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TWO NEW GINGERS FROM SABAH

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ABSTRACT. Two new species of Zingiberaceae, *Amomum kinabaluense* and *Hornstedtia gracilis*, both known only from Kinabalu Park, Sabah, are described.

Amomum kinabaluense R. M. Smith **species nova**, ob flores luteo-aurantiacos, bracteolas tubulares, ovarium verrucosum *A. oligantho* K. Schum. similis, sed inflorescentia pauciflora, bracteis mox diruptis et antherae crista triloba differt. Fig. 1.

Fronda foliorum ad 1 m alta. Lamina supra vaginas subsessiles vel breviter petiolata, 20–30 × 5–8 cm, anguste elliptica, caudato-acuminata, glabra; ligula c.2–3 mm integra vel paulo emarginata, glabra. Inflorescentia pedunculo 4–7 cm, basi frondae oriens, 4–5-flora; bracteae ad 2 cm, ovatae, apice rotundatae, ciliato-marginatae, mox diruptis; bracteolae 2–2·5 cm, tubulares, bilobae. Flores luteo-aurantiaci demum fuscescentes; calyx 3–3·5 cm, breviter pubescens, lobis 3 brevibus late triangularibus sub apice callosis; corollae tubus calyce brevior, extra et intus circa faucem parce pubescens; labellum 4·5 × 4 cm parte latissima, trapeziforme; staminodia lateralia ad 3 mm, subulata; stamen 4 cm longum; filamentum 2 cm superans; antherae thecae 1·5 cm, parallelae, rimis piloso-marginatis; connectivum in cristam c.2 × 6mm obscure trilobam (lobo mediano emarginato) carnosam prolongatum; stylus glaber; stigma circum orem piloso-marginatum; glandulae epigynae 2 mm dorso conjunctae; ovarium 1–1·3 cm pubescens, verrucosum, triloculare, placentis axilibus. Fructus ignotus.

Type: Sabah, Kinabalu Park, Silau Silau trail, 5000 ft, pale yellow-orange flowers, darkening with age; bracts small and soon disintegrating, 15 vi 1986, *R. M. Smith* 16/86 (holo. E).

Additional material examined:

SABAH: Kinabalu Park, Silau Silau trail, 5000 ft, 15 vi 1986, *R. M. Smith* 15/86 (E); Kinabalu Park, Liwangue trail, 17 vi 1986, *Smith & Phillipps* S27/86 (E).

A. kinabaluense is characterized by the few-flowered inflorescence, small and quickly disintegrating bracts and tubular bracteoles. Although no fruits have been seen, the verrucose ovary indicates that the capsules are echinate as in the closely related *A. oliganthum* K. Schum.

Hornstedtia (subgen. *Elettariostemon*) **gracilis** R. M. Smith, **species nova** *H. havilandii* (K. Schum.) K. Schum. ob inflorescentiam longipedunculatum et antherae thecas per longitudinem fertiles similis, sed et pedunculo et inflorescentia multo tenuioribus, et labello expanso differt. Fig. 2.

Fronda foliorum ad 1·5 m. Folia petiolo ad 1 cm; lamina 20–40 × 3–6 cm, lanceolato-acuminata, glabra; ligula 1–2 cm, integra, glabra. *Inflorescentia* erecta, pedunculo tenuissimo 20–40 cm pubescente, vaginis pedunculi ad c.8 cm longis glabris obscure reticulatis; spica 9–12 × 1·5–2 cm, anguste

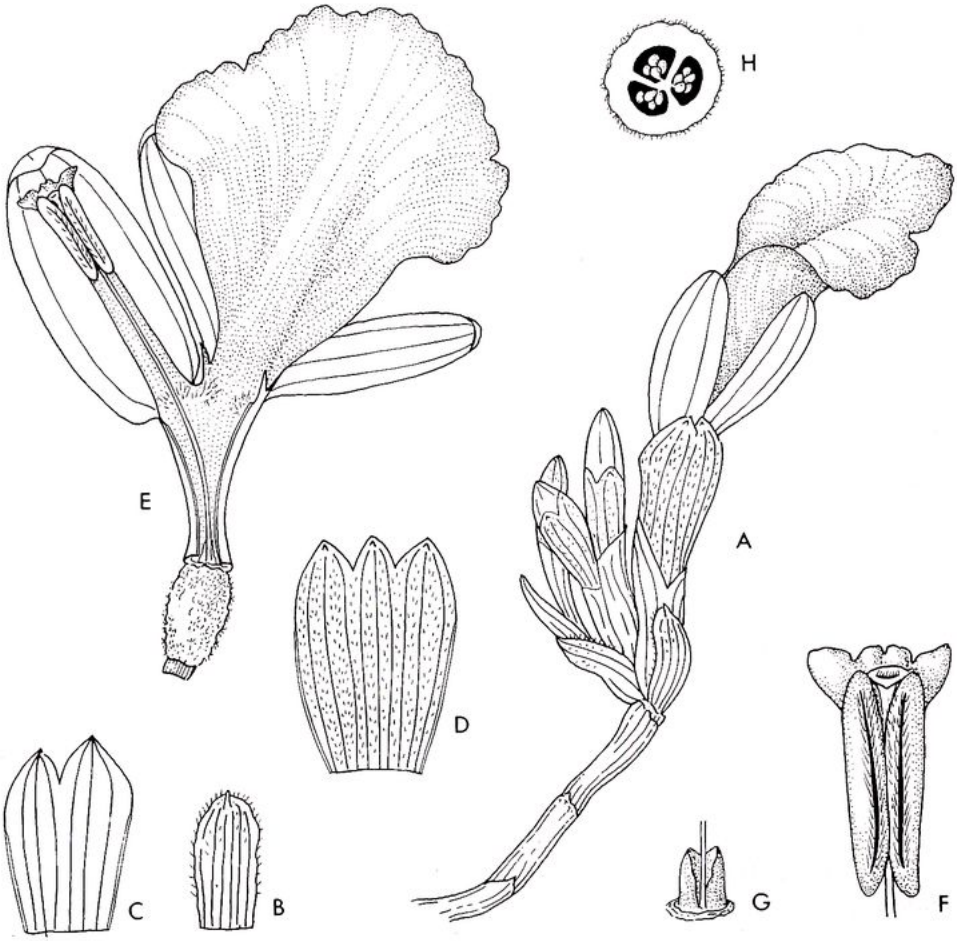

FIG. 1. *Amomum kinabaluense*. A, habit ×1; B, bract ×1; C, bracteole, dissected ×1; D, calyx, dissected ×1; E, corolla, dissected ×1; F, anther ×2; G, epigynous glands and base of style ×2; H, ovary in TS ×2 (from spirit material of *Smith & Phillipps* S 27/86).

fusiformis; bracteae steriles rubro-brunneae, ad 4 × 1·5–2 cm, anguste ovatae, apice rotundato, dimidio inferiore pubescentia griseo-velutina praeditae; bracteae fertiles c.4 × 1 cm; bracteolae nullae. Flores rubri et albi; calyx 4 cm longus, basi per 4 mm corollae tubo coalitus, breviter trilobus, basin versus pubescens; corollae tubus 6 cm longus primo anthesi demum valde elongatus; lobi 2–2·5 cm, apice rotundati; labellum roseo-rubrum albo-marginatum, 3 cm longum, unguiculatum, parte inferiore pubescens, apice in limbum c.1·75 cm longum plus minusve orbicularem expansum; staminodia lateralia nulla; anthera sessilis; thecae 1·5 cm longae, pubescentes, ad basin dehiscentes; connectivum emarginatum parvo lobo apice cujusque thecae, interdum truncatum; stigma plus minusve rotundatum, dorso apertum, flore maturo haud ultra antheram attingens; stylus pubescens; glandulae epigynae 7–8 mm longae, lobatae; ovarium 8 × 3 mm, pubescens, triloculare, placentis axilibus. *Fructus* 4–5 × 1·5 cm, anguste oblongus, dorsoventraliter compressus, parce pubescens collo brevi pubescente.

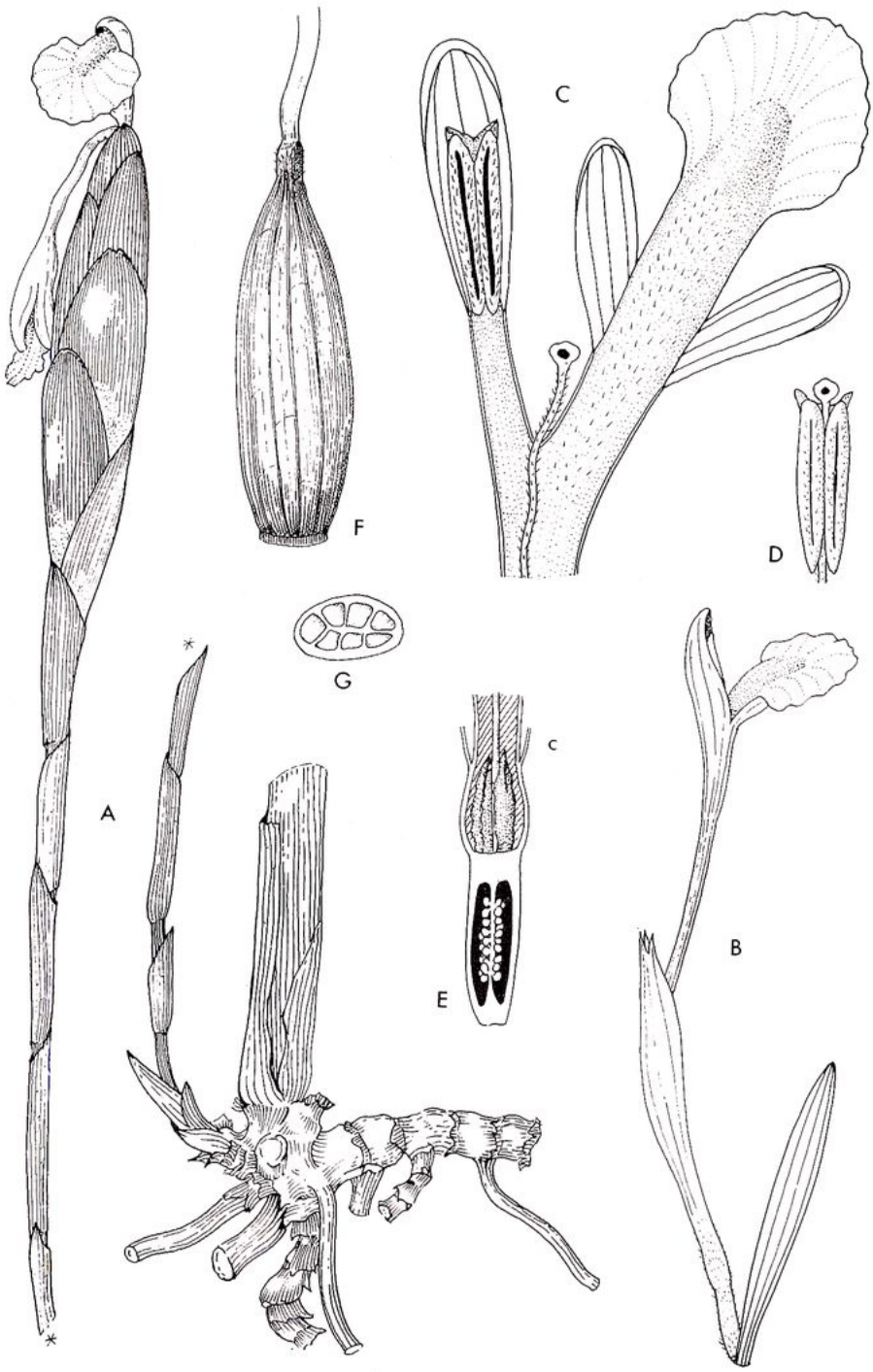

FIG. 2. *Hornstedtia gracilis*. A, habit $\times\frac{2}{3}$; B, flower with fertile bract $\times 1$; C, upper part of corolla, dissected $\times 2$; D, anther from immature flower $\times 2$; E, lower part of corolla tube and ovary in TS, showing epigynous glands and point of attachment of calyx (c) $\times 2$; F, capsule $\times 1$; G, capsule in TS $\times 1$ (A–E from spirit material of *Smith, Phillipps & Tan* S 36/86; F, G from spirit material of *Smith* 39/86).

Type: Sabah, Kinabalu Park, Poring Hot Springs, old Langanan waterfall trail, flowers red, lip white edged, 19 vi 1986, *Smith, Phillipps & Tan* S36/86 (holo. E).

Additional material examined:

SABAH: Kinabalu Park, Silau Silau trail, 1630 m, locally common, flowers red apart from labellum which has a broad white margin and central red stripe, 23 i 1976, *Stevens et al.* 661 (E, A); *ibidem*, Liwangue trail, 1800 ft, loose clay soil on recent landslide, red and white flowers, 17 vi 1986, *Smith & Phillipps* S24/86 (E); *ibidem*, flowers red and white, 19 vi 1986, *R. M. Smith* 39/86 (E); *ibidem*, Mamut rd, common by riverside, corolla red, lip edged white, anther white with pinkish bar on each side, 5 viii 1961, *Chew, Stainton & Corner* 1648 (SING).

Hornstedtia gracilis belongs to subgen. *Elettariostemon* which is characterized by the sessile anther, with thecae fertile throughout their length, rounded stigma with a dorsal orifice, and lateral petals which are free from each other and from the labellum. *H. gracilis* resembles *H. havilandii* in the absence of stilt roots and in having long erect peduncles, but is a much less robust plant with slender peduncles and inflorescences and almost glabrous non-reticulate sterile bracts. The flowers, which usually open only one at a time, are unique for the genus in the expanded apex of the labellum which is red centrally with a broad white margin. The species has not yet been recorded outside Kinabalu Park.

As the flowers of *H. gracilis* mature the corolla-tube elongates considerably but the style does not. Young capsules were found on one plant (*Smith* 39/86), and it seems that self-pollination is effected before the flower opens as the anther is pushed upwards by the elongation of the corolla tube. As this happens the stigma probably curves inwards to bring its dorsal opening in contact with the copiously produced pollen and its final position in the mature flower is just below the thecae (Fig. 2C). *H. havilandii* and the more southerly *H. scottiana* (Australia, New Guinea and the Solomons), also members of subgen. *Elettariostemon*, behave in exactly the same way, although the elongation of the tube may not be so great in these species, and mature flowers with the stigma remaining above the thecae are often seen. In all three taxa the basal part of the calyx is fused to the corolla-tube above the ovary forming a swollen area around the epigynous glands, giving the impression that the rather narrow ovary is, in fact, a pedicel. This has not been observed in subgen. *Hornstedtia*.

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