

FOUR NEW SPECIES OF ZINGIBERACEAE FROM BORNEO

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Four new species of Bornean Zingiberaceae are described:- *Amomum sceletescens*, *Hedy-chium borneense* from Sabah, *H. lineare* which occurs in Sabah, Sarawak and Kalimantan, and *Elettariopsis kerbyi* from the Gunong Mulu National Park in Sarawak.

Amomum sceletescens R.M.Smith, **species nova** ob fructus echinatos, bracteoles breves tubulares et colorem florem *A. oligantho* K.Schum. similis; sed labello 3-lobo, calyce 3-lobo, et bracteis demum sceletescentibus differt. **Fig. 1.**

Herb up to 2m high. *Leaves* shortly petiolate (petioles 0.5–2cm), lamina 25–35 × 6–10cm, lanceolate-acuminate, attenuate at the base, lower surface shortly pubescent to glabrescent; ligule 2–3mm long, bilobed, the lobes rounded, densely pubescent; sheaths pubescent. *Inflorescence* borne separately from the leaves on an erect 20–45cm peduncle, sheaths of the peduncle shortly pubescent; inflorescence c.7cm wide × 4cm deep; bracts each subtending a single, shortly pedicellate flower (outer whorl apparently sterile), 5–7 × 1.5–2 cm, narrowly oblong, obtuse, membranous, pubescent, reticulation prominent, becoming skeletonized with age; bracteoles c.1.5cm long, tubular, ciliate margined; calyx greenish, split unilaterally, 2–2.5cm long, 3-lobed, each lobe with a subapical tuft of hair; corolla orange-yellow, tube ± the same length as the petals or shorter; petals 2–3cm long, rounded at the apex, the dorsal much wider than the laterals, glabrous; labellum 2.5–3 × 2–2.5cm, 3-lobed, the mid-lobe also 3-lobed; lateral staminodes 8 × 1mm; filament 1.25cm; anther 1.5cm, thecae hairy with a short, 1cm wide, obscurely 3-lobed or entire crest; stigma hairy at mouth; style linear; epigynous glands c.2mm, encircling the base of the style; ovary pubescent, verrucose. *Fruit* echinate, 3.5 × 3cm, ellipsoid, glabrescent.

Type: Sabah, Mt Kinabalu, Ulu Ligwagu and Ulu Mesilau, 6°N c.116°35'E, 4000ft, lip, staminodes, anther-crest deep orange-yellow, petals pale yellow, sepals greenish, bracts green, drying brown, 2 ix 1961, *Chew, Corner & Stainton* RSNB 2649 (holo. K).

Other material seen:

SABAH: Mt Kinabalu, Dallas, 3000ft, flower yellow and white, fruit green, 21 x 1931, *J. & M.S.Clemens* 26838 (K); *ibidem*, ix 1931, *Clemens* 26440 (A); *ibidem*, Mamut R, 3800ft, in scree forest, capsules very spinous, bracts green, 10 viii 1961, *Chew, Corner & Stainton* RSNB 1714 (K, excluding leaves); *ibidem*, Bembangan camp, 5000ft, leaves hairy, 27 ii 1964, *Chew & Corner* RSNB 4580 (K).

A. sceletescens belongs to Group IV of the informal subdivision of *Amomum* suggested by Smith (*Notes RBG Edinb.* 42: 295, 1985) and is characterized by the decaying habit of the bract tissue between the veins as the capsules begin to form. Spiny fruits also occur in the allied *A. oliganthum* K.Schum., in the poorly known *A. bicorniculatum* K.Schum., and in the much less robust *A. kinabaluense* R.M.Smith.

While the inflorescence of *Chew, Corner & Stainton* 1714 matches that of the type

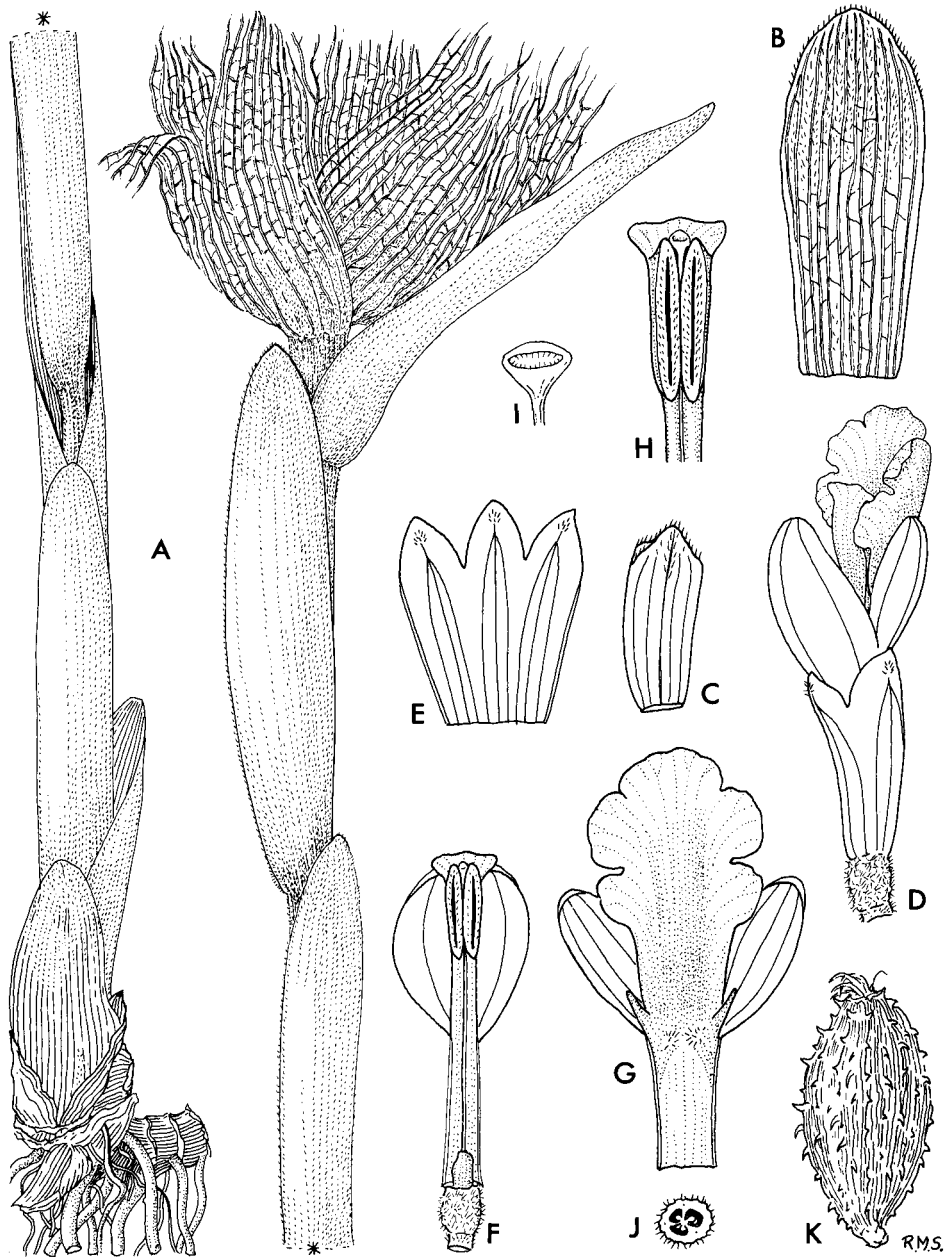


FIG.1. *Amomum sceletescens*. A, old inflorescence $\times \frac{2}{3}$; B, bract $\times 1$; C, bracteole $\times 1$; D, flower, bracteole removed $\times 1$; E, calyx, dissected $\times 1$; F, L.S. of corolla showing dorsal petal, stamen and epigynous glands $\times 1$; G, L.S. of corolla showing lateral petals, labellum and lateral staminodes $\times 1$; H, anther and upper part of filament $\times 2$; I, stigma, much enlarged; J, ovary in T.S. $\times 1$; K, capsule $\times 1$. (A from dried material of Chew & Corner RSNB 4580; B–J from spirit material of Chew, Corner & Stainton RNSB 2649; K from dried material of Clemens 26838).

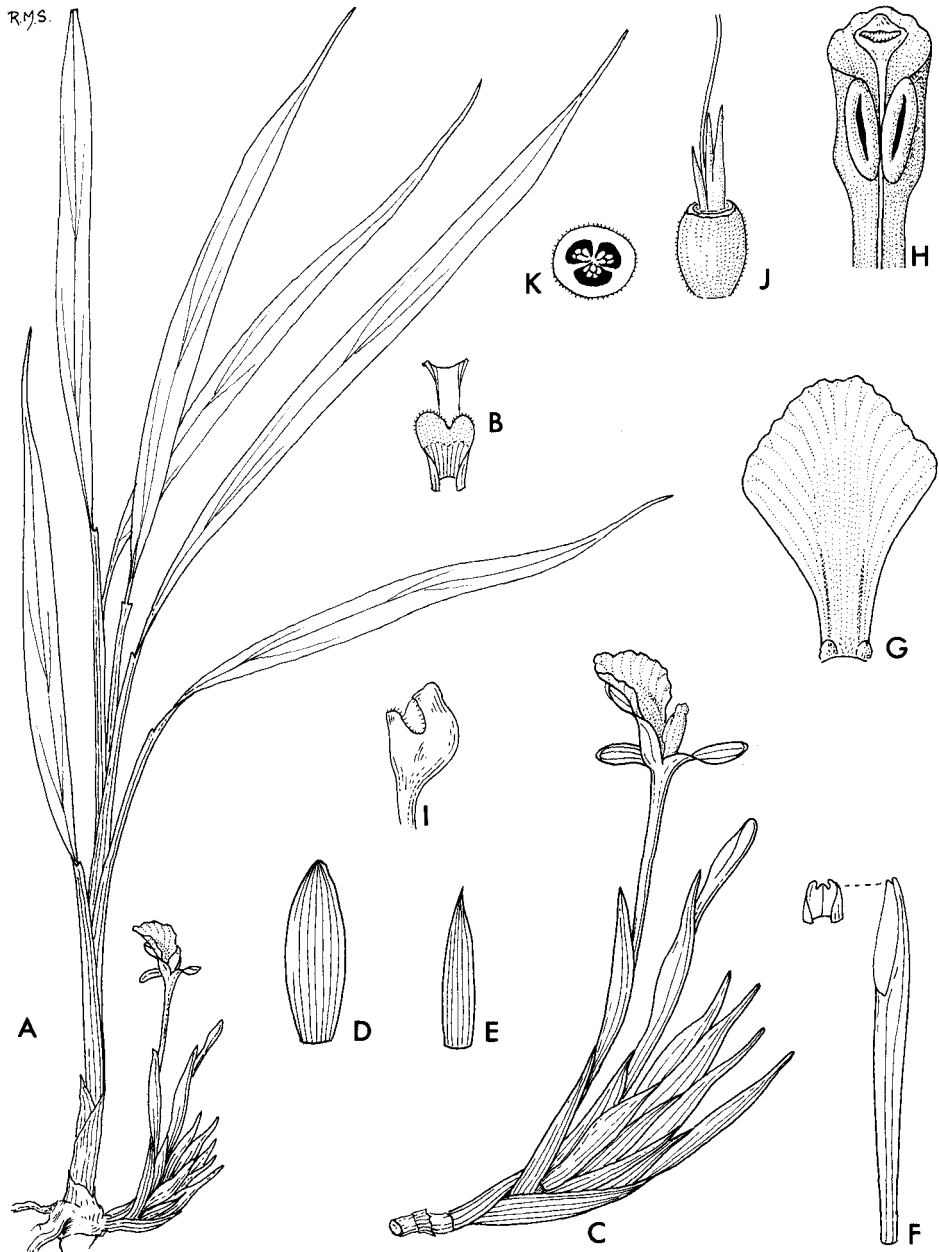


FIG.2. *Elettariopsis kerbyii*. A, habit $\times \frac{1}{2}$; B, ligule $\times 4$; C, inflorescence $\times 1$; D, bract $\times 1$; E, bracteole $\times 1$; F, calyx $\times 1$; G, labellum and lateral staminodes $\times 1$; H, stamen, showing stigma and upper part of style $\times 2\frac{1}{2}$; I, stigma from the side, much enlarged; J, ovary, epigynous glands and base of style $\times 3$; K, ovary in T.S. $\times 3$. (All from living material of Kerby 140).



FIG.3. *Hedychium borneense*. A, habit (tip of lamina shown separately); B, bract; C, bracteole, dissected; D, calyx; E, tip of petal, much enlarged; F, L.S. of corolla showing labellum, lateral petals, lateral staminodes and epigynous glands; G, L.S. of corolla showing dorsal petal, stamen and style (*); H, anther from the side; I, stigma, much enlarged. (From living material of R.B.G. Edinb. acc. no 842372).

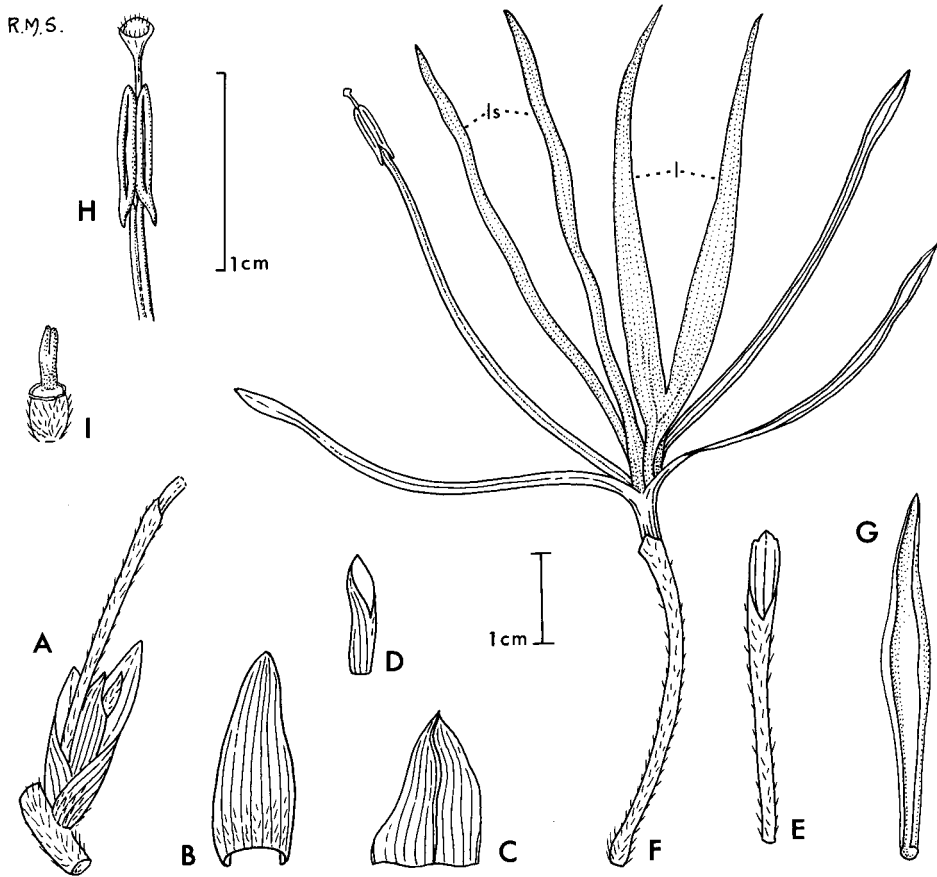


FIG.4. *Hedychium lineare*. A, cincinnus, showing bract, bracteoles and base of first flower; B, bract; C, first bracteole, dissected; D, bracteole from third flower of the cincinnus; E, calyx; F, flower (l=labellum, ls=lateral staminodes); G, tip of petal, much enlarged; H, stamen, only upper part of filament shown; I, ovary with epigynous glands. (From dried material of Richards 1311).

material of *A. sceletescens* precisely, the leaves are quite glabrous with entire ligules up to 2cm long and cannot belong here.

***Elettariopsis kerbyi* R.M.Smith, species nova** ob vaginas foliorum amplectentes pseudocaulum formantes, flores singulares et labellum integrum *E. smithiae* Kam similis; sed foliis linearibus, petiolis brevioribus, calyx longiore et antherae crista minore. **Fig. 2.**

Herb up to 60cm; leafy shoots with up to 6 leaves, the sheaths clasping at the base to form a 10–15cm long pseudostem; leaves subsessile or, in the leaves at the top of the shoot, with petioles up to 1cm long; lamina 20–25 × 1.5–2cm, linear, long caudate at the apex, attenuate at the base, glabrous; ligule 1mm long, membranous, bilobed, the lobes rounded and unequal; sheaths glabrous. *Inflorescence* held on a short (1–

2cm) peduncle, arising at the base of the leafy shoot, consisting of at least 6 laxly arranged flowers each subtended by a bract and bracteole; bracts greenish white, to 2.5×1 cm, lanceolate, obtuse, glabrous; bracteoles red-tipped, $c.2 \times 0.4$ cm, narrowly lanceolate acuminate; calyx white with reddish tip, 4–5cm long, unilaterally split in upper third, glabrous; corolla white, tube to 5cm long; petals up to 1.5cm long, rounded; labellum white, yellow centrally with a red line on either side in the lower half, 2×1.5 cm, entire; lateral staminodes reduced to small pubescent swellings; stamen $c.2.2$ cm long; filament 0.8cm, anther \pm the same length; crest 3–4mm, entire; stigma obconical, the orifice ciliate. *Epigynous glands* $c.4$ mm long, slender, lobed. *Ovary* 4×3 cm, minutely pubescent, trilocular with axile placentation. *Fruit* unknown. Type: Sarawak: Gunong Mulu National Park, 1000m above Sungei Lansat, 1977, Kerby 140, living material only, flowered in cultivation, R.B.G.Edinburgh, xi 1985, acc. no 773416 (holo. E).

The publication of *E. kerbyi* has been delayed in the hope that the species, which is still in cultivation at Edinburgh, might again flower and details of the rhizome, i.e. whether it elongates and produces further inflorescences as in *E. smithiae*, or terminates with the flowering head as in *E. triloba* be noted. Both these species are known only from W Malaysia. The plant from which the above description was taken was pot cultivated and therefore restricted in growth.

E. kerbyi is remarkably similar to *E. smithiae* in almost all aspects of the inflorescence. Vegetatively it shows important differences: the linear leaves are very long caudate and the petioles, when present, do not exceed 1cm. In *E. smithiae* the blades are elliptic or oblanceolate with distinct petioles, 1.5–2.5cm long in the lowermost leaves, up to 6cm in those at the top of the shoot.

Hedychium borneense R.M.Smith, **species nova** ob bracteas imbricatas latas et labellum elliptico-obovatum breviter bilobum *H. cylindrico* Ridley similis, sed floribus viridiflavis et aurantiacis, et habitu glabro differt. **Fig. 3.**

Herb, probably under 1m. *Leaves* with petioles up to 4cm long (sometimes sessile), 10–18 \times 4cm, lanceolate, more or less obovate, acute, glabrous; ligule to 2cm long, entire, membranous; sheaths glabrous. *Inflorescence* to $c.10$ cm long, cylindrical, glabrous; bracts reddish-brown, imbricating and concealing the main axis, up to 2.5×1.5 cm, obtuse with membranous margins; flowers pale lemon yellow, darkening with age, borne in cincinni of 1–3; bracteoles tubular 0.6–0.8cm long, keeled, apiculate; calyx pale green, tinged red, $c.2$ cm long, shortly bidentate, shallowly split unilaterally; corolla-tube to 5cm long, pubescent within; petals greenish $c.3$ cm long, their margins strongly inrolled, acute at the apex; labellum 3–3.5cm long, shortly unguiculate; limb \pm ovate, bilobed in the upper third; lateral staminodes $c.3 \times 0.6$ –0.8cm, narrowly spatulate, acute; stamen orange, 4cm long, anther $c.0.8$ cm, thecae free at the base; stigma green, pubescent; style linear, concealed within a groove throughout its length; epigynous glands 0.4cm, united ventrally. *Ovary* lightly pubescent in upper half. *Fruit* orange, to 4×2 cm, ovate-trigonous, glabrous; seeds and arils bright red.

Type: Sabah, Crocker Range, Sinsuran Rd, 4000ft, iii 1984, living material only, flowered in cultivation, R.B.G.Edinburgh, x 1989, acc. no 842377 (holo. E).

When *H. borneense* first flowered at Edinburgh (viii 1987) each bract was subtended by a single flower. Subsequent inflorescences have shown that this condition is not constant and cincinni of two or three flowers commonly occur. The species resembles *H. cylindricum* Ridley, a common plant of the Kinabalu area, in the imbricating bracts but differs in the colour of the flowers and in its glabrous habit.

Hedychium lineare R.M.Smith, **species nova** *H. longicornuto* Baker similis ob inflorescentiam pubescentem, tubum corollae brevem, petala et staminodia lateralia linearia et labellum profunde divisum; sed foliis glabris, inflorescentia valde elongata bracteis remotis praedita, labello longiore et staminodiis lateralibus differt. **Fig. 4.**

Epiphytic herb up to 1m tall. *Leaves* sessile 20–30 x 4–6cm, narrowly lanceolate, acuminate, rounded to attenuate at the base, glabrous; ligule 1–1.3cm, entire, rounded, membranous; sheaths glabrous. *Inflorescence* 20–30cm long, narrowly cylindrical, main axis densely hairy; bracts not imbricating, 2–2.5 × 0.5–0.8cm, lanceolate, acute, pubescent towards the base; flowers (colour not recorded) in cincinni of 3–4; bracteoles tubular, c. 1.5cm long, splitting readily, pubescent; calyx c. 3cm long, minutely 3-lobed, unilaterally split, pubescent; corolla tube barely exceeding the calyx, fleshy, pubescent within; petals linear, 4–4.5 × 0.1cm, with inrolled margins, slightly spatulate and acuminate at the apex; labellum 4–5cm long, divided almost to the base into two narrowly lanceolate lobes, lobes 0.4cm across at widest point; lateral staminodes linear 5 × 0.1cm; stamen 5.5cm long; anther 0.5cm, thecae free basally; stigma pubescent; style linear, concealed in a groove in the filament and throughout the length of the corolla tube; epigynous glands 0.3cm long, often fused ventrally. *Ovary* c. 0.2cm long, densely pubescent. *Fruit* unknown.

Type: Sarawak, 4th Division, Mt Dulit, near Long Kapa, c. 300m, epiphytic, on humus caught between trunk of large tree and liane at least 100ft from ground, flowers sweet scented, 17 viii 1932, *Richards* 1311 (holo.K).

Other material seen:

SABAH: Beaufort distr., Lumaak, 100ft in primary forest, 17 vi 1966, *Sadou* SAN50354 (K).

KALIMANTAN: Sungei Kenepai, 1893/94, *Hallier* B1918 (K).

H. lineare resembles *H. longicornutum* Baker of the Malay Peninsula in its epiphytic habit and in the deeply bilobed labellum. It is, however, quite distinct from that species in the elongate inflorescence with remotely placed bracts and in the non-exserted stamen. The flowers of *H. longicornutum* are basically orange-scarlet; unfortunately no colour notes have been recorded for *H. lineare*.

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