

# Stemma



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# contents

- 3** Editor's Note
- 4** Talking with the experts by Antone Jones
- 12** A look at *Hoya* sections- part 4 by Mark Randal
- 29** Reprint: *Hoya manipurensis* Deb (as *Micholitzia obcordata* N.E. Br.)
- 31** Source Materials
- 32** Appendix A MR
- 33** Back Page: *Hoya* sp. AH-240 MR

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# Editor's Note

The **Stemma** website has evolved a wide and growing collection of photographs of species and cultivars of *Hoya* and *Eriostemma*. Click on the *Hoya* or *Eriostemma* gallery at our homepage: <http://www.stemmajournal.com>

It is hoped that in time this will become a comprehensive resource for research and plant identification. I invite you to check in from time to time to see our progress and view the images, contributed by many *Hoya* aficionados and researchers from around the world. Please feel free to send in photographs of species or cultivars we have not added yet, or alternate photographs of covered species. Send any contributions to the editor at: [markroy68@yahoo.com](mailto:markroy68@yahoo.com)

The **Stemma** forum also has grown, and features taxonomic discussions, images of blooming plants, cultivation discussions, and images of new species recently brought into cultivation or growing in the wild: <http://tech.groups.yahoo.com/group/thestemmaforum/>

This issue concludes a four part article on subdivisions (sections or species complexes) within the genus *Hoya*. With our next issue, **Stemma** will shift focus slightly to present more material on *Hoya*, *Dischidia* and *Eriostemma* cultivation. A series of articles from various growers, highlighting some of their favorite species, will begin in that issue.

I would here like to thank a number of people for their input or contributions to the *Hoya* sections article.

Torill Nyhuus and Jeanette Karlsen, editors of **Hoyatelegraf**, the bulletin of the Swedish *Hoya* Society, have generously allowed **Stemma** the use of photographs from the SHS website (<http://www.swedishhoyasociety.com/eng/hoya.htm>) and from their personal collections.

Dale Kloppenburg provided input on the initial entry for this series in which the morphological features of *Hoya* species were described. Mr. Kloppenburg also generously allowed the free use of many of his microphotographs of *Hoya* pollinaria.

Michele Rodda provided criticism of my handling of the taxonomy and nomenclature of the various sections and complexes described here.

Surisa Somadee provided many photographs of her own and facilitated the use of some from her Thai language forum: <http://www.thailandhoyaclub.com>. 🐦

# Talking with the experts

By Antone Jones



Living in central Florida has its perks. This part of the state has a large concentration of nurseries, many of which grow Hoya and Dischidia. None, however, grow them quite like one nursery in particular: Hermann Engelmann Greenhouses. Most will know this company by their trademark, “Exotic Angel” plants. I had the wonderful opportunity to speak to one of Hermann Engelmann’s location managers about their fantastic Hoya and Dischidia.

*What’s your name and what do you do here?*

**“My name is Jayson Opgenorth and I am the head grower for Hermann Engelmann Greenhouses in Apopka, Florida, and am also in charge of general quality control for the company. I graduated from Texas A&M University with a B.S. in Horticulture in 1992.”**

*How long have you worked for Hermann Engelmann Greenhouses?*

**“16 years.”**

*How many different Hoya and Dischidia does the company grow?*

**“Approximately 18 Hoyas and around 7 Dischidia.”**

*How long has the company been growing Hoyas? How about Dischidia?*

**“Hoyas since the beginning, 36 years ago and Dischidias began about 5 years ago.”**

*What was the first Hoya that the company grew and released to the public?*

**“36 years ago we began to grow *Hoya carnososa compacta* (Hindu rope) , *Hoya carnososa compacta* ‘Regalis’, *Hoya carnososa compacta* ‘Mauna Loa’, *Hoya carnososa* ‘Krimson Princess’ (Rubra) and *Hoya carnososa* ‘Krimson Queen’ (tricolor). I would not say we released them as many came from the breeder Cobia, and since the patents have run out, we simply use Rubra, Tricolor, Rope and other names. The first Hoya we actually “released” to the public is *Hoya lacunosa* ‘Snow caps’ which we know is a made up name and not recognized by any authority, but that is what we call it.”**



*Hoya compacta* ‘Regalis’

*There has been a lot of buzz over Hoya lacunosa “Snow Caps.” Where did that plant originate?*

**“This is a beautiful plant. We simply found one vine out of thousands that had a chlorophyll-deficient chimera. We selected it, continued to grow and reselected until it was stable. This is a nice addition to our Hoya mix.”**



*Hoya lacunosa ‘Snow Caps’*

*What are some species that you’ve tried that didn’t work out in the long run? What about them didn’t work out?*

**“Hoya multiflora is the first one that comes to mind. It simply grew too big too fast and did not have the right growth structure for a hanging basket in our opinion. We also tried Hoya carnosa ‘Marlea’ and found it to be too unstable.”**

*Of the Exotic Angel Hoya and Dischidia that you grow, which is your personal favorite and why?*

**“*Hoya linearis* simply due to the challenge of growing a perfect specimen. It is a real accomplishment to bring these to marketable size, and to my knowledge no other commercial greenhouse produces it large scale. *Dischidia nummularia* ‘Pebble beach’ is my favorite *Dischidia* that we grow. It has such unique color and shaped foliage and is a very versatile plant. It can be mounted or grown in soil. Our 8.0 hanging basket provides a little too much soil for this species, so you must be careful with over watering.”**



*Hoya linearis* Stock Plants



*Hoya linearis*





*Dischidia nummularia* 'Pebble Beach'

*Often times we hear that people have watering issues with some Exotic Angel hanging baskets. Usually they find that these plants rot. What's shocking is that here in the facility, these plants look fantastic and they are started here from cuttings to finished plant. Do you have any ideas as to why people are having these experiences?*

**“This is probably due to our soil being engineered to withstand the shipping process and also to hold up at retail level. We are currently working on a new mix that will provide more pore space, yet maintain acceptable water holding capacity. This new soil has proven to provide our plants with an exceptional advantage and provide proper delivery of water, nutrients and oxygen to the rhizosphere. We will begin to use the new soil this Spring and although it may appear similar, the components and chemistry have been retooled.”**

*Where can we find these various Exotic Angel swinging baskets other than Home Depot and Lowes?*

**“Our plants are also available in Walmart, Target, Kroger and Publix grocery stores, and various other retail stores. You can also check [www.exoticangel.com/shop](http://www.exoticangel.com/shop) for our online store highlighting various products that change all the time.”**

*Are there any new releases for 2009? If so, what are they?*

**“Yes, we have 2 more variants of *Hoya lacunosa*. One has a deep red or maroon leaf blade, especially on the newer growth, and a dark almost black stem and petioles. We have named this one 'Ruby Sue' and it has been released. We will introduce another variant of *Hoya lacunosa* that appears as a cross between the above mentioned maroon 'Ruby Sue' and 'Snow caps'. This one will knock your socks off, deep maroon leaf blades with the white speckles of 'Snow caps' complimented by black stem and petioles. We have named this one 'Royal Flush' and should be released it in our hanging baskets by late summer.”**

It was a great experience talking with Jayson about their Exotic Angel plants. I would like to thank Jayson and the entire Hermann Engelmann Greenhouses company for giving me some time to sit and speak with them. Seeing their impressive operation and the fantastic Hoya and Dischidia that they grow was an experience I'll not soon forget. If you'd like to know more, please visit, [www.exoticangel.com](http://www.exoticangel.com)

-Antone ☺



*Hoya lacunosa* 'Ruby Sue'

# A look at *Hoya* sections

## Part 4 by Mark Randal

This is the fourth and final installment of the **Stemma** series exploring the groups (designated as “sections” or, less formally, as “species complexes”) of similar species within the genus *Hoya*. The species included in each of these groups share similarities of floral structure, and, to a lesser degree, vegetative parts. The species in each group also often share cultural preferences. Therefore a working knowledge of the *Hoya* sections can be useful to horticulturalists and collectors in providing a general idea of the physical form, scent, flower type, and cultivation needs of a given species, if that species can be assigned a place in the devised system of species complexes discussed in this four part article.

Previous sections discussed in this series show numerous possible links to other sections, suggesting that there are broad lines of genetic divergence within *Hoya* that have resulted in similar groups which share some common morphological features. In this portion of the sections article five groups of like species are presented. Three of these groups are distinguished from the groups discussed previously in that they are very different from the vast majority of species grouped into the genus *Hoya*. They do not have morphological features which show obvious links to any other group discussed here, so that these groups suggest a widely divergent genetic line from the bulk of *Hoya* species.

These three groups are sections *Centrostemma* and *Antiostelma*, and genus *Eriostemma*. *Eriostemma* was previously included within the genus *Hoya* as a section, and was listed in the first portion of this article as such. *Eriostemma* was elevated to genus rank by D. Kloppenburg & E. Gilding in 2001, but the publication has been widely criticized and deemed invalid by some sources. A closer look by this author found that the flaws indicated by some of these sources do not invalidate the publication of *Eriostemma*, nor are there any other obvious problems which would render this publication invalid. Due to its closely shared history with *Hoya*, *Eriostemma* is still presented here, though recognized as a separate genus.

One section, *Cystidanthus*, is presented in this section of the article not because it shows no morphological links to the other sections already presented, but because it shows so many possible links to many other groups it would seem unwise to speculate about its possible affinities until further molecular testing is performed on the species associated with this taxon.

One section, *Kloiphora*, was originally included here as it seemed to display no overt affinity with other *Hoya* sections, but recent research by this author, with input from Antone Jones, suggests a probable linkage of this group to section *Otostemma*. This speculation is corroborated by findings in the molecular studies conducted by Livia Wanntorp (2006a, 2006b). Therefore, section *Kloiphora* should have been included next to section *Otostemma*, in part one of this article.

## 22: Section *Cystidanthus* (Hassk.) King & Gamble

**Etymology:** “cystis” = “bladder”, Gr. + “anthos” = “flower”, Gr.

**Type species:** *Hoya campanulata* Blume.

**Overall form:** species grouped here can display a bushy, upright habit when young, but even young plants will also twine readily. Leaves are thin textured, medium to large, oval with a sharply pointed tip. Flowers are large, cup-shaped, cream or nearly white, and intensely fragrant.

**Distribution:** Java, Sumatra, Malaysia.

**Publication:** (as a genus) Hasskarl, J. K. 1843. Hov. & De Vriese’s *Tijdschrift voor Natuurlijke Geschiedenis en Physiologie* 10: 125; (as a section) King, G. 1910 “Flora of the Malayan Peninsula”. *Journal of the Royal Asiatic Society, Bengal Branch* 74 (2): 559--563

**Original description:** (translated from Latin by Dale Kloppenburg) “Calyx pentamerous. Corolla somewhat campanulate, shallowly 5 lobed, at first the lobes spreading, later reflexed. Corona of 5 segments, fused to the short gynostegium; corona segments fleshy, spreading, flattened with the lower margins in-rolled, the exterior angle rising upward, interior produced into a tooth lying upon the anther. With the terminal membrane of the anther appressed to the stigma. Pollinia attached at the base, erect, oblong, flattened, here with an almost transparent margin. Stigma convex 5-sided blunt. With the seed pod solitary through abortion, elongate, cylindrical, smooth. Seeds hairy-tufted. Shrubs of the Indian Archipelago with the general appearance of a *Centrostemma*.”

**Revised descriptions:** King, G. “in Flora of the Malayan Peninsula”- “Corolla rotate-campanulate; lobes very short, broader than long; corona processes with lower lobes spreading, upper erect.”

### Salient features:

**Pollinarium-** pollinia are roughly three times as long as wide, and the ratio in size of the pollinia to the corpuscula are very similar to the those of the pollinaria of section *Hoya* and *Hoya pottsii* complex species. The caudicles, however, are quite large and broad, unlike those found in section *Hoya* or the *H. pottsii* complex, as are the translators, as is found in sections *Acanthostemma* and *Otostemma*. Both the caudicles and translators are attached low on the corpusculum side and quite long in comparison to those of most *Hoya* species.

**Corona-** the corona segments are roughly horizontal on their upper surface, with the anther appendages exceeding the height of the corona lobe. Segments appear long-ovate from above, and have a furrow which runs the longitudinal length of each segment.

**Corolla-** narrowly or flattened campanulate.

**Raceme-** loosely convex.

### Species thought to belong in this section/complex:

<i>Hoya campanulata</i> Blume (type) *	<i>Hoya wallichii</i> (Wight) C. M. Burton*	<i>Hoya cystiantha</i> Schltr. **
<i>Hoya phyllura</i> O. Schwartz		

\* It is disputed whether one or two species are represented by the determinations now prevalent for *H. wallichii* and *H. campanulata*.

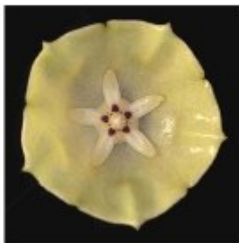
\*\* The name *Hoya cystiantha* may not be technically valid.

**Taxonomic considerations:** The first grouping possibly incorporating a member of this group was R. Wight's genus *Physostelma* (1834), which had as its type species *Hoya wallichii*. The publication of Wight's *Physostelma* precedes the publication of Hasskarl's genus *Cystidanthus* by nine years, and since both publications are thought by many botanists to deal with morphologically similar species (or possibly the same species, if *H. wallichii* is synonymous with *H. campanulata*, as some sources suggest [Kloppenburg, 1994]), genus *Physostelma* has precedence and would be considered the legitimate name for this grouping. However, Schlechter's transfer of genus *Physostelma* into genus *Hoya* (1914) is rendered invalid by Art. 53.4 of the ICBN (International Code of Botanical Nomenclature), which states: "the names of two subdivisions of the same genus, or of two infraspecific taxa within the same species, even if they are of different rank, are treated as homonyms, the later of which is illegitimate, if they have the same or a confusingly similar final epithet and are not based on the same type."

Clearly, the name *Physostelma* is not able to be transferred into the genus *Hoya* as a section due to the previous publication of a section *Physostemma* Blume (1849), which has *Hoya coriacea* Blume as its type. The two names, *Physostemma* and *Physostelma*, are more than just similar, they are slightly different variations of the same greek words "physo" (bladder-like) and "stemma" or "stelma" (crown). The code prevents duplicate names of this sort in order to prevent the confusion of the taxa involved. Since the ICBN prevents the transfer of genus *Physostelma* into genus *Hoya* as a section, the newer name *Cystidanthus* would be the applicable name for this section, unless efforts were undertaken to conserve the name *Physostelma*, which would result in the valid inclusion in the infrageneric structure of *Hoya* the confusingly similar names *Physostelma* and *Physostemma*.

There is a considerable amount of debate over the number of, and proper names for, the species which seem to belong in section *Cystidanthus*. Differing sources have the names *H. campanulata* and *H. wallichii* as synonyms or as distinct species, and some botanists believe that the true *Hoya wallichii* is a very different plant from the one presented here as *H. wallichii* so different that it would not belong grouped with the other campanulate species placed into *Cystidanthus* with *H. campanulata*. The plant sold most commonly as "*Hoya cystiantha*" is thought to have an invalid name by some sources, and *H. phyllura* has not been widely inspected for a consensus to emerge concerning its determination, due largely to its apparently very demanding cultivation requirements.

Several botanists are working to clarify the standing of this group of species, so changes in species names or determinations are probable.



Section *Cystidianthus*.

1) *Hoya cystiantha* (L) and *Hoya wallichii* (R) (photo courtesy of Ted Green and Green: Plant Research.

2) *Hoya wallichii* (photo courtesy of Carol Noel).

3) *Hoya campanulata* (photo courtesy of David Liddle).

4) *Hoya cystiantha* (photo courtesy of David Liddle).

5) *Hoya phyllura* (photo courtesy of David Liddle).

6) Pollinarium of *Hoya wallichii* (photomicrograph courtesy of Dale Kloppenburg).

7) Pollinarium of *Hoya cystiantha* (photo courtesy of Torill Nyhuus).

8) *Hoya phyllura* (photo courtesy of David Liddle).

9) *Hoya campanulata* (photo courtesy of David Liddle).

10) *Hoya wallichii* (photo courtesy of Carol Noel).

## 23: Section *Kloiphora* King & Gamble

**Etymology:** “chlamyd” (uncertain- no more probable root was found) = “cloak”+ “phorum” = “carry-ing”, Gr.

**Type species:** *Hoya curtisii* King & Gamble.

**Overall form:** *Hoya curtisii* is a small leaved epiphytic vine which climbs through use of adventitious roots and rarely or never twines. Leaves are about 1.5cm, rounded with a sharp tip, quite hard-textured. Flowers are medium sized, reflexed, pale greenish-white to yellow, and fragrant. *Hoya waymaniae*, which also may belong here, has medium sized leaves, also very hard, a scrambling, non-twining habit, and flat clusters of bright orange, ball-shaped flowers.

**Distribution:** Thailand, Malaysia, the Philippines.

**Publication:** King, G. 1910. “Flora of the Malayan Peninsula”. *Journal of the Royal Asiatic Society, Bengal Branch* 74 (2): 559--563

**Original description:** “Corona-processes with lower lobe globose, hollow, laterally compressed; upper shorter-curved; corolla-tube with a broad annular ring (corolline corona?)”.

**Revised descriptions:** none.

**Salient features:**

**Pollinarium-** pollinia are elongate and club shaped, translators are fairly broad, not so pronounced as the translators of those species grouped in or around sections *Acanthostemma* or *Otostemma*. The corpuscula are relatively small and narrow compared to the pollinia.

**Corona-** lobes appear approximately round from above, segments are tall, middle portions are excised, lower surfaces curve up and end in a point midway up the segment.

**Corolla-** reflexed to revolute.

**Raceme-** flat or loosely convex.

**Species thought to belong in this section/complex:**

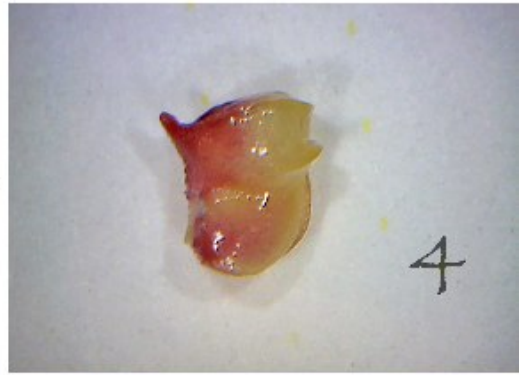
<i>Hoya curtisii</i> King & Gamble (type)	<i>Hoya waymaniae</i> D. Kloppenburg(?)	
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**Taxonomic considerations:** *Kloiphora* has no apparent taxonomic problems associated with its publication or standing.

Since the inception of this article, and thanks to the input of Antone Jones regarding similarities between the two species tentatively included in *Kloiphora* in this article and *Hoya endauensis* Kiew, a closer look was taken at these species by this author.

*Hoya endauensis*, which was included in section *Otostemma* in part one of this article, does indeed share a very similar corolla structure with *Hoya waymaniae*, and while the corona of *H. endauensis* bears a close affinity to those coronas of section *Otostemma* species, with their characteristic coronal skirts, the pollinarium of *H. endauensis* shares features of both section *Otostemma* and section *Kloiphora* species pollinaria (the basic shape of *Otostemma* pollinia, the narrowness and relatively small size of the corpuscula of section *Kloiphora* species pollinaria). In looking closer at the Wanntorp (2006a, 2006b) studies, which conducted molecular testing on a small sample of *Hoya* species, it appears that this author over-looked those studies’ results placing *H. lacunosa* Blume (in section *Otostemma*) and *H. curtisii* in the same clade, which suggests a close genetic relationship. In light of this, and considering the possibility that *H. endauensis* may represent a transitional species between these two sections, it appears that section *Kloiphora* should probably have been included near to section *Otostemma* in this article, rather than discussed in this portion of the article, which addresses complexes which are apparently more widely divergent genetic groups from the main body of *Hoya* species.





Section *Kloiphora*. 1) *Hoya curtisii*. 2) *Hoya curtisii* (photo courtesy of Bob Ely). 3) *Hoya waymaniae*. 4) *Hoya waymaniae*, side of corona segment. 5) *Hoya waymaniae*, corona. 6) pollinarium of *Hoya waymaniae*. 7) Pollinarium of *Hoya curtisii* (microphotograph courtesy of Dale Kloppenburg). 8) *Hoya waymaniae*. 9) *Hoya curtisii* (photo courtesy of Bob Ely).

## 24: Section *Centrostemma* (Decne.) Bentham & Hook. f.

**Etymology:** “centron” = “a sharp point”, Gr. + “stemma” = “crown”, Gr.

**Type species:** *Hoya multiflora* Blume

**Overall form:** these species are bushy, non-twining, mostly terrestrial plants with conspicuous large clusters of white, pointed, reflexed flowers sometimes tinged with pink, yellow or green. Flowers are mostly not strongly fragrant. Even small plants in this taxon seem to flower readily.

**Distribution:** Thailand, Malaysia, western Indonesia.

**Publication:** (as a genus) Decaisne, A. 1838. *Annales des Sciences Naturelles; Botanique* 9 (2): 271; (as a section) Bentham, G. & Hooker. J. D. 1876. *Genera Plantarum* 2: 776--777

**Original description:** (as a genus) (translated from Latin by Dale Kloppenburg) “Calyx pentamerous. Corolla deeply divided into 5 reflexed lobes, with a prominent beard about the base of the gynostegium. Corona of 5 stamens, attached at the upper part of the elongated gynostegium; corona segments fleshy, upright, depressed above, with the lower margins inrolled, at the base prolonged into a spreading or horn-like spur, at the apex narrowed into a tooth longer than the stigma. With the terminal membrane of the anther oppressed to the stigma. Pollinia affixed at the base, erect, oblong, compressed, here with a sub transparent margin. Stigma apiculate. Follicles single, elongate, cylindrical, smooth. Seed hairy-tufted. ---The climbing plant growing in the Indian Archipelago, the Moluccas and the Philippines with leaves opposite, leathery, somewhat veined, glabrous; with the many flowered umbels pedunculate between the petioles and terminal. With flowers often rather large, yellowish.”

**Revised descriptions:** Bentham & Hooker. f. (1876), (as a section) (translated [poorly] from Latin by MR) “Corolla lobes narrow, staminal tube usually longer and interior angle of corona scale long, produced; these characters notwithstanding these (few or one) species are by no means a separate genus. Species from Silhet, corolla lobe equally narrow and scale-like, inside long produced...”

### Salient features:

**Pollinarium-** the pollinia are proportionally longer and narrower than those of the vast majority of *Hoya* species. The translators are narrow. The corpuscula are relatively very narrow and small.

**Corona-** the inner corona lobe apex is raised high above the anther membranes, the outer apex is lowered. The base of the corona is modified into a tall staminal column. This structure is also found in genus *Eriostemma*, but in that genus the column is proportionally much broader than in *Centrostemma* species.

**Corolla-** lobes are sharply reflexed, margins are revolute.

**Raceme-** loosely convex.

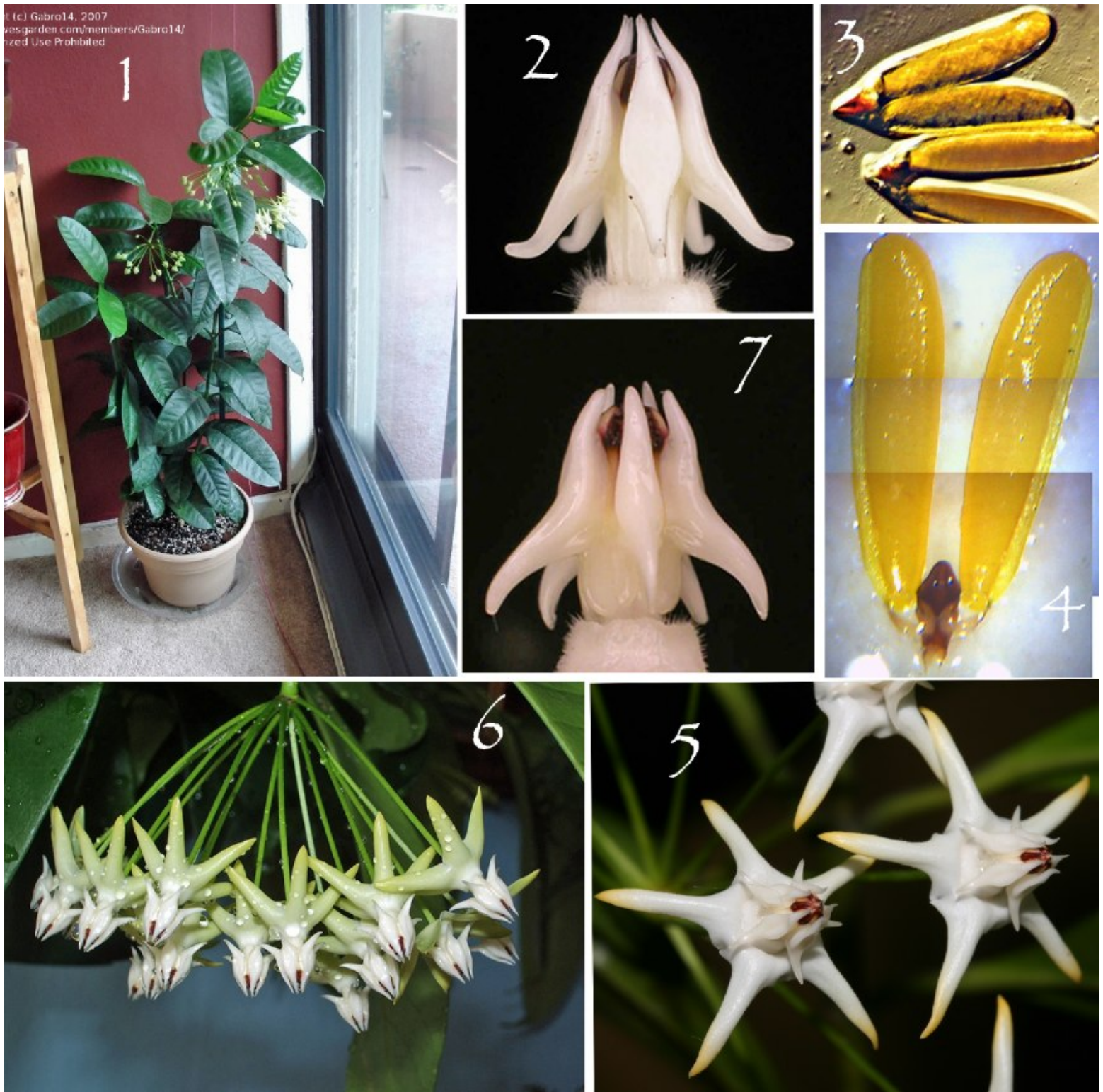
### Species thought to belong in this section/complex:

<i>Hoya multiflora</i> Blume (type)	<i>Hoya javanica</i> Boerl.	<i>H. sp. Cyrtoceras floribundum</i> Maund
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**Taxonomic considerations:** The names *Centrostemma* and *Cyrtoceras* were published as genera in the same year, 1838. The publication of the name *Centrostemma* preceded that of the name *Cyrtoceras* by several months (Kloppenburg, 1994), so the name *Centrostemma* has priority.

Genus *Cyrtoceras* was absorbed into genus *Hoya* by Bentham & Hooker f. (1876), with *Centrostemma* as a synonym. The name *Centrostemma* has priority, so it is not clear at this time whether this publication would serve to validly publish the name *Centrostemma*. If not, the 1994 work “*Hoya Sections*” by D. Kloppenburg should serve to validly re-rank the name *Centrostemma*. In the latter case, the citation would be changed to *Centrostemma* (Decne.) D. Kloppenburg.

This taxon seems to be composed of several species, but more work is needed to define the boundaries of these taxa.



Section *Centrostemma*. 1) *Hoya* sp. *Cyrtoceras floribundum* (photo courtesy of Gabi Rothman). 2) *Hoya javanica* (photo courtesy of David Liddle). 3) Pollinarium of *Hoya* sp. *Cyrtoceras floribundum* (photo courtesy of Dale Kloppenburg). 4) Pollinarium of *Hoya* aff. *javanica*. 5) *Hoya* aff. *javanica*. 6) *Hoya* sp. *Cyrtoceras floribundum*. 7) *Hoya multiflora* (photo courtesy of David Liddle).

## 25: section *Antiostelma* Tsiang & P. T. Li

**Etymology:** “antio”= “opposite” L. (?) + “stelma” = “crown”, Gr.

**Type species:** *Hoya manipurensis* Deb

**Overall form:** *H. manipurensis* is a scrambling, non-twining epiphyte with small, heart-shaped, succulent leaves and small, tube-shaped, greenish-white flowers. *H. telosmoides*, also possibly belonging grouped into this section, is a twining epiphyte with small, urn-shaped white flowers with elongated, spreading corolla tips.

**Distribution:** southern China, eastern India, Burma, Thailand (all *H. manipurensis*) & Borneo (*H. telosmoides*).

**Publication:** (see Taxonomic considerations, below) (as a section) *Acta Phytotax. Sin.* 12(1): 126. 1974.

**Original description:** (translated from Latin by Mark Randal) “similar to section *Pterostelma* (Wight), corolla cylindric, lobes erect twisting to the left, staminal corona erect margins recurved, pollinia almost subquadrate-ovate with a well distinguished pellucid margin at the base.”

**Revised descriptions:** none.

**Salient features:**

**Pollinarium-** pollina are rounded, slightly longer than wide, translators are narrow, corpuscula are relatively small.

**Corona-** segments are laterally compressed, inner lobe is acute and erect, elevated high above the outer corona lobe apex. The anther apex is elongated and greatly exceeds the height of the inner corona lobe apex.

**Corolla-** urceolate, densely pubescent on the inner surfaces.

**Raceme-** loosely convex.

**Species thought to belong in this section/complex:**

<i>Hoya manipurensis</i> Deb (type)	<i>Hoya telosmoides</i> R. Omlor (?)	
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**Taxonomic considerations:** This taxon was originally recognized as genus *Micholitzia* N. E. Brown (1909). This taxon was also published as *Hoya* section *Antiostelma* Tsiang & P. T. Li (1974) and as genus *Antiostelma* (Tsiang & P. T. Li) P. T. Li (1992). These later two publications were produced on the assumption that this group was an un-described genus, missing the earlier publication of *Micholitzia*. The two genus names were later reconciled under *Micholitzia* N. E. Brown by P. T. Li et al. (1994) (see the Reprint section on page 29 of this issue of *Stemma*).

This taxon was taken back into the genus *Hoya* by Livia Wanntorp et al. (2007a) as a single species, under the name *Hoya yuennanensis* Hand.-Mazz. This name later proved to be unsupportable, and the name was then recognized as *Hoya manipurensis* Deb (Wanntorp, 2007b).

*Hoya telosmoides* also shares several key features of corona and pollinaria morphology with *Hoya manipurensis*, and so may belong grouped into section *Antiostelma*.

The name *Antiostelma* as a section may prove to be an invalid name, as Tsiang & Li’s publication of section and genus were later found to be synonymous with genus *Micholitzia*. The name *Micholitzia*, therefore, may be a more suitable name for this section.



Section *Antiostelma*. 1) *Hoya telosmoides* (photo courtesy of Torill Nyhuus & the Swedish Hoya Society). 2) Corona of *Hoya telosmoides* (photo courtesy of Torill Nyhuus & the Swedish Hoya Society). 3) Corona of *Hoya manipurensis* & 5) details of the illustration of the pollinarium (lower left) and leaves and flowers (right) of *Hoya manipurensis*, as presented on pgs. 29-30 of this issue). 4) Pollinarium of *Hoya telosmoides* (photo courtesy of Dale kloppenburg).

## 26: genus *Eriostemma* (Schltr.) D. Kloppenburg & Gilding

**Etymology:** "Erio" = "wooly", Gr. + "stemma" = "crown", Gr.

**Type species:** *Eriostemma coronaria* (Blume) D. Kloppenburg & Gilding.

**Overall form:** these species are rampant, twining lianas which have a terrestrial, rarely or never epiphytic, habit. Leaves are medium-sized, ovate-acute, pinnately veined, with no silver splotching. Except for the interior of the corollas and the upper coronas of these species, mostly all parts of the foliage and flowers are covered with dense to scattered hair. Flowers are large to giant-sized, thick, mostly rotate but occasionally reflexed (*E. ciliata*) or shallowly cup-shaped (*E. lauterbachii*), usually not strongly fragrant, ranging in color from white and pale green through pink and orange to dark brownish-red.

**Distribution:** tropical Australia, New Guinea, Indonesia, Malaysia, Thailand, the Philippines.

**Publication:** (as a section) Schlechter, 1914. "Die Asclepiadaceen von Deutsch-Neu-Guinea".

**Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie** 50 (sup.): 81--164; (as a genus) D. Kloppenburg & Gilding. *Fraterna* 14(2). 2001.

**Original description:** (translated from German by Dieter Paul & Dale Kloppenburg) "...the stems and leaves with all surfaces (parts) covered with short soft hairs; in other respects its blooms possess marked, sharp characteristics..... The gynostegium stands upon a column which goes down into the crown of the collar of the corolla which is covered with shaggy cottony hairs. The corona scales are comparatively short. The blooms are large or very large with a well developed, thickly hirsute calyx. Type species of the section is *H. coronaria* Blume."

Also, from the same publication: "I thought it best to present here this distinctive section *Eriostemma*. This section is so well and sharply different, that one could consider whether or not to regard it as a separate sub-genus. I have so far presented above briefly the main points, but now I wish to present them once again in more detail. In habit there is a strong similarity that can be found with *EU-Hoya*, but the branches are softer and more fleshy and consistently with more or less soft hairs. The peduncles are extraordinarily thick and soft textured, the calyx as with *Pterostelma* more strongly structured, and the large hairy blooms are likewise fleshy. The gynostegium with the corona scales stand upon a woolly matted column that is the outgrowth formed of the filaments, which are united with the corona tube. The pollinia are distinguished (marked) as opposed to the other *Hoya* species by means of the fact that the translators have undergone a strong development and exhibit a twist; also the retinaculum is rather large. The pollinia are more club shaped and moreover do not have the keel on the outer edge, characteristic of other *Hoya* sections."

**Revised descriptions: Kloppenburg (2001):** "This section is so distinctive and has so many sharp differences from other hoyas that it has been proposed to make it into a subgenus of *Hoya* (Schlechter) or even a distinct genus in its own right (Dr. Ken Hill). With this in mind the diagnostic features are as follows:

1. Stems and leaves with soft short hairs
2. Gynostegium stands on a column
3. Column covered with shaggy cotton-like hairs
4. Corolla with distinct collar
5. Large flowers
6. Thick hirsute calyx
7. Branches soft and fleshy
8. Peduncles extraordinarily thick and soft
9. Flowers hairy and fleshy
10. Pollinia club shaped with no pellucid border
11. Translator arms long, twisted
12. Retinaculum large"

**Kloppenbug & Gilding (2001):** (as a genus) "Stems slightly fleshy, 3-10mm thick. All parts exude milky sap when injured. Leaves and stems covered with pubescence except in a few species, in which case the plant possesses a notable covering of indumentums on young growth but becomes glabrous when mature. Stems and the upper leaf surface are of the same color. No noticeable red pigment in young vegetative shoots. Stems twining or prostrate, supple when young, later becoming lenticelate and finally with corky bark. Petiole always developed but short, 1-5cm in length, round in cross section or nearly so without a channel on the upper surface. Leaves fleshy, 2-5mm thick, succulent, opposite in whorls. Leaves faintly glanduliferous on upper leaf surface where it is attached to the petiole. Leaf shape obovate, oblong, or elliptic, but always apiculate at the apex with recurved margins. Nerves always pinnate, sometimes not visible in fresh state. Inflorescence consists of a short peduncle that is of the same thickness and texture of the stem, the end developed into an extremely compressed panicle. Peduncles are either persistent, flowering numerous times or deciduous and flowering only once. Flowers are produced in clusters from the end of the peduncle in numbers from one to twenty but with a mean of six. Pedicels range from 2-15cm in length, thick and supple occasionally pubescent. Calyx of five large lobes usually spatulate, adnate to corolla. Corolla always valvate, thick and rigid. Inside of corolla is cetaeous, being glabrous to densely villose. Lobes of the corolla short to elongate. Corolla lobe posture variable between species from recurved to flat or incurved. Tube short or non-existent, when present it is patellae to cupulate. Base of corolla beneath corona is unique, abruptly cupulate and adnate with column of corona, sericeous in all species. The corona column is also sheathed with corolla tissue that is densely sericeous in all species. Color of corolla ranges from white to green-yellow or orange to deep dull red-brown. The structure forms a deep inverted annulus from which nectar is produced. Corona lobes simple inornate, inner (central) lobe acute and laterally flattened. Outer lobe broad also inornate erect to flat but always broadly obtuse. Usually yellow or yellow with red areas, rarely all white. Pollinaria have rhomboidal retinaculum, with the unique character of twisted translator arms, pollinia always flask-like in shape without obvious pellucid edge frequently found in *Hoya* Br. Follicles large, elongate to 35cm and thick in cross-section to 5cm. Outside pubescent or glaucous, mamillate at apex. Unique character of well developed spongiform mesocarp. Seed number 250 to 450 per follicle, freshly ochre-white in color but becoming dull green-blue with age, comate."

**Salient features:**

**Pollinarium-** the pollinia are club shaped, approximately twice as long as wide, and lack a pellucid edge. Translators and caudicles are twisted strongly. Corpuscula are relatively large, square.

**Corona-** segments are usually relatively flat, acute at interior angle, rounded at exterior angle, with a median furrow on the upper surface. Underside of segments are broadly channeled. Overall the coronas of the species placed in genus *Eriostemma* are very similar morphologically to those of species grouped into *Hoya* section *Amblyostemma*, although these taxa are very different in most other respects. The lower portion of the corona is modified into a tall, broad staminal column which is buried in the corolla tissue.

**Corolla-** waxy, thick textured. Usually rotate, occasionally reflexed (*E. ciliata*) to cup shaped (*E. lauterbachii*).

**Raceme-** loosely convex.

**Species names currently thought to belong in this genus, validly transfered from genus *Hoya*:**

<i>Eriostemma coronaria</i> (Blume) D. Kloppenburg & Gilding (type)	<i>E. affinis</i> (Hemsl.) D. Kloppenburg & Gilding	<i>E. ariadna</i> (Decne.) D. Kloppenburg & Gilding
<i>E. ciliata</i> (Elmer ex. C. M. Burton) D. Kloppenburg & Gilding	<i>E. gigas</i> (Schltr.) D. Kloppenburg & Gilding	<i>E. hollrungii</i> (Warb.) D. Kloppenburg & Gilding*
<i>E. lutea</i> (Kostel.) D. Kloppenburg & Gilding	<i>E. madulidii</i> (D. Kloppenburg) D. Kloppenburg & Gilding	<i>E. neoguineensis</i> (Engl.) D. Kloppenburg & Gilding
<i>E. peekelii</i> (Markgr.) D. Kloppenburg & Gilding	<i>E. purpurea</i> (Blume) D. Kloppenburg & Gilding	<i>E. sussuela</i> (Merr.) D. Kloppenburg & Gilding
<i>E. velutina</i> (Wight) D. Kloppenburg & Gilding*	* see appendix A, pg. 33	

**Species names thought to belong to this genus, not technically transfered from genus *Hoya*:**

<i>Hoya lauterbachii</i> K. Schum.	<i>Hoya pulgarensis</i> Elmer (Nom. Inv.)	<i>Hoya guppyi</i> Oliver
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**Taxonomic considerations:** the species grouped here are widely recognized as constituting a distinct morphological group similar in many ways to the mass of species grouped within the genus *Hoya*. Opinions vary on whether this group should be included within genus *Hoya* as a section or recognized as a distinct, but closely related genus, as is genus *Dischidia*.

While these species seem superficially similar to many species accepted in genus *Hoya*, there are several features which occur among *Eriostemma* species which rarely, if ever, occur among *Hoya* species. Of primary difference are the pollinaria of the species placed in genus *Eriostemma*, which have unique, twisted translators and caudicles and club shaped pollinia lacking a pellucid edge. The presence of a pellucid edge (a transparent zone on the outer margin of the pollinia through which pollen germination occurs) is a feature common to all accepted *Hoya* species, though rudimentary in some species (*H. darwinii*). The pollinaria of *Eriostemma* species also seems to have evolved a slightly different method of attaching themselves to the legs or probosces of visiting pollinators, a feature that further distinguishes these species from all known *Hoya* species (see pg. 28, this issue).

Some other features which distinguish genus *Eriostemma* species are sometimes found in species accepted in genus *Hoya*, and so are not sufficient alone as distinguishing traits to demarcate genus *Eriostemma*. These features do provide corroborating evidence to the distinctness of this group of species. Among these “secondary” distinguishing traits are a terrestrial habit, densely wooly vegetative (and to some degree reproductive) parts, an extremely well developed staminal column hidden from casual viewing by virtue of being buried within the corolla, and thick, short follicles usually of a bluish-green color at maturity.



Until molecular testing sheds more light on this subject and further publishing is done, this group of species must now be technically recognized as a genus, as section *Eriostemma* was re-ranked as a genus by D. Kloppenburg and Gilding in 2001. This publication has been challenged on various technical grounds. Further investigation by this author shows no valid reason for this publication to be viewed as invalid (see appendix A, pg. 32, for a technical discussion on the validity of this publication). However, three species names were not technically published due to errors in citation or basionym validity: *E. guppyi*, *E. lauterbachii*, and *E. pulgarensis*.

Several taxonomists have recommended ignoring this publication as it conflicts with their personal interpretation of what might constitute a separate genus from genus *Hoya* (pers. com.). But technical publication is an important aspect of taxonomy and nomenclature, and cannot be dismissed so arbitrarily. Technical problems prevent the recognition of several species within the genus *Hoya* as they are commonly accepted (*Hoya bella* (technical name *Hoya lanceolata* ssp. *bella*), *Hoya angustifolia* (no technically valid name), *Hoya cystiantha* (no technically valid name), *Hoya nicholsoniae* (reduced to synonymy under *Hoya pottsii*). As the technical problems with these names are recognized, so must be the genus status of *Eriostemma*, unless and until such time as further publication effects a change of status for this genus.

Further complicating the status of this group is the placement of several species included here into synonymy under *Hoya coronaria* by van Donkelaar & Kleijn (2001) shortly after the re-ranking of genus *Eriostemma*. This synonymization is questioned by current botanists, but seems to be technically valid, despite recognizing the plants in that publication as *Hoya* rather than *Eriostemma*. An earlier work by Forster & Liddle (1992) placed (as then recognized) *Hoya hollrungii* and *Hoya ariadna* under synonymization to *H. sussuela*, but the later Kloppenburg & Gilding publication would seem to technically reinstate those two species names.

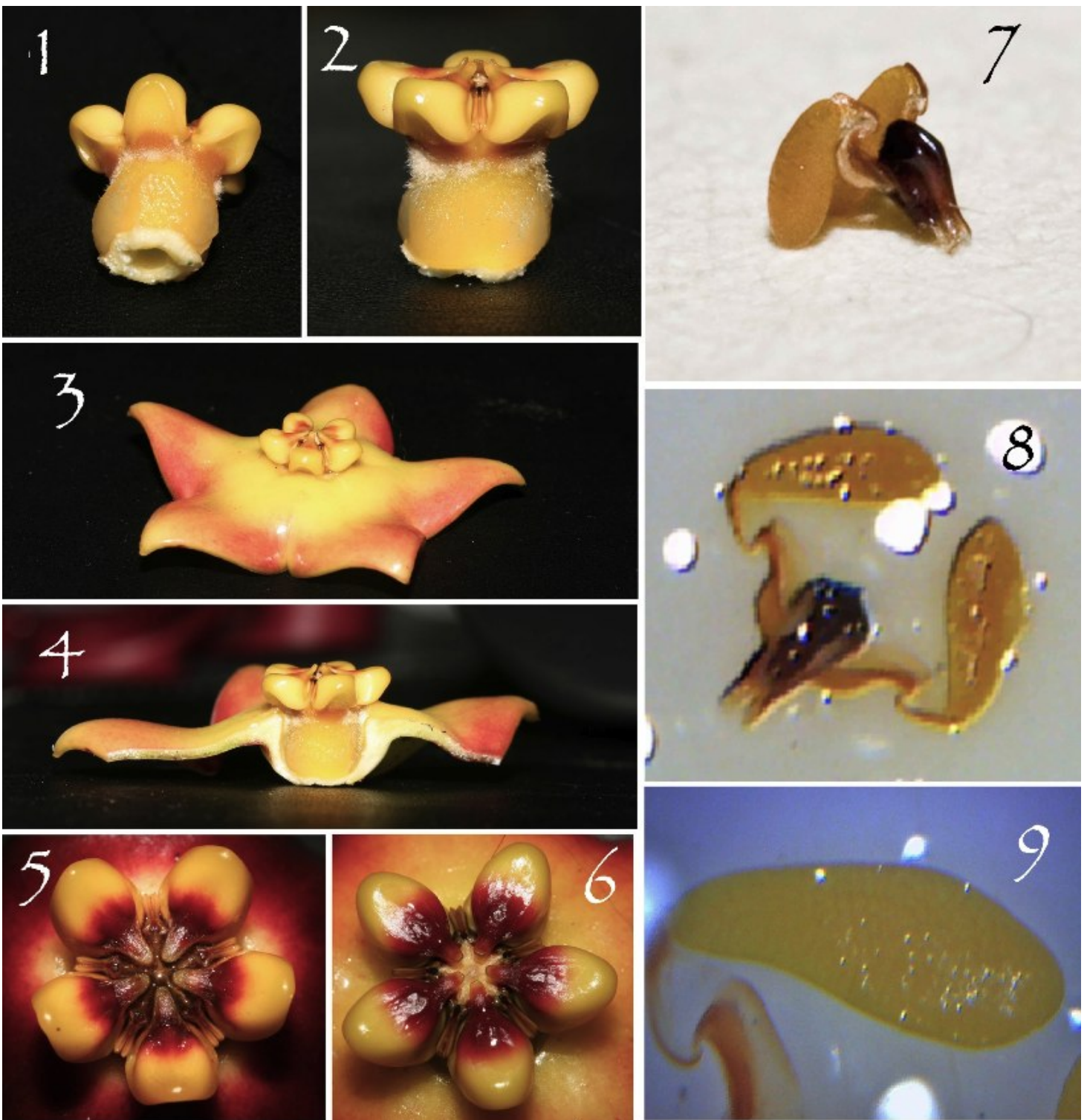
Much work is needed, especially including molecular testing, to clarify the standing of this genus and the number and correct names of the species contained within it. For this article, the most commonly recognized names for these taxa are recognized for purposes of clarity, although some may prove to be invalid.



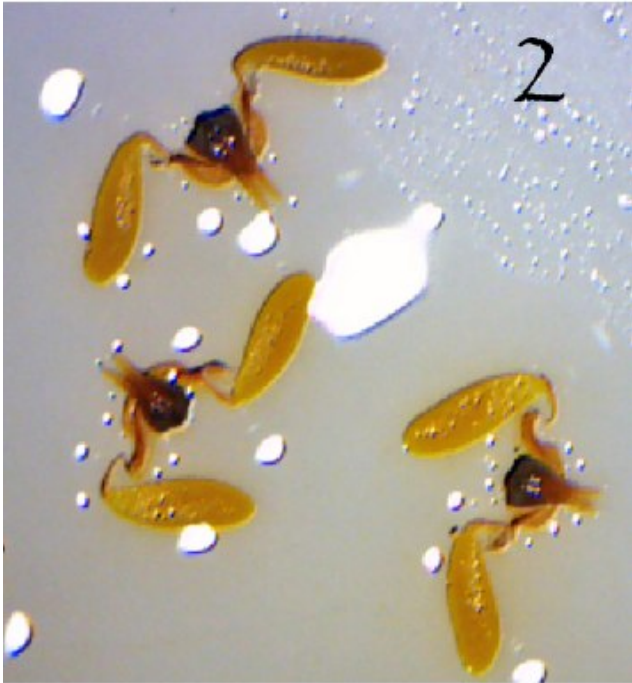
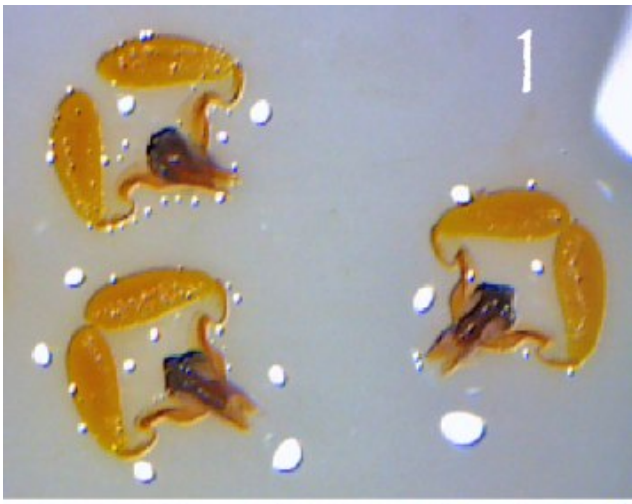
***Eriostemma* species and hybrids (from left): *E.* 'Ruthie', *E.* 'Black Star', *E.* 'Optimistic', *E.* sp. Apple Green (discolored from shipping), *E.* sp. Bada.**



**Genus *Eriostemma*.** 1) A group of *Eriostemma* flowers. 2) *Eriostemma lauterbachii*, compared with an umbel from *Hoya pubicalyx* (photo courtesy of Carol Noel. 3) *Hoya sussuela* (photo courtesy of Joni Kahn). 4) *Eriostemma* hybrids climb a tree in Hawaii at the home of Carol Noel.

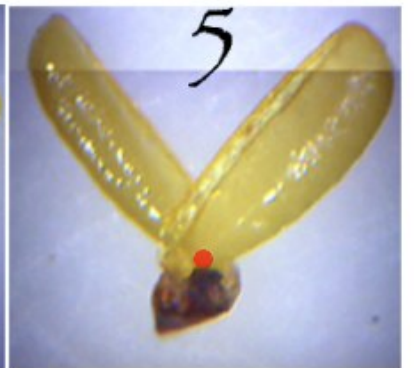
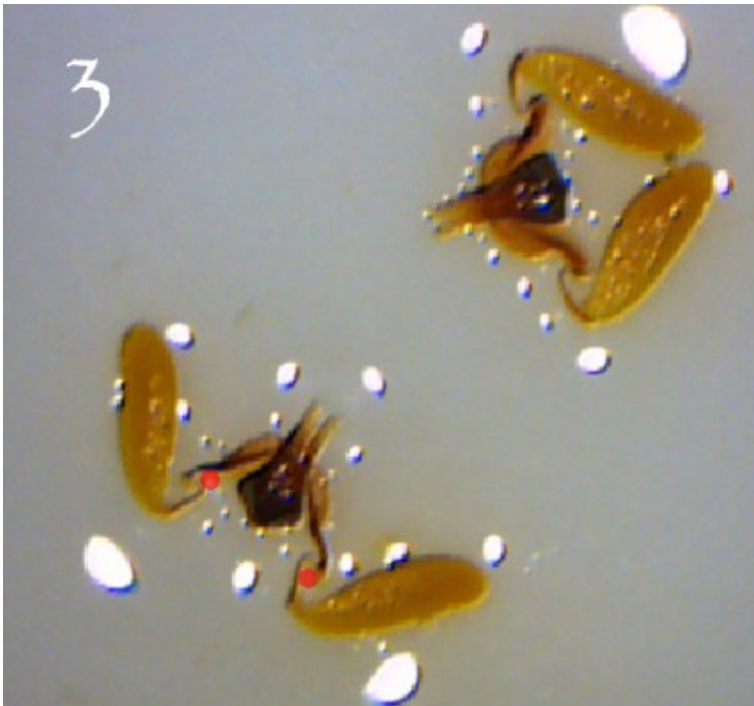


**Genus *Eriostemma*, reproductive parts.** The base of the corona for all *Eriostemma* species have developed into a tall, broad staminal column which is hidden from casual view as the column is surrounded by the tissue of the corolla. This feature is found, to a much less developed degree, in some *Hoya* species (*Hoya multiflora*, *Hoya curtisii*). 1 & 2) Corona of *E. 'Ruthie'*. 3) *E. 'Ruthie'*. 4) *E. 'Ruthie'*, with a part of the corolla removed to reveal the buried staminal column of the corona. 5) Corona of *E. ciliata*. 6) Corona of *E. 'Optimistic'*. 7) Pollinarium of *E. 'Optimistic'*, showing the natural position of the pollinia and the twisted caudicles/translators, taken with a macro lens on a digital camera. 8) Pollinarium of *E. 'Optimistic'* showing twisted translators/caudicles taken through a 20x lens. 9) Closeup of the twisted translators/caudicles (of *E. 'Optimistic'*) and one pollinium, taken through a 400x lens.



**The pollinaria of *Eriostemma* species** seem to have evolved a different mechanism for attaching themselves to the bodies of visiting pollinators. In *Hoya* species, the pollinaria are formed on the corona with their pollina held out straight, extending towards the center of the corona (figure 4). When the pollinia are pulled from their positions over the stigma, the pollinia usually spring inwards, crossing each other and forming a clasp in which a portion of the pollinators body may be trapped (figures 5 & 6- the red dots indicate the likely place where a pollinators leg or proboscis would be trapped.)

In *Eriostemma* species, the pollinarium hold their pollinia in a different position, the base of each held far out from the corpuscula, the pollinia apex angled inwards, almost touching (figure 1). When *Eriostemma* species pollinaria are removed from the stigma, the pollinia tend to swing away from each other, rather than towards each other, as in *Hoya*, possibly due to the twisted nature of the translators/caudicles. In figure 2, the top pollinarium has both pollina sprung into their secondary position, the lower two have one each of their pollinia swung to their secondary position. No studies seem to have been done to determine the actual method of pollinarium transfer for *Eriostemma*, but it seems logical that the likely place for attachment to a visiting pollinator for these species would be in the complexly twisted translators/caudicles themselves (figure 3, with two red dots highlighting the likely place of attachment). 🐝



# Reprint

## *Hoya manipurensis* Deb

(as *Micholitzia obcordata* N. E. Brown)

from- P.T. Li et al. 1994. **Flora of China** 16: 189-270. (Illustration published separately, as *Hoya lantsangensis* Tsiang & P. T. Li) from- Tsiang, Y. & P. T. Li. 1977. Asclepiadaceae. **Flora Reipublicae Popularis Sinicae** 63: 475--559)

### 24. **MICHOLITZIA** N. E. Brown, Bull. Misc. Inform. Kew 1909: 358. 1909.

扇叶藤属 shan ye teng shu

*Hoya* sect. *Antiostelma* Tsiang & P. T. Li; *Antiostelma* (Tsiang & P. T. Li) P. T. Li.

Subshrubs epiphytic or epilithic. Stems rooting from lowermost nodes only. Leaves opposite, fleshy. Inflorescences extra-axillary, rachis usually branched, branches racemelike with close-spaced pedicel scars and producing successive umbel-like clusters of flowers. Calyx not glandular. Corolla tubular; lobes erect, twisted to left. Corona lobes 5, fleshy, erect, square, adnate lengthwise to gynostegium, margin strongly recurved at back. Anther with membranous apical appendages; pollinia 2 per pollinarium, erect, basal margin translucent. Stigma head beaked, exceeding anther appendages. Follicles linear-lanceolate.

One species: China, India, Myanmar, Thailand.

#### 1. ***Micholitzia obcordata*** N. E. Brown, Bull. Misc. Inform. Kew 1909: 358. 1909.

扇叶藤 shan ye teng

*Antiostelma lantsangense* (Tsiang & P. T. Li) P. T. Li; *A. manipurensis* (Deb) P. T. Li; *Dischidia obcordata* (N. E. Brown) Maxwell & Donckelaar; *Hoya lantsangensis* Tsiang & P. T. Li; *H. manipurensis* Deb.

Subshrubs to 1 m, glabrous except for young parts and inflorescences. Stems and branches straw colored, striate. Petiole ca. 2 mm, with 2 or 3 glands grouped adaxially; leaf blade obtriangular or obovate, 2–3 • 1.5–2.5 cm, fleshy, sub-leathery when dry, base cuneate, apex retuse, rarely truncate; lateral veins obscure. Inflorescences sessile or subsessile. Pedicel 0.3–5.5 cm, pubescent. Sepals ovate-oblong, ca. 1.5 • 1 mm, hirsute. Corolla hirsute; tube ca. 6 • 3 mm; lobes tri-angular, ca. 1.5 • 1 mm, erect. Margins of corona lobes meet at middle. Anthers oblong, apical membrane acuminate, longer than corona lobes; pollinia nearly square; gynostegium shorter than corolla tube. Stigma head long, beaked at apex, exceeding anthers. Follicles linear-lanceolate, ca. 6.5 cm • 4 mm. Seeds oblong, ca. 3 • 1 mm; coma ca. 2 cm. Fl. Jul.

Montane forests, often attached to rocks or trees; 1000–1600 m. SW Yunnan [NE India, Myanmar, N Thailand].

*Micholitzia* was overlooked when *Antiostelma* was elevated by Li (Novon 2: 218. 1992) to the generic rank. The material from Thailand combines the characters used to separate the two species of *Antiostelma*, and it is not practical to recognize more than one species. Maxwell (Nat. Hist. Bull. Siam Soc. 39: 78–79. 1991) included *Micholitzia* in *Dischidia*, but this has not been followed as taxa of both genera differ markedly in habit and flower structure. ☹️

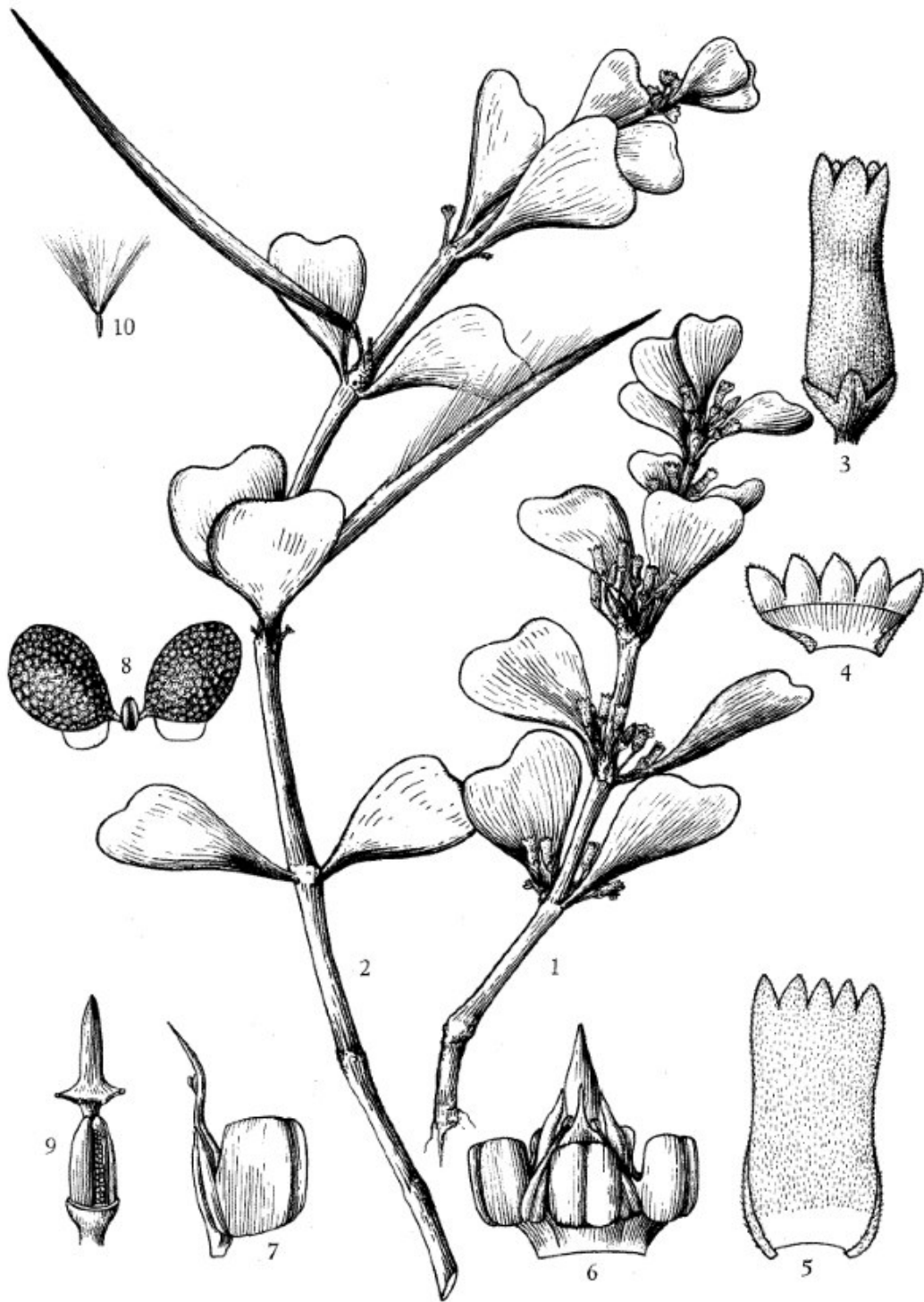


Figure 217. 1-10. *Micholitzia obcordata* N. E. Brown, 扇叶藤 shan ye teng (*Hoya lantsangensis* Tsiang & P. T. Li). —1. Flowering branch. —2. Fruiting branch. —3. Flower. —4. Opened calyx. —5. Opened corolla. —6. Column and corona. —7. Stamen lateral view and corona lobe. —8. Pollinarium. —9. Pistil. —10. Seed. (FOC 228; FRPS 63: 491, pl. 182. 1977. —杨可四 Yang Kesi).

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# Appendix A

## Technical discussion of the validity of the re-ranking of genus

*Eriostemma* (Schltr.) D. Kloppenburg & Gilding.

by Mark Randal

In looking at this publication only one serious problem which may affect the validity of the publication of genus *Eriostemma* is obvious: the individual species transfer data (except for *Hoya coronaria*) do not explicitly state the basionym form of each species name. This point was suggested by Christine Burton in **P. S. The Hoyan** V.4,#4 and also indicated in **Flora Malesiana Bulletin** Vol. 13(1) in the following way: "15 new comb, all invalid (Art. 33.3: basionyms not mentioned, only referred to!; see also **Fraterna** 14/1 (2001)".

This point does not actually agree with the rules of the ICBN, and this view is not supported by the IPNI (International Plant Name Index) which, while not infallible, does research the names listed therein and notes invalid names/combinations.

The relevant Article (33.4) of the ICBN states:

"On or after 1 January 1953, a new combination, a new generic name with a basionym, or an avowed substitute (replacement name, nomen novum) based on a previously and validly published name is not validly published unless its basionym (name-bringing or epithet-bringing synonym) or the replaced synonym (when a new name is proposed) is clearly indicated and a full and direct reference given to its author and place of valid publication, with page or plate reference and date (but see Art. 33.5 and 33.7).

On or after 1 January 2007, a new combination, a new generic name with a basionym, or an avowed substitute is not validly published unless its basionym or replaced synonym is cited. "

The requirement here states that before 2007 a new combination may be published by "**clearly indicating**" the basionym, rather than explicitly **citing** the basionym, so long as the basionym author and place of publication are correctly cited. This point is illustrated in example 13 for Article 33.4:

"Ex. 13. The new combination *Conophytum marginatum* subsp. *littlewoodii* (L. Bolus) S. A. Hammer (**Dumpling & His Wife: New Views Gen. Conophytum**: 181. 2002), being made prior to 1 January 2007, was validly published even though Hammer did not cite the basionym (*Conophytum littlewoodii*) but only indicated it by citing its bibliographic reference. "

As this instance parallels the situation for D. Kloppenburg & Gilding's *Eriostemma* species transfers almost exactly (they all correctly cite basionym author and publication, except as noted below), it seems that the code would recognize the new *Eriostemma* species as being validly published.

So this point does not preclude valid publication of *Eriostemma* as a genus.

There are problems which preclude the valid transfer of two *Eriostemma* species from the genus *Hoya*:

*Eriostemma guppyi* (the author citation is incorrect.)

*Eriostemma lauterbachii* (the bibliographical citation is incorrect.)

Also:

*Eriostemma pulgarensis* is rendered invalid, since the basionym, *Hoya pulgarensis*, is itself not a validly published name.

Two *Eriostemma* species (treated at the time as *Hoya* species- *H. hollrungii* and *H. velutina*) were placed into synonymy under *Hoya coronaria* by Kleijn & van Donkelaar (2001). This does not reflect the view of most botanists studying this group today; more study and potential republishing are necessary to clarify the standing of these potential species, but the names *E. hollrungii* and *E. velutina* now stand technically as synonyms of *E. coronaria*.





Back page

## *Hoya* sp. AH-240

**Country of Origin:** New Guinea.

**Related/Similar Species:** *Hoya albiflora*, *Hoya magnifica*, *Hoya calycina*.

**Flower Color:** white corolla and corona, with a red stain under the corona.

**Flower Size:** 2.5cm.

**Flower Form:** flattened campanulate, divided.

**Scent:** strong, sweet, spicy.

**Leaf size:** up to 20cm long, 8cm wide.

**Collector:** unknown.

**Water Requirements:** requires regular water, do not let dry out completely.

**Light Requirements:** partial shade.

**Cultivation notes:** This species is a vigorous, large leaved vine which will require a large support as it matures. The roots of this species are extremely vigorous also, and will quickly fill large containers. *H. sp.* AH-240 seems to not like to dry out completely, and keeping mature, root-bound plants watered adequately can be a challenge. Flowering tends to occur in the autumn, in synch with the similar species *H. calycina* and *H. magnifica*.



Hoya sp. AH#240 from Carol Noel  
Corollas measure 3.2 - 3.5cm across.  
photos: Carol Noel