STEMMA

a pdf magazine devoted to hoya
culture, history and photography

Volume 1, Issue #3, Summer 2007

Contents

Editor's Note

by Mark Randal

The cover of this issue is a reproduction of a 17th century map showing the "Indian Archipelago", as this region was known at the time. This map is reproduced from Gerard Mercator's ***Atlas Minor*** (ca.1630).

The densest concentration of hoya species occurs in this area, with the largest known number of species occurring in the Philippines and New Guinea.

Populations of various hoya species also occur into India (to the west of the depicted region), into southern China (to the north), and through Australia and the Pacific islands as far east as Tonga.

In this issue of ***Stemma***, Carol Noel contributes an article detailing a recent collecting trip to the Philippines. Carol runs **Aloha Hoya** in Keaau, Hawaii. Online at http://www.bigislandgrowers.com/ghp/AH.php.

Hoya lacunosa Blume is featured In Cultivation, and *Hoya lanceolata* ssp. *lanceolata* wall ex D. Don, ssp. *bella* (Hook.) D.H. Kent and a group of similar species are presented as a follow up to the article on *H. lanceolata* in ***Stemma*** V.1 #1.

The winner of the second ***Stemma*** Photo Contest is Ann Strahm, and her winning photograph of *Hoya clandestina Blume* appears on pg. 36. Pictured here is a detail from the painting produced by Kevin Mosley for last issue's photo contest winner, Maggie Alm. The Photo Contest will only run for the first year of ***Stemma***, making next issue (#4) the last chance to win one of Kevin's colorful paintings.

A new department for ***Stemma***, New Determinations, will note new species publications or determinations, and follow their acceptance in the taxonomic community.

And finally, the Back Page, highlighting new or little know hoya species or cultivars, will feature *Hoya inflata*.

In Cultivation: *Hoya lacunosa* Blume

by Mark Randal

Figure 1: The fully open flowers of *Hoya lacunosa* Blume.

HISTORY

Hoya lacunosa Blume has a long history in cultivation. It was first presented by Carl Blume in ***Bijdragen tot de Flora von Nederlandsche Indie*** (pg.1063) in 1826. This publication consisted only of an extremely brief, probably inadequate description of this species with no illustration.

Blume later illustrated this species in ***Rumphia*** 4 (tab. 184), 1848. The rather abstract illustration, included in the background of a (much higher quality) illustration of *Hoya coronaria* Blume (fig.2), shows a limited resemblance to the species we know as *Hoya lacunosa*. It was speculated by Christine M. Burton in ***The Hoyan*** (V.4, pgs.100-101) that

Figure 2: Illustration from Rumphia 4

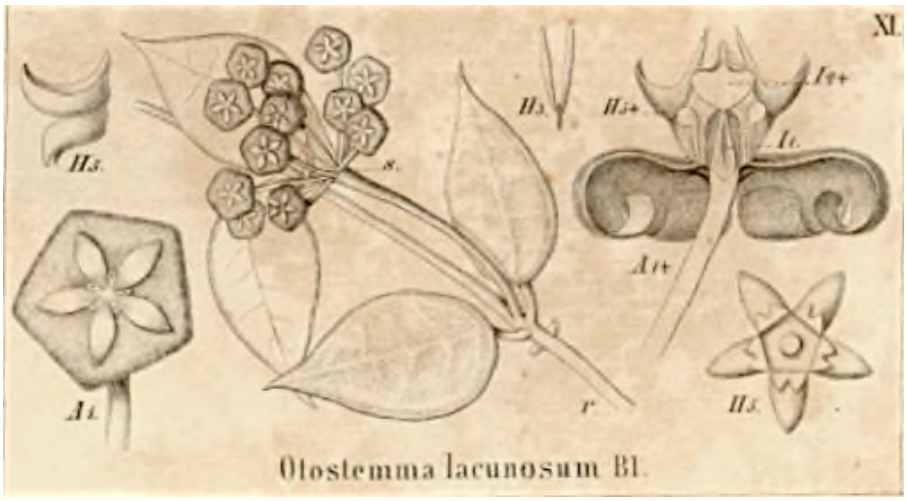

Figure 3: Illustration from Museum Botanicum L-B, 1849

the plant illustrated here may have belonged to the *Acanthostemma* section of the genus Hoya, rather than the *Otostemma* Section where *Hoya lacunosa* is included as the section type. Also in this ***Rumphia* 4** publication, Blume has moved this species into a new genus as *Otostemma lacunosum Blume*. This new determination did not stick, as this species was continuously referred to as *Hoya lacunosa* by other authors in all subsequent publications, most prominently in ***Curtis' Botanical Magazine*** (1855) where the authors acknowledge the new determination but, citing technical problems, use the older name and imply that they will continue to do so.

Blume next included this species in the publication ***Museum Botanicum Lugduno-Batavum*** in 1849, and here the species we know as *lacunosa* is competently illustrated with a very detailed drawing of the floral parts and leaves (fig.3).

The type variety of this species, *Hoya lacunosa* var. *lacunosa*, was described and illustrated in ***Curtis' Botanical Magazine*** in 1855, and a variety of the species, *Hoya lacunosa* var. *pallidiflora* was described and illustrated in ***Curtis***' in 1861. Some confusion has arisen over the identity of these two plants, as the illustrations in ***Curtis***' seem to match more closely with the description of the other variety than their own. Several later authorities noted that the plant pictured as *H. lacunosa* var. *pallidiflora* was a good match to the type for

Figures 4 & 5: Illustrations from *Curtis' Botanical Magazine* of (L) *H. lacunosa* var. *lacunosa* and (R) var. *pallidiflora*. Courtesy of: (4) Torill Nyhuus and (5) Simone Merdon-Bennack

Hoya lacunosa, and the publishers of ***Curtis'*** themselves say in the article on var. *pallidiflora* that this variety "notwithstanding the obsolete nervation of the leaves (which later are broader than usual at their base), and the almost colorless flowers, cannot be otherwise distinguished from the *Hoya lacunosa* of Blume ... had it not been that the figure was engraved, and the plates coloured, before the close similarity was detected, we should hardly have deemed the present variety worthy of having a place in this work ...". The confusion seems to have been compounded, as supported by this statement, by the relatively little difference between *H. lacunosa var. lacunosa* and var. *pallidiflora*. It seems likely that if var. *pallidiflora* were presented today it would be given a form rather than a variety status, similar conceptually to "*Hoya lacunosa* from Langkawi Island".

SECTION

As mentioned before, *Hoya lacunosa* is the type for the *Hoya* section *Otostemma*, which includes the similar species *Hoya obscura* Elmer ex C. M. Burton, *Hoya sipitangensis* D. Kloppenburg & Wiberg, *Hoya walliniana* D. Kloppenburg & Nyhuus, *Hoya nabawanensis* D. Kloppenburg & Wiberg, and *Hoya pusilla* R. E. Rintz. While some Hoya sections contain species that are dissimilar visually and in cultivation needs, the species placed in section *Otostemma* are markedly similar, all having fairly small ovate to lanceolate leaves set closely along the stems and a partially pendant growth habit. The flowers of these species are also quite similar, being comprised of persistent umbels of small, usually revolute* cream colored flowers with pale yellow to red-rimmed coronas. Some species or forms have a pinkish blush to the corollas, as does *Hoya obscura* and *Hoya lacunosa* 'Tove'. The plants in this section also have similar fragrances; light, spicy, and reminiscent of carnations.

DISTRIBUTION

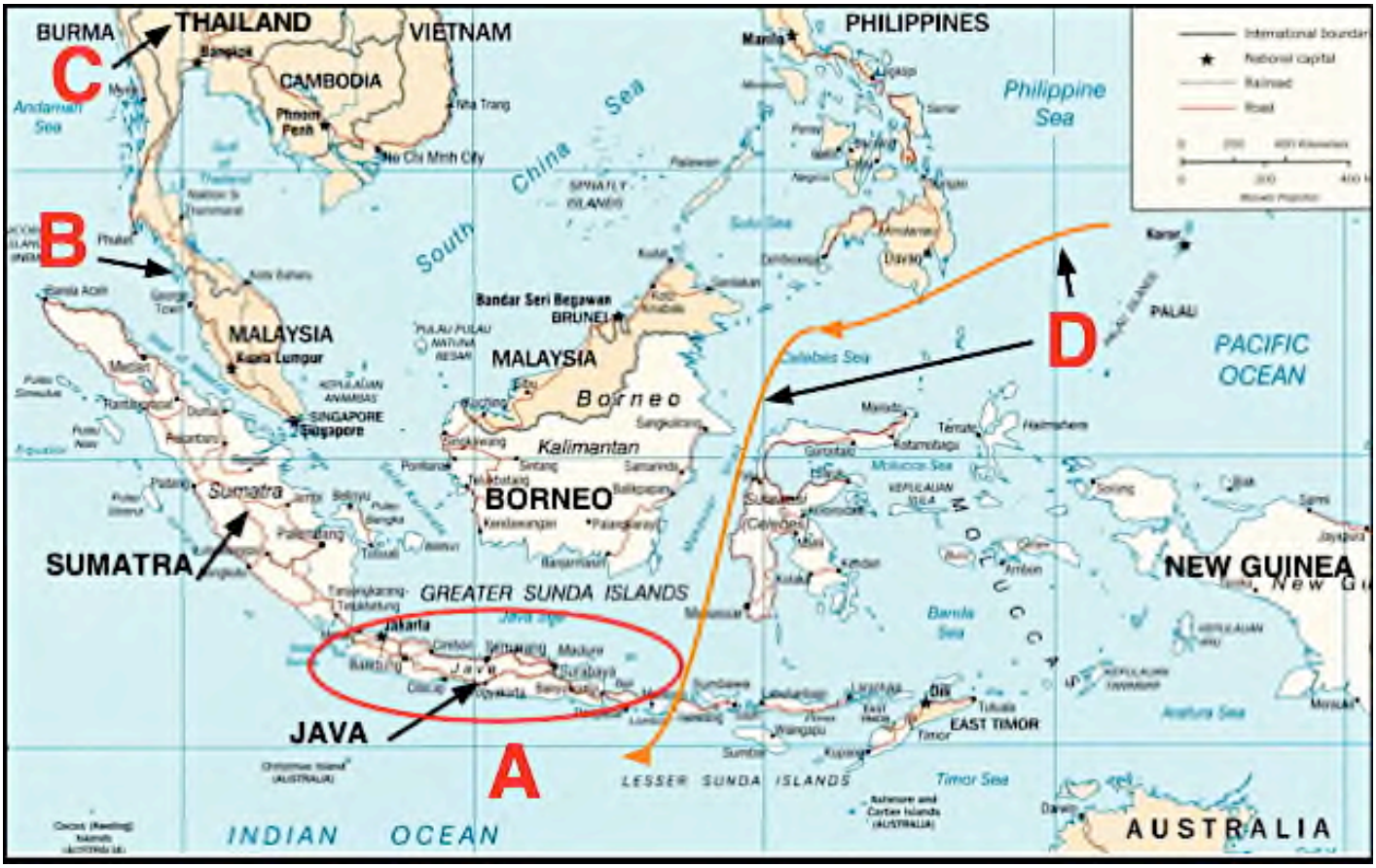

Figure 6: The main distribution area of *Hoya lacunosa*. Populations of this species may occur farther northwest into northern Thailand and even into India, though present collected material does not bear this out. *H. lacunosa* is not thought to occur past Wallace's Line (D), nor in the Phillipines. A- Java, the site of the original collections of *H. lacunosa* var. *lacunosa* and var. *pallidiflora*. B- Langkawi Island, the site of Ed Gilding's small- leaved collection. C- southern Thailand, the source of *H. lacunosa* "Poonsak".

Hoya lacunosa is a variable species which occurs over a wide range. Early collections seem to have come from Java, but early written descriptions cited the range of *H. lacunosa* as being the entire "Indian Archipelago", a region which corresponds roughly to present day Indonesia, the island portion of Malaysia, and part or all of New Guinea and Papua New Guinea.

VARIETIES, FORMS, AND CULTIVARS

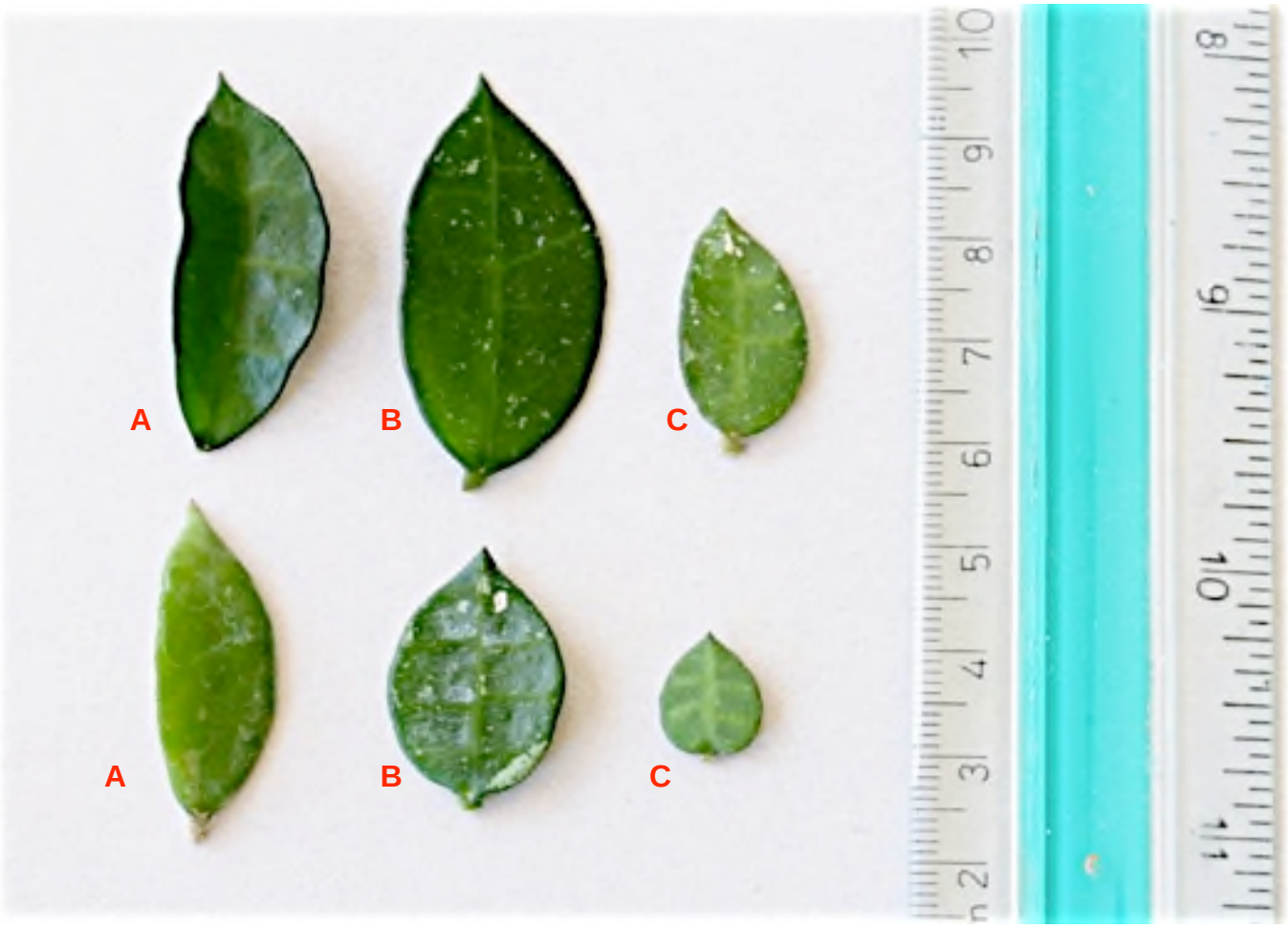

Figure 7: Three pairs of leaves, of A) *Hoya lacunosa* var. *pallidiflora*, B) *H. lacunosa* var. *lacunosa*, C) *H.* aff. *lacunosa* from Langkawi Island. The bottom leaf of each pair is typical of growth produced in high-light, high-humidity conditions of a greenhouse. The upper leaf of each pair was produced from the same plant in lower-light, lower-humidity conditions typical of indoor cultivation. Plant material of *H. lacunosa* from Langkawi Island kindly provided to *Stemma* by Carol Noel of Aloha Hoya, Hawaii.

Aside from the type variety of *Hoya lacunosa*, there is one additional variety, a hybrid, several forms and several cultivars of the species which will be presented here.

Hoya lacunosa* var. *lacunosa, the type variety for this species, has leaves with rounded bases and acute to nearly cuspidate* tips. The leaves of this variety are lightly speckled with silver splotches, are of a medium green color, and vary in length from 1.5 to 4cm. Stems and leaves are rather thicker than in variety *pallidiflora*. With this variety it is easy to see how this species got it's specific name- "lacunosa" refers to the Latin word "lacunose", meaning covered in small holes or concavities.

The flowers are approximately .75cm wide when fully open before becoming revolute*. The mature flower has all of the corolla petals rolled backwards and under, making a flattened, cream colored ball covered in dense, silvery hair. This mature flower is about .5cm across. The flowers occur in umbels of 15 to 25 flowers.

As most Hoya growers will have noticed, hoyas can produce dramatically different foliage in response to differing cultural conditions. *Hoya lacunosa* is among the most marked species in the genus in this respect. Plants received from greenhouses will usually have small, succulent leaves with a teardrop shape, but the same plant in the lower light and humidity conditions of the general home environment will produce leaves that are twice as wide and long, and half as thick (fig. 7).

Figure 8: *H.* aff. *lacunosa* from Langkawi Island. Photo: Torill Nyhuus

Hoya lacunosa* var. *pallidiflora differs from the species type in having generally more lanceolate, longer (up to 7cm), darker green leaves with little or no silver speckling. The leaves are typically more acute at the base than var. *lacunosa*'s. The flowers, despite the implication of the variety name (pallidiflora= "pale flowered"), are not noticeably paler than those of var. *lacunosa*'s.

***Hoya* 'Sunrise'** is a hybrid between *Hoya lacunosa* var. *pallidiflora* and *Hoya obscura*. The leaves are larger than in typical *lacunosa* clones and the flowers are flushed with pink. Produced by Michael Miyashiro. (fig.9)

Figure 9: *Hoya* 'Sunrise'. Photo contributed by Bob Noel.

***Hoya* aff. *lacunosa* from Langkawi Island** has very small leaves, varying from 1 to 2.5cm. This plant was discovered on Langkawi Island (the largest island in an archipelago just west of the border of peninsular Malaysia and Thailand) by Ed Gilding during a trip with Torill Nyhuus and Ted Green in 1999. This plant has somewhat rounded corona apexes (fig. 8).

***Hoya lacunosa* "Poonsak" IML1648** was named after the Thai man, a driver and guide for David Liddle, who climbed the tree to collect this form. "Poonsak" has more linear leaves than most clones of *H. lacunosa*, of a brighter green with more visible veins. This form shows a pronounced tendency to climb, with new shoots usually growing upwards until the weight of the developing leaves causes the branch to bow.

***Hoya lacunosa* 'Tove'** is said to have arisen in the Danish nursery of Viggo Larsen and to be named after the proprietor's wife. This exciting cultivar has crisp looking, very acute* leaves, which often display maroon or purplish coloration on new growth. The flowers are blushed with lavender-pink, and the fragrance has a more perfume-like quality than other clones of *lacunosa*. This cultivar is a rapid grower and blooms early (fig. 10).

***Hoya aff. lacunosa* "heart-shaped leaf"-** The larger flowers (over 1cm) of this clone and its distinctive, heart-shapes leaves set this plant apart from other clones. There may be several different plants being traded under this name. One seems to be a sport of var. lacunosa (fig. 11), the other is possibly a distinct species (fig. 12).

Figures 10-12 (from top): 10- *H. lacunosa* 'Tove', 11- *H. lacunosa* "heart-shaped leaf", 12- comparison of flowers of (L) *H. lacunosa* "heart-shaped leaf" and (R) var. *pallidiflora*. Figure 12 contributed by Torill Nyhuus.

Figure 13: *Hoya lacunosa* "speckled leaf". Plant material kindly provided to Stemma by Sara Hutcheson of Great Falls, Montana US

***Hoya lacunosa* "speckled leaf"** is a recent introduction with leaves highly mottled with silver. This plant is most likely a sport of var. *pallidiflora*, and may revert to plain green leaves occasionally. Solid green branches should be removed to maintain this cultivar's character. Cuttings of this cultivar so far seem to be quite difficult to root, although this may prove to not be the case when more plants are established in collections under differing cultural conditions.

***Hoya* aff. *lacunosa* "giant"** is possibly a clone of *lacunosa* with larger leaves and flowers (1cm when revolute) than other forms, but the determination is still tentative for this plant.

CULTIVATION

In cultivation *Hoya lacunosa* is a very adaptable and accommodating plant. While rooting is difficult for some forms, established plants grow rapidly and flower over a long period, year round in ideal conditions. Due to these traits, as well as *lacunosa*'s pleasing form, superb scent and flexible stems (which are less prone to mechanical damage than many other hoyas), this species is one of the few hoya species found commonly in the retail trade.

Hoya lacunosa will grow in a variety of lighting conditions and will flower readily even in relatively low levels of light. In brighter conditions, including an hour or two of direct light in the early morning or late afternoon, the leaves of *H. lacunosa* will display more attractive coloration and form, usually with heavier silver mottling. High humidity also seems to improve leaf form, though plants perform well in regular household conditions.

H. lacunosa prefers a moist soil with good drainage, and will more readily tolerate overwatering than drought. This plant does not seem to require being pot-bound to grow and flower well and may in fact become leggy and drop older leaves when roots are overly constricted.

H. lacunosa is most widely classified as a cool grower, preferring temperatures from 10' to 25'C (50' to 78'F), though it performs well in intermediate (15' to 35'C (60' to 95'F)) conditions as well. Growth and flowering may slow or stop when temperatures exceed 30'C (85'F).

This species benefits from regular applications of dilute (1/4 to 1/2 strength) balanced fertilizer, and when under-fertilized tends to drop older leaves and flower poorly.

Hoya lacunosa is generally grown as a hanging basket plant. All forms lend themselves to this practice. All forms will also climb, given a trellis or support, and are suitable for growing as a mounted plant (see ***Stemma*** V1#2, "**Mounting Dischidia"**, by Antone Jones). Some collections are more prone to climbing, as is *H. lacunosa* "Poonsak", while others, such as var. *pallidiflora*, readily assume a pendant form and may need some assistance to remain attached to a support.

Cuttings may be started in a 10cm (4") pot and will eventually need to be moved to a 15-20cm (6" or 8") pot. Older plants may become quite large and heavy, requiring a 25cm (10") pot. Periodic renewal by starting groups of cuttings in smaller pots will allow most growers to keep this species in a more easily-handled smaller pot.

With this species' many good qualities and its ease of cultivation, this is one of the very finest hoyas, and continues to be justifiably popular.

Collecting: In the Philippines

Text and all photographs by Carol Noel

When I began my passion with hoyas, I became intrigued with the collection process: men on Capt. Cook's voyage of discovery, early botanists and collectors like Schlechter- what hardships they dealt with…what adventures they must have had… their compulsion to venture so far afield into the unknown for uncertain rewards but certain dangers.

So, when Ted Green asked me to join him and his wife Dorothy and another couple, R. and A. Bachmann, in a collecting trip to the Philippines, I jumped at the chance. My husband thought I was crazy and he is half correct…but I also love adventure!

Figure 14: (From left) Dorothy Green, Monina Siar, and Ted Green viewing Monina's shade house, full of hoyas and dischidias.

I will skip boring details of the looooooong plane trip thru Japan and jump right to our trip from Manilla out to Los Banos to visit Monina Siar. (*Hoya siariae* D. Kloppenburg is named after Monina). Dr. Siar is a lovely, charming, funny and very bright plant research fellow with a great collection of dischidia and hoya and a terrific sense of humor. One of the remarkable things about Los Banos ("The Baths"…known for the thermal hot springs) is the amazing display of bouganvilleas out on the road in front of the side by side nurseries lining the road. The displays of color were breathtaking- as was the traffic!!!

A short flight took us to Palawan, an island province within the Philippines. Palawan is known for cultured black pearls and the thousands of jeepnies…mopeds with side cars that clog the streets, dart in and out of traffic and never have accidents!

Figure 15: This well groomed little garden beside a small house is typical of the whole countryside.

Our home base was a comfortable little hotel where Ted had stayed before, with a beautiful central garden surrounded by the rooms, walking distance from town. All of the walls and ceilings, inside and out, were made of woven mats, the floor of tropical hardwood. All of the rooms had a private bath, cable TV, Air-conditioning, a ceiling fan AND a refrigerator. $12 a night, including breakfast!

Through Ted's arrangements, we had a van and a driver at our disposal for the entire time we were there. No way in this world were any of us going to brave the driving in this country which is a mixture of bumper cars, chicken, apre vous Alphonse, and pure deviltry! Ronaldo was our driver- a wonderful driver, considerate, funny and very caring of his "well worn" travelers. More than once he picked me up and brushed off the twigs from my encounters with the earth (bad balance sometimes).

Some of our looking for hoyas was done at 60mph from the van. From this speedy vantage we sighted and stopped to photograph and admire *H. imbricata* and *H. diversifolia* growing on trees along the road. We also trekked along a trail supposedly 1 or 1½ miles long which turned out to be 4 miles of "straight up the mountain/straight down the mountain" 4 or 5 times, though we all lived through it!

Figure 16: Quezon, a small town. The white tower is where the mussein stands to call for prayers.

The Palawan countryside is beautiful, spectacular, and varied. Old islands, there are volcanic plugs, sandstone cliffs, gorgeous pristine bays and wide expanses of white sand beaches. We bought mangoes and watermelon to eat for lunch (together with Granola Bars) and our favorite snack was scrumptious dried mangoes from the supermarket.
Our accommodations were always rustic…clean, well cared for, no frills and basic. Bamboo floors, mosquito nets over the bed, walls of woven reeds and a lovely porch with a view of the ocean for a whomping $6 per night. Yes…a bathroom AND running water!

Figure 17 & 18: (L) Tangles of *H. diversifolia* growing very dry in a dead tree. When the rains come it will revive and bloom. (R) In places the trunks and limbs of the trees were nearly solid with *H. imbricata*.

The Filipinos we met were lovely. Beautiful people with gorgeous smiles, hearts as big as Texas and a desire to help. Always willing to accommodate…even if the poached eggs had been on the platter for ½ hour before we came for breakfast – eaten with garlic fried rice and fresh mangos…who knew it?

Driving thru the countryside we witnessed the rice harvest. The ancient water buffalo with soulful deep brown eyes and lowered heads working in concert with the harvesters: it was a ballet of humans and animals. Everyone with a job towards the ending harvest. These beasts, used for nearly everything we would use a cart for, have the most endearing expressions…. and are so strong!

The roadside near the large prison is lined with fields of rice being tested for growing properties. In the market, there had to be 20-30 different types of rice being sold…perhaps more.

Tiny communities of perhaps 1 to 4 houses along the road, with their walls of woven mats from rice stalks, all proudly displayed stands of pots of bougainvillia, adeniums, euphorbia and orchids.

Swept yards displayed orderly posts growing vandas. We often stopped to take photos, compliment the owners and enjoy their love of the world growing around them.

We also saw along the way a live monitor lizard and a dead (thankfully) 11′ cobra stretched across the road.

My next trip: perhaps to Borneo, again with Ted Green, in the summer of 2008?

Figures 19-22 (From upper left):
19- At the waterfalls this was growing overhead and I think it is *D. nummularia*.
20: Rice harvest- the two people in the background are cutting the stalks of rice, bundling them, and then the 'sleds' pulled by the caribou pick them up and take them to the thrasher.
21: Yep - 11' (3.5m) of Cobra in the middle of the road!
22: A Monitor Lizard. Some places have squirrels around the picnic tables. In Sabang this baby 4 foot Monitor Lizard performs the same task!

Figure 23: *Dischidia oneata*. Another mass of gorgeous growth... this time in back of a little store in town.

Revisited: *Hoya Lanceolata* Wall ex D. Don and Similar Species, Subspecies, and Forms.

by Mark Randal, with content and photographic assistance from Torill Nyhuus

Figure 24: A close-up shot of *Hoya lanceolata* ssp. *bella*. Photo by Theo Happe of the Netherlands.

Hoya lanceolata Wall ex D. Don and its subspecies *bella* (hook.) D.H. Kent, along with bella's form *paxtonii* and *H. dickasoniana* P. T. Li were covered previously in ***Stemma*** V.1 #1, but the coverage there was primarily historical and focused solely on these four plants. Some confusion has been expressed by ***Stemma*** readers since then over the distinctions between the species covered at that time and several other small leaved, small flowered southeast Asian hoya species. This group of hoyas, consisting of *H. lanceolata*, ssp. *bella*, forma *paxtonii*, *H. dickasoniana*, (possibly also H. weebella D. Kloppenburg), *H. engleriana* Hosseus, *H. linearis* Wall. and the more distantly related *Hoya serpens* Hook f. have been confused in taxonomy and horticulture to some degree since their collections.

Here ***Stemma*** will attempt to define the taxonomic distinctions between these species (or forms) and describe each briefly. Some specific taxonomic history will be discussed, and a cultural overview will round out this treatment.

Figure 25: a plant from the Uppsala Botanical Garden, Sweden, similar to ssp. bella.

The area in which the plants to be discussed here were found has not been exhaustively collected. It is probable that the plants in this group that have been defined as species may be a rather random, incomplete sampling of the diversity of this taxon. For instance, there is a plant collected in 1982 by A. Kasvi in Trisuli valley (near Kathmandu in Nepal) which is on display at the Uppsala Botanical Garden (Sweden) which has leaves that approximate in size the leaves of ssp. *bella*, but lack that ssp.'s acute leaf apexes and are very similar in shape to those of *Hoya dickasoniana*. The floral parts, while similar to those of the *bella* complex, do not appear to match exactly with any other known species. There are also several undetermined clones similar to but distinct from ssp. *bella* in the collection of Mr. Sutthisak Sangkhakorn, owner of Apodagis Exotic Plants nursery in Bangkok, Thailand (on the web at **http://apodagis.com**).

Figure 26 & 27: (Top) a comparison of (L) the Uppsala BG plant and (R) *H. dickasoniana*, courtesy of Torill Nyhuus, and (bottom) a plant from Apodagis Exotic Plant nursery, photo courtsey of Sutthisak Sangkhakorn. The name *Hoya chinghungensis* has been suggested as a possible identity for this plant.

Figure 28: Comparison of the foliage of (from left) *H. lanceolata* ssp. *bella*, *H. linearis*, *H. dickasoniana*, and *H. serpens*.

This suggests that there may be many more plants in habitat or private collections that are intermediate between two or more of the species to be discussed here, which in turn suggests it is probably too early to make definitive determinations regarding the *H. lanceolata*/ ssp. *bella* complex. A program of intensive collecting in the Himalayan region and nearby areas of India, Thailand, and Burma (Myanmar) may turn up plant material which would provide a more complete picture of the relationship between the plants to be discussed here. In the future, some species may be reduced in rank to subspecies, varieties, or forms of other species, and some plants now considered subspecies or forms will likely be determined to be species in their own right.

See **Apendix A**, located just before the **Back Page** feature, for a detailed distribution map for these species, and **Appendix B** for a comparison of the floral parts of these plants.

Hoya serpens *Hook f.*

Figure 29: Flowers and leaves of *Hoya serpens*.

Hoya serpens Hook f. is the odd man out in this grouping. *H. serpens* belongs to *Hoya* section *Hoya*, subsection *Acersuccus*, which includes many of the most common hoyas in cultivation; *Hoya carnosa* R. Brown, *Hoya motoskei* Teijsm. & Binn., *Hoya pubicalyx* Merr., *Hoya shepherdii* Short ex Hook. and others. Although the flowers of *H. serpens* are very similar in structure and size to the other species in this subsection (*H. serpens* flowers are approximately 1.5cm in diameter), its leaves are quite small in comparison, usually from 1 to 2cm in length and width, and are round to ovate, lacunose*, and covered in fine, short hair. *H. serpens* also differs from other plants in subsection *Acersuccus* by being a much smaller plant overall, and having a delicate appearance, with pendant or weakly climbing stems crowded densely with small round leaves. The specific name “serpens”, latin for “creeping” or “snake-like”, comes from the plants sinuous, prostrate growth habit.

It is interesting that this plant, so closely related to the other vigorous and large plants of its subsection, has in the environment of the Himalayas evolved into a form more like the other, more distantly related plants to be discussed here.

One prime distinction between *Hoya serpens* and all of the other species discussed here is the manner of peduncle production these plants display. *H. serpens* produces persistent peduncles as new stems produce leaves. The peduncles produce flowers over and over again, in the manner of most hoya species. The other species to be discussed here all produce peduncles during the flowering season, flower, and then shed the peduncles.

The flowers of *H. serpens* go through a color-change, from pale green to pink as they age, and the buds often open sequentially, as opposed to the other species to be discussed here. The flowers are fragrant, the scent being similar to that of H. carnosa, but with a slight medicinal base-note of menthol.

Hoya serpens was collected first in Sikkim in the Himalayan foothills of eastern India, and was first mentioned in ***Flora of British India 4*** (1883) by J. D. Hooker.

Figure 30: Illustration of *H. linearis* from Curtis' Botanical Magazine, 1883.

H. serpens has been sold under many names in cultivation, including *H. nummularia*, *H. minima*, *H. engleriana*, *H. picta*, and *H. puber* to name a few. The name *H. engleriana* has been the most consistently linked to *H. serpens*.

Hoya linearis Wall.

H. linearis is included in hoya section *Acanthostemma*, subsection *Angusticarinatae*. *Acanthostemmas* are distinct from other hoyas in that the lower apex of the corona scale is divided into two lobes which extend outwards past the top of the scale apex. In subsection *Angusticarinatae* this trait is somewhat less apparent- the lobes usually extend only to slightly past the scale apex*, and are visible when viewed from above only as an emarginate* tip to each scale. All of the remaining hoyas to be discussed here are members of this subsection, and seem to be quite closely related to one another.

Hoya linearis is a flaccid-stemmed plant with hairy, linear leaves which are usually 4 to 6cm long and 1/4cm wide. The leaves are rolled under along the margins, so as to appear round from the top and sides. It is the narrow leaves which are referred to in the species name. (Linear= "narrow, with two opposite margins parallel", Latin.) Its flowers, which are just over 1cm wide and slightly reflexed*, are creamy white with a creamy yellow corona. They are borne in terminal clusters of from 9-13 flowers, and tend to occur during the northern hemisphere's autumn months. The flowers of *H. linearis* and all of the remaining species to be discussed here are fragrant, with a more straight-forwardly sweet scent than the more complex odors of *H. carnosa* and *H. serpens*.

This species shares a taxonomic link to *Hoya lanceolata* Wall ex D. Don in that it was also based on a collection described by Wallich in an informal way and later described in greater detail in 1825 by David Don in ***Prodromus Florae Nepalensis***.

Hoya linearis was cited by Wallich as having been collected first in Nepal. A later collection, from Sikkim, formed the basis of the publication in ***The Flora of British India 4*** (1883) of a variety of the species, *Hoya linearis* var. *sikkimensis*. There is some suggestion that there may not be a valid variety of this species, as the floral parts included in the type sheet of the species are said by some authorities to potentially be from a different species. J. D. Hooker wrote in ***Curtis' Botanical Magazine*** (1883) that "*H. linearis* was founded by Wight on Wallich's Nepal specimens. I have examined these in Wight's Herbarium and find that the corona is papillose within and its coronal lobes broader and fatter than in the Sikkim specimens; unfortunately, however, these flowers are detached from the leaves, and may probably belong to another species (*H. lanceolata*)". Another possibility for the identity of these detached floral parts is ssp. *bella*, as the corona of *H. lanceolata* does not differ in the described way from that of *H. linearis*. J. D. Hooker in the ***Flora of British India*** publication described the coronas of the Nepal material as "ovate flattened above", a passable description of the corona lobes of ssp. *bella*.

If this speculation is so, then the published variety *sikkimensis* would actually represent the type of this species, and no actual variety would exist. No specimen of a *H. linearis*-like plant has surfaced with floral parts diverging from var. *sikkimensis*.

Hoya linearis has been confused often in cultivation with *Hoya engleriana*. The leaves of these two species are similar in being almost terete*, with a continuous channel along the lower surface of the leaf. The leaves of *Hoya linearis*, however, are much greater in length than those of *Hoya engleriana*, which are from 1 to 1.5cm long. The corona of *H. engleriana* also differs greatly from that of *H. linearis*, the former being much more similar in structure to that of *H. lanceolata* ssp. *bella*, while the corona of *H. lineraris* is quite similar to that of *Hoya lanceolata*, both of which were originally collected in the same region. This serves to highlight the sometimes puzzling inter-connections between this group of species.

Hoya lanceolata Wall. ex D. Don

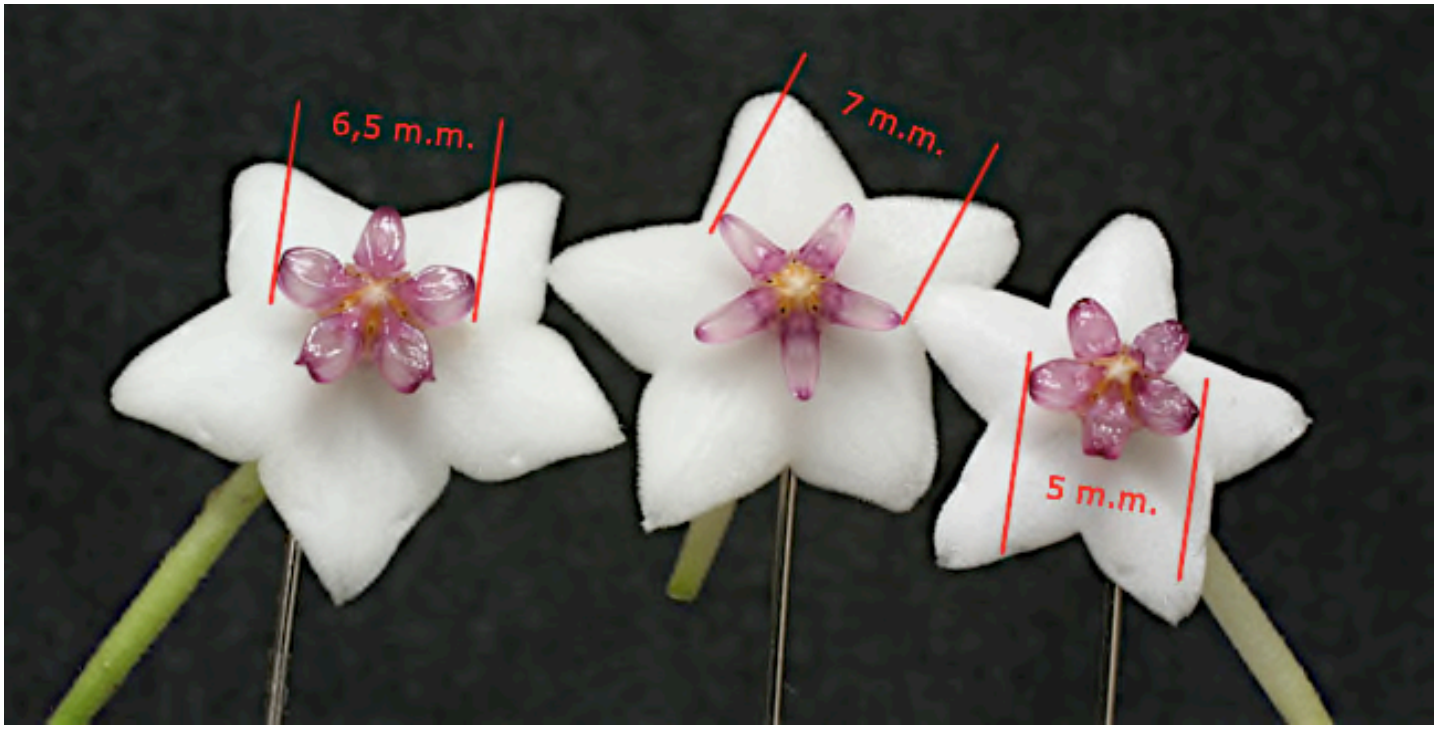

Figure 31: comparison of (from left) *ssp. bella*, *H. lanceolata*, and f. *paxtonii*.
Photo courtesy of Torill Nyhuus

Hoya lanceolata Wall ex D. Don is distinct from the remaining species to be discussed here in the many differences in the overall shape and structure of the corona, although the overall appearance of this plant is very similar to ssp. *bella* and f. *paxtonii*. *Hoya lanceolata* and its subspecies *bella* were originally separate species, but *H. bella* Hook was erroneously placed as a subspecies to *H. lanceolata* by Douglas Kent in his 1981 paper "**Notes on Hoya in Cultivation (1)"**. This determination, as mentioned in ***Stemma*** V.1 #1, is not accepted by the majority of modern experts in the field of hoya taxonomy.

As mentioned above, *H. lanceolata* is similar in appearance vegetatively to ssp. *bella*, though having smaller, more closely set leaves. The stems are pendant and clothed in lance-shaped leaves that are 1.5 to 2.5cm long and approximately 1cm wide. ("Lanceolata"= "lance shaped, broadest in the middle and tapering to both ends", Latin).

The flowers of *Hoya lanceolata* are about 1.7cm in diameter, with a creamy white corolla and a translucent lavender corona. The corona scales are more linear in shape (when viewed from above) than those of ssp. *bella*, similar in structure to the corona scales of *H. linearis*, and lack the broad concave top of the corona scales of ssp. *bella, f. paxtonii, H. engleriana, and H. dickasoniana*. The flowers are terminal and occur in groups of six to ten, usually during the northern hemisphere's spring.

Hoya lanceolata has been sold in cultivation as *Hoya bella*, and the converse is also likely true.

For more on the history of *H. lanceolata* ssp. *lanceolata* and ssp. *bella*, see ***Stemma*** V.1 #1. More information on f. *paxtonii* and *H. dickasoniana* can also be found there, and so largely is not reproduced here.

Hoya lanceolata Wall. ex D. Don Ssp. *bella* (Hook) D. H. Kent

The remaining species, ssp., and form- ssp. *bella*, f. *paxtonii*, *Hoya engleriana*, and *Hoya dickasoniana* all have similar coronas which can be difficult to distinguish from each other with the naked eye. There are minor differences in the floral structure of each species, however, with the possible exception of ssp. *bella* and *Hoya dickasoniana*.

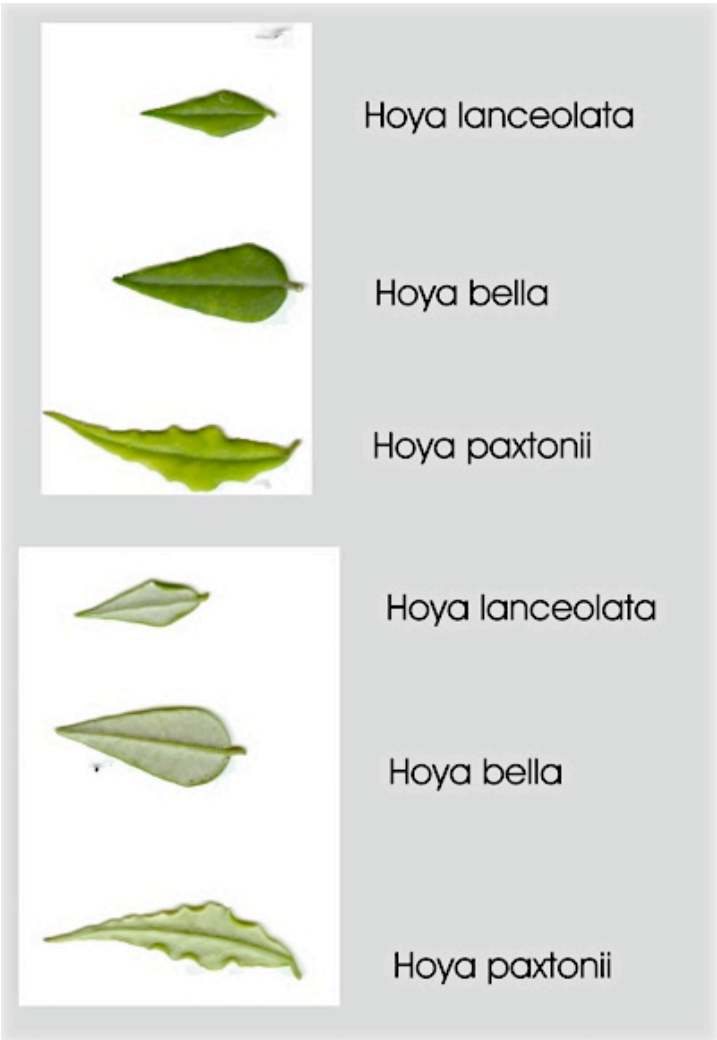

Figure 32: Leaf comparison provided by David Liddle

Since the flowers of these four species are so similar, identification is easier when considering leaf morphology, which is distinct for each species or form.

Hoya lanceolata ssp. *bella* is the most commonly found of the "*bella* complex" in cultivation. The leaves of this plant are larger than those of *H. lanceolata*, ranging in size from 2.5 to 3cm in length and 1 to 1.5cm in width, but are of a similar, lanceolate shape.

Flowers of both species are similar in size and color, though the corona of ssp. *bella* is usually more infused with a reddish-violet than that of *H. lanceolata*, and the corona scales (in ssp. *bella*) are cymbiform (boat-shaped), being wider and having a broad shallow concavity on the top of each scale.

Flowers are borne (in ssp. *bella)* terminally and all along the stems, and the flowers occur, in clusters of six to ten, more freely and often for a longer bloom period that in *H. lanceolata*.

"Bella" is a latin word for "beautiful".

There are two variegated forms of ssp. *bella*. The more common one has green leaves bordered in white and often is sold under the name 'Lida Buis', 'Lois Buis', or a variation on that name. The other form has green margins with creamy yellow centers. The new growth is often flushed with pink in these two clones. These variegated ssp. *bella*s are notoriously fussy, slow growers. As with most variegated plants, flowering is greatly reduced, so these are most often grown for their colorful foliage.

Figure 33: Variegated forms of ssp. *bella*. Photo by Carol Noel

Hoya lanceolata Wall ex D. Don ssp. *bella* (Hook.) D. H. Kent forma *paxtonii*

Hoya lanceolata Wall ex D. Don ssp. *bella* (Hook.) D. H. Kent forma *paxtonii* has longer, wider leaves than ssp. *bella*, often with an undulate* leaf margin. The flowers are hard to differentiate from ssp. *bella*, the most obvious difference being that the corona scales of forma *paxtonii* are more compact, resulting in a smaller corona than that of ssp. *bella*.

The prime difference (to growers) between these two forms will be that forma *paxtonii* (abbreviated as f. *paxtonii*) is said to be a more vigorous, less culturally demanding plant.

Forma *paxtonii* blooms, similar to ssp. *bella*, over an extended period in the northern hemisphere's summer, also in flower clusters of six to ten.

It has been suggested by some working in the field of hoya taxonomy that f. *paxtonii* should be considered a separate species, but the publication of *Hoya paxtonii* (if that is the name eventually chosen for this plant) has not yet been attempted.

The form designation of this plant probably refers to Joseph Paxton, a 19th century architect, landscape architect, and editor of several botanical journals.

This plant was introduced at the Royal Botanical Society's Horticultural Exhibition held at Regents Park, London, in 1852 and seems to have no extant recorded history prior to this date.

The reference to *paxtonii* as a form is technically not correct. It was referred to as a form by Thompson in 1905, but D. H. Kent (in **"Notes on Hoya in Cultivation (1)"**) followed Nicholson's 1885 placement of this plant into synonymy with ssp. *bella*, saying that "until fresh evidence becomes available it is best treated as a horticultural variant of H. *belle*." "Horticultural variant" would seem to call for a cultivar (cv.) status, but due to current authorities tentative match of this plant material to herbarium sheet Wallich 8164b, this might be construed as misleading. Stemma has elected to use the "form" designation here, for the sake of convenience and clarity, but this status is not legitimate.

Hoya engleriana Hosseus

Figure 34: *Hoya engleriana*. Photo courtesy of Torill Nyhuus.

Hoya engleriana Hosseus has, again, very similar flowers to those of ssp. *bella*, and the coronas closely resemble those of forma *paxtonii*. The prime distinction for this species is the very small leaves (1- 1.5cm) which are linear or slightly tapered and closely spaced along the stems. The flowers are borne terminally, usually in clusters of four.

Hoya engleriana was collected near Chiang Mai in the mountains of northern Thailand by C. C. Hosseus. This is very close to the collection site of *H. dickasoniana*. It was published by Hosseus in ***Notizbaltt des Konigel Botanischen Gartens und Museums zu Berlin 40*** in 1907. The name honors Dr. Adolph Engler, a German Botanist of the 19th and early 20th centuries and one time Director of the Berlin-Dahlem Botanical Garden, where *Hoya linearis* and *Hoya engleriana* were grown and displayed.

Hoya dickasoniana P. T. Li (possible syn. Hoya weebella D. Kloppenburg)

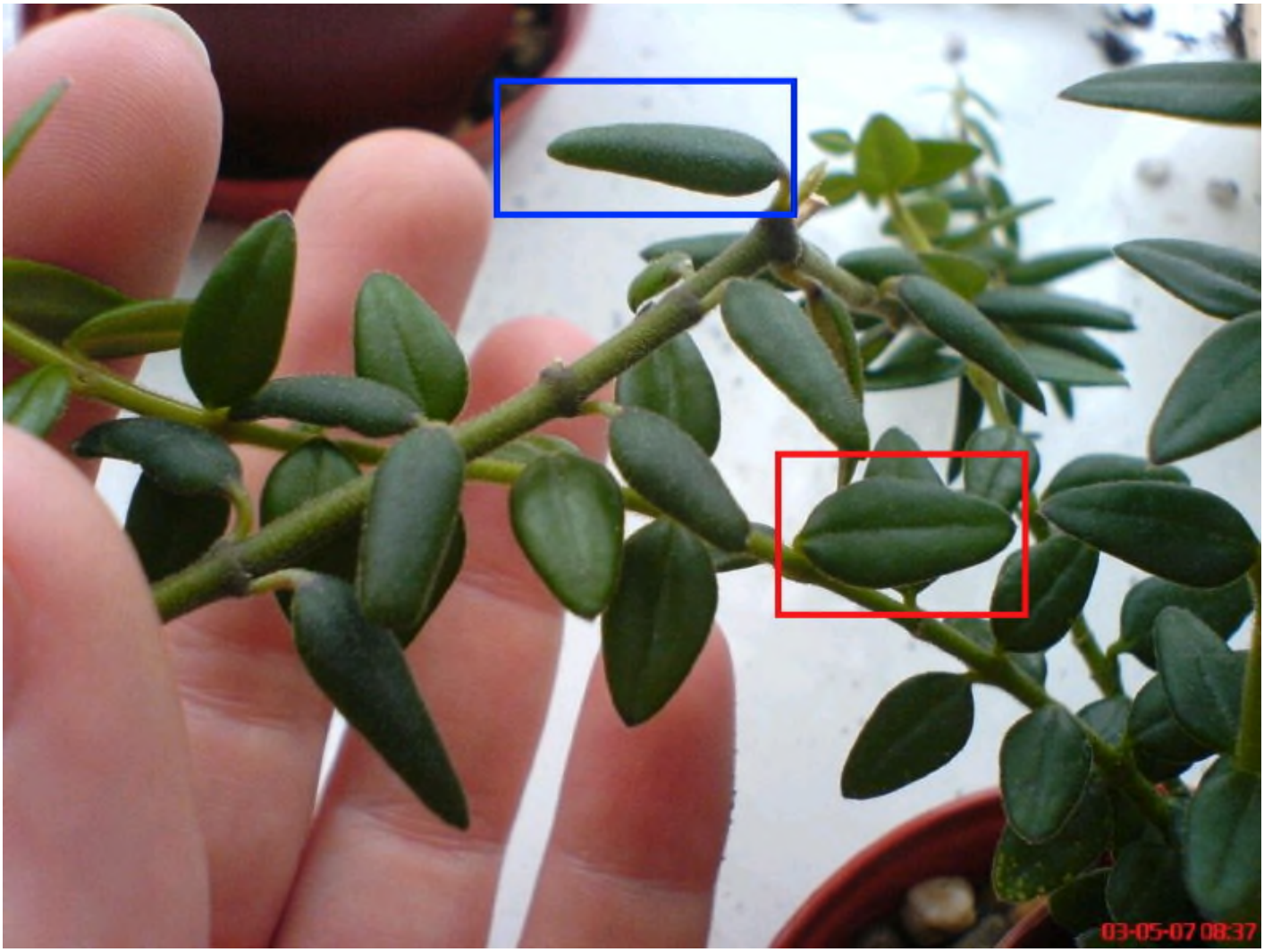

Figure 35: comparison shot of the foliage of *H. dickasoniana* and *H. engleriana* provided by Hillary Roberts of London, England, UK. Hillary also included this caption: "*H. engleriana* has a box around one of the leaves in blue. The leaves are rice-shaped, a bit flatter when they are first made, and then become succulent over time. I would say they're only a couple of mm wide. They are also very slightly hairy.

The *H. weebella (dickasoniana)*, with a red box around one of the leaves, is much flatter and wider. The leaves seem to be pretty much glabrous to me. Also there is a noticeable mid-rib down each leaf as opposed to *H. engleriana* which, when succulent, doesn't have."

The final species in this group may go by several names, or there may be two separate species involved. *Hoya dickasoniana* P. T. Li, published in 1994, seems to be the most widely accepted. Another publication, by Dale Kloppenburg in ***Fraterna*** V.18 #2, of *Hoya*

weebella, is controversial in that several authorities consider *H. weebella* to be synonymous with *H. dickasoniana*. In that case, the law of precedence would make "*dickasoniana*" the proper name for this plant. If it could be demonstrated that the species published as *H. dickasoniana* is a distinct species from the one published as *H. weebella*, the latter name would be considered valid, and the actual *H. dickasoniana* would be a distinct, but similar, plant. In this vein, Dale Kloppenburg has said "The differences I see in the type descriptions are: *H. dicksoniana* is a pubescent* species, *H. weebella* is hirsute*. The corolla inside on *weebella* is puberulous* not pubescent*. Most significant is the pollinia length- *H. dicksoniana* says "ca. 1mm long" whereas *H. weebella* is 0.77 or 0.765mm to be more precise (this is a large difference!). Flower diameter- *dickasoniana* says 1.7 cm in diameter, weebella is 1.20 cm." It will have to be left to the experts to determine whether these differences are consistent and if they are enough to separate two species out of this extremely similar (if not identical) plant material.

The opinion has also been advanced (C. M. Burton in ***P. S. The Hoyan*** V.6 #1 (online at: **http://www.psthehoyan.com/PStheHoyan6_1.htm)** that *H. dickasoniana* is too close in floral structure to ssp. *bella* to be considered a distinct species, in which case it would ideally be reduced in rank to a subspecies, variety or form to a reinstated *Hoya bella* Hook. This theory has not been advanced in a credible way in a widely distributed print-media publication, and so cannot be considered as a legitimate determination.

H. dickasoniana, as mentioned above, is very close to ssp. *bella*, f. *paxtonii and Hoya engleriana* in floral structure. This species also resembles *H. engleriana* in leaf morphology and form, being pendant and tiny-leaved, though bearing its flowers in terminal clusters of seven to ten flowers as opposed to *H. engleriana's* usual four.

This species, along with *H. engleriana*, is one of the most delicate appearing plants in the Hoya genus, and is widely sought after by collectors.

Hoya dickasoniana was published in 1994 in the ***Journal of the South China Agriculture University,*** V.15 #2, by P. T. Li. The specific epithet "dickasoniana" honors the collector of the plant material used as the type for the species, F. G. Dickason (the type sheet is F. G. Dickason #3032). The name "weebella" refers to the small size of this plant, and its similarity to ssp. *bella*.

CULTIVATION

All of these small species are epiphytic plants that grow on the trunks or in the crotches of trees in the forests of SE Asia. The distribution of these species crosses several climate zones and thousands of micro-climates. Any notes on the cultivation of these species must necessarily be based on generalizations, but some broad assumptions may be drawn which may be of help in growing these demanding species.

Figure 36: Photo of *H. linearis* provided by Simone Merdon-Bennack.

TEMPERATURES

Most of these species are generally classified as cool growers, but some collections come from locales which are closer to semi-tropical or tropical. The collection climate of a species does not necessarily limit the temperature tolerance of a particular plant- some plants from tropical locales may adapt well to intermediate or cool growing conditions, and some plants from cool climates may perform quite well under warm greenhouse conditions. Some plants, like some people, are more adaptable than others.

Much- often contradictory- information has been written about the temperature preferences of these small species over the years, especially regarding *Hoya serpens*. A safe place to start may be to grow these species in intermediate bordering on cool conditions and to experiment with plant preference gradually. Cool conditions are usually regarded as being in the range of 10′ to 25′C (50′ to 78′F), intermediate as approximately 15′ to 35′C (60′ to 95′F).

LIGHT

In nature these plants usually occur as epiphytes on forest trees, where they are generally shaded by their host tree's canopy from the intense mid-day sun, receiving some direct sun in morning or afternoon, unless neighboring trees block even those few hours of sunlight. This is why, with few exceptions, most hoyas are recommended to be grown in bright indirect light with only direct exposure to the sun in early morning or late afternoon.

This applies to most of the species considered here, although *Hoya linearis* is said to prefer slightly more sun (and in one instance was reported to be found growing in full sun on a rocky slope), and *H. serpens*, probably coming from a more densely shaded environment, seems to prefer no direct sun at all.

WATER

All of these species require regular water and prefer for their potting medium to remain consistently moist, except for *H. linearis*, which seems to need to be kept on the drier side to avoid root-rot.

Good drainage is important for all hoyas, but is of prime importance for all of these species. Soil needs to retain some moisture at all times, but any period in which the soil is kept constantly wet seems to lead inevitably to root loss and the plants demise.

A very light mix and keen attention to watering is necessary to keep this group of hoyas happy and productive.

FORM

As all of these hoya species are pendant (or in the case of *H. linearis*, flacid), and seem to lack the ability to climb (except for *H. serpens*, which can climb weakly), they are best grown as hanging plants.

Hoya serpens, which branches freely and has somewhat stiff stems, can make a rounded plant suitable for a 15 to 20cm (6" to 8") pot. *H. linearis* develops quite long, mostly unbranched stems which hang straight down and develop flowers terminally, suggesting that this plant should be hung quite high to fully appreciate its unique form. *H. linearis* can become quite large, eventually requiring a 20 to 25cm (8 to 10") pot. *Hoya lanceolata*, ssp. *bella*, and f. *paxtonii* are some-

Figures 37 & 38: Foliage and flowers of ssp. *bella*. Top photo provided by Melanie Meyers of Knoxville, Tennesee, bottom photo, showing typical arching growth, courtsey of Awanda Clark of Mesa, Arizona.

where in between these two species (*H. linearis* and *H. serpens*) in size and form, and are best kept to 20cm (8") pots maximum. When these plants have grown into larger pots and become root-bound, they are often past their prime and might better be started over again with cuttings in a small pot. *H. linearis* seems to be an exception to this rule, as many very large specimens in cultivation seem to thrive year after year.

H. engleriana and *H. dickasoniana* are much smaller plants which tend to produce long, unbranched stems which can trail down to several feet in length. Unfortunately, these branches are somewhat stiff, lacking the more graceful aspect of the larger *H. lanceolata* and ssp. *bella*, and can be challenging to display attractively as they mature. These two plants will probably never require larger than a 15cm (6") pot, and should be potted up slowly and cautiously, increasing pot size by only 2-3cm (1″) at each step.

Figure 39: A mature plant of *H. serpens*. Photo courtesy of Gabi Rothman of Whitestone, NY.

PESTS & DISEASES

All of these species except for *H. serpens* show a marked susceptibility to spider mites. Mealy bugs may also trouble all of these plants. Root rot may also be a problem for this group of plants, suggesting a low level of resistance to soil-based fungal infections, although the stems and leaves of these species are rarely troubled by mildew or black spot. A weekly shower with a moderate force spray from a garden hose (from above and below) serves to keep populations of spider mites and mealys at bay. For serious mealy infections a systemic insecticide like imidacloprid works very well. Spider mites are more difficult to deal with. Heavy infestations may require thrice weekly applications of neem oil or insecticidal soap or more toxic chemical interventions to bring under control.

Figure 40: A mature, heavily flowering specimen of ssp. *bella*.
Photo provided by Marcy Durst of Long Beach, CA, USA.

Photo Contest- Winner: Ann Strahm

The second ***Stemma*** photo contest has been won by Ann Strahm of Chowchilla, CA USA.

Depicted here is Ann's photo of *Hoya clandestina* Blume. *H. clandestina* is fairly widespread in cultivation, and has often been sold in the USA as *Hoya macrophylla*. *H. clandestina* has large, thick, deep green leaves with an acute tip and attractive lighter veining.

For her winning photograph Ann will receive a painting by San Francisco artist Kevin Mosley based on this lovely hoya. Kevin's colorful paintings are reverse-painted on glass, and employ acrylics and joss paper.

Next issue (V.1 #4) will mark the end of the photo contest for ***Stemma***, so this will be the last chance for subscribers to win one of Kevin's paintings. Send entries to:

markroy68@yahoo.com.

New Determinations

A new paper by Livia Wanntorp and Paul I. Forster, "**Phylogenetic Relationships Between Hoya and the Monotypic Genera Madangia, Absolmsia, and Micholitzia (Apocynaceae, Marsdenieae): Insights from Flower Morphology**" published in ***Annals of the Missouri Botanical Garden***: Vol. 94, No. 1, pgs. 36–55, has proposed two new determinations which fall into the genus *Hoya*. An abstract of this paper is available online at: http://apt.allenpress.com/aptonline/?request=get-abstract&issn=0026-6493&volume=094&issue=01&page=0036

Micholitzia obcordata N. E. Br. is transfered to the *Hoya* genus and the name *Hoya yuennanensis* Hand.-Mazz. is proposed for this species, as that name is considered by the authors to be synonymous with *Micholitzia obcordata*, and to have precedence. The consensus of authorities is unclear as of yet with regard to this determination, although C. M. Burton has expressed the view that this species, if transfered to the *Hoya* genus, would more properly be considered to be *Hoya manipurensis* Deb (See P. S. The Hoyan V.6 #3). It seems that the authors find merit in this critique, as they are planning to amend the name determination of *Micholitzia obcordata* from *Hoya yuennanensis* to *Hoya manipurensis* in a future issue of **Asclepios** (#99).

Madangia inflata P. I. Fost, Liddle & I. M. Liddle is also transfered to the genus *Hoya*, under the new name combination *Hoya inflata* (P. I. Forst., Liddle and I. M. Liddle) L. Wanntorp & P. I. Forst. (See the **Back Page**, this issue, for more on this species.) At this time response to this publication seems to be mixed, with approximately an equal number of authorities accepting or rejecting this determination.

An article about the species discussed in ***Annals*** is planned for a future issue of the bulletin of the Swedish Hoya Society (at: http://www.swedishhoyasociety.com/eng/starta.htm), to be authored by Ms. Wanntorp.

A word on the subject of peer-review and consensus may be in order here. For those not familiar with the concepts, the processes of peer review and consensus are a system designed to validate scientific ideas by debate and eventual acceptance or denial of the proposal by the scientific peers of the presenter.

Typically, an article (or proposal of any sort) is published in a widely available print media publication relevant to the subject. Some sort of peer review will have already been conducted for most reputable publications, where the text is distributed to other experts in the field of research for evaluation. Once the article or proposal has passed this test, it is printed and distributed. If the proposer's peers have concerns or doubts about the determination, these are debated formally (in print) or informally. Ultimately, acceptance or non-acceptance of the proposal or determination is based on the consensus of the proposer's peers.

Department of Corrections

by Mark Randal

There are two corrections for ***Stemma*** V.1 #2, both brought to my attention by Christine M. Burton.

The first is regarding the illustration of *Hoya meliflua* ssp. *fraterna* used in the article on *Hoya fraterna* Blume (Figure 2). This image was credited as being from ***Curtis' Botanical Magazine***. This illustration actually appeared in ***Flore des Serres et des Jardins de Europe***, a Belgian horticultural journal which was published from 1845 to 1888. The illustration in question appeared in V. 8 on page 179. Here is the ***Serres*** illustration which appeared in the last issue of ***Stemma*** (on the left) compared to the actual ***Curtis' Botanical magazine*** illustration (on the right) which appeared in 1852 and is labeled as tab 4684.

Figure 41: (L) illustration from *Flore des Serres et Jardins de Europe* (R) from *Curtis' BM*.

An interesting situation I learned of while researching this point: ***Flore des Serres*** on several occasions reproduced images from ***Curtis***' ***BM*** in its own pages without crediting the illustrator or obtaining permission to use said images. Often ***Flore des Serres*** reversed the illustration, possibly in a not very sophisticated attempt to disguise the duplication. In this case, the ***Serres*** image is not merely a mirror image, the plate was copied and the artwork redone, but the many points of similarity clearly show the influence of the ***Curtis***' print.

The second point involves the hoya featured in last issue's **Back Page** feature, *Hoya* sp. IML0831. The text for this species lists *Hoya benquetensis* Schltr. and *Hoya bordenii* Schltr. as "related/similar species". This is factual, but Ms. Burton points out that *H*. sp. IML 0831 is, in her opinion, more closely related to *Hoya blashernaezii* D. Kloppenburg and *Hoya siariae D. Kloppenburg*.

Here is what she had to say:

"Re your back page IML-831: much more closely related to IML-831 than *Hoyas bordenii* and *benguetensis* are *Hoyas blashernaezii* and *siariae*. Dissect the flowers of these 3 and examine them side by side under a microscope lens (photograph them while you have them there). You'll see that all those parts are identical. It is only when the flowers are not dissected that you see that one has a reflexed corolla and the other two have campanulate corollas. Two have more or less rotate coronas, while the third has a corona whose outer lobal apexes are more or less erect. There is really less difference between these three species than between the various subspecies of *Hoya australis*."

My thanks to Ms. Burton, and my thanks in general that this section is much smaller this time than last.

Source Materials

for In Cultivation- ***Curtis' Botanical Magazine,*** 1855, 1861**;** ***Bijdragen tot de Flora van Nederlandsch Indie,*** 1826**;** ***Rumphia* 4,** 1848**;** ***Museum Botanicum Lugduno-Batavum,*** 1849**;** ***Passport Hoya Series-*** D. Kloppenburg**,** 2001**;** ***The Hoyan*** V.2:82-83b, V.4:100-101, V.20:43,59

for *"Hoya Lanceolata* **Wall ex D. Don and Similar Species, Subspecies, and Forms"**- ***Flora of British India V.4,***1883; ***Contributions to the Botany of India***,1834; ***Curtis' Botanical Magazine*** *(bella)*1849**,** *(linearis)*1883**,** ; ***Prodromus Florae Nepalensis,***1825***; Notizbaltt des Konigel Botanischen Gartens und Museums zu Berlin 40,***1907***; Notes on Hoya in Cultivation (1),***1981***; Journal of the South China Agriculture University,*** V.15 #2; ***Fraterna*** V.18 #2; ***The Hoyan*** V.1:48-50,90-92, V.3:6-12, V.15:25-32; ***P. S. The Hoyan*** V.6:1-7; ***Passport Hoya Series***, D. Kloppenburg, 2001

for Department of Corrections- ***Flore des Serres et des Jardins de Europe***,1852; ***Curtis' Botanical Magazine***,1852; ***Fraterna,****1995 #1*; ***Passport Hoya Series***, D. Kloppenburg,2001

Glossary

acute: ending in a sharp point.
corona scale: one of the five structures which comprise the corona.
corona scale apex: the outer tip of a corona scale or lobe.
cuspidate: with the tip ending in a point formed by two inward curves.
campanulate: bell shaped.
emarginate: with a notch or series of notches, in botany generally referring to a notch at the center of the tip of a leaf, petal, corona, or other structure.
globose: spherical. globe-shaped.
hirsute: covered with short, straight, stiff hairs. Bristly.
lacunose: with small hollows or concavities.
puberulous: slightly hairy, with less dense coverage than "pubescent".
pubescent: covered in fine, soft hair which is short and more dense than "puberulous".
reflexed: bent backwards or downwards.
revolute: rolled backwards, towards the lower side.
rotate: wheel shaped. Neither cupped (campanulate) nor rolled backwards (revolute).
terete: round in cross section.
undulate: having a wavy surface or edge.

Appendix A: Distribution map for species discussed in "***Hoya Lanceolata* Wall ex D. Don and Similar Species, Subspecies, and Forms".**

Figure 42: Collection sites for the following species/ forms: A -*Hoya lanceolata* (in Nepal), B -ssp. *bella* (in Moulmein), C -*H. dickasoniana* and *H. engleriana* (in Chiang Mai), D- Wallich 8164-b (f. *paxtonii,* in Syhlet), E- *H. serpens* (in Sikkim), E & A- *Hoya linearis* (in Sikkim and Nepal), F- the Uppsala Botanical Garden plant (fig. 25) (near Kathmandu, Nepal).

Appendix B: coronal structures in the *H. lanceolata* complex (+ *H. serpens*).

Hoya serpens

Hoya linearis
photo: Torill Nyhuus

Hoya lanceolata
photo: Torill Nyhuus

Hoya lanceolata ssp. bella
photo: Bob Noel

Hoya aff. chinghungensis
photo: Sutthisak Sangkhakorn

Hoya lanceolata ssp. bella f. paxtonii photo: Torill Nyhuus

Left**: *Hoya engleriana***
photo: Bob Noel

Right: ***Hoya sp*.3** from Thailand
photo: Sutthisak Sangkhakorn

Back Page: *Hoya inflata* *(P. I. Forst.,D. Liddle & I. M. Liddle) L. Wanntorp & P. I. Forst.*

(pictured on next page- Figure 43 & 44: Photos courtesy of (top) David J. Liddle and (bottom) Carol Noel)

Synonyms: *Madangia inflata* P. I. Forst., D. Liddle & I. M Liddle

Country of origin: Papua New Guinea, from a felled tree in the Dom River logging area west of Madang.

Related/similar species: Hoya hypolasia Schltr.

Flower color: creamy to yellowish white.

Flower size: 2.5cm in diameter.

Flower form: globose*

Scent: little to none.

Leaf size: to 12cm long, 6 cm wide.

Collector: David Liddle, on a collecting trip with Paul Forster.

Temperature range: intermediate- 15'C to 35'C (60'F to 95'F)

Watering requirements: let dry slightly between waterings, established plants use soil moisture quickly.

Light requirements: bright indirect light, morning or afternoon sun only.

Cultivation notes: "I give this plant good air circulation and shade.... no sun at all but indirect bright light. A very easy grower. It has no detectable fragrance, but the flowers are really large vis-a-vis the leaves and the flowers do last a long time!" -Carol Noel