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# ETLINGERA: THE INCLUSIVE NAME FOR ACHASMA, GEANTHUS AND NICOLAIA (ZINGIBERACEAE)*

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ABSTRACT. Taxonomic reasons are given for the union of *Achasma* Griff., *Nicolaia* Horan., and Geanthus Val. The earliest name for the composite genus is *Etlingera* Giseke, based wholly on the description of *Amomum littorale* König, which is translated into English. Failure to propose any of the three names in current use for conservation is explained. An extended generic synonymy is given and an appendix covers the nomenclature of *E. rosea* Burtt & Smith, *nom. nov.* and *E. sessilanthera* R. M. Smith, a new species from Borneo relevant to the botanical arguments presented.

We are mainly concerned with five generic names: *Etlingera* Giseke (1972), *Geanthus* Reinwardt (1825), *Achasma* Griffith (1851), *Nicolaia* Horaninow (1862) and *Geanthus* Valeton (1914). It is the last three of these that are currently in use, but it has been known for some time that the characters separating them are inadequate at generic level and their union is overdue. Taken together, they show much less diversity than, for example, *Amomum*, and their separation has relied wholly on two characters, the labellum (short in *Nicolaia* and *Geanthus*, with an elongate central lobe in *Achasma*), and the peduncle (short and usually subterranean in *Achasma* and *Geanthus*, long and held erect in *Nicolaia*). In *Achasma* it may be added, the anther is always held at an angle to the short free part of the filament, whereas in *Geanthus* and *Nicolaia* it is usually more or less erect. However, in *Etlingera sessilanthera*, a recently collected Bornean species (see Appendix), the *Achasma*-like anther is not accompanied by an expanded labellum.

The three genera have the following important characters in common: an involucre of sterile bracts (sometimes considerably reduced in *Geanthus*), elongate tubular bracteoles, and a distinct tube formed above the insertion of the petals by the lower part of labellum and filament, see Fig. 1. In all three the labellum rolls inwards as the flower fades.

The first species of this group to become known to botanists was found by König on Phuket (then known as Young Ceylon or Junk Ceylon) on the west coast of southern Thailand in 1779. König, who had been a pupil of Linnaeus, described a number of species of Zingiberaceae in considerable detail and he named this one *Amomum littorale*. It was a botanical tragedy that König's specimens from Thailand were lost at sea. That did not deter another of Linnaeus' pupils, P. D. Giseke, from working through König's descriptions and using them as the basis for the establishment of several new genera (Giseke, 1792). One of these he called *Etlingera*, and *Amomum littorale* König was its only species. The name has not been taken up hitherto. Since its adoption necessitates 57 new

*Dedicated to Professor R. E. Holttum on his 90th birthday in recognition of his stimulating work on Zingiberaceae. Professor Holttum has already suggested that the union of the genera as proposed here might be necessary (Holttum, 1974, p.163).

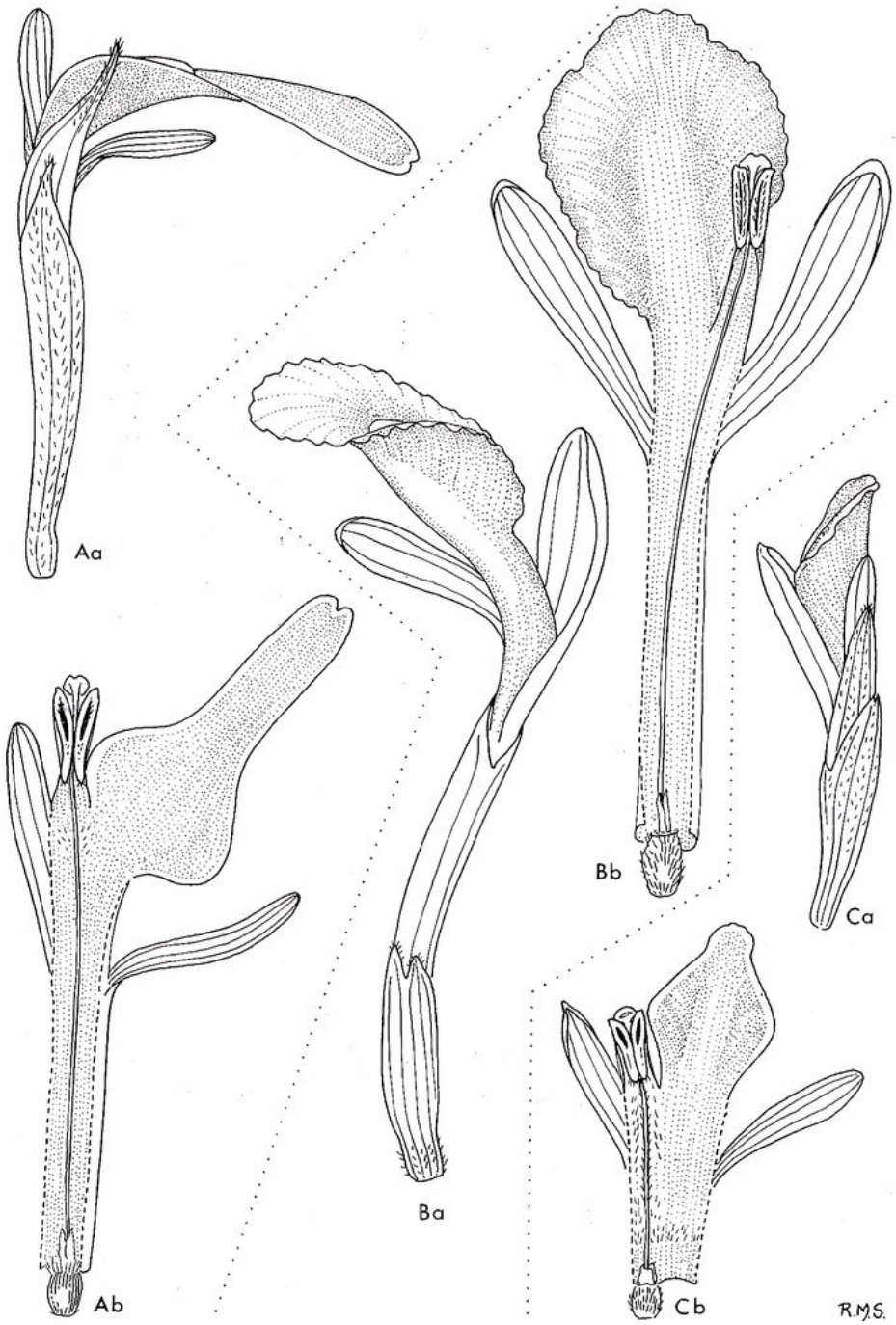


FIG. 1. A. *Etlingera littoralis* (König) Giseke (*Achasma megalocheilos* Griff.). Aa, flower, with bracteole ×1; Ab, flower, dissected ×1 (from spirit material of *Burtt & Woods* B1618). B. *Etlingera brevilabris* (Val.) R. M. Smith (*Geanthus brevilabris* (Val.) Loesen.). Ba, flower, with bracteole ×1; Bb, flower, dissected ×1 (from spirit material of *Burtt & Martin* B4983). C. *Etlingera elatior* (Jack) R. M. Smith (*Nicolaia elatior* (Jack) Horan.). Ca, flower, with bracteole ×1; Cb, flower, dissected ×1 (from spirit material of *Burtt & Martin* B5141).

combinations, it is desirable to show why none of the later names has been proposed for conservation.

An account of the history of *Geanthus* has been given elsewhere (Burtt & Smith, 1972a). The name was first validly published by Reinwardt, but there was already an earlier *Geanthus* Raf. (=*Crocus*). The objection to conservation lies not in the illegitimacy of *Geanthus* Reinw., but to the later use of the name in the sense of Valeton (1914). Some years ago (Burtt & Smith, 1972b), we attempted to conserve *Geanthus* Val., not against *Achasma* or *Nicolaia,* but merely to give legitimacy to its continued use in Valeton's sense. The proposal was rejected (Hara et al., 1974). If *Geanthus* were now conserved from Reinwardt, the type of subgenus or section would be equivalent to *Achasma* Griff., not to *Geanthus* Val., the only sense in which the name has been much used. This would cause certain confusion.

*Achasma* at present contains rather less than 20 species, so its adoption would not represent a very great saving in the number of new combinations needed. *Nicolaia* comprises only about a dozen species.

Thus, with so many changes inevitable, there seems to be some advantage in adopting the unused name *Etlingera* for the new generic concept, rather than seeking the small amount of continuity feasible through the tedious process of conservation. This decision has not been taken lightly, for the type specimen of *Etlingera littoralis* (König) Giseke is no longer extant. However, König's lengthy description (in Retzius, *Obs. Bot.* 3:52–54, 1783), translated below, shows that the plant was certainly an *Achasma* and, we believe, the species currently known as *A. megalocheilos* Griff.

AMOMUM *littorale*

*Rhizomes* nodose, articulate, with filiform fibrous roots, aromatic.

*Stems* very numerous, quite simple, terete, erect, leafless for one third, nodding in upper part, taller than a man, clavate above the rhizome, globose, glabrous, included within a single sheath, at length wrapped in three or five alternate, distant, sheaths closely appressed to the stem. In the upper part of the stem sheaths oblong, marginate, ciliate, appressed, green.

*Leaves* distichous, alternate, petiolate, spreading, oblong; acute, quite entire lightly striate as is usual in all Scitamineae. Lower leaves more distant, very small.

*Petioles* spreading, glabrous, compressed, short, woody.

*Flowers* near the rhizome, scarcely above ground, numerous, crowded into dense fascicles, surrounded by numerous involucral bracts, the size of a swan's egg.

*Peduncles* arising from the rhizome below ground, short, terete, clothed with small scales, white, scarcely as thick as the little finger.

Outer *involucral bracts* sessile, imbricately appressed, orbicular-cordate, acute, quite entire, the tips slightly keeled on the back, lightly striate outside, smooth within, alternately striate with white pellucid longitudinal lines, subcoriaceous, rigid, the margin thinner, brownish.

*Bract* solitary to each flower adnate to the receptacle of the flower below the ovary, linear-lanceolate, quite entire, at the apex rather acute incurved and ciliate, concave, outside glabrous slightly striate with sparse scattered hairs towards the tips, white semi-transparent, inside smooth, a little longer than the spathes [bracteole and calyx] of the flower, of an equal breadth.

*Calyx* double [bracteole and calyx]:

*exterior* [bracteole]: spathe monophyllous, on both sides a little inflated and keeled, compressed, broader than the tube of the flower, membranous, white, bifid at the tip; *laciniae* with their tips appressed to the flower, acute, ciliate, pink, scarcely longer than the tube of the flower.

*interior* [calyx] monophyllus, tubular at the base, ovate-lanceolate, appressed to the very large lower lip of the flower, quite entire, acute, less concave, membranous, pink, especially towards the tip, narrower than the larger lip of the flower, a little shorter.

*Corolla* gamopetalous, tubular at the base.

*Tube* erect, slightly curved, glabrous, white, an inch long, occasionally somewhat longer.

*Limb* double [petals and staminodes]:

outer [petals] small, irregular, united above the tube with the very large interior lip, tripartite. *Upper segment* incumbent on the anther, oblong, ovate, quite entire, somewhat acute, very thin, membranous, most elegantly silky-scarlet, rather short. *Lower* two approximate to the lower lip and appressed to the very large interior one, lanceolate, acute, very thin, a little shorter.

*inner and lower* lip opposite the stamen, cordate, margins delicately undulate-crispate, very elegantly coloured with orange colour, recurved at the tip, distichously bidentate, concolorous.

*Disc* [throat] of the flower silky-scarlet on both sides.

*Stamen* opposite the lower lip.

*Filament* broad, flat, fleshy, stiff, short, coloured.

*Anther* ascending, oblong, broadly truncate at tip, emarginate, naked on the smooth back, flattish, coloured; on the other side divided by a deepish longitudinal groove. Thecae fertile towards the margins, whitish, opposite the lower lip, shorter by half and much narrower.

*Pistil:*

*Ovary* inferior, small, white, glabrous, rather compressed.

*Style* within the tube slender, glabrous, white, outside the tube ascending in the groove of the anther and a little longer than it.

*Stigma* clavate, with a dorsal rather acute somewhat prominent callus, pink, almost cup-shaped, concave, with very thin ciliate whitish margin.

*Pericarp*. Capsule oblong, obsoletely triangular, evanescent in decay.

*Seeds* very numerous, angular.

*Obs*. Leaves towards the top pendulous a foot long.

The important points in this description are:

1. Peduncle below the ground.
2. Involucral bracts imbricate.
3. One flower to each [fertile] bract.
4. Tubular bracteoles (*calyx duplex, exterior*).
5. Outer [petals] small, irregular, united above the tube with the very large interior lip (*exterior parvus, irregularis, cum labio maximo interiore supra tubum unitus*). The meaning of this phrase is not clear-cut but, as it does not appear in König's descriptions of *A. uliginosum* König or *A. koenigii* Gmelin, both of which are known to belong to *Amomum* sens. strict., it almost certainly refers to the tube formed by the base of the labellum and filament.
6. Cordate labellum (in reference to the broad rounded lateral lobes), the margin frilled.
7. Short filament.
8. Apex of the anther truncate, emarginate.
9. Stigma with a dorsal callus.

All this is in accordance with *Achasma*. In his 'Voyage from India to Siam and Malacca', König (1894, no. 27, p.66) records 'I observed here [Phuket] two kinds of Monandria, ... the second kind has its blossoms at the root, growing in a thick bundle; the lower lip which is the biggest, is of the most beautiful carmine red colour .... The edge is of a beautiful orange yellow, wavy and has sometimes the appearance of being slightly torn. I described both plants. People here eat both the blossom and the

fruit ....' Despite the fact that his formal description makes no mention of the yellow edge to the labellum, König must surely have been writing of *Amomum littorale*, for no other species described by him from Phuket agrees with the above comments. Records of the culinary uses of *Achasma* are sparse, but Heyne (1927, p.489) records that plants have been cultivated for their edible seed.

Two *Achasma* are recorded from peninsular Thailand, *A. megalocheilos* Griff. and *A. macrocheilos* Griff., both widespread in Malaysia and Indonesia; a third, *A. araneosum* Bak., which was described from Burma, occurs in the north of the country. The decision to identify *Amomum littorale* with *A. megalocheilos* is substantiated by three points in König's description: the calyx, which exceeds the corolla tube in length, the rather short dorsal petal and the absence of dense pubescence on the anther-thecae. Furthermore, although concolorous lips are found in both *A. megalocheilos* and *A. macrocheilos*, only in the former may the labellum be yellow edged.

## Possible subdivisions of Etlingera

Formal subdivision of *Etlingera* must not be undertaken without full botanical revision, which would be quite premature at present. However, it may be useful to make the nomenclatural position clear.

*Elettaria* sect. *Geanthus* Bl. is a legitimate name. However, with *E. coccinea* as its lectotype it will be synonymous with the typical section of *Etlingera* and its transfer to *Etlingera* will be unnecessary. It would be technically possible to use *Geanthus* as a subgeneric or sectional name within *Etlingera*, giving it a circumscription similar to that of Valeton's genus. This is undesirable; it will be far better if the name *Geanthus* disappears from use in the Zingiberaceae. *Nicolaia* was used by K. Schumann at subgeneric level and *Phaeomeria* by Ridley as a section: these are both legitimate names in their respective ranks.

*Note:* Some new combinations in *Etlingera* have been used in the following account and in Fig. 1. These are formally set out in Smith (1986).

**Etlingera** Giseke, Prael. Ord. Nat. 209, 229, 251 (1792).

Syn.: *Ettlingera* Raeuschel, Nomencl. Bot., ed. 3:1 (1797), orth. var.

*Geanthus* Reinw., Syll. Pl. Nov. Ratisbon. 2:5 (1825); Burtt & Smith in Notes RBG Edinb. 31:221 (1972)—non Rafinesque (1814) nec Philippi (1884) nec Valeton (1914). Lectotype species *G. coccineum* Reinw. nom. nud. = *Elettaria coccinea* Bl. (= *Etlingera punicea* (Roxb.) R. M. Smith).

*Diracodes* Bl., Enum. Pl. Jav. 55 (1827). Type species: *D. javanica* Bl. (see Backer & Bakh. f., Fl. Java 3:64, 1968).

*Achasma* Griff., Not. Pl. Asiat. 3:411 (1851). Lectotype species: *A. megalocheilos* Griff. (= *Etlingera littoralis* (König) Giseke).

*Nicolaia* Horan., Monogr. Scit. 32 (1862). Type species: *N. elatior* (Jack) Horan. (= *Etlingera elatior* (Jack) R. M. Smith).

*Phaeomeria* [Lindley, Nat. Syst. Bot. ed. 2, 44b (1836) nom. inval. ex] K. Schum., Pflanzenr. Zing. 261 (1904).

*Geanthus* Val. in Bot. Jahrb. 52:43 (1914)—non Rafinesque (1814) nec Reinwardt (1825) nec Philippi (1884). Type species:

*Donacodes roseus* Teysm. & Binn. nom. nud. (=*Etlingera rosea* Burtt & Smith: see appendix).

*Hornstedtia* subgen. *Nicolaia* (Horan.) K. Schum. in Bot. Jahrb. 27:301 (1899).

*Elettaria* sect. *Geanthus* (Reinw.) Bl., Enum. Pl. Jav. 51 (1827).

*Amomum* sect. *Geanthus* (Reinw.) Benth., Gen. Pl. 3:644 (1880); Bak. in Hook. f., Fl. Brit. Ind. 6:233 (1892).

*Amomum* sect. *Achasma* (Griff.) Bak., op cit. 234.

*Hornstedtia* sect. *Phaeomeria* Ridley in J. Str. Br. Roy. Asiat. Soc. 32:139 (1899).

Type species: *Etlingera littoralis* (König) Giseke, Prael. Ord. Nat. Pl. 209, 229, 251 (1792).

Basionym: *Amomum littorale* König in Retz., Obs. Bot. 3:52 (1783).

Type: Thailand, Phuket Is. (olim Young Ceylon) *König*, specimen lost at sea.

Syn.: *Achasma megalocheilos* Griff., Not. Pl. Asiat. 3:426, t.355 (1851). Type: Malaya, Mt Ophir, *Griffith* s.n. (specimen lost?).

## Appendix

**Etlingera rosea** Burtt & Smith, **nom. nov.**

Type: Moluccas, *Teysmann* s.n. (n.v.).

Syn.: *Donacodes roseus* Teysm. & Binn., Cat. Hort. Bogor 58 (1866), nomen nudum.

*Amomum roseum* K. Schum., Pflanzenr. Zing. 229, f. 29 (1904), excl. syn.—non Roxb. (1798).

*Geanthus roseus* Loesen., Pflanzenfam. 2 Aufl. 15A:593 (1930), nom. illegit.—non Valeton (1914).

Teysmann & Binnendyk proposed the name *Donacodes roseus* in 1866, without providing a description. K. Schumann (1904) 'transferred' this to *Amomum*, but a *nomen nudum* forms no basis for a new combination, and *Amomum roseum* must be attributed to Schumann alone. It was validly published, with description, but was illegitimate, being a later homonym of *A. roseum* Roxb. In setting up the genus *Geanthus*, Valeton mentioned (1914, p.44) that the only species of which he knew the fruit was '*Geanthus roseus* (=*Amomum truncatum* Gagnep.).' Nomenclaturally this extraordinary statement can only be taken as an unjustified change of the epithet and *Geanthus roseus* is an illegitimate name for *Amomum truncatum*, and has the same type. Valeton no doubt presumed that the epithet *roseus* dated from its publication by Teysmann & Binnendyk. Because of this use of *Geanthus roseus* by Valeton, Loesener's later use of the same combination in the form *Geanthus roseus* (Teysm. & Binn.) Loesen. (1930, p.593) is illegitimate. Thus, right up to the present day this plant has never had a legitimate name. There is no objection to the epithet *rosea* in *Etlingera*, and it is validated by Schumann's description of *Amomum roseum* (excl. syn.) and has the same type.

**Etlingera sessilanthera** R. M. Smith, **species nova** *Geantho* (i.e. *Etlingera*) *brevilabri* floribus rubris et anthera ecristata similis, sed inflorescentia multiflora et anthera sessili differt.

Type: Sarawak; 4th Division, G. Mulu National Park, camp V, Melinau Gorge, 200m, 29 i 1978, *Hansen* 201 (holo. C).

A full description of *E. sessilanthera* will appear in part 2 of 'A Review of Bornean Zingiberaceae' (*Notes RBG Edinb.* 43:—in press).

Before the adoption of *Etlingera*, the generic position of this interesting species had been problematic (see Smith, 1982, p.61). It is distinguished by its sharply angled anther which is attached to the tube above the petals by a short hinge-like connective; there is no free part to the filament. The distinctly 3-lobed labellum has an orbicular, rather than elongate, central lobe.

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