several species of *Amorphophallus* not counted before, most of these had $2n = 26$. In *A. campanulatus* from India he counted $2n = 28$. Earlier 26 and 28 have been counted. It seems that the sections *Rapyogkos* and *Cundarum* have a more original cytological pattern than the other sections (cf. Larsen l.c.).

![Fig. 2. 2 metaphase plates from root tips.](image)

*A. dixenii* fits well into this pattern. In several good metaphase plates from root tips $2n = 28$ was counted (Fig. 2). The morphology of the chromosomes corresponds to what has been found earlier.

The author is indebted to Mr. Tyge Christensen for latinizing the diagnosis.

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**A REVISION OF PLETHIANDRA (MELASTOMATAECEAE)**

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**ABSTRACT**

Seven species are described and a key to the species is presented. The genus is recorded for the first time from Central Sumatra and this record is an extension of its generic distribution, known previously from Borneo and Malaya. *Plethiandra acuminata* Merr. and *Plethiandra sahebi* Burkill are reduced to synonymy and the following new combinations are proposed: *Plethiandra robusta* (Cogn.) Nayar, *Plethiandra sessiliflora* (Cogn.) Merr. var. *sessilis* (Stapf) Nayar.

**ABSTRAK**


**INTRODUCTION**

J. D. Hooker founded the genus *Plethiandra* in 1865 on the basis of *Plethiandra molleyi* from Labuan (Borneo). He placed it in the tribe *Astroniieae* immediately next to the genus *Kibessia*. Baillon (Nat. Hist. Pl. 7: 63, 1881), Cogniaux (1891) and Krasser (1893) followed Hooker in its assignment.

The genus was described again as *Medinillopsis* by Cogniaux (1891) with two species *Medinillopsis beccariana* from Sarawak and *Medinillopsis sessiliflora* from Singapore, both based upon Beccari’s collections. In 1895 Stapf noted that Cogniaux’s *Medinillopsis* matched perfectly with Hooker’s genus *Plethiandra* and he suggested the reduction of the genus *Medinillopsis*. Although Stapf and later on Burkill (1917) suggested this, it was left to Merrif (in Journ. Roy. As. Soc. Straits Spec. No. 448, 1921) to make the new combinations in the genus *Plethiandra*.

Stapf in 1894 (in Trans. Linn. Soc. II, 4: 163, 1894) after adding a new species *P. hookeri* noted the correct systematic position
of the genus Plethiandra and placed it near Medinilla. In 1895 Stapf erected three new species Plethiandra sessilis, P. cuneata and P. rojungensis from Sarawak on the basis of Haviland’s collections. Burkill (1917) briefly reviewed the genus and proposed a new species Plethiandra sahebii on the basis of a plant cultivated in Singapore Botanic Gardens. P. sahebii is found to be conspecific with P. robusta (Cogn.) Nayar and hence it is reduced to its synonymy. Although Stapf (1895) suggested Medinilla robusta Cogn. as a species of Plethiandra the new combination Plethiandra robusta (Cogn.) Nayar is effected only in the present review. Merrill's Plethiandra acuminata (in Univ. Calif. Publ. Bot. 15: 226, 1929) is found to be conspecific with P. motleyi Hook. f.

The Philippine genus Caronia Naud. placed near Medinilla has characteristically larger 6-merous flowers with 12 stamens; Plethiandra, an obviously allied genus, has smaller 6-merous flowers with 20–30 stamens. Apart from this in Caronia the stamens are two ariied ventrally and tuberculate dorsally and the extra-ovarial chambers descend to the base of the ovary, whereas Plethiandra is characterised by the inappendiculate stamens and the absence of extra-ovarial chambers.

The genus is recorded for the first time from Central Sumatra and this record is an extension of the generic distribution, known previously from Borneo and Malaya. Of the seven species so far known six are endemic to Borneo and one species P. sessiliflora (Cogn.) Merr. is recorded from Singapore and Central Sumatra.

PLETHIANDRA Hook. f.


Shrub. Branches terete or angular, usually glabrous. Leaves sessile or petiolate, elliptic, elliptic-ovate, ovate-oblanceolate or ovate-lanceolate, base subround, cuneate or obtuse, apex acuminate or obusate or subobtuse, glabrous, 3–11-nerved, cross-veins indistinct, rarely cross-veins on the pinnatifid veins, indistinct, rarely cross-veins on the coriaceous leaves. Flowers in axillary fascicles, 4-merous, subasexile or pedicellate; bracteoles present, minute, subulate. Calyx tube urceolate-campanulate or ovoid, limb usually truncate, rarely limb 6-toothed, glabrous. Petals 6, obovate-elliptic, elliptic or ovate-lanceolate. Stamens 20–30, filament present, anthers linear, connective not produced, dorsally and ventrally inappandulate. Ovary fully con- consistent with the calyx tube, extra-ovarial chambers absent, ovary 6-chambered, top of the ovary minutely puberulous or glabrate. Style filiform, glabrous, stigma punctiform. Berry subglobose or ovoid. Seeds minute, numerous.

TYPE SPECIES: Plethiandra motleyi Hook. f.

DISTRIBUTION: Malaya, Sumatra and Borneo.

KEY TO THE SPECIES OF PLETHIANDRA

1. Leaf sessile or subsessile or shortly petiolate, petiole if present not more than 5 mm long.

2. Flowers long pedicellate with pedicels 15–30 mm long.

3. Leaves elliptic-ovate, 5–11 × 5–6 cm, 5–7 nerved, calyx tube 3–6 mm long, calyx limb 6-toothed.

   1. P. motleyi

3. Leaves elliptic-oblong, 12–25 × 8–11 cm, 7–9 nerved, calyx tube 6–7 mm long, limb truncate.

   2. P. beccarii

2. Flowers sessile or shortly pedicellate, pedicel not more than 8 mm long.

4. Leaves subasexile, petiole 2–5 mm long; flowers shortly pedicellate, pedicel 5–8 mm long, petals 7–8 × 3 mm.

   3. P. hookeri

4. Leaves sessile, flowers subasexile, pedicel at most 5 mm long, petals 5–6 × 2 mm.

5. Leaves ovate-oblong or ovate-lanceolate 28–30 × 5–12 cm, apex acuminate, 7–11 nerved.

   4. P. robusta

5. Leaves ovate-elliptic, 8–13 × 5–7 cm, apex obtuse or briefly acuminate, 7-nerved.

   5. P. sessiliflora

6. Petals in bud acuminate, calyx tube 5 mm long.

   6. P. sessiliflora var. sessilis

7. Petals in bud obtuse or rounded, calyx tube 4 mm.

1. Plethiandra motleyi Hook. f.


Shrub. Branches terete or angular, usually glabrous. Leaves sessile or petiolate, elliptic, elliptic-ovate, ovate-oblanceolate or ovate-lanceolate, base subround, cuneate or obtuse, apex acuminate or obtuse or subobtuse, glabrous, 3–11-nerved, cross-veins indistinct, rarely cross-veins on the upper surface, indistinct, rarely cross-veins on the coriaceous leaves. Flowers in axillary fascicles, 4-merous, subasexile or pedicellate; bracteoles present, minute, subulate. Calyx tube urceolate-campanulate or ovoid, limb usually truncate, rarely limb 6-toothed, glabrous. Petals 6, obovate-elliptic, elliptic or ovate-lanceolate. Stamens 20–30, filament present, anthers linear, connective not produced, dorsally and ventrally inappandulate. Ovary fully consistent with the calyx tube, extra-ovarial chambers absent, ovary 6-chambered, top of the ovary minutely puberulous or glabrate. Style filiform, glabrous, stigma punctiform. Berry subglobose or ovoid. Seeds minute, numerous.

TYPE SPECIES: Plethiandra motleyi Hook. f.

DISTRIBUTION: Malaya, Sumatra and Borneo.

1. Plethiandra motleyi Hook. f.
Epiphytic shrub. Branches terete, glabrous. Leaves sessile, elliptic or elliptic-oblong, 12–25 × 8–11 cm, base obtuse or sub-rounded, apex obtuse or obtuse-acuminate, glabrous, 5–7-nerved, cross-venules indistinct, coriaceous. Flowers in axillary fascicles; pedicels 15–25 mm long. Calyx tube campanulate 6–7 × 4–4.5 mm, glabrous, limb truncate. Petals 6, 9–10 mm long. Stamens about 25, filament 6–7 mm long, anther linear 4–4.5 mm long, corona connate, inappressed dorsally and ventrally. Ovary fully concrescent with the calyx tube, extra-ovarial chambers absent. Style filiform, 10–12 mm long, glabrous, stigma punctiform.

**Distribution:** Sarawak part of Borneo.

**Borneo.** Sarawak, sine loc., Becari 4004 (K).

In 1891 Cogniaux proposed the species *Medinillopsis beccariana* on the basis of Becari 4004. But Stapf (in Hook. f., Lc. Pl. 25; 3198) suggested that "judging from a specimen of Becari's in the Kew Herbarium numbered 4004 and from Cogniaux's description there cannot be any doubt that it is identical with *Pletthandra*". Stapf (l.c.) had his doubts about the number of chambers in the ovary since he could not see any good specimen and he considered that Cogniaux's conception of three cells for *Medinillopsis* was incorrect. In 1921 Merrill (l.c.) appropriately transferred this species to the genus *Pletthandra*.

Vegetatively *P. beccariana* can be mistaken for *P. robusta*. But the flowers are long pedicellate (pedicel 15–25 mm long) in *P. beccariana*, whereas in *P. robusta* the flowers are subsessile or shortly pedicellate (pedicel 2–4 mm long).

### 3. PLETTHANDRA HOOKERI Stapf


Shrub. Branches terete, glabrous, nodes thickened. Leaves elliptic, 8–11 × 4.5–5.5 cm, base obtuse, apex obtuse or retuse, glabrous 5–7-nerved, cross-venules indistinct, coriaceous; petiole 2–5 mm long. Flowers in axillary fascicles, 6-merous, reddish; pedicel 5–8 mm long. Calyx tube urceolate-campanulate, 4–5 mm long, limb truncate. Petals 6, obovate-elliptic, 8–9 × 2–2.5 mm, acute. Stamens 26–30, filament 4.5–5 mm long, anther linear 2.5–3 mm long, corona connate, not produced, dorsally and ventrally inappressed. Ovary fully concrescent with the calyx tube, extra-ovarial chambers absent, apex of the ovary puberulous. Style filiform, 8–9 mm long, glabrous; stigma punctiform.

**Distribution:** In evergreen forests to 2500 m, Borneo.
Borneo. Sabah. Kinabalu: alt. 3290 m, Haviland 1169 (K); ibid., Maran Park, alt. 1566 m, 27 April 1933, J. & M.S. Clément 32985 (K, BM, L); ibid., J. & M.S. Clément 32980 (K, BM); ibid., Eastern shoulder, alt. 2500 m, 18 June 1961, R.S.N.B. No. 1059 (K); ibid., Penbukan, alt. 3333–1966 m, 10 January 1933, J. & M.S. Clément 36996 (K, BM, L); ibid., Upper Kinabalu, alt. 1566 m, 11 October 1933, J. & M.S. Clément 40393 (K); Sarawak. Summit of Sambang, alt. 766 m, 12 July 1937, Anderson 8924 (K, L).

This species is closely allied to Plectandra sessiliflora but differs in having longer pedicels (5–8 mm long), larger flowers and subsessile leaves (petiole 2–5 mm long); whereas in P. sessiliflora the pedicels are shorter (1–3.5 mm long), the flowers smaller and the leaves sessile.

4. Plectandra robusta (Cogn.) Nayar, comb. nov.


Epiphytic shrub. Branches terete, glabrous. Leaves sessile, ovate-oblanceolate or ovate-lanceolate, 20–30 × 5–12 cm, base rounded, apex acuminate, glabrous, 9–11 nerved, cross veins indistinct, mid-rib thick and prominent on the lower surface, coriaceous. Flowers axillary in fascicles, about 10–12 buds present in each fascicle at various stages of development; pedicel 2–3 mm long. Calyx tube urceolate-campanulate, 3–4 mm long, glabrous, limb truncate. Petals 5, contorted in bud, obovate-elliptic, 5–6 mm long, obtuse. Stamens about 28, filaments 3 mm long, anther linear, 2–3 mm long, connective not produced, inapiculate dorsally and ventrally (rarely minutely tubercled dorsally). Ovary fully concrescent with the calyx tube, extra-ovarial chambers absent. Style filiform, 8 mm long, glabrous, stigma punctiform.

DISTRIBUTION: Endemic to Borneo.

Borneo. Sarawak: near Kuching, 28 April 1893, Haviland & House 3620 (K, BM); Namman Fr. Bghi, Betung, alt. 5 m, 15 March 1900, Anderson 12442 (K); E. Sabah, Betung, 20 March 1903, Klotz 16290 (K); Br. Nangg, Tanah, alt. 1100 m, 11 October 1933, Rengganis ab Nyadong S. 1905 (K); Koenig. Kenapei, Hallier 2681 (K, L); same loc., Beccari 532 (K), Beccari 10749 (K); Indonesian Borneo: W. Kotai, near L. Pohres, alt. 90 m, 12 August 1925, Endert 2505 (K, L). — Local name: “Kekhuan sabang” (Iban).

CULTIVATED: Singapore, Beccari s.n. (K); ibid., Passin Piah, 28 October 1910, Ridley 15526 (K, BM); East Jabor: Sungai Kayu, alt. low, 14 March 1937, Klotz 23369 (K).

SUMATRA. Indragiri: Muara Padangkong, 9 April 1938, Bawaali 6449 (K, L).

This species was based on Beccari’s collection from Singapore and Cogniaux (1891) assigned the species to Medinilla. Though Stallf as early as 1895 suggested that the new genus of Cogniaux (Medinilla) was superfluous in view of the availability of the genus Plectandra Hook. f., the new combination Plectandra sessiliflora was effected only in 1921 by Merrill (I.c.).
While describing *Plethiandra sessilis* Stapf (in Hook. f., Ic. Pl. 25: 2418. 1895) indicated thus: "The description of *Medinillopsis sessiliflora* Cogn. agrees almost exactly with my *P. sessilis*, the only point of difference being the length of the petals." Though the petal-length is not a stable character for specific recognition the shape of the petals in the flower bud and the length of calyx tube indicate that Stapf’s *P. sessilis* could best be considered as an infraspecific taxon. Because of the close resemblances between *P. sessiliflora* and *P. sessilis* and since the similarities outweigh points of difference, added to which there is a distinct geographical pattern of their distribution *P. sessilis* Stapf is relegated to varietal rank under *P. sessiliflora*.

**Plethiandra sessiliflora** (Cogn.) Merr. var. sessilis (Stapf) Nayar, stat. nov.


Epiphytic shrub. Branches suberect, young ones angular. Leaves sessile, ovate-elliptic, 7–12.5 × 5–6 cm, base rounded, apex obtuse, glabrous, 7-nerved, cross-veins inconspicuous, coriaceous. Flowers in axillary fascicles, sessile or subsessile, flower buds many in each fascicles at all stages of development. **Calyx tube** urceolate-campanulate, 3–4 mm long, limb truncate. **Petals** ovate-elliptic, 4–5 × 2 mm. **Stamens** about 20, filiment 4 mm long, anter 2.5 mm long, connective not produced, dorsally and ventrally inapandiplicate. **Ovary** fully concrescent with the calyx tube. **Style** filiform, 6–7 mm long, glabrous, stigma punctiform.

**Distribution:** Epiphytic shrub in peat swampy forests of Borneo.

**Borneo. Sarawak:** Sarawak river, Peninsa road 3rd mile, *Haviland c.f.a.* 93 (K); Simangrang Dist., one mile from Tanjung Trisco, alt. ca 3 m, 13 April 1959, *Anderson* 9793 (K).

6. **Plethiandra rejaensis** Stapf


Epiphytic shrub. **Branches** terete, glabrous. Leaves elliptic, 10–15 × 5–8 mm, base acute or subrounded, apex briefly acuminate, glabrous, 3–5-nerved, cross-veins on the upper surface distinct, coriaceous; pediole 10–30 mm long. **Flowers** in axillary fascicles; pedicel 10–18 mm long. **Calyx tube** urceolate-campanulate, 4.5–5 mm long, limb truncate. **Petals** 6, rotundate-obovate, 6–7 × 5.5–6.5 mm. **Stamens** about 30, filiment 5 mm long, anther linear 3.5–4 mm long, connective not produced, inapandiplicate dorsally and ventrally. **Ovary** fully concrescent with the calyx tube, extra-ovarial chambers absent. **Style** 9–10 mm long, filiform, glabrous, stigma punctiform.

**Distribution:** An epiphytic shrub of 1.5–2 m height growing in primary lowland forests of Borneo.

**Borneo. Sarawak:** Reja river, Sibor, *Haviland d.g.k.a.* 514 (K); Kuching Dist., Bako National Park, alt. 25 m, 18 April 1962, *Arderi* b. *Arderi* S. 16381 (K, L); Telok Pauk, Bako National Park, alt. 10 m, 2 June 1968, *Paul Chai* & *Hoa Piie* S. 17651 (K); Assam, Bako National Park, alt. 50 m, 17 May 1956, *Peregrine* P. 4012 (K); Near Kuching, 6 February 1883, *Haviland & Howe* 3829 (K, BM, L, CAL); Baram Dist., Baram, 16 November 1894, *Hass* 41 (K, BM); *Biron* Baram Dist., Baring Tunk, Daro F.R., alt. low, 2 February 1968, *Samsun* c. *Tahar* 974 (K). — Local name: "akai tembusu".

**Plethiandra rejaensis** Stapf with its larger 3–5 nerved leaves and rotundate-obovate petals is easily distinguished from *P. cuneata* Stapf.

7. **Plethiandra cuneata** Stapf


Shrub. **Branches** terete, glabrous. Leaves elliptic or oblong-elliptic, 6–9 × 2.5–4 cm, base cuneate, apex acuminate, glabrous, 3-nerved, cross-veins inconspicuous, coriaceous; petiole 10–20 mm long. **Flowers** axillary, 1–3 in each axil; pedicel 10–18 mm long. **Calyx tube** urceolate-campanulate, 5–5.5 mm long, limb truncate. **Petals** 6, elliptic-oblong, 7–8 × 3.5–5 mm, apex obtuse. **Stamens** about 30, filiment 5–6 mm long, anther linear, 3.5–4 mm long, connective not produced, inapandiplicate dorsally and ventrally. **Ovary** fully concrescent with the calyx tube, extra-ovarial chambers absent, apex of the ovary puberulous. **Style** filiform, 11–12 mm long, glabrous, stigma punctiform.

**Distribution:** A bushy shrub of about 2 m height growing near sea coast in Sarawak part of Borneo.

**Borneo. Sarawak:** Selabat Rock, sea coast, *Haviland* 179 (K, BM).

In the type description of *P. cuneata* Stapf it is stated that the flowers are solitary. It is seen that the flowers are in small axillary fascicles of 1–3 flowers.

**Acknowledgements**

I wish to express my gratitude to the authorities of the Herbarium, Royal Botanic Gardens (Kew), the British Museum (London) and the Rijksbherbarium (Leiden) for their hospitality during my visits and for loan of herbarium specimens. My thanks are also due to Dr. K. Subramanyam, Director, Botanical Survey of India for his encouragements.
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