with stigmas 2 1/2–4 1/2 cm long; stigmas
fimbriate, fimbriae 5–6 mm long
Labellum 10–12 cm long, its blade 5 cm wide;
sepals 11–14 cm long

1. *O. fimbriata*

Labellum 6 cm long, its blade 2.2 cm wide;
sepals 6–6 1/2 cm long

2. *O. siamensis*

Style with stigmas not over 1.6 cm long; stigmas
with short teeth or trilobed
Ovary with extension 8–12 cm long;
sepals 6–10 cm long

3. *O. longiflora*

Ovary with extension 2–5 1/2 cm long;
sepals 2 1/2–3 cm long
Stigma-lobes bilobed with a small tooth
in the sinus; ovary with extension
5 1/2 cm long

4. *O. maxillarioides*

Stigma-lobes finely toothed; ovary with
extension 2–2 1/2 cm long
Sepals greenish white; petals 10 x 4 mm;
labellum brown with yellow lines

5. *O. laotica*

Sepals pale yellow at base to dull
purple at apex; petals 8 1/2 x 1 1/2 mm;
labellum blackish violet

6. *O. borneensis*

1. *Orchidantha fimbriata* Holttum, *sp. nov.*


A *Lowia longiflora* Scort. differt: stylo cum stigmatibus triplo longioribus; stigmatibus longe fimbriatis; lebello duplo longiori et latiori.

*Leaf-blade* light green, to 100 x 15 cm, base narrowly decurrent, edges undulate; petiole with sheath to 30 cm long. *Inflorescence*
little branched; 2-keeled bracts 18 mm long; intermediate bracts
to 7 cm long, green; floral bract to 15 cm long, dull purple. *Ovary*
with extension 12–20 cm long, purple, distal part 4 mm diameter.
*Sepals* reflexed, 11–14 cm long, 2 cm wide when flattened, narrowed
very gradually to the mucronate apex, edges strongly recurved
when flower first expands, flattening later, dark dull purple
throughout or green with a dark purple base. *Petals* at first rolled
back, cream with dark purple tip and base, 27 mm long, 6 mm
wide near base, narrowly triangular, apex filiform. *Labellum* 10–
12 cm long, 5 cm wide when flattened, base dark purple-brown,
narrow, with inflexed sides, widening abruptly beyond the stigma to a creamy white irregularly grooved and folded blade, towards apex usually 3-lobed, lateral lobes reflexed, middle lobe smaller and straight, texture rather fleshy, surface smooth and somewhat mucilaginous. *Stamen* 24 mm long in all, filament 3 mm, flushed with purple, anther cream. *Style* 2 cm long, purplish, wiry, stigma 2.4 cm long, white at base beneath (receptive surface) divided almost to the base into 3 narrow dark purple shining lobes arranged near together almost in a horizontal plane like a trident, their distal edges bearing many curved fimbriae 5–6 mm long. *Fruit* 8½ cm long including neck; *seeds* as in *O. maxillarioides*, 1 cm long, aril-lobes to 15 mm long.


In addition to the above, there is in Kew Herbarium a specimen collected by Scortechni in Perak (the name not in his handwriting) presumably distributed after his death from Calcutta. There are also flowers from a plant cultivated in the Botanic Garden at Calcutta.

The flowers have at first an unpleasant odour, described by Corner (on the label of his Kemaman specimen) as “smelling of bugs and coconut oil”. On the second day the lip is putrescent, the sepals become flat, and the odour is more like that of a fungus. Such odours usually attract flies, but I did not observe any flies visiting the flowers on cultivated plants at Singapore, nor any fruits produced by those plants.

In addition to the Kemaman specimen recorded above, Corner also collected another *Orchidantha* in Ulu Ayam swamp (S.F.N. 30353). He reports this as smaller than *O. fimbriata* as found at S. Nipa, the flowers apparently similar but without scent (unfortunately no complete flower was preserved). He records the Malay name *Lobor* and that the leaves are used for wrapping *bras pulut* in cooking. He also noted a smell of bananas when the plant was crushed.

After the manuscript was submitted for publication, Dr. Hsuan Keng of the Botany Department (University of Singapore) informed me that Professor A. N. Rao collected a clump of this plant on Gunong Panti in South Johore in 1969 and grew it in the Department. Late September 1970, the plant produced flowers which were photographed (see Plate 1).


*Leaf-blade* 35 × 6–7 cm, cuspidate; petiole with sheath 28 cm. *Ovary* with extension 10–14 cm long; *sepals* 6–6½ cm × 8–10 mm, dull purple; *petals* 15–20 × 2 mm; *labellum*, narrow basal part 3 cm long, purple, blade 3 × 2.2 cm, white, emarginate; *stamens*
10 mm long; style 10–15 mm long, stigma 15 mm, lobes laciniate, laciniae to 6 mm long; fruit 2½–3 cm long, seeds 7 mm long, arill-lobes 10 mm.

TYPE: *Kerr 7148*, Bachaw, Pattani, S. Thailand (K). Also collected at some locality by Kiah, *S.F.N. 24292* (SING).


*Leaf-blade* to 55 × 6 cm, somewhat recurved with raised undulate edges, base long-recurrent and not sharply distinct from the broadly grooved petiole; petiole with sheath to 20 cm long. *Ovary* with extension 8–12 cm long, tinged with pink. *Sepals* 6–10 cm long, to 15 mm wide, oblong, shortly narrowed to apiculate tip, edges more or less revolute, dark brown-purple towards apex, olive green with brown veins towards base. *Petals* 2.8 cm long, 3 mm wide at the base, with long slender tip, nearly white. *Labellum* 5–6 cm long, 2.2–2.5 cm wide, base dark purple with overlapping edges quite enclosing sepals and petals, blade ovate, creamy white, strongly rugose with raised veins, tip (always?) with a triangular sinus 14 mm deep, the raised midrib ending in a point in the sinus, a little longer than the lobes. *Stamens* in all 12 mm long, filaments short, widened and purplish brown at the base. *Style* 1 cm long; stigma-lobes purple, with truncate apices finely and irregularly toothed, midlobe 6 mm long, laterals shorter.

TYPE. The type of this species has not been found, but the agreement of Scortechini’s descriptions and figure with Henderson’s specimen, especially in dimensions and shape of stigmas and labellum, leave no doubt that Henderson had re-discovered Scortechini’s species (the discrepancies are that Scortechini gave 10 cm as length of sepals, Henderson 6 cm, and Scortechini 12 cm for length of “calyx-tube”, Henderson 8–10 cm). In the Singapore Herbarium is a specimen collected by Wray, no 3366, from Upper Perak, labelled *Lowia longiflora* Scort. in an unknown hand, which is clearly this species; Henderson evidently did not notice it. The type of *O. calcarea* Hend. is Henderson 26023, Lenggong, Upper Perak. No other specimens are known.


*Leaf-blade* to 33 × 8.5 cm, concave with broadly waved edge, base rather broadly cuneate and sharply distinct from the petiole; petiole narrowly grooved, 20–40 cm long, slender; sheath 10–20 cm long. *Inflorescence* often with several branches close together,
branches sometimes branched again; floral bract 3.5 cm long, dark purple. Ovary with extension 20 mm longer than bract, purplish. Dorsal sepal hardly 3 cm long, 4½ mm wide, edges a little reflexed; lateral sepals 3.2 cm × 5½ mm, slightly concave, edges not reflexed, all sepals translucent purplish, greenish towards apex, oblong, the apical quarter narrowed to acute tip. Petals 7 mm long, less than 2 mm wide, oblong with short abrupt tip, straight, dull purplish with pale veins. Labellum 21 × 10 mm, elliptic, apex rounded, basal 3–4 mm with sides upcurved, meeting but not overlapping the petals, cream with faint dull purple mottling especially towards the apex, base entirely flushed with dark purple, surface with about 3 longitudinal folds on either side of a broad plane median band. Stamens hardly 5 mm long, filaments shorter than anther, whitish. Style white, 4 mm long; stigma dull dark violet, base hollow, each of the three lobes 2 mm long and wide, bilobed, with a small tooth in the sinus. Fruit purple, 3 cm long, 1.7 cm wide, 3-angled, narrowed at apex to a stiff appendage 15 mm long; seeds 7 mm long, 5 mm wide, short-hairy, spherical above a narrow base; aril of c. 6 stiff narrow lobes longer than seed.


The origin of the plants cultivated at Singapore is not recorded. They do not usually bear fruits, but there is a ripe capsule on Ridley’s original collection. The flowers have no perceptible odour.


Leaf-blade 35–50 × 10–15 cm; petiole with sheath 45 cm. Ovary with extension 2.5 cm long. Sepals 3 cm × 5 mm, greenish white; petals 10 × 4 mm; labellum 2–2.5 cm long, brown with yellow lines; stamens 5–6 mm long; style 5 mm, stigma 3 mm, lobes shortly lanciate.

TYPE. Kerr 21284, Muang Baw near Wieng Chan, Laos (K).


Leaf-blade 15–25 × 6–9 cm; petiole 10–25 cm. Ovary with extension 1.8 cm. Sepals 2.5–2.8 cm long, base pale yellowish, apex dull purple; petals 8 × 1½ mm, truncate with a fine bristle at apex; labellum 2 cm long, linear-lanceolate, acuminate, blackish violet (as petals); stamens 5 mm long; style “as long as the stamens, slender, terete, whitish, terminating in a blackish violet 3-parted simbriate crest with a V-shaped stigma below it facing the labellum”.

TYPE. Cult. Compagnie Continentale d’Horticulture, Gand, 23 June 1885, origin Borneo (K). A letter from Florence attached to the type sheet at Kew confirms that this species was published two days before Lowia longiflora Scort.
Plate 1. *Orchidantha fimbriata* Holttum.
Photographs of plant from Gunong Panti. Divisions in cm.  
*Left*: Habit of flowers. *Right*: Close-up of one to show fimbriate stigmas.  
*(Photographs by Mr. D. Teow)*.