Notes RBG Edinb. 40(2):369–373 (1982)

CIENKOWSKIELLA AND SIPHONOCHILUS (ZINGIBERACEAE)

B. L. BURTT

ABSTRACT. Examination of *Siphonochilus natalensis* (Schlechter & K. Schum.) Wood & Franks, when it flowered in cultivation at Edinburgh, showed that it is congeneric with *Cienkowskia* Schweinf. non Regel & Rach = *Cienkowskiella* Kam. The name *Siphonochilus* must be adopted and the necessary transfers are made.

During a sabbatical leave spent in Aberdeen and Edinburgh in 1977–78, the late Dr Kam Yee Kiew commenced a study of the genus *Kaempferia* L., and in particular considered the position of the African plants currently referred to it (Kam, 1980). This work was, in intent, a preliminary to a more detailed study of the Asiatic species. Dr Kam's conclusions agreed with views that had been recently expressed by others, that the genus *Cienkowskia* Schweinf. should be revived for the African plants.

At that time very little was known about *Kaempferia natalensis* Schlechter & K. Schum.; it had been placed in a separate genus, *Siphonochilus,* by Wood & Franks, partly on account of polygamous flowers. There was no good material available for dissection, so I recommended Dr Kam not to worry about this plant: we had it in cultivation at Edinburgh, perhaps it would flower one day and then we could settle its position.

When Dr Kam's paper, including a synopsis of the species of *Cienkowskia*, was already in proof, Dr J. M. Lock, another student of Zingiberaceae who had been consulted about the work, discovered that the generic name was illegitimate. There was a flurry of activity and Dr Kam, then back at the Universiti Sains Malaysia, Penang, decided to re-name it *Cienkowskiella.* In the heat of that moment *Siphonochilus natalensis* was overlooked. The fault was mine. I had advised Dr Kam to forget about that plant, and she did. But so did I.

In June 1980 the cultivated plants of *Siphonochilus* flowered splendidly in the Royal Botanic Garden, Edinburgh. To anticipate details given below, study of these plants left no doubt that the species is congeneric with the other African plants recently renamed *Cienkowskiella.* It has all the six distinctive characters as detailed by Kam (1980, p.8). Then came the realisation that *Siphonochilus*, although it had been safely antedated by the illegitimate *Cienkowskia,* now provides an earlier legitimate name for *Cienkowskiella* and must be adopted.

I wrote to Dr Kam telling her what had happened and she replied that she would think about it. But she was already ill and in the months left to her she was trying to finish other work. It therefore falls to me to clear up the muddle. At the time Dr Kam was in Edinburgh, we, together with Miss R. M. Smith and Dr J. M. Lock, worked over the African species and agreed on those that could be safely transferred to *Cienkowskia,* as we then called it: the remainder seemed likely to end up as synonyms, or were too little known for any decision to be taken. Therefore I have transferred to *Siphonochilus* only the names that Dr Kam herself accepted under *Cienkowskiella.*

The plants of *Siphonochilus natalensis* that flowered in Edinburgh were obtained for us by Mr Ian Garland of Mtunzini, Natal. Nearly a hundred years ago the species was collected by Wylie at Ngoye in Zululand. Ngoye is a granite mountain surrounded by forest (Huntly, 1965). Mr Garland hunted in this area, which he knows well. He reported that he was unable to find plants growing completely wild, as they all seemed to have been transferred to the surrounds of the Zulus' huts because of the belief that they conferred protection against lightning. However he obtained one or two of these. The localities in Natal where *S. natalensis* has been recorded all lie north of Durban. Yet Sanderson, in his notes on the Natal flora (Sanderson, 1868, p. 455), refers to an undescribed *Kaempferia* in the valley of the Umtwalume, the river running through Ixopo and Highflats to the sea some 50 miles south of Durban. There is no other species to which he could have been referring.

The first thing to be said about the flowers produced on the plants at Edinburgh is that all were hermaphrodite. Schlechter & K. Schumann had described *Kaempferia natalensis* from herbarium specimens that had only female flowers; Medley Wood & Franks, when establishing *Siphonochilus* as a separate genus, said that most flowers were female but some plants also bore a few hermaphrodite flowers. It is clear that sexual expression is not constant and a more detailed study would be well worthwhile, if one could be at the right spot at the right time.

The only other deviation from the hermaphrodite condition yet reported in Zingiberaceae is in *Alpinia* sect. *Myriocrater* (see Burtt & Smith, 1972; Smith, 1977). There is an interesting difference in the structure of the female flowers in the two genera. In *Alpinia* there is a well-developed stamen, and the anther-crest, which shelters the stigma, is also well-developed; but the anther-thecae are small and almost empty. The male flowers, in contrast, have large fertile anther-thecae but a much reduced anther-crest, which suggests that this crest is only important in protecting the stigma. In *Siphonochilus* the female flower is said to have no stamen at all, but the hermaphrodite flower has a remarkably large anther-crest that is slightly reflexed. The complete absence of this crest from female flowers suggests that here it does not contribute to stigma protection.

Examination of the living flower of *Siphonochilus natalensis* shows that there is a thick-walled corolla tube (Fig. 1, I, J). The only other species that has been examined in the living condition is *Kaempferia decora* van Druten (*Hilliard & Burtt* 6331 from Moçambique) and the feature is not shown there. It is probably difficult to discern in herbarium specimens.

Above the corolla tube there is, in these hermaphrodite flowers, another tube formed by the inrolling of the lower part of the staminodial organ, which consists of labellum and lateral staminodes fused for half their length (Fig. 1, H): it was correctly described by Wood & Franks as a split-tube. There is no difference here from the condition in *Cienkowskia aethiopica*.

It is in the stamen-less female flowers that both Schumann and Wood & Franks report a closed tube with a six-lobed (or 4–6-lobed) limb (see Schumann, 1904, 66, Fig. 10E). A more critical investigation of such flowers is clearly needed. However they are not always produced, and to use their special features as the only generic difference between *Siphonochilus* and *Cienkowskiella* would obviously be unacceptable.

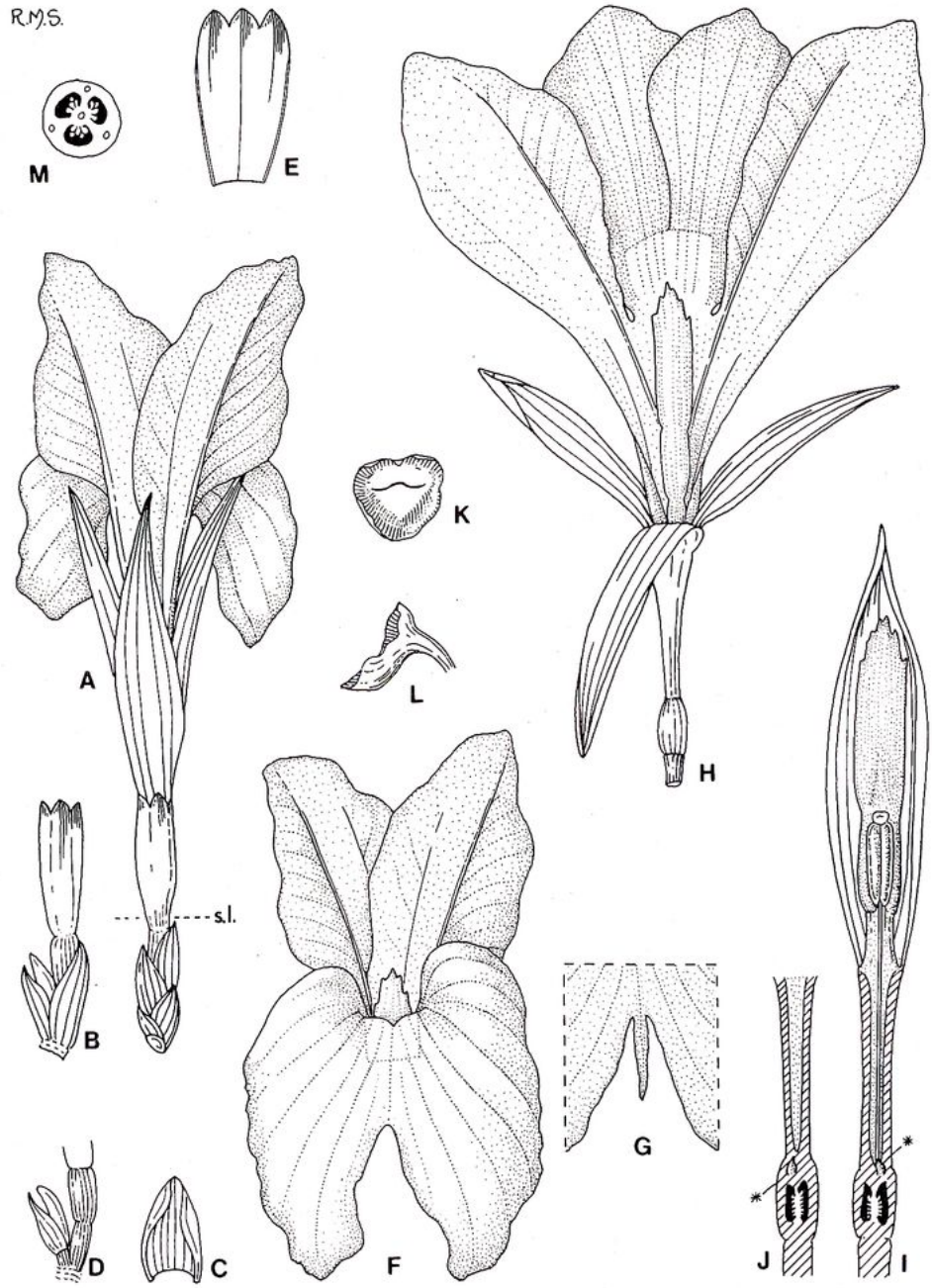

FIG. 1. *Siphonochilus natalensis* (Schlechter & K. Schum.) Wood & Franks: A, inflorescence × ½ (s.l. = soil level); B, base of inflorescence, sheaths removed, showing bracts, calyx of first flower and bud of second flower × ½; C, bract × ½; D, base of inflorescence, bract removed, showing pedicels and bud of second flower with its bract × ½; E, calyx, dissected × ⅔; F, flower, from the front, showing labellum, lateral staminodes and top of anther-crest × ½; G, top of labellum of another flower, showing extra lobe × ½; H, flower calyx removed, petals spread out, showing labellum, lateral staminodes and back of stamen × ½; I,J, flower in L.S. showing dorsal petal, stamen, epigynous glands (*) and ovary × ½; K, stigma, from above × 3; L, stigma, from the side × 3; M, ovary in T.S. × 1½. From *Hilliard & Burtt* 6884A, living material.

Siphonochilus Wood & Franks in Medley Wood, Natal Plants 6(3): tab. 560–561 (1911) & in Kew Bull. 1911, 274 (1911).

Syn.: *Cienkowskia* Schweinf., Beitr. Fl. Aethiop. t. 1 (1867) — non Regel & Rach (1859).

Kaempferia subgen. *Cienkowskia* K. Schum. in Pflanzenr. (Heft 20) Zingib. 67 (1904).

Cienkowskiella Kam in Notes R.B.G. Edinb. 38: 8 (1980).

Type species:—

Siphonochilus natalensis (Schlechter & K. Schum.) Wood & Franks in Medley Wood, Natal Plants 6(3): tab. 560–561 (1911) & in Kew Bull. 1911, 274 (1911). Fig. 1.

Syn.: *Kaempferia natalensis* Schlechter & K. Schum. in Pflanzenr. (Heft 20) Zingib. 72 (1904); Wood & Franks in The Naturalist (Journ. Natal Sci. Soc.) 1(3): 112–115 (Jan. 1911).

I take this combination as being based on *Kaempferia natalensis* Schlechter & K. Schum. since this is mentioned in the accompanying text. In the formal heading the name is actually set out as 'sp. nov.'; but the specimen collected by Medley Wood at Inanda is presumably the same as that cited as the type of *K. natalensis*.

Other species:—

Siphonochilus aethiopicus (Schweinf.) B. L. Burtt, **comb. nov.**

Basionym: *Cienkowskia aethiopica* Schweinf., Beitr. Fl. Aethiop. tab. 1 (1867).

Siphonochilus brachystemon (K. Schum.) B. L. Burtt, **comb. nov.**

Basionym: *Kaempferia brachystemon* K. Schum. in Engler, Pflanzenwelt Ost-Afrika C: 149 (1895).

Siphonochilus evae (Briq.) B. L. Burtt, **comb. nov.**

Basionym: *Kaempferia evae* Briq. in Ann. Conserv. Jard. Bot. Genève 6: 3 (1902).

Siphonochilus nigericus (Hepper) B. L. Burtt, **comb. nov.**

Basionym: *Kaempferia nigerica* [Hutch. ex] Hepper in Kew Bull. 22: 465 (1968).

Siphonochilus kirkii (Hook.) B. L. Burtt, **comb. nov.**

Basionym: *Cienkowskia kirkii* Hook. in Bot. Mag. 98: t.5994 (1872).

Siphonochilus kilimanensis (Gagnep.) B. L. Burtt, **comb. nov.**

Basionym: *Kaempferia kilimanensis* Gagnep. in Bull. Bot. Soc. France 53: 352 (1906).

ACKNOWLEDGEMENTS

I am indebted to Miss R. M. Smith, Dr J. M. Lock and R. Polhill for help in the preparation of this note, and to Miss Smith for the illustration, made when the plants flowered in Edinburgh.

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