

NEW SPECIES OF *ALPINIA*
FROM SULAWESI AND SARAWAK

R. M. SMITH

Four new species of *Alpinia* are described; *A. glacicaerulea*, *A. sandsii* and *A. maxii*, all belonging to sect. *Myriocrater* K. Schum., and *A. amentacea*, which is placed in the small sect. *Eubracteata* K. Schum.

Sect. *Myriocrater* K. Schum.

Syn. nov.: sect. *Cylindrobotrys* K. Schum.

Alpinia sandsii R. M. Smith, *species nova*. *A. caeruleoviridio* K. Schum. foliis linearilanceolatis petiolatis et floribus monoeciis similis, sed ligula brevior et floribus roseoaurantiacis et flavis ex axi circumcirca orientibus (nec secundis) differt. **Fig. 1C.**

Leafy shoots to 2m. *Leaves* 25-30 x 1-2cm, linear-lanceolate, acuminate, shortly pubescent below; petioles 2-3cm; ligule just over 1cm, membranous and becoming fimbriate except for the persistent basal 1/3, shortly pubescent; sheaths striate, with some marginal hair. *Inflorescence* to c.10cm, sometimes held at right angles, with numerous, densely congested sessile cincinni of at least 5 flowers, arising all round the main axis. *Bracts* minute; bracteoles reddish brown, c.8mm, funnel-shaped, membranous, lightly pubescent. *Flowers* salmon-pink to orange and yellow, with short, pubescent pedicels; hermaphrodite flowers (from the base of a cincinnus): calyx 6-7mm, 3-lobed the lobes with minute subapical teeth, not unilaterally split, glabrous; corolla tube equal to the calyx in length; petals 5-6mm, the dorsal shortly cucullate; labellum yellow, slightly exceeding the petals in length, oblong with an emarginate rounded apex; stamen c.8mm, almost petal-like, thecae 4mm widely divergent, the connective notched at the apex and forming a short crest; stigma rigid with a ventral orifice; ovary bright green, glabrous, trilocular with axile placentation. *Capsule* 8mm diam., somewhat ridged when dry. Functionally male flower (from a young bud at the top of a cincinnus): anther thecae 6mm, parallel, no crest formed; style aborted, c.2mm long.

Type: S Sulawesi, Enrekang district, Latimojong mts, flat saddle area between Bunte Djakke and Rampuan Tekken, 2750m, mixed forest, frequent locally on heavy loam in shade, rhachis sometimes turning at right angles, bracteoles reddish-brown, outer tepals salmon-pink to orange, inner parts of flower yellow, 10 xi 1969, *Sands* 459 (holo. K, iso. E).

Other material seen:

S Sulawesi, Latimojong mts, ridge near Rampuan Tekken, 2825m, 24 x 1968, *Sands* 305 (K).

This species is named for its collector, Dr Martin Sands, Royal Botanic Gardens, Kew.

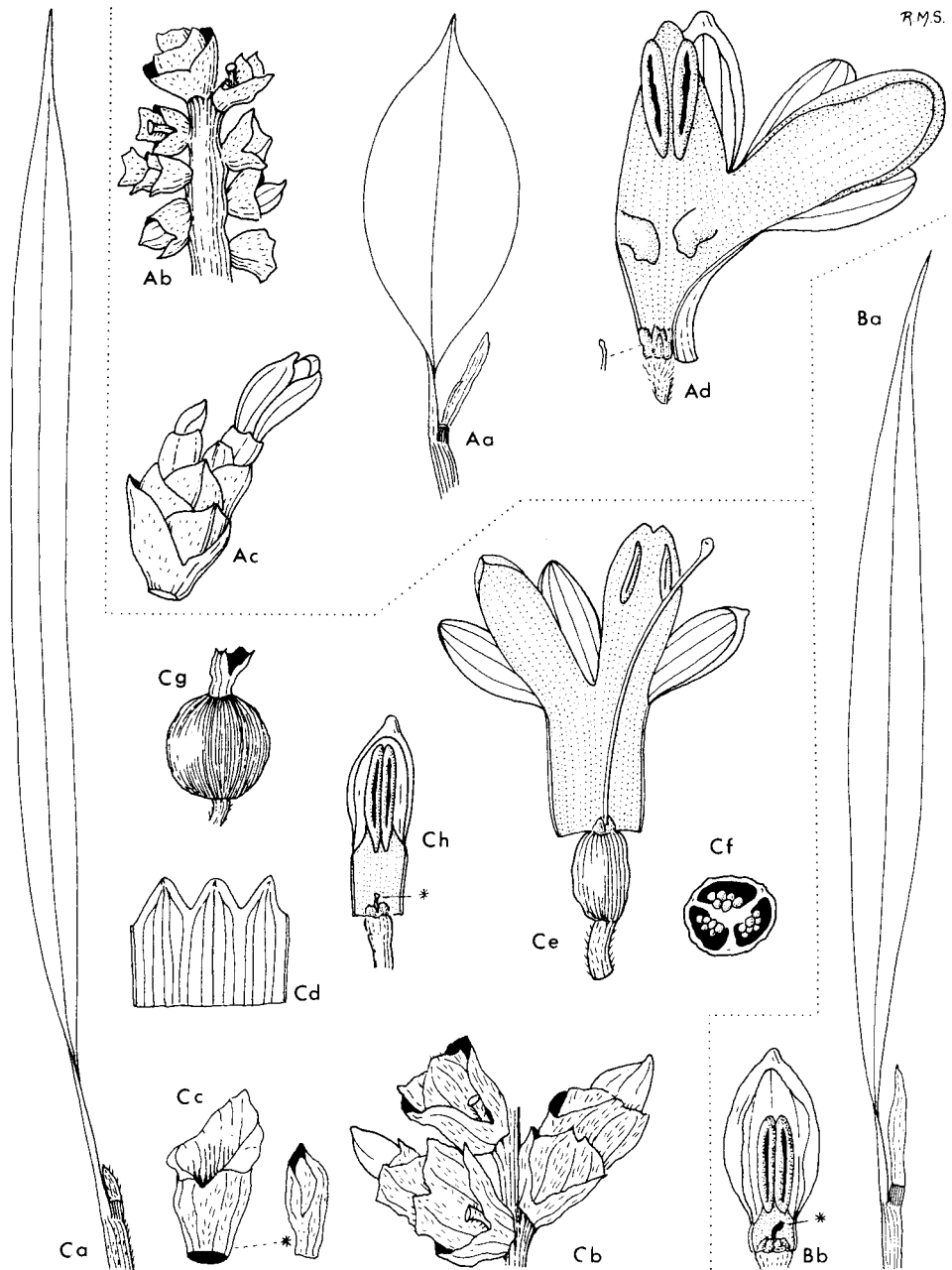


Fig.1 A. *Alpinia glacicaerulea*. Aa, lamina, petiole and ligule c. $\times \frac{1}{2}$; Ab, uppermost part of cincinnus $\times 2$; Ac, single cincinnus $\times 3$; Ad, male flower, dissected $\times 4$. (From dried material of *van Balgooy* 3194.) B. *Alpinia caeruleoviridis*. Ba, lamina, petiole and ligule c. $\times \frac{1}{2}$, Bb, L.S. of young male bud from upper part of cincinnus showing aborted gynoecium * $\times 3$. (From dried material of *Johansson et al* 240.) C. *Alpinia sandsii*. Ca, lamina, petiole and ligule c. $\times \frac{1}{2}$; Cb, part of cincinnus, old flowers fallen $\times 3$; Cc, bracteole from first flower of cincinnus, with remainder of cincinnus removed and shown alongside * (not from same inflorescence as Cb) $\times 3$; Cd, calyx $\times 2$; Ce, flower, dissected $\times 2$; Cf, ovary in T.S. $\times 4$; Cg, capsule $\times 2$; Ch, L.S. of young male bud from top of cincinnus showing aborted gynoecium * $\times 3$. (From dried material of *Sands* 459.)

Alpinia glacicaerulea R. M. Smith, **species nova** *A. caeruleoviridio* K. Schum. floribus caeruleis monoeciis et ligulis longis membranaceis similis, sed foliis brevioribus ellipticis omnino glabris differt. **Fig. 1A.**

Leafy shoot to c. 1m. *Leaves* 8–10 x 4cm, acuminate, elliptic, coriaceous, glabrous; ligule 2–3cm, membranous and becoming fimbriate except for the persistent, short (c. 3mm) basal part, glabrous; sheaths striate, glabrous. *Inflorescence* c. 3–5cm long with a c. 6cm stalk; cincinni sessile, tightly congested, borne on one side of the axis only, at least 6-flowered; bracts not seen; bracteoles c. 4–5mm, campanulate, sparsely pubescent. *Flowers* (only functionally male seen) icy blue, c. 1.5cm; calyx 7–8mm, truncate; corolla tube a little longer, petals to c. 1cm, the dorsal shortly cucullate; labellum slightly longer than the petals, oblong; lateral staminodes 2mm, fleshy. *Stamen* c. 1cm, filament and anther ± equal, the former cymbiform, anther with a short rounded crest; style reduced to 2–3mm, hidden by the epigynous glands.

Type: C Sulawesi, Mt Roroka Timbu W slope, montane forest dominated by *Agathis* 40m tall, 2000m, flowers icy blue, 8 v 1975, *van Balgooy* 3194 (holo. L, iso. E).

The type of *A. caeruleoviridis* (*Sarasin* 649) has been lost, but a recent collection from central Sulawesi, N slope of G. Lokilalaki, in primary forest at 1700m, *Johansson et al* 240 (L, E), Fig. 1B, probably belongs here. It accords with the original description in the linear lanceolate leaves, long ligule and the colour of the flowers, and seriously deviates only in the length of the inflorescence which Schumann records as being scarcely 2cm long with 5 congested, sessile cincinni. The recent collection has a second inflorescence up to 13cm long. In a footnote Schumann remarks that the flower examined had a rudimentary style and since hermaphrodite flowers are to be found only at the base of the cincinnus in sect. *Myriocrater*, one may assume he was not dealing with an immature inflorescence but, perhaps, one that was incomplete.

As well as displaying the characteristic monoecism of the section, *A. sandsii*, *A. glacicaerulea* and *A. caeruleoviridis* are further linked by their curious ligules. In all three species the upper, and greater part, of the ligule is membranous, becoming fimbriate with age, and there is a very clear demarcation line between this area and the almost coriaceous lower part. The membranous area of the pink and yellow-flowered *A. sandsii* is very much shorter than that of the blue-flowered species, from which it also differs in the cylindrically, rather than unilaterally borne, cincinni. Such ligules also occur in *A. cylindrocephala* K. Schum., the type of which (*Sarasin* 1243, S Sulawesi, Lampobatang) is lost, but *Teysmann* 13781 (L), collected close to the type locality fits Schumann's description well and the old inflorescence shows the remaining flowers to be functionally male. This species, which was recently incorrectly assigned to sect. *Dieramalpinia* (Smith, *Edinb. J. Bot.* 47: 42, 1990) and was placed in the monotypic sect. *Cylindrobotrys* by Schumann should now be referred to sect. *Myriocrater*. The cincinni arise all around the axis and the leaves are pubescent on the lower surface. In general facies these rather slender, small leaved plants, together with *A. maxii*, which is described below, are very different to the majority of the species already known in sect. *Myriocrater*, most of which are characterized by their robust habit – sometimes up to 10m tall – and large (occasionally 2m long) leaves.

Alpinia maxii R. M. Smith, **species nova**. *A. sandsii* R. M. Smith foliis lineari-lanceolatis et floribus monoeciis eiusdem coloris similis, sed cincinnis interse remotis foliis subsessilibus et ligula omnino coriacea recedit. **Fig. 2.**

Leafy shoots to 1.5m. *Leaves* subsessile, 15–25 x 1.5–2cm, linear lanceolate, acuminate; ligule 2–3mm, entire, coriaceous; sheaths striate, glabrous. *Inflorescence* to 30cm with many remote (usually 2–3.2cm apart) sessile or shortly stalked, irregularly arranged

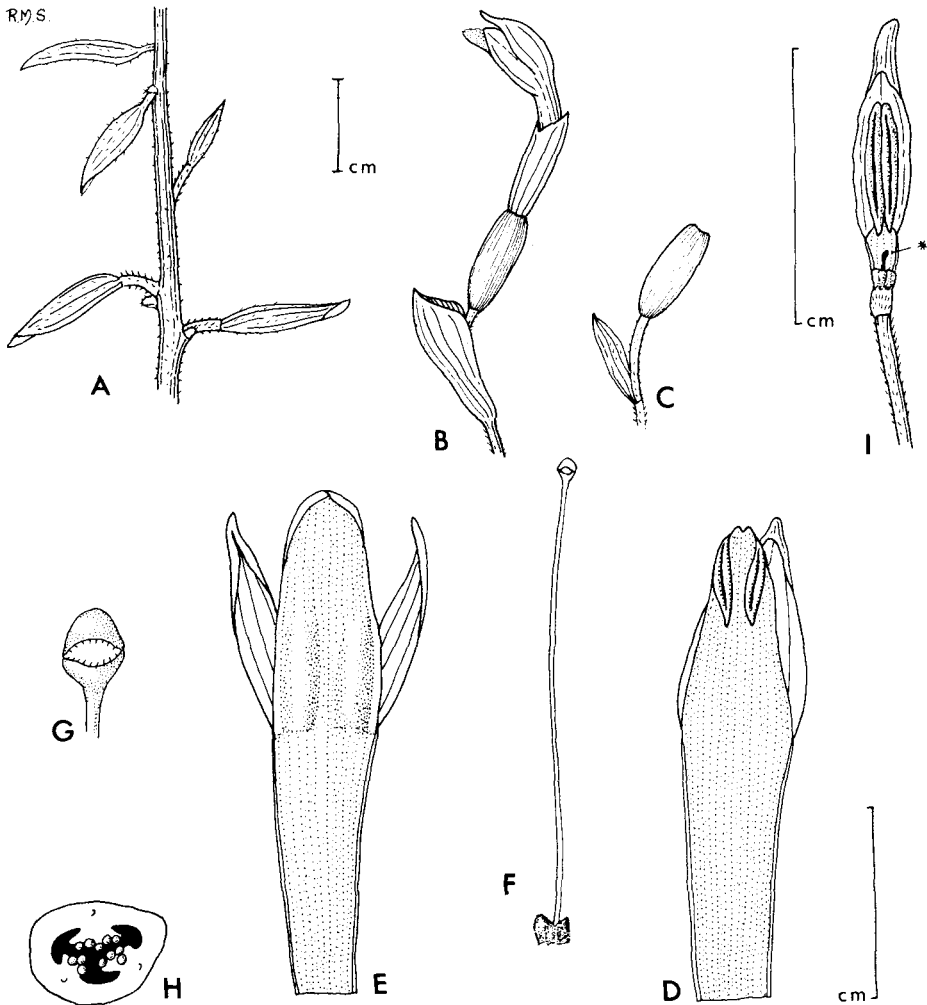


Fig. 2 *Alpinia maxii*. A, part of inflorescence showing young cincinnus; B, cincinnus showing first bracteole and flower; C, cincinnus, first bracteole removed to show second bracteole which encloses remainder of cincinnus; D, stamen and corolla tube with dorsal petal; E, labellum and corolla tube with lateral petals; F, stigma, style and epigynous glands; G, stigma; H, ovary in T.S.; I, L.S. of young male bud from top of cincinnus showing aborted gynoecium *. G & H much enlarged, remainder as indicated by cm scales. (From dried material of *van Balgooy* 3327.)

cincinni of up to 4? flowers. *Bracts* minute, ciliate; bracteoles 1.5–2cm, funnel-shaped, sparsely pubescent. *Flowers* red-pink and yellow, pedicels c.1cm, pubescent; hermaphrodite flower (from base of a cincinnus): calyx red, c.1cm, 3-lobed, not unilaterally split, glabrous; corolla tube slightly longer; petals c.1cm, the dorsal shortly cucullate; labellum equal to the petals, oblong with an emarginate rounded apex, fleshy and with two elongate swellings in the lower half, thin-textured at the margins; lateral staminodes absent; stamen c. 1cm, filament 5–6mm, cymbiform, thecae 4–5mm, divaricate, the connective emarginate; stigma rigid with a hair-fringed ventral orifice; ovary imperfectly trilocular, glabrous. Functionally male flower (from a young bud at the top of a cincinnus): thecae parallel ecristate, style aborted. *Capsule* (from *de Vogel* 5158) red, to 2.5cm long, flask shaped.

Type: C Sulawesi, Mt Roroka Timbu W slope, 2000m, montane forest dominated by *Agathis* 40m tall, calyx red, corolla yellow, 11 v 1979, *van Balgooy* 3271 (holo. L; iso. E, K).

Other material seen:

C Sulawesi, N slope of G. Lokilaki, 17500m, tepals [calyx and petals ?] pink, lip yellow, anther white, 9 iii 1981, *Johansson et al* 242 (L, E,); Mt Roroka Timbu, 80km S E of Palu, 1900m, undisturbed forest with *Fagaceae* and *Myrtaceae*, rather common, flower and fruit red, 30 iv 1979, *E. F. de Vogel* 5158 (K).

It is a pleasure to name this species for Dr Max van Balgooy who, in the course of several expeditions to Indonesia, has collected many interesting gingers.

Sect. Eubractea K. Schum.

Alpinia amentacea R. M. Smith, *species nova* *A. beamanii* R. M. Smith cincinnis multifloris bracteolis numerosis imbricatis floribus albis monoeciis et parte libera labelli profunde divisa similis. Foliis latoribus apicibus pilis remotis setoso-ciliatis praeditis et inflorescentia glabra differt.

Leafy shoots? *Leaves* to 35 x 6cm, lanceolate acuminate, lightly pubescent below, the margins with remote bristle-like hairs towards the apex; petioles 1–2.5cm; ligule 1–2mm, entire or slightly emarginate, glabrous, sheaths glabrous. *Inflorescence* to c.13 cm, glabrous, bearing many well-spaced, short-stalked, catkin-like cincinni of up to 40 flowers. *Bracts* not seen but scars visible; bracteoles, c. 1cm, decreasing in size towards the top of the cincinnus, narrowly funnel-shaped. Only young male buds from near the top of the cincinnus seen, which may be described as:– white, pedicels to 5mm, calyx 5–6mm, truncate; corolla c.6mm, dorsal petal cucullate; labellum probably joined to the base of the filament into a short tube, free part deeply 2-lobed, no crest noted; style rudimentary. *Capsule* (unattached) c.1cm in diameter, spherical.

Type: Sarawak; 7th Division, Sg Iban, Belaga, on ridge of mixed *Dipterocarp* forest, flowers white, fruit green, 12 xi 1984, *Lee* S45518 (holo. E, iso. AAU, SAR).

As will be realized from the above description, the type material of *A. amentacea* is incomplete, but enough detail can be observed to justify treating it as a distinct species, and one that is very close to *A. beamanii* R. M. Smith (see *Notes R.B.G. Edinb.* 45: 341,

1989 for discussion on monoecism in this section). *A. amentacea* differs in the wider leaves with their bristle-like marginal apical hair and the glabrous inflorescence. The many-flowered cincinni, which are more slender than those of *A. beamanii*, are remarkable for their catkin-like appearance.

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