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**ON THE COVER: HOYA MEGALASTER  
PHOTO: NATTAMON KARANG**

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# Editor's Note

Mark Randal

Some observant *Hoya* enthusiasts or researchers will notice that there are many images in this issue from Alex Gavrus. We have featured Alex's images throughout this issue because here we also present the first installment of his memoir, in which he recounts how the genus *Hoya* has been interwoven with his life from his early childhood.

Beyond the contributions Alex describes here, I want to highlight another of Alex's achievements - his Pakeha's Hoya website. For more than a decade, it has been the go-to online source for images of the floral and vegetative structures of *Hoya*. In addition to its close up images of the floral details of hundreds of *Hoya* species and cultivars, the site hosts thousands of beautiful images of species in full bloom. It also features inspired species comparisons that illuminate both the diversity of the genus and the sometimes surprising interconnections to be found within it.

In my *Hoya* research I have spent countless hours in the vaults at Pakeha's- searching, examining, downloading, comparing- and on every visit discovering something that I hadn't been looking for but was suddenly hotly intrigued by.

For those who haven't visited that site- it can be a little hard to find as it is not optimized for Google. To find the site if it evades your search engine, type in the address by hand: [www.pakehas-hoya.com](http://www.pakehas-hoya.com) and you will be rewarded for your old-fashioned effort with the old-fashioned excitement of discovering something genuine and unmonetized on the internet.

Thank you Alex!



*H. naumanii* (L) and *H. subcalva* (R). photo: Alex Gavrus



# Nectar in The Blood: A Memoir, part 1

Alex Gavrus



(All images by A. Gavrus)

**I was born in 1961 in Cluj-Napoca, Transylvania, in northwestern Romania**, and I inherited my passion for plants from my grandmother. She owned several rare plants, and family legend holds that her city's Botanical Garden was able to recover plants from her that had been lost during World War II. Among them, she had a magnificent *Hoya carnos*. It was unique in that its leaves were heavily speckled with large, light-colored spots, a characteristic I hadn't seen to such an extent in any other *carnosa* variety.

I remember being fascinated by every detail of this plant (pictured below):

- the vines that spread out in all directions, exploring their surroundings
- the glossy leaves, thick enough to withstand even two months without watering
- the spots that could cover over 50% of the leaf surface
- the translucent sap and its ultra-fast healing properties
- the small aerial roots scattered throughout
- the umbels bearing a crown of white flowers
- the perfect five-point symmetry of all parts of the flower
- the delicate white petals with their fine down
- the dark red crown with its five star-shaped points
- the sweet nectar that forms large drops
- and last but not least, the persistent nocturnal fragrance.

I still have a plant grown from my grandmother's plant, which I have distributed as *Hoya carnososa* (spotted leaf).



I moved to France in 1990. My original intention was to emigrate onwards to New Zealand, but although I traveled extensively there and spent time with that country's Māori community, I ultimately decided to live in France. I worked for 20 years as an engineer in a huge international company. I lived in Paris for the first 10 years, and since 2000, I've lived in Rouen, Normandy.

During these years I discovered and began growing additional *Hoya* species.

First, *Hoya bella*, with its thinner, lanceolate leaves and dangling habit. Then *Hoya australis*, with its porcelain-like flowers, followed by two relatively stable variegated varieties of *Hoya carnososa*: KRIMSON PRINCESS and KRIMSON QUEEN. The former can have red leaves when young, the latter can have entirely white leaves.

Then, during my first trip to Thailand in 2002, I acquired *Hoya verticillata*, *Hoya pubicalyx*, and *Hoya 'Compacta'*, all three at the Chatuchak Market in Bangkok. On my next trip to Thailand in 2005, during my honeymoon, I was shocked to discover a multitude of *Hoya* species for sale. I found *Hoya multiflora*, with its flowers resembling bursting rockets and its very fine leaves; *Hoya caudata*, with its leathery, rough leaves that can remain red for several months at a time and its hairy flowers; and *Hoya kerrii* (yellow splash), with heart-shaped leaves the size of a hand and nectar that darkens from light yellow to dark brown. I also found *Hoya imperialis*, which flowered quite quickly in my house with its enormous, fragrant red blooms, as well as *Hoya lacunosa* and *Hoya obscura*, with their tiny flowers and heady scent. By then, I owned twelve *Hoya* species in total, and I had to set up a small greenhouse in my home to accommodate all of these plants.



left: *Hoya 'Compacta'* and below: *Hoya kerrii* (yellow splash), both sourced from Chatuchak Market in Bangkok, Thailand.



Also in 2005 I discovered another ten or so *Hoya* species at the Paris Flower Market (Île de la Cité) mixed in with the orchids. These included *Hoya calycina*, *Hoya linearis*, *Hoya diversifolia*, *Hoya wayetii*, and *Hoya serpens*. Some were half-dead and needed reviving.

That same year, I visited the Jardin des Serres d'Auteuil in Paris and began a fruitful exchange with its staff. This historic botanic garden and complex of greenhouses is now part of the Stade Roland Garros, the site of the French Open tennis tournament- surely the only tennis complex in the world containing a *Hoya* greenhouse! Their *Hoya* collection was quite extensive, but poorly maintained, with many plants on the verge of collapse. I was able to take some home and save them before they were completely lost, later returning rooted cuttings to them in far better condition. Once again, I had to expand my greenhouse to accommodate these new plants.



**The Jardin des Serres d'Auteuil in Paris. Their old Hoya House (R) was torn down to construct a tennis court many years ago.**

Also at the end of 2005, I met several French *Hoya* enthusiasts who had discovered one another through an on-line orchid forum where they had created a *Hoya* section. Together, we went on to build the first French forum entirely dedicated to hoyas, and later founded the AFAHo association (Association Francophone Des Amateurs De *Hoya*) and published the AFAHo's journal *Asclep-Hoya* (pictured below) of which I was the editor. This was the first use of my avatar Pakehanuitanekeimokokiwiwheoapuru, of Maori language origin, surely one of the longest names ever adopted on a an on-line forum. The exchanges of both plants and information within this community proved invaluable.



In 2006 I met Torill Nyhuus, a Swedish lady of Norwegian origin, who was the president of the Svenska Hoyasällskapet, (or, the Swedish *Hoya* Society) and for several years, was editor of their journal *Hoyatelegrafem*. She was traveling in France and honored us with a visit. She gave a lecture in an exhibition hall at the Jardin d'Auteuil, which also hosted our association meetings. Torill not only supported me in my scientific approach to the study of hoyas, but was also a loyal friend until her death in 2022. We visited each other several times, both in Stockholm and Rouen, and spoke together on phone at least once a month.

In 2007 our group was visited by Ted Green, an avid traveler and *Hoya* discoverer living in Hawaii. He became a close friend, and we later traveled together on the island of Borneo, where I had previously journeyed alone (see next section). I was also in regular contact by phone and email with Ted's close friend, Dale Kloppenburg, who gave me valuable advice on the use of microscopy in the study of *Hoya* pollinaria and provided me with the basis for the publication of new species. Unfortunately, we never met in person.

Around the same time, I met another passionate *Hoya* collector and avid traveler, Paul Shirley, a Dutchman of English origin. We also became friends and still see each other from time to time. Through him, I was able to acquire *Hoya* cuttings from plants he had collected during his travels in Southeast Asia. His Epiphyllum collection was also fabulous.

I also met the Belgian *Hoya* grower Emilio Begine, well known for having produced and registered two popular *Hoya* cultivars: *Hoya* 'Mathilde' and *Hoya* 'Chouke'.

Little by little my collection grew- largely through exchanges- until I had my first hundred species.

It was around this time that I began to confront the diseases and parasites that plague many *Hoya* collections: mealybugs, scale insects, the terrible red spider mites (*Tetranychus* sp.), various fungal infections, and even plant viruses. I successfully eradicated the mealybugs by strictly quarantining all new cuttings and applied anti-fungal treatments when necessary. Increasing humidity- combined with good ventilation and high temperature- proved effective in controlling arachnids of all kinds. As for combatting viral infections, when removing the infected stem was not enough, I threw the plant away.



In 2000 I had a skiing accident. Six knee operations later, I had a moderate physical disability. This plunged me into depression and, to free myself from it, in 2008 I undertook a month-long journey to the island of Borneo, visiting the Malaysian states of Sarawak and Sabah and the Indonesian state of Kalimantan.

It was there that I had my first encounters with hoyas in situ. Seeing *Hoya* flowers blooming in the jungle was profoundly moving. The very first *Hoya* I found was an unusual form of *Hoya glabra*, bearing flowers slightly larger than its type and distinguished by their particular coloration (pictured p.10).

Fortunately, I took a few photos and collected five cuttings- each with only a single leaf, because in the jungle, internodes are much longer than in cultivation and parasites and mechanical damage are common, so that the loss of one or two leaves at a node is typical.

This *Hoya* was growing on a shrub on the edge of the jungle, bordering the courtyard of my guide's house. The very next day, the shrub was cut down for firewood, and the *Hoya* was consumed in the flames! Luckily, the cuttings- kept by my guide's wife during our hike- survived.



***Hoya glabra* Sarawak AG08-01, my first *Hoya* collection, in habitat (above) and in cultivation (below).**

I was later able to grow those cuttings out in several places: Sabah's Tenom Botanical Garden, the Sandakan Sepilok Botanical Garden, and the Kipandi Butterfly Park. I also grew two cuttings at home. Subsequently, I released this form under the name *Hoya glabra* Sarawak AG08-01.

Despite my shattered knee (I wore a hinged knee brace, and as a former marathon runner had maintained good muscular fitness), I managed a fantastic one-week trip in the Kelabit Mountains, on both sides of the Malaysian-Indonesian border. This was primary jungle in all its splendor. My guide and I explored it in complete autonomy, relying almost entirely on the forest's natural resources. Aside from a little pasta, tea and a few energy bars, everything we consumed was gathered along the way and quickly cooked: leaves, tubers, and flowers. I learned that one can drink the water contained as sap in a thick vine, and that the liquid held in the reservoirs of carnivorous pitcher plants is drinkable, as long as the operculum has not yet opened. No need for a cup, when you can make one from the culm above a node of a thick bamboo stalk.

I am almost sure that for certain places, I was the first non-local person to pass through.

I "instructed" my very clever guide to help me identify potential hoyas using a set of clear criteria: epiphytic growth; two potential leaves per node (neither 1, nor 3); sticky sap, either white or transparent; relatively thin stems with aerial roots; climbing or hanging habit; and generally (but not always) thick leaves. We thus found several likely plants which seemed to be hoyas or dischidias. Ultimately, flowering is the only definitive way to determine them, although, with experience, I have found that I can determine 90% of them without the flowers with good accuracy.

Among the hoyas we found in bloom, in addition to *H. glabra*, were some members of the *Eriostemma* section of *Hoya* (giant, large flowered lianas hanging on huge trees) and several dischidias. One plant that had all the above characteristics, but totally atypical leaves, could have been a completely unknown species. Unfortunately it did not survive in any collection. It had a hyper-hairy stem, similar to that off *Hoya hamiltoniorum*, which suggested to me that it was a strictly high-altitude *Hoya*, very difficult to acclimatize at lower elevations. The region where I found that *Hoya* in is a protected nature reserve (unlike much of Borneo, nearly 95% of which is experiencing an ecological disaster), so there is a good chance that that species will survive there.

This journey continued with a further two weeks in Sabah.

I will pick up my story here in the next issue!



The colorful leaves of *H. glabra* Sarawak AG08-01 in habitat.



# The Exotic Gardeners

Horticultural Contributions to *Hoya* by Edward & Minnie Belle Hummel

by Michael Green | @TheHoyaArchive on IG

**From the early 1930s and into the late 1970s, Edward (birth name: Emerald) & Minnie Belle Hummel** were highly renowned within the rare and unusual plant trade. They initially put their focus on growing drought resistant plants like Cacti and Succulent species, but later expanded their offerings to include tropicals like hoyas and bromeliads. The Hummels did not come from wealth, and built their business completely from the ground up into a thriving enterprise, in a period where many businesses were closing due to the financial hardships of the Great Depression.

As a result of their success, the couple were able to fully explore the limits of their hobby, producing a range of plants and hybrids highly sought after by collectors. Even early on in the business venture, Mr. Hummel noted, in 1941, that their business differed from other novelty businesses in that they had such variety and diversity of supply, and the market of consumption was nearly inexhaustible.



**Edward & Minnie Belle Hummel in their Bromeliad Greenhouse.**

Edward C. Hummel was born in Prosperity, Missouri on July 18th, 1903, and lost his father Perry very early (Edward was seven at the time). After this loss, his mother Theresa moved Edward and his younger brother Myron to live with their grandfather in Aberdeen, California, where he completed elementary school. He then moved in with his mother in Los Angeles to attend high school, in addition to working a part time job at a local hotel.

He stayed in school for a year, then quit during his first summer break, opting to obtain a full time job at the Beverly Hills Nursery, at the time under the management of John J. Reeves. He recalls that his duties here were not very interesting, consisting mainly of easy jobs like watering plants. He notes of his time there that it was a period in which there was great competition among the affluent to acquire the most desirable plants like orchids, cycads, palms, and other rare tropicals. He also fondly recalled that during his tenure here, he got a chance to visit and observe the construction of vast plant exhibition houses at the Doheny Mansion (No. 8 Chester Place, Los Angeles).

After his time at the Beverly Hills Nursery, he spent time in Owens Valley and the Sierra Mountains, working a few odd jobs to make ends meet. Seeking to further his education, he joined the U.S. Navy, where he cruised along the coasts of Mexico and South America. During shore leave, he would visit tropical parks in the coastal cities, and was occasionally able to take an excursion further inland. In the spring of 1922, after an unspecified accident on board the ship, Ed was medically discharged from his duties as a navyman.

Minnie Belle Byrne was born on April 14th, 1904 in Piedmont, Wyoming to William and Cecile Byrne. In 1908 at the age of 4, she and her family packed up all their possessions and belongings and left Piedmont, traveling by train to El Cerrito, California. The family took a Pullman car; a type of luxurious sleeper train car equipped with plush velvet seats and couches, along with curtained-off bunk beds for sleeping. It was on this train ride that Minnie remembers her and her siblings (Truth (8y), Thelma (6y), Rae (2y) and Wilma-Francis (4m)) were each given the first orange they had ever eaten, by a train porter.

The family arrived in El Cerrito in September of 1908, and leased a property with an old house. This structure was most likely dilapidated, as they chose to use it to house bees, while the family slept outside in semi-permanent tent structures. They stayed here for some time, and made a few moves to other places in California, eventually settling in Owens Valley.

It is not documented when Edward and Minnie Belle met, but they married in 1925.

After their marriage they lived together in a house in the Owens Valley, where they both worked full-time tending to apple and pear trees at the Red Mountain Fruit Ranch. After about a year, Ed left the ranch to become a foreman at the Commetti Gold Mine in Inyo county, CA. While Ed was working here, the couple lived in a small cabin in a canyon, and raised a select strain of White Leghorn chickens, trading their eggs for other goods. He eventually left his job at the mine, taking a position with the City of Los Angeles as a maintenance man for large equipment on the construction site of the Tinemaha Dam. In 1926, Minnie gave birth to their daughter Marquette, and in 1928, to their son, Edward Jr.

The following year Ed was transferred to Los Angeles, prompting the family to sell their breeding stock of chickens, which provided them with a modest sum to start their new life in the city. In this time period, the Great Depression was at its worst. Seeking land to live and work on, Ed and Minnie borrowed \$500.00 from a friend, and obtained \$300.00 in credit from a lumber yard, to build an 800 sq. ft. two-bedroom house complete with plumbing and electric. They also obtained a 20ft x 20ft lath house from a Japanese friend, in which they put their growing plant collection.

As they had purchased a lot zoned for commercial use, the Hummels decided they would like to run a nursery of their own. With a trip to city hall, they retrieved the names of the landowners for the eleven adjoining lots to theirs, and over the next eight years they purchased all of these, giving them a nursery site with 240ft of frontage on the Imperial Highway. Because of a rule by the City of Los Angeles that forbid any city employee from owning a business, Minnie was the listed owner of their new nursery, Hummel's Exotic Gardens.

In 1935, the Hummels were brought into the spotlight when the Quaker State Motor Oil Corporation published a newspaper advertisement featuring the family posing with their cacti and succulents (shown on p.18), igniting a flurry of customers interested in the exotic plants they grew. By 1937, the Hummels had shifted their business model to solely wholesale, as the influx of attention had made things overly chaotic for them to continue managing both a retail storefront business and a bulk wholesale shipping model. In 1939, Ed was able to leave his job working for the City of Los Angeles and pursue working at the nursery full time. Also employed by the nursery were Ed's mother Theresa, Minnie's sister Rae, and both of the Hummel's children.



Marquette Hummel inspects a *Wonder Collection* in the air conditioned packing house.

The Hummels had several "Collections" of plants available for purchase. The WONDER COLLECTION was one of the most prominent over the years, and the couple carried it for over 40 years. Ed describes it well in the nursery's 1941 catalog:

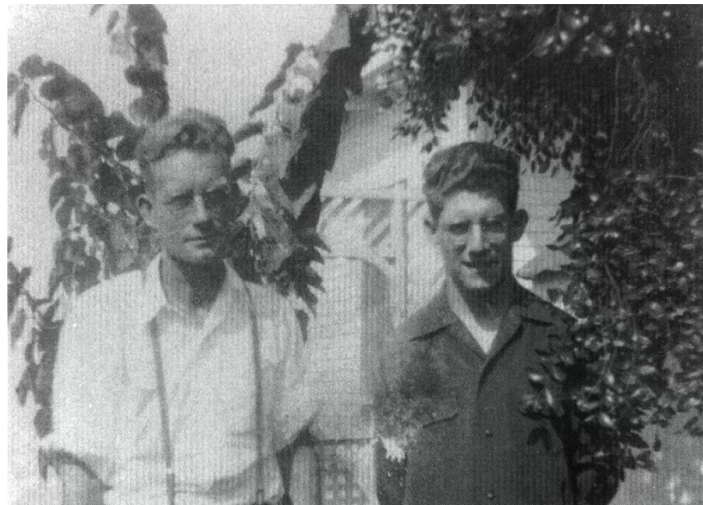
*"This is an all purpose collection built to satisfy one customer or 100. No two plants are alike and building is never complete until packed. Into this collection goes the cream of more than one hundred thousand plants. Some of our most aristocratic numbers have made their debut here; it is often possible to retire the full cost of the collection by the sale of one or two items. Many of nature's rarest and most intriguing oddities have reached the public for the first time through the WONDER COLLECTION. We could go on at great length about the wonders of this assortment which we think is so appropriately named but we suggest you try it and find out for yourself. This collection of 100 plants... **Unamed... \$5.00 or Named... \$7.50**"*

Ed Hummel was a man extremely proud of both his business morals and the quality of the plants he sold. Writing in his 1941 catalog's Bulletin No. 29, he emphasized his belief in fair treatment for workers:

***“Many nurserymen are overly perturbed about the trend to socialized legislation and unionization which means social security, unemployment insurance and a fixed wage scale. But why? Giving the employee better working conditions and greater compensation for his work is to our notion another notch in the good health of the industry; the more contented employee is going to do a better job for you.”***

He also stressed the importance of plant quality:

***“Good health in our industry means clean principles of production and distribution, as well as healthy sterilized soil and properly cultured plants.”***



Ed Hummel (L) with his son, Edward Myron Hummel (R) in Inglewood, CA.

In 1948, with the health of their plants in mind, the Hummels decided on a move. The increasingly busy Los Angeles International Airport (LAX) was nearby, and its fumes from both ground and air traffic were becoming an issue that was detrimental to their plants. Seeking higher ground, the couple purchased seven acres in Rolling Hills. This land could only be used for building a house and as outdoor growing grounds though, and they found it impossible to find a small lot at the base of the hills, as all the land had already been purchased by larger companies seeking to develop it. Presumably this lot would have been for greenhouse growing, which they were unable to do on their 7 acre lot in the hills, possibly due to zoning bylaws prohibiting the construction of commercial greenhouses.

As a result of this, in 1951 the couple decided on another move, this time to Carlsbad - some 90 miles southeast. In 1952, they purchased a lot from Dr. John Poindexter, who had inherited it from his father Dr. Robert W. Poindexter after his untimely demise 9 years earlier in 1943 while working at the nursery he operated on the lot. When the Hummel's son Edward Myron Hummel enlisted in the Korean war, they decided to postpone their move to Carlsbad, and for a time operated utilizing their Inglewood location as "Shipping and Growing", their Rolling Hills location as "Residence and Experimental Growing" and their Carlsbad location as "Growing and Special Shipping".

1943 was the first year the Hummels listed a *Hoya*. In their [Victory Picture Book of Cacti and Succulents](#) (a lookbook of plants offered by the nursery) they listed "*Hoya carnos*a Variegata — Variegated Wax Plant." This is an outer variegated clone of *Hoya carnos*a.

Availability of *Hoya* grew starting in the 1954 catalog, with the introduction of Mr. Hummel's first *Hoya* cultivar, *Hoya carnos*a 'Exotica', in addition to *Hoya carnos*a 'Variegata' and a green-leafed *Hoya carnos*a. This catalog was also the first to be released from their new location in Carlsbad, California. Their 1956 catalog saw their introduction of *Hoya bella*, followed in 1958 by *Hoya pubicalyx* 'Silver Pink' (listed as "Hoya Silver Leaf - Maroon Flowers", *Hoya cinnamomifolia* (*Hoya macrophylla*), *Hoya keysii* (*Hoya australis* ssp. *australis*), *Hoya motoskei* (*Hoya carnos*a), and *Hoya shepherdii*.

In 1960, something very special was released. *Hoya carnos*a 'Compacta', a plant well known to us in the modern day, traces its roots to Hummel's Exotic Gardens, as a mutation discovered in 1952 by a nursery foreman. Minnie Belle Hummel, in an interview with William Drysdale in 1992 for *The Hoya* (1992) remarked of a phone call with their Inglewood nursery foreman, who was taken aback and alarmed by one of the stock *Hoya* plants, having "gone crazy" and inquired if the plant should be isolated or destroyed. The Hummels chose to isolate the plant, and stabilize the mutation into a new cultivar - 'Compacta'. The 1960 catalog also contained their first listing of *Hoya imperialis*.



Anyone familiar with the Hummels is likely to notice that until now I have left out two *Hoya* cultivars that are widely attributed to their nursery: *Hoya* 'Minibelle' and *Hoya* 'Shepherdell'.

'Minibelle' is attributed to Hummel's Exotic Gardens by David Silverman (Silverman's Hoyas, Lynbrook, NY | 1979 Catalog) and Hermine Stover (Endangered Species, Tustin, CA | 1981-1982 Catalog), and both 'Minibelle' & 'Shepherdell' are attributed to them by Christine Burton (1982). 'Minibelle' is said to be named in honour of Ed's wife Minnie Belle. Mr. Hummel is said to have always named the best of any of his creations in honour of his wife; we have evidence of a few instances of this, such as *Platynerium* 'Minnie Belle', *Aloe* 'Minnie Belle', *Echeveria* 'Minnie Belle', *Euphorbia* 'Minnie Belle' and several bromeliads (*Aechmea* 'Minnie Belle', *Cryptanthus* 'Minnie Belle', *Guzmania* 'Minnie Belle', and *Neoregelia* 'Minnie Belle').

**David Silverman's Hoyas, 1979**

103	mini-belle	long narrow leaf (not as narrow as long-step)	✓		Hummel's California	✓	3.00
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**Endangered Species, 1980**

**H. minibelle (Hummel hybrid) \$12**  
 Wider and shorter leaf than longifolia shephardii and more vining habit. Very beautiful plant.

**Country Hills Greenhouse, 1982**

'Minibelle.' Silver flecked leaves slightly wider and shorter than; and the internodes shorter than H. Longifolia shephardii; The rose-purple umbels of flowers are nearly everblooming. Best Hoya for small hanging baskets..... 7.00

Though I was unfortunately unable to speak with either of the Hummels or their children, I did get a first-person account of a meeting with the Hummels from Robert Cobia during my interview with him in September of 2024 (*Stemma Journal* 7(1): 3-10).

Robert recalled being given a tour of the greenhouses by Ed that took around 20 minutes, and afterwards he was invited into the family home to continue talking. In their home was where he met Ed's wife, who was introduced as Minnie Belle. He remembers that she was a very sweet lady, reminding him of an old grandmother. At the request of Ed, she even baked them a cake. He told me that he ended up staying for around 2 hours chatting with the two of them.



16 **Edward Hummel in Greenhouse, circa 1950s.**

VISITORS ARE ALWAYS WELCOME. It is not necessary to place an order when visiting us. We enjoy showing our stock to interested parties. Please allow yourself plenty of time to enjoy the visit. Even though a "long-legged" visitor may cover ground much faster than a "short-legged" companion, it is never safe to promise "Aunt Mary" to be back for a six o'clock dinner unless you arrive here early in the afternoon.

An excerpt from "CHIT CHAT OF THIS AND THAT" in Hummel's Exotic Gardens 1960 Catalog.

Looking back, the Hummels noted that they felt their business, judged by some standards, was a very modest success, and were happy that they accomplished what their goal was from the very beginning- an interesting life with few worries and much pleasure from the business itself.

For his innumerable contributions to the field of Cacti and Succulents, Mr. Hummel was awarded the Cactus & Succulent Society of America's Certificate of Fellowship and a lifetime membership in 1969. In addition, the Bromeliad Society International also awarded him with a lifetime membership and a Certificate of Appreciation.

His final award came to him in 1976 when he was presented with the Southern California Horticultural Institute's annual Award for Outstanding Contribution to Horticulture. The Hummels closed their business in 1977 after selling off their remaining plant stock. In their retirement they chose to retain some plants for a small collection in a 20ft x 30ft plexiglass enclosure on their back patio of their home in Oceanside, CA.

Ed Hummel passed away on November 29th 1979 at the age of 76, and was buried at sea. Minnie Belle Hummel passed away on the 15th of January, 1993, living to the age of 88. She also chose to be buried at sea.



Edward Hummel with a dog in the greenhouse.



In 2002, Norman Shultz, husband of the Hummel's daughter Marquetta, donated a remarkable collection of documents to the Carlsbad City Library. Meticulously preserved by the Hummels, the materials include nursery catalogs, mailers, and other records spanning the years 1903 to 1996, documenting the Hummels, their family, and their nursery. These documents were integral to the writing of this article, as well as in providing scope to the numerous relationships the Hummels had with botanical institutions.

Some of these relationships were with: William J. Dress, professor emeritus of botany at The L.H. Bailey Hortorium at Cornell University; Diane S. Tindsley, Greenhouse Technician for Mitchell Park Horticultural Conservatory; Madame Ganna Walska of Lotusland; Peter H. Raven, Director of the Missouri Botanical Garden; Lawrence "Larry" Mitich, weed scientist emeritus at University of California Davis; and Paul R. Weissich, Director of the Honolulu Botanical Gardens.



Header for Hummel's Exotic Gardens Stationary.



Mr. and Mrs. E. C. Hummel of Inglewood, Cal., and children. Mr. Hummel's cactus garden contains many unusual specimens.

## I WAS TRYING SO HARD TO CUT EXPENSES

Gentlemen:

I saw your invitation in a recent magazine to write my experience with Quaker State Oil.

Times aren't very flush with us just now. We have a '29 Whippet which has only been in the garage once, and has done plenty of miles. We always have used Quaker State. My husband drives, but leaves the servicing to me as well as the handling of the family finances. So just a month ago, I came to the place where I had to cut expenses somewhere. I've cut my grocery allowance, and still keep the family in good health. The oil was the only place I could think of, so I had the car filled with 20¢ oil.

Everything went fine for awhile. But the station man insisted in checking the oil the first week over my protests and assertions that my car never used any oil between changes. To my amazement, he told me it would take a quart to fill it. The same thing happened the second and third week. I knew by now something had happened to my car.

My husband saw me worrying, and each time he came home I expected him to tell me we would have to figure out some of the wages for repairs. Then I had to tell him how much oil it had been using. He told me some one was putting one over on me. Maybe all that oil would be necessary if I had used a cheaper brand, but not with Quaker State. Of course I had to tell him, and I feel better. I hope my experiment has had no ill effect on the car, and from now on I'll try to cut expenses some other way.

(Signed) Mrs. E. C. Hummel  
Inglewood, California

*"First choice of Experience"*

**QUAKER STATE MOTOR OILS**

Quaker State Oil Refining Co., Oil City, Pa.

1935 Newspaper advertisement for the Quaker State Motor Oil Co. featuring the Hummel family.



*Hoya carnosus* 'Compacta'. Photo: Eduardo Robles / @trinitytropicals

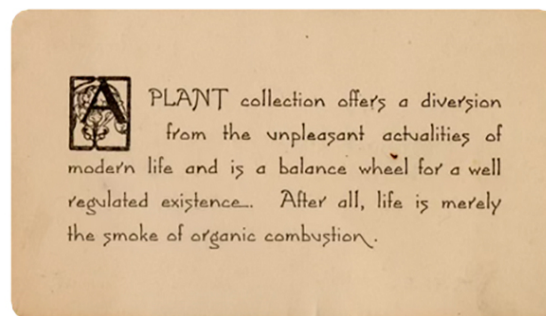


*Hoya* 'Minibelle'. Photo: Alex Gavrus

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I would also like to use this space to thank Rachel Colette Conroy and Mark Randal for their help, expertise and suggestions, and immense thanks to the staff (Yolanda and Melanie) at the Carlsbad City Library for their work in digitizing for me.



**Front & back of Hummel's Exotic Gardens business card for their Inglewood location (Undated).**



# The Genus *Hoya*

Photographic Collection and Descriptions

Mark Randal



*Hoya nummularioides*

photo: M. Randal

***Hoya nummularioides*** Costantin is a non-twining epiphytic vine that grows in a scrambling or clinging fashion. Its leaves are small (from 2-6cm long), fleshy, elliptic to ovate, and covered in a very short pubescence, which gives them a subtle shimmering effect in the right light (see image below). This species produces clusters of small white flowers in great numbers during its bloom period. Its flowers have rotate, pubescent corollas and last for about a week. Most collections of this species are very fragrant, and this species is often regarded as one of the most aromatic of all hoyas. The scent is soft and smooth, reminiscent of *Choisya ternata* (Mexican Orange Blossom), for those who are familiar with that plant. For those who are not- the fragrance is similar to the scent of Orange blossom, but less polleny, with a note of almond extract and a little bit of yeasty warmth.

This species has a highly seasonal blooming habit. When blooming is initiated, usually in the fall or early winter (this varies by clone), *H. nummularioides* bursts into a profusion of flowers, forming a temporary peduncle at nearly every node. For over a month, fragrant waves of flowers open sequentially, until blooming ceases and the temporary peduncles are generally (but not always) shed.

*Hoya nummularioides* is an easy plant in cultivation, growing well in warm conditions and not unduly bothered by low humidity. It will tolerate drying out occasionally and appreciates a light, airy medium. It prefers very bright indirect light. All clones make excellent hanging basket plants. Smaller leaved clones with shorter internodes have more of a sprawling habit and will produce wider baskets with rather stiff stems, whereas those clones with longer internodes will produce a basket with a more pronounced "fall", usually growing straight down after clearing their pot's rim.



To date, *H. nummularioides* is known to occur in Laos, Cambodia, Vietnam and Thailand. It is found in warm, humid lowland forests.

This species was published in 1912 but did not enter cultivation in the US until the mid 1970s, when Dale Kloppenburg imported multiple clones of it from Thailand. It appeared on the cover of *The Hoya* (1990) with an accompanying article by Christine Burton describing the several clones of this species in commerce. At that time there may have been as many as seven clones in circulation, mostly sold as "aff. *pubera*" or "species called *pubera*", as it was suspected to be that species for some years after its introduction. Kloppenburg alone sold four clones of *nummularioides*, labeled as "*Hoya* sp. called *pubera* #1, #2, #3 and 'Still another one.'" Burton described the one labeled "*Hoya* sp. called *pubera* #3" or "DK#3" as having olive green leaves of up to 2.5 x 6cm, flower clusters of 17-21 flowers, and a blooming period of November through December.

The beautiful shimmer of the leaves of this species, produced by the very short, fine leaf pubescence.  
photo: M. Randal



Two currently traded forms of *nummularioides*:

L) A smaller leaved form (with leaves to 2.5cm long) with short internodes that blooms with strongly fragrant, small, rounded clusters of 9-13 flowers, primarily in September/October.

R) A larger silver-leaved form (with leaves to 5cm long) with longer internodes and flatter clusters of 5-10 flowers, blooming in November/December. Its scent is similar to that of the plant on the left but is much weaker.



Flowers of (L) the smaller leaved clone above left and (R) the larger leaved clone above right.  
All photos this page: M. Randal

In addition to Kloppenburg's clones, another clone, "*Hoya* sp. Geri", was introduced into the trade from Ted Green in the 1970s. This plant should not be confused with *Dischidia* sp. Geri, which has similar leaves and habit to *H. nummularioides*, and was also introduced into cultivation by Green. *H. sp. Geri* was described by Burton (compared with Kloppenburg's "species known as *pubera* #3") as having smaller, ovate dark green leaves, shorter internodes, blooming from September through October, with umbels of around 10-12 flowers. There were also small differences in the corona and pollinarium shape of these two clones.

By 1990, Ted Green had determined all of these clones to be representatives of the species *Hoya nummularioides*, and that name has been maintained for these plants since that time. While both Kloppenburg and Burton speculated that two species may be represented in the cultivated material at that time, with the clone DK#3 apparently representing one species and "sp. Geri" representing the other, neither suggested another published species name to segregate these clones between, nor published any new related species name. Therefore the collections we have determined as *nummularioides*, with all of their subtle differences, remain part of the diversity of one species.

Today there are clones commonly available in the trade that are similar to Burton's descriptions of both Ted Green's "sp. Geri" and Kloppenburg's DK #3. A common clone similar to "sp. Geri" is shown on the left on p. 22.

Additional collections or seedlings have appeared in the trade with variable forms. Some have different flower color (yellow corona), umbel shape (flat umbel), or leaf shape and size (spoon leaf, large leaf). There is a popular clone of *H. nummularioides* with larger, completely silver leaves and a later bloom period (October- November), which is shown on the right on pg. 22. Aside from that first silver clone there may be a newer silver variety of this species described as "*nummularioides* (silver round leaf)" which has not been documented sufficiently. There is a slightly variegated form circulated as *nummularioides* 'Mali', and several new more strongly variegated forms have been pictured recently on Facebook.

*Hoya nummularioides* was placed in *Hoya* section *Acanthostemma* subsection *Angusticarinatae* by Dale Kloppenburg (1994). Christine Burton later recognized this group as its own section, *Pseudohoya* (Burton, 1995). This group consists of non-twining, sprawling or pendant vines with flat umbels of small flowers (mostly with white corollas and pink coronas) and pollinaria with winged translator arms. Subsection *Angusticarinatae* contains the species *H. aeshynanthoides*, *H. anulata*, *H. collina*, *H. diptera*, *H. eitapensis*, *H. flavida*, *H. microstemma*, and *H. vanuatuensis*. *Hoya kanyakumariana*, a species with many morphological similarities to *H. nummularioides*, should likely be grouped sectionally alongside *H. nummularioides*. If genetic testing does show that these two species are closely related to each other and to the subsection *Angusticarinatae* species, that would make this group one of the most widely distributed of all defined *Hoya* divisions. This group, as defined above, occurs from southern India on the western limit of the genus *Hoya*, to the north through Vietnam, Cambodia, and Laos, to the east through Thailand, Malaysia, Indonesia, and Papuasia and all the way to Vanuatu near the eastern limit of the genus.



*Hoya nummularioides* growing in habitat in Vietnam, photo courtesy of Nguyễn Văn Cảnh.





photos: M. Randal

**Hoya 'Suwanna Gems'** was produced ca. 2022 in Phang Nga province, Thailand in the Bang Muang nursery of Suwanna Limpanich. It was derived from a seed pod from *Hoya nummularioides* which is suspected to have been fertilized by a *Hoya* section *Acanthostemma* species, based on this plants many similarities to species of that group. 'Suwanna Gems', like its parent *H. nummularioides*, seems to have a seasonal flowering period where it bursts into a profusion of flowers from nearly every node, but this cultivar seems to bloom most heavily in summer rather than fall/winter as does *H. nummularioides*, and over a longer period of time. Its flowers have a weak, caramel fragrance more similar to its presumed *Acanthostemma* parent than to *H. nummularioides*. Despite *H. nummularioides* having been in cultivation since the 1970s, no hybrids have been reported of it until the introduction of this cultivar. 'Suwanna Gems' performs well in hot or warm conditions. It prefers bright indirect light but tolerates a little direct sun, and benefits from drying out slightly between waterings, much like most section *Acanthostemma* species.





photo: M. Randal

***Hoya kanyakumariana*** A.N.Henry & Swamin. is a sprawling, non-twining vine that clings readily to rough surfaces. Its rather stiff stems produce copious amounts of adventitious roots which can become quite long in humid conditions. Its leaves are unique in the genus, being small (to 2cm long and wide), rounded, hard, and with an attractively undulate margin. While young examples of this species may seem like delicate, diminutive plants, this impression is misleading, as mature plants can become quite large and heavy. Its flowers are borne in tight clusters of around 12-14 per umbel, are about 1cm across, with off-white, slightly reflexed pubescent corollas and white coronas with purple centers. They emit a very pleasant, mild perfume reminiscent of lavender and cherry. It can flower at any time, even in the dead of winter when flowers are scarce on most *Hoya*. Its flowers last for almost a week.

In cultivation *H. kanyakumariana* is an easy, though often slow-growing, plant. It grows slowly in a variety of conditions and grows slightly faster in hot conditions. It requires high light to flower well, and can tolerate a little direct sun. It is not fussy about watering and can tolerate drying out occasionally with no ill effects. Due to its rigid, non-twining stems and short internodes, it can look quite attractive when grown in a hanging basket. It also performs well on a trellis, but as it does not twine it must be guided and attached manually.



photo: M. Randal

At first glance it may seem that this species is named after its place of collection, Kanyakumari, India, but in that case it would be named "*kanyakumariensis*". Its name's latin suffix of "*iana*" is used to create a Latinized form of a non-Latin female name, so while the publication does not mention this species' name's etymology, it is evidentially named in honor of the Indian goddess Devi Kanya Kumari, after whom the region of its collection is also named.



Above left- a blooming plant of *H. kanyakumariana*. photo: Alex Gaurus  
Above right- a variegated form of *H. kanyakumariana*. photo: Mindy Maddy  
Below- *H. kanyakumariana* (L) compared with *H. nummularioides* (R). photo: Alex Gaurus

This species was originally collected in Kanyakumari, the southernmost district in India, on the very tip of the subcontinent. While many *Hoya* species occur in northeast India on the lower slopes of the Himalayas, only a very few *Hoya* species have roamed into central or southern India, which defines the western reach of the genus. Only four other *Hoya* species have been reliably reported as occurring there- *H. ovalifolia* (possibly a synonym of *Hoya verticillata*), *H. retusa*, *H. pauciflora*, and *H. wightii*. Kanyakumari has a hot, semi-arid climate, with a mean daily maximum of around 32C (90F) and a mean daily minimum around 24C (76F).

A beautiful-inner variegated form of this species has appeared in the market in recent years.

Morphologically, *H. kanyakumariana* shares many similarities with *Hoya nummularioides*. Although phylogenetic studies have not yet clarified their exact relationship, the two species appear closely related based on physical characteristics: both are creeping, non-twining vines with small, hard leaves, rigid stems, and small clusters of sweet smelling flowers with rotate, pubescent off-white corollas and pink- or purple-centered coronas. Their pollinaria are also similar, with wide translator wings as is typical of the pollinaria of section *Acanthostemma* species. They differ from one another in their leaves (*kanyakumariana* has smaller, rounded, glabrous leaves with an undulate apex whereas *nummularioides* has generally finely pubescent, elliptical leaves with an acute apex), and in fine floral details (*kanyakumariana*'s corollas have slightly more recurved margins and their coronas are flatter on top than those of *nummularioides*).



photo: M. Randal





The name ***Hoya megalaster*** Warb. ex Schltr. was published in 1905 to describe a taxon of *Hoya* from Papua New Guinea with large, wine-red colored flowers with narrow, upwardly keeled coronas. A previously published name, *Hoya subcalva* Burkill (1901), is actually the technically correct name to use for this taxon, but it has been known in cultivation as *H. megalaster* since the 1970s (see Appendix A, p.40), and the name *Hoya subcalva* has also been accepted for another species since that time (see p.35). Since the two species are so well known under these names, it is not suggested here that anyone adopts their technically correct usage at this time. The species pictured above and on p.31 should still be called *Hoya megalaster* for now.

*H. megalaster* is a very ornamental species, one of the best for cultivation, if its requirements can be met. Its large leaves (up to 20cm in length) are ovate-elliptic, thin, glossy and heavily textured due to the lamina being depressed around the mid-vein and inner secondary veins. This species' new leaves can take on a bronze or reddish blush in bright light. Its large flowers vary in color from dark blackish-red to dark raspberry, and have interestingly textured corollas. Based on the collections we have in cultivation, there appear to be two distinct forms of this species: one from the eastern part of its range with larger (4-4.5cm), cupped flowers (pictured on this page); and one from the western part of its range with smaller (around 3.5cm), rotate flowers (pictured on the next page). It is possible that one or the other of these forms could be named as a separate species or a subspecies of *H. megalaster*. Its floral fragrance strength is variable by collection- the larger-flowered form generally has a pleasant, mild perfume whereas the smaller-flowered form seems to have a weak or absent scent.



In cultivation *H. megalaster* thrives in warm or hot 50% shade greenhouses with minimal direct sunlight, and prefers high (>80%) humidity levels. When actively growing, this species is a heavy water user and does not like to dry out completely. It will grow rather quickly in those conditions. In cooler and/or drier conditions this species is reported to still flower well, but to grow quite slowly, so growers with that environment may see more flowers than new leaves. One collection of the small-flowered form of this species, NS12-164, is noted for its adaptability, growing and flowering eagerly even in typical household conditions (N. Simonsson, pers. comm., 2026.)

While *H. megalaster* can grow as a hanging basket, it often produces long, leafless new stems that benefit from guidance, making trellis growth generally easier. This species' young stems are thinner and slightly more flexible than those of related plants such as *H. macgillivrayi* or *H. archboldiana*, making it easier to train on a trellis than those species, which are prone to broken stems and leaf damage when handled.

*H. megalaster* has been found to occur in northern New Guinea, on either side of the border between Indonesian and Papuan New Guinea. It has been collected at altitudes of from 300-700m in relatively open forest, in one instance as regrowth on a disturbed area (IML1098). It's habitat is lowland tropical rainforest, with very consistent temperatures year round. The average temperature there is around 27C (81F) across most months with maximum temperatures in the upper 30sC (upper 90sF) for hotter months, and year round high humidity of over 80% (Daawia et al, 2023).

*H. megalaster* seems to be closely related to *H. macgillivrayi* (and to its sibling species *H. archboldiana*, *H. liddleana*, *H. onychoides*, and *H. stenaokei*) based on their similar large, campanulate to cupped, vividly reddish purple corollas and prominently veined leaves. Phylogenetic studies do show them to be closely related (Wanntorp, 2014), but the species that *H. megalaster* (especially the smaller-flowered form) is most similar to is *Hoya piestolepis* (see p.33), which also hails from New Guinea.



**Top:** a collection of a smaller flowered clone of *H. megalaster* from Ubiyau Forest (above) and a larger flowered clone, possibly one of David Liddle's collections from Madang, PNG (see map p.41). photo: Nattamon Karang

**Bottom:** A larger flowered clone showing its highly textured leaves. photo: Angeline Simmons



**Hybrids created from *Hoya megalaster*:**

**Top left: SusantiQ17, *H. megalaster* (small-flowered form) x *H. globulifera*, created by Sri Susanti.**

**Top right: *H. megalaster* (big-flowered form) x *H. archboldiana*, created by Nathaniel Tiama.**

**Bottom left: *H. megalaster* (big-flowered form) x *H. liddleana*, created by Nathaniel Tiama.**

**Bottom right: NTX-010, *H. megalaster* (big-flowered form) x *H. macgillivrayi*, created by Nathaniel Tiama.**

**photos: courtesy of the respective hybridizer.**





photo: Cathleen Joaquin



photo: Wenling Jia

***Hoya piestolepis*** Schltr. is a vigorous, twining, epiphytic vine. It has large, thin, prominently veined leaves, the new ones of which can turn bronze or red in bright light. It has large clusters of showy flowers with reflexed corollas that range in color from wine red to raspberry, though they often appear much lighter, especially in photos, because of the corolla's covering of short, glistening white hair. Its flowers exude a pleasant, mild fragrance that has been compared to the caramel scent of the *Acanthostemma* section hoyas by many growers.

*H. piestolepis* thrives in high heat and humidity. When grown in these conditions it can grow quickly and produce abundant clusters of vividly colored flowers. It is a heavy water user during active growth, as are many other thin-leaved hoyas. It benefits from a little direct sun, as the red coloration of new leaves is stronger in high light, but is also happy (if less colorful) in bright indirect light. Given its vigorous climbing habit, large leaves, and long internodes, it is best maintained on a trellis.

This species was published in 1913 by Rudolf Schlechter, based on material he collected in bloom from the Waria Valley in eastern Papua New Guinea, at about 450m above sea level. This area is lowland tropical rainforest. The lower Waria Valley has monthly average high temperatures of 29-32C (84-90F) and average low temperatures of 24-26C (75-79F), with humidity ranging from 80-90% (Dawson et. al., 2011).



**A small-flowered form of *H. megalaster* (L) with rotate corollas, compared with *H. piestolepis* NS10-057 (R). photo: Camilla Sjöholm Gedin**

This species did not enter cultivation until it was recollected by Nathalie Simonsson during her work in Papua New Guinea in the 2010s. Her collections are: NS10-057, NS11-092 and NS16-002. A yellow-flowered form of *piestolepis* has been recently introduced into cultivation, as has a hybrid of *piestolepis* x *hypolasia* (Susanti R18) produced by Sri Susanti.

*H. piestolepis* seems to be closely related to *H. megalaster*, based on their similar keeled corona lobes and similar leaf shape, thickness and texture. It differs from that species in having smaller corolla lobes (*H. piestolepis*'s corollas are around 2.5cm across when pressed flat while *H. megalaster*'s corollas are 3.5 - 4.5cm when pressed flat) and by the fine pubescence on the inner corolla surface (versus the glabrous corolla interiors of *H. megalaster*). Additionally, the corona lobes of *H. piestolepis* are proportionally taller and their base is more highly raised from the corolla surface than in *H. megalaster*.

*H. piestolepis* is particularly similar to some collections of *H. megalaster* with smaller, rotate corollas from the western range of that species, collected from Ubiyau in NE Indonesian New Guinea and Sanduan Province in Papua New Guinea (see image above, and collection map on p.41). These small-flowered forms of *H. megalaster* almost seem transitional between *H. piestolepis* and the big-flowered forms of *H. megalaster*.





photo: Alex Gavrus

The *Hoya* species that we currently call ***Hoya subcalva*** Burkill is an extremely vigorous, twining vine with large, fleshy, elliptic leaves. Its leaves are a medium green, lack prominent venation, and are not prone to developing silver splashing. While its foliage can appear somewhat plain, this is more than compensated for by its large (around 2.5cm in diameter) flowers, which are brightly colored dark pink to red and have an incredibly potent fruity fragrance, often compared to that of grape candy.

This species has been known in cultivation as *Hoya subcalva* since it was introduced in the 1970s by Ted Green of Hawaii. The original source and determiner of Green's *subcalva* are uncertain, but a possible origin is from Geoff Dennis, a plantsman friend of Green's, who lived in the Solomon Islands, founded the Honiara Botanic Gardens, and wrote several articles on the hoyas of the Solomon Islands (Dennis, 1982). What *is* certain is that, while for practical reasons this species should probably continue to be labeled as *H. subcalva*, that name does not technically belong to this taxon (see Appendix A, p.40).

Christine Burton, editor of *The Hoyan*, the bulletin of the Hoya Society International, assigned the label BSI-1 to the original clone introduced into commerce by Ted Green (Burton, 1979). At that time, this was the only known collection of this species in cultivation, creating a clear and direct association between that label and that specific clone. Plants with unbroken provenance traceable to the label BSI-1 may still exist in cultivation today.



**Two clones of *H. subcalva*, both collected by David Beardsell in 1981.  
photos: Carol Noel, of plants grown in her garden in Hilo, Hawaii.**

A later collection of this species was documented in *The Hoya* in 1983, in an article by David Beardsell and Chris Symons titled “*Hoya* Collecting in the Solomon Islands” (Beardsell, 1983). In this piece the authors recount that while working at Goldie College on the small island of Mbanga in the Solomon Islands in 1981, they explored that island and some nearby ones, observing and collecting from local populations of *Hoya*. They write: “After several visits to other islands in the area, it became clear that only three species were commonly encountered in the region. The first, *Hoya* sp. DAV-816<sup>2</sup>, is large flowered and is closely related to *H. guppyi*. It normally has cream colored flowers, although specimens were seen with greenish yellow and pink flowers (...) The second species, *Hoya* sp. DAV-817<sup>3</sup>, is extremely variable, even the flowers range in size from 1.5 to 2.5 cm in diameter, and the colour varies from pale pink to deep red. One of the great features of this species is its overwhelming fruity scent. The third *Hoya* species native to the region (*Hoya* sp. DAV-819<sup>4</sup>) was found by the second author near the village of Barasipo on the island of Vona Vona.”

Beardsell later contributed another article to *The Hoya* further discussing *Hoya* sp. DAV-817, and includes an image of its flowers, which correspond to the species now widely accepted as *H. subcalva* (Beardsell, 1984).

Note that in the excerpt above Beardsell uses his DAV numbers (an abbreviation for Department of Agriculture, Victoria) to refer to a whole species, not to individual collections. He distributed multiple collections of *H. sp.* DAV817 under that singular label (see image above). The late Australian botanist David Liddle, in personal communications with this author, also used the designation *H. sp.* DAV817 to refer to this whole taxon.

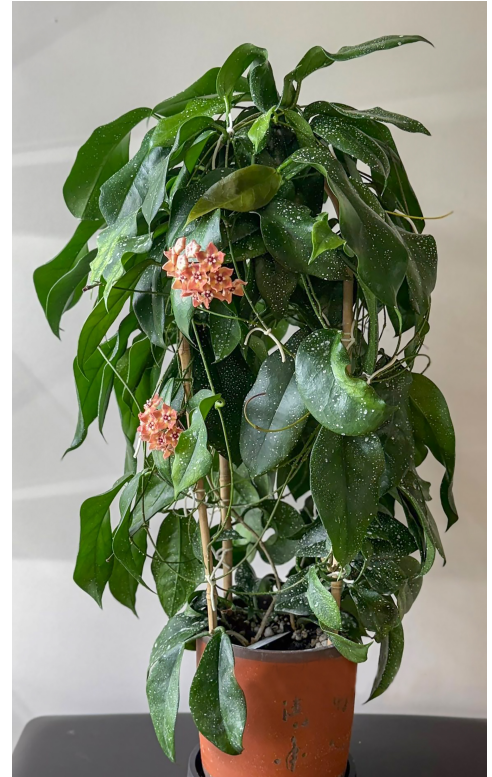
<sup>2</sup> DAV-816 could be *Hoya sussuela*, as the mainly occurring *Eriostemma* section *Hoya* in that region is now defined.

<sup>3</sup> DAV-817 was collected on Kolo Hite island, according to David Liddle.

<sup>4</sup> DAV-819 could be *H. nicholsoniae*, based on its picture in *The Hoya Handbook* (Kloppenburger, 1992) and its identification as *Hoya cominsii*, which has since been synonymized under *Hoya nicholsoniae* (Liede-Schumann, S. et. al., 2020).

*Hoya subcalva* is a highly desirable species, with its large, brightly colored and intensely fragrant flowers. However, it is also one of the most demanding of all *Hoya* in its environmental requirements. It was collected from the beaches of the Solomon Islands where it grew directly above the water. Correspondingly, it requires very high humidity and heat and bright light in cultivation, tending to cease growth or grow very slowly in cool and/or dry conditions.

This species also displays a peculiar and commonly observed growth characteristic: newly emerging leaves are often luridly colored pink and yellow, sometimes accompanied by distorted lamina margins, in a manner suggestive of nutrient deficiency or sensitivity. The cause for this phenomenon remains unknown. It has been observed in plants grown outside in the warmth and humidity of Florida, in hot moist greenhouses, and on windowsills in warm household conditions. For decades, various strategies of increased fertilizer levels, isolated nutrient supplements, and soil leaching have been tried in an effort to reduce this effect, but none have proven effective. Observations from experienced growers suggests that this phenomena is more prominent in young plants and in cooler conditions, and tends to diminish as plants mature or are grown in more ideal environments. Importantly, the phenomenon does not appear to harm the plant or indicate acute stress, as individuals displaying these traits are still capable of vigorous growth and abundant flowering under suitable conditions.

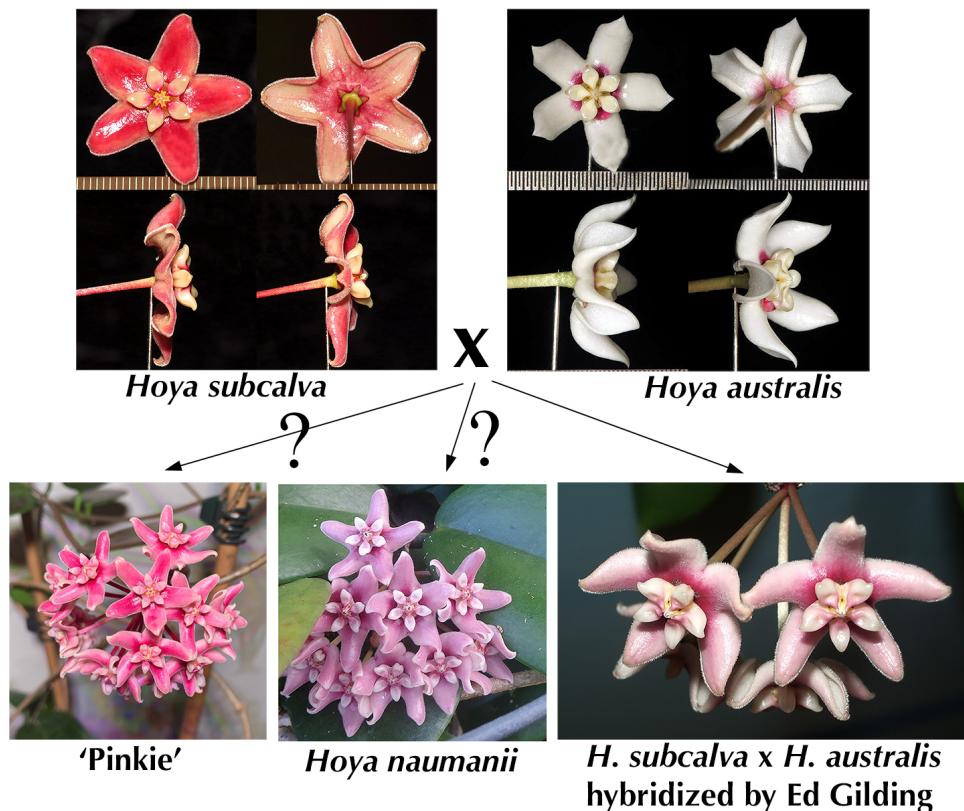


**Top: A specimen of *Hoya subcalva*. photo: Wenling Jia. Left: An example of the varying floral coloration this species can display, possibly related to temperature, and Right: New leaves of *H. subcalva* that show the vivid, odd new colors and distorted leaf margins that frequently occur in this species. photos: Alex Gavrus**

When grown in environments that meet its needs, *Hoya subcalva* is exceptionally fast-growing and can reach impressive sizes, with stems exceeding 4m in length. This species all but requires a trellis, as basket-grown plants readily scramble into neighboring specimens and quickly outgrow both their pots and allotted space. Happy plants of this species are so vigorous in fact that some growers find they can not accommodate the large size that these plants insistently want to achieve.

The *Hoya* we have in cultivation as *H. naumannii* has often been thought to be a naturally occurring hybrid of *H. subcalva* and *H. australis*. There are a number of other hoyas in cultivation that strongly resemble our *H. naumannii* that could also represent hybrids of the same parentage (all pictured below):

- David Liddle relayed to this author that David Beardsell had collected a plant very much like the one we know as *H. naumannii* at the same time and place as his collection of his clones of *H. sp.* DAV-817.
- There was a clone of unknown provenance sold by the late Ted Green of Hawaii as 'Pinkie' which has long been speculated to be a natural hybrid of *H. subcalva* and *H. australis*.
- Dr. Edward Gilding (a friend of Ted Green's who went on many collecting trips with him) hybridized *H. australis* and *H. subcalva* to compare the progeny with *H. naumannii*, and indeed the seedlings he produced were extremely similar to our *H. naumannii*.



*Hoya subcalva* and *H. australis*, and possible and actual hybrids between them. All photos by Alex Gavrus, except for: 'Pinkie', by Julie Kennedy and: *H. subcalva* x *H. australis*, by Edward Gilding.

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## Appendix A

# The Nomenclature and Application of the names *Hoya subcalva* Burkill and *Hoya megalaster* Warb. ex Schltr.

Mark Randal



The names *Hoya megalaster* and *Hoya subcalva* have a complex, confusing history. The initial publication of both names took place in 1901. Since that time, the two names have been applied to many different species and have been suggested to be synonymous by several authors, with one or the other name believed to be the legitimate one.

Since the 1980s the dominant application of these names has been to use the name *megalaster* for the species shown on this page and p.30 (a species from Papua New Guinea with large, glossy, decoratively veined leaves and very large, wine-red flowers), and to use the name *subcalva* for the species shown on pg. 35 (a Solomon Islands species similar to *H. australis*, but with bright pink, fruit-scented flowers).

But is this application of the two names correct? Let's take a closer look.

## Collection sites of *Hoya subcalva* and *H. megalaster*



- 1- Upper Sepik river, PNG, collection site of Hollrung n.28/ Hollrung258. (*megalaster*)
- 2- North of Ramu, PNG, the collection site of Schlechter #14148. (*megalaster*)
- 3- North of the Ibo Mountains, PNG, collection site of Schlechter #18276. (*megalaster*)
- 4- Near Saugueti Stage, PNG, collection site of Schlechter #18664. (*megalaster*)
- 5- Goldie College, Mbanga, Solomon Islands.
- 6- Kolo Hite island, Solomon Islands, the collection site of *Hoya subcalva* by David Beardsell and Chris Symons.

- 7- Madang, PNG, the site of David Liddle's collection of *H. megalaster* in 1992.
- 8- Jayapura, Indonesia, a site of the recent collection of a smaller flowered clone of *H. megalaster* with rotate corollas.
- 9- Ubiyau Forest, Indonesia, another collection site of a smaller-flowered form of *H. megalaster*.
- 10- Sandaun Province, PNG, a third site of a collection of a smaller flowered form of *H. megalaster*, NS12-164, collected by Nathalie Simonsson in 2012.

The first known collection of *Hoya megalaster* was made by Max Hollrung in 1886-88. This specimen, labeled as Hollrung 28 or 258 (both numbers have been applied to that collection) was initially labeled only as being collected in New Guinea, but a more precise location was later specified as the upper part of the Empress Augusta River (the German name for the Sepik River) in what is now Papua New Guinea (Schlechter, 1913). Rudolf Schlechter collected a larger flowered form of this taxa several times on his trips to New Guinea in 1901-1902 and 1907-09 (Schlechter, 1913).

The next known collection of *H. megalaster* wasn't made until 1992 by David Liddle, who found several large flowered clones of it at Madang, PNG (IML1080 and IML1098) (Liddle, 1993).

Several recent collections have been made of a smaller-flowered form of this species (around the size of the flowers of the original Hollrung 258 specimen) at Jayapura and Ubiyau in Indonesian New Guinea and in Sandaun Province, Papua New Guinea. Sandaun Province was formerly known as West Sepik Province, and is not far from the collection site of Hollrung 258.



*Hoya megalaster*, large-flowered form. photo: Nattamon Karang

### **The introduction of the names *Hoya subcalva* and *Hoya megalaster*, and their application over time**

The publication of *Hoya subcalva*<sup>5</sup> appeared in 1901, in *The Bulletin of Miscellaneous Information*, the botanical journal produced by the Royal Botanic Gardens, Kew. It was made by Isaac Henry Burkill, who worked at Kew as a principal herbarium assistant at that time and later became the Director of the Singapore Botanic Gardens (from 1912-25).

The name *Hoya megalaster*<sup>6</sup> was introduced in 1901 in *Die Flora der Deutschen Schutzgebiete in der Südsee*, authored by Karl Schumann and Karl Lauterbach. This Flora attributes the name *megalaster* to Otto Warburg, from an unpublished manuscript, but contains no description. The name *H. megalaster* appeared next in 1905 with a brief description in *Nachträge zur Flora der Deutschen Schutzgebiete in der Südsee*, in a section written by Rudolf Schlechter.

The descriptions for these two names are similar, and both reference Max Hollrung specimens- "Hollrung, 28" by Burkill (there was another specimen cited by Burkill, which we will here call the Penguin sheet) and "Hollrung n. 258" by Warburg. There was confusion around these references at the time, as there were two specimens labeled with the combination of "Hollrung" and "28" sent from Berlin to Kew (the other being *Wollastonia biflora* (L.) DC.).

Schlechter later wrote that both Hollrung references may be to a single specimen he referred to as Hollrung 258 (Schlechter, 1913). Schlechter relayed in that text that Burkill considered the two names to be synonymous when he wrote (translated from German): "If Burkill's assumption is correct that his *H. subcalva* Burkill is synonymous with *H. megalaster* Warb. [then] the former name must replace the name given by Warburg, since *H. megalaster* Warb., although known in the literature for many years, was only published with a description in 1907." Modern International Code of Nomenclature for algae, fungi and plants (ICN) rules agree with Schlechter's logic, although the correct date for the validating publication of *H. megalaster* is 1905 (see p.46).

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<sup>5</sup> The name "subcalva" is composed of the Latin words "sub" (meaning "approaching" or "under", and "calvus" meaning "bald", contrasted with the pubescent *H. purpurea* and *H. guppyi*, which Burkill believed were closely related to his *H. subcalva*.

<sup>6</sup> The name "megalaster" is composed of the words "megal" = "large" and "aster" = "star", gr.

No living plants attributed to either name are recorded as having been in cultivation until a species determined to be *Hoya subcalva*, collected from the Solomon Islands, was introduced into cultivation in the US in the 1970s. Several clones of it were available by the 1980s. The first clone to be labeled as *H. subcalva* was introduced into the US trade by Ted Green (Burton, 1979). The identification of that taxon to the name *subcalva* arose through it being matched to one of the herbarium specimens referenced in the *H. subcalva* publication- the Penguin sheet (David Liddle, pers. com. 2006, Michele Rodda, pers. com. 2026). It is here that the second great point of confusion with these two names is made manifest (after the original uncertainty of the citations of Hollrung n.28/ Hollrung 258); *H. subcalva*'s publication has two herbarium specimen references which belong to two different taxa- one (Hollrung 258) is the species we currently call *megalaster*, and the other (The penguin sheet) is the one we currently call *subcalva* (pictured right).

Starting in 1979, Christine Burton began to write in the pages of *The Hoyan* (The bulletin of the *Hoya* Society International) that *subcalva* was an illegitimate name and was a synonym to *Hoya megalaster*. Others (primarily Ted Green) argued that *subcalva* was a legitimate name and continued to apply it to the Solomon Island species.

The name *H. megalaster* was briefly attached to the New Guinean species *Hoya onychoidies* before that species was published in 1995 (Burton, 1996), and was briefly thought to be conspecific with *Hoya macgillivrayi* (Burton, 1987).

*Hoya megalaster* was finally recollected by the late Australian botanist David Liddle. He mounted an expedition to Papua New Guinea expressly to find this species in 1992. His expedition was funded by the Christensen Research Institute, and was based at their Madang Field Station. From here, Mr. Liddle would walk in the footsteps of giants, in the areas which had been travelled by the turn of the century (last) botanists Hollrung, Schlechter and Warburg. Mr. Liddle writes: "One day we collected a large leaved hoyas<sup>7</sup>. It was a plant not unlike *H. macgillivrayi* but with a thin wiry vine. This was an exciting find, but what was it? We would have to wait until it flowered in cultivation. The plant struggled through the methol bromide gassing and quarantine period, but once it was in the shade-house it grew rampantly. It began to look more like *H. macgillivrayi* every day. Then one day, almost ten months after collection, a long thin peduncle appeared. This was definitely not *H. macgillivrayi*. The buds grew larger and larger until they were 20 mm. in diameter and the colour changed from green to bright red. There were two umbels, one with 14 flowers, the other with 10 and the bright red flowers were 35 mm to 40 mm. in diameter. Was this *H. megalaster*? Not wanting to make the same mistake twice, I drew up a chart of characteristics and had two other people compare the plant to it. Each time it agreed in every detail.



***H. subcalva*. Photo: Wenling Jia.**

I feel confident enough to say *H. megalaster* has been recollected. This is, indeed, a plant of incredible beauty and justifies the esteem in which it was held by the early Germans." (Liddle, 1993).

Then, over 90 years after the initial introduction of the name *Hoya megalaster*, this taxon entered cultivation under that name as suggested by Christine Burton and as accepted by David Liddle.

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<sup>7</sup> This was in Madang, PNG. Mr. Liddle collected at least two clones of *H. megalaster*, IML 1080 and IML 1098.

## Initial publications of *subcalva* and *megalaster* in detail

The name *Hoya subcalva* was published in 1901 in *The Bulletin of Miscellaneous Information* as follows:

337. *Hoya subcalva*, *Burkill* [Asclepiadaceæ]; ex affinitate *H. purpureae*, Blume, et *H. Guppyi*, Oliv., ab una coronæ radiis elongatis, ab altera petalis subcalvis, ab utraque foliis tenuioribus differt.

*Folia* ovato-elliptica, brevissime acuminata, basi rotundata, 4-4½ poll. longa, 2-2½ poll. lata, glabra, nervis utrinque sat conspicuis; petiolus 6-10 lin. longus. *Inflorescentia* umbellatæ, 8-10-floræ; pedunculus et pedicelli ad 1½ poll. longi, glabri. *Sepala* subtriangularia, ½ lin. longa. *Corolla* ad medium divisa, 10-14 lin. lata, dorsa glabra, intus præcipue ad margines minutissime pustulata nec pilosa; segmenta anguste triangularia, acuta. *Coronæ* radii 2½-3 lin. longi, medio vix 1 lin. lati, nitentes.

NEW GUINEA. Kaiser-Wilhelms Land *Hollrung*, 28. SOLOMON ISLANDS. In a collection chiefly from New Georgia, *Officers of H.M.S. "Penguin."*

The specimen collected in New Guinea was sent to Kew under the name of *H. purpurea*, Blume.

The description here translates as:

From the affinity of *H. purpureae*, Blume, and *H. Guppyi*, Oliv., differs from one crown by elongated rays, from the other by almost hairless petals, from both by thinner leaves.

Leaves ovate-elliptic, very shortly acuminate, rounded at the base, 10-11.25cm long, 5-6.25cm wide, glabrous, veins quite conspicuous on both sides; petiole 12-21mm long. Inflorescence umbellate, 8-10-flowered; peduncle and pedicels to 1.5 in. long, glabrous. Sepals subtriangular, 1mm long. Corolla divided to the middle, 21-30mm wide, dorsum glabrous, inside especially to the margins minutely pustulated but not hairy; segments narrowly triangular, acute. Crown rays 5.3-6.4mm long, at the middle scarcely 2.1mm wide, shining.

This publication meets current ICN standards for effective and valid publication of a species name, as it was published with an appropriate name and description and meets all other requirements of ICN Articles 32-45. Christine Burton (1979) believed it did not, based on her assessment that Burkill mis-cited his herbarium specimen, Hollrung 28. He did not, as we will discuss in the next section. This misinterpretation on her part is what led her to her long-standing opinion that *subcalva* was a synonym of *megalaster*. "There ain't no such animal as *Hoya subcalva*!" was her common refrain (Burton, 1979).

In 1901 the name *Hoya megalaster* appeared in print in *Flora de Deutschen Schutzgebiete in der Südsee*, written by Karl Schumann and Karl Lauterbach. It reads:

**“H. megalaster Warb. ms. in Mons. ined. - H. purpurea K. Sch. Fl. deutsch-ostas. Schutzgeb. 216, non Fl. Kais. Wilhelmsl., non R. Br. Kaiser Wilhelmsland: Ohne bestimmten Standort (Hollrung n. 258). Ist endemisch.”**

which translates as:

**H. megalaster Warb. in unpublished manuscript. Not H. purpurea K. Sch. Fl. deutsch-ostas. Schutzgeb. 216, not Fl. Kaiser. Wilhelmsl., not R. Br. Kaiser Wilhelmsland: No specific location (Hollrung no. 258). Is endemic.**

*H. megalaster* next appears in 1905 in *Nachträge zur Flora der Deutschen Schutzgebiete in der Südsee*. in a section for Asclepiadaceae (Apocynaceae subfamily Asclepiadoideae), in a section written by Rudolf Schlechter:

**“H. megalaster Warbg. ex FL. d. S. (1901), p. 513. Kaiser-Wilhelmsland: Auf Bäumen in den Wäldern am Nuru, auf dem Wege vom Ramu zur Küste, alt. ca. 100 m (R. Schlechter n. 14148, bl. Jan. 1902). Von dieser Art besitze ich nur Blüten, welche ich im Urwalde auf dem Boden aufgelesen habe. Diese Blüten sind zwar größer als die des Originals, doch ist eine Identität beider Exemplare wohl sicher. Die Färbung der Blüten ist dunkelweinrot. Die Art ist durch ihre großen schmalen Koronaschuuppen, die oben breit gekielt erscheinen, charakterisiert.”**

which translates as:

**H. megalaster Warbg. ex FL. d. S. (1901), p. 513. Kaiser-Wilhelmsland: On trees in the forests at Nuru, on the path from Ramu to the coast, altitude approx. 100 m (R. Schlechter n. 14148, flowering Jan. 1902). Of this species, I only possess flowers, which I collected from the ground in the primeval forest. These flowers are larger than those of the original specimen, but the identity of both specimens is almost certainly the same. The color of the flowers is dark wine-red. The species is characterized by its large, narrow corona scales, which appear broadly keeled at the top.**

The name *H. megalaster* also appeared in 1907 in *Repertorium novarum specierum regni vegetabilis* with a longer description. That text is not quoted here as it is irrelevant to the valid publication of *H. megalaster*.

The 1901 publication does not contain a description or diagnosis, and so it is a nomen nudem, or naked name, and is not validly published<sup>8</sup>. The 1905 publication contains a description in its text: “The color of the flowers is dark wine-red. The species is characterized by its large, narrow corona scales, which appear broadly keeled at the top”. This is a scant description, but does satisfy the ICN rules for valid publication<sup>9</sup>.

The overall text that Schlechter’s 1905 publication appears in is authored by Schumann and Lauterbach, but the section in which his description appears in is authored by Schlechter. The ICN says:

**46.6. For the purposes of Art. 46, the authorship of a publication is the authorship of that part of a publication in which a name appears regardless of the authorship or editorship of the publication as a whole.**

Therefore the correct citation for this name is *Hoya megalaster* Warb. ex Schltr. (1905).

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<sup>8</sup> ICN Art. 38.1. To be validly published, a name of a new taxon (see Art. 6.9) must: (a) be accompanied by a description or diagnosis of the taxon (see also Art. 38.8 and 38.9)...

<sup>9</sup> “ICN Art. **38.2** A diagnosis of a taxon is a statement of that which in the opinion of its author distinguishes the taxon from other taxa. **Ex. 5.** The generic name *Epilichen* Clem. (Gen. Fungi: 69, 174. 1909) is validly published by means of the key character “parasitic on lichens” (contrasting with “saprophytic” for *Karschia*) and the Latin diagnosis “*Karschia* lichenicola”, referring to the ability of the included species formerly included in *Karschia* to grow on lichens. These statements, in the opinion of Clements, distinguished the genus from others, although provision of such a meagre diagnosis is not good practice.”

Before the work done in researching this article, Kew's IPNI and POWO sites listed the following data for the name *Hoya megalaster*- "***Hoya megalaster* Warb. ex K.Schum. & Lauterb. First published in Fl. Schutzgeb. Südsee: 513 (1900)**" (accessed 1/15/2026). After communication with Kew regarding the work done in this article, Kew has revised this data to: "***Hoya megalaster* Warb. ex K.Schum. & Lauterb., Nachtr. Fl. Schutzgeb. Südsee [Schumann & Lauterbach] 364 (1905)**" (accessed 2/25/2026). This reflects the correct date and place of valid publication for the name *Hoya megalaster*, but not, in this author's opinion, the correct author citation for that name, which should be "Warb. ex Schltr." as explained above.

### Herbarium references in the publication of *H. subcalva*

The protologue of *H. subcalva* references two herbarium specimens: the first is Hollrung 28, which is the first sheet mentioned in the penultimate paragraph of that publication as "New Guinea. Kaiser-Willhelms Land *Hollrung*, 28"; and following this a second specimen is identified as "Solomon Islands. In a collection chiefly from New Georgia, Officers of the H. M. S. Penguin" (referred to here previously as the Penguin sheet).



**K000278010, the Kew sheet labeled with two collector numbers: Hollrung 258 (as referenced by Warburg) and Hollrung n. 28 (as referenced by Burkill). Image courtesy of Royal Botanic Gardens, Kew.**

**K000216173, the Kew sheet referenced by Burkill as "Solomon Islands. In a collection chiefly from New Georgia, Officers of the H. M. S. Penguin." Image courtesy of Royal Botanic Gardens, Kew.**

The two specimens that Burkill cites are clearly referable to the sheets at Kew barcoded as K000278010 (for the Kaiser-Willhelms Land reference) and K000216173 (for the Penguin reference).

K000278010, referred to by Burkill as Hollrung n. 28, is a Max Hollrung collection which would have been originally turned in by Hollrung to the Herbarium Berolinense (at the Berlin Botanic Garden, Herbarium code B) after his return from participating in a botanical expedition to Papua New Guinea from 1886-1888. A sheet would have been held at B. A duplicate sheet of this specimen held at Kew is barcoded as K000278010 and recorded with the collector number "Hollrung 258". It was likely received at Kew in 1889, as most other Kew specimens from Hollrung's 1886-1888 trip are labeled as being received that year.

This specimen appears to have been remounted at some point, as the leaf and some flowers are affixed to a separate card from the main paper of the sheet, and were presumably cut out from an earlier mount. This belief was echoed by Sally Dawson (Senior Curator-Botanist Asia, Science Collections at Royal Botanic Gardens, Kew), who told this author: "I also notice that K000278010 has been cut from a sheet at some point in its history. This may have resulted in loss of information."



Details of sheet K000278010. Image courtesy of Royal Botanic Gardens, Kew.

Attached to the cut out sheet bearing the leaf is another, smaller, card which reads “n. 28 Hollrung Hoya purpurea Bl. New Guinea ex. herb. Berol.” Hollrung 28 was reported in the *H. subcalva* protologue to have been sent to Kew as *Hoya purpurea*, so that label was presumably attached to this sheet when it was sent to Kew or upon its receipt there. The “ex. herb. Berol.” indicates that this sheet was a duplicate of material at B. The Berlin specimen was presumably destroyed when that institution was bombed during WWII, as the Herbarium staff there confirms that they have no sheets with the collector data as Hollrung 28 or 258.

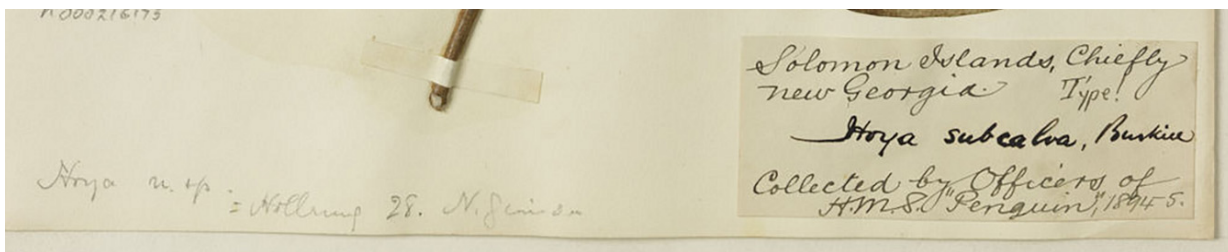
Written directly on the cut out leaf card of K000278010 is “?258 see bot. jarb. IX 216”. That reference seems to be to an 1888 work of Adolf Engler’s, where he lists the species *Hoya purpurea* Blume and provides the citation “Hollrung 258” as an example of it (Burkill did not accept this determination- see in his *subcalva* publication “from the affinity of *H. purpureae*”, nor did Schumann & Lauterbach (see in their *megalaster* publication “-*purpurea*”). This is the first reference this author could find of a mention of “Hollrung 258”. The fact that K000278010 contains the note “?258” suggests that this sheet was not already labeled as Hollrung 258 at the time this note was written, and suggests that the label of “Hollrung 258” was created for this sheet some time after its arrival at Kew, as this note contains the English word “see” rather than its German equivalent “sehen”.

Burkill worked at Kew in 1901 when he made his publication of *Hoya subcalva*, so would have seen the K000278010 sheet there, and presumably took its label of “n. 28 Hollrung” at face value, making this a good faith attempt at referencing this sheet, even if Kew now has its collector number (but labeled so at an unknown date) recorded as “Hollrung 258”. Additionally, it is labeled “*Hoya subcalva* Burkill” in the lower right corner in what looks like Burkill’s hand.

The second herbarium reference in Burkill’s *H. subcalva* prologue is cited by Burkill as “Solomon Islands. In a collection chiefly from New Georgia, Officers of H.M.S. Penguin,” which is nearly identical to the identifying text on the card affixed to the lower right of the Kew specimen sheet barcoded K000216173, which reads “Solomon Islands, chiefly New Georgia Collected by Officers of H.M.S. Penguin, 1894-5”.



Details of sheet K000216173. Image courtesy of Royal Botanic Gardens, Kew.



This sheet also has fainter handwriting directly on the mount sheet which reads “*Hoya* n. sp. = Hollrung 28. N, Guinea”, which matches closely to the hand of the “?258” comment from the first sheet, and indicates that the writer, possibly Burkill, considers this sheet to represent the same taxon as does the sheet Hollrung 28 (K000278010). This sheet is labeled as “*Hoya subcalva*, Burkill”, which looks to be written by two different people, with “*Hoya subcalva*” having a rougher hand but the “Burkill” possibly matching Burkill’s own handwriting. This sheet is clearly the one referred to in the second herbarium reference in the *H. subcalva* protologue.

K000216173 also has “Type!” written above “*Hoya subcalva*”, in an unidentifiable hand. That designation should be taken with a grain of salt, as to validly designate a type, that information must be effectively published in print<sup>10</sup>, and no evidence of this typification is known.

### Herbarium reference in the publication of *Hoya megalaster*

*Hoya megalaster*’s 1905 validating publication cites herbarium specimen Schlechter 14148. Schlechter was a curator at the Berlin Botanical museum, located on the grounds of the Berlin Botanic Garden, from 1921-25. Much of his collection was archived there or at the nearby herbarium, and is believed to have been largely destroyed in the bombing of the Garden in 1943 during WWII. Schlechter 14148 appears to have been one of the casualties of that bombing, as the Herbarium does not have an existing sheet with that label. There are no known isotypes of that specimen.

### Conclusions

Where does this information lead us in determining the correct nomenclature of the names *subcalva* and *megalaster*?

Both names should have a lectotype designated, which will tie each name to the taxon represented by that specimen.

For the name *subcalva*, one of the two herbarium specimens cited in its protologue (K000278010 and K000216173) must be chosen as its lectotype, as:

**ICN Art. 7.9 the name of a taxon assigned to a group with a nomenclatural starting-point later than 1 May 1753 (see Art. 13.1) is to be typified by an element selected from the context of its valid publication (Art. 32–45).**

The ICN also says:

**ICN Art. 9.12. In lectotype designation, a part of the holotype (if it is taxonomically mixed) that is not in conflict with the validating description or diagnosis must be chosen if such exists, or otherwise an isotype if such exists, or otherwise a syntype or isosyntype if such exists, or otherwise a paratype if such exists. If none of the above specimens exists, the lectotype must be chosen from among the illustrations and uncited specimens that comprise the remaining original material, if such exist.**

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<sup>10</sup> ICN Art. 7.10. For purposes of priority (Art. 9.19, 9.20, and 10.5), designation of a type is achieved only by effective publication (Art. 29–31).

K000278010 has been determined by David Liddle and Michele Rodda to represent the species we now know as *H. subcalva* (pers. comm. 2006 & 2026). K000278010 and K000216173 are syntypes for *H. subcalva*. The entirety of K000216173 is in conflict with the description of *H. subcalva* (see appendix C, p.56). K000278010 agrees with the description of *H. subcalva*, and does not appear to be taxonomically mixed, so according to Art. 9.12, K000278010 must be chosen as the lectotype for *Hoya subcalva*.

Some taxonomists have suggested designating K000216173 as the holotype for *H. subcalva* regardless of its legitimacy under ICN rules as a matter of convenience, to maintain the names *subcalva* and *megalaster* in their current usage. In this author's opinion this would be a move contrary to both the rules and spirit of the ICN, a perverting of Burkill's intent, and a disregard for the principle of priority. Additionally, it would not be a lasting fix, as the ICN has a remedy which would undo such an effort:

**ICN Art. 9.19. The author who first designates (Art. 7.10, 7.11, and F.5.4) a lectotype or a neotype in conformity with Art. 9.11–9.13 must be followed, but that choice is superseded if:**

**(a) the holotype or, in the case of a neotype, any of the original material is found to exist.**

**The choice may also be superseded if it can be shown that:**

**(b) it is contrary to Art. 9.14; or**

**(c) it is in serious conflict with the protologue, in which case an element that is not in conflict with the protologue is to be chosen.**

For the name *megalaster* a lectotype should also be designated.

**ICN Art. 9.3. A lectotype is one specimen or illustration designated from the original material (Art. 9.4) as the nomenclatural type, in conformity with Art. 9.11 and 9.12:**

**(a) if the name was published without a holotype; or**

**(b) if the holotype is lost or destroyed; or**

**(c) if a type is found to belong to more than one taxon (see also Art. 9.14).**

Schlechter references Schlechter 41418 in his 1905 publication, but that sheet is presumed destroyed and no isotypes are known to exist, so another specimen from the original material for *megalaster* must be chosen.

**ICN Art. 9.4 Original material of a name comprises the following elements:**

**(a) the holotype (Art. 9.1) and any isotypes (Art. 9.5); and**

**(b) any syntypes (Art. 9.6) and isosyntypes<sup>1</sup>; and**

**(c) any paratypes (Art. 9.7); and**

**(d) any illustrations published as part of the protologue (fossil-taxa excepted: see Art. 8.5); and**

**(e) those specimens and illustrations (both published and unpublished; illustrations of fossil-taxa excepted: see Art. 8.5) that were associated with the taxon by, and that were available to:**

**(1) the publishing author(s) prior to, or at the time of, publication of the protologue; or**

**(2) other author(s) to whom the description or diagnosis may have been ascribed (or unequivocally associated) prior to, or at the time of, preparation of the description, diagnosis, or illustration with analysis (Art. 38.8 and 38.9) validating the name (but see Art. 7.8, 7.9, and F.3.10).**

In Schlechter's 1905 text in which his publication of *H. megalaster* appears, he also writes in an entry for *H. subcalva*: "**Hollrung did not collect any Hoya under n. 28; perhaps n. 258 should be read, which was already listed under the name H. megalaster Warb.**" Schlechter clearly associated Hollrung 258 with the name *megalaster*. Therefore Hollrung 258 is original material for the 1905 publication of *Hoya megalaster*.

The only legitimate choice for a lectotype for *Hoya megalaster* Warb. ex Schltr. is K000278010.

*Hoya subcalva* Burkill and *Hoya megalaster* Warb. ex Schltr. both have only one possible legitimate type, K000278010, and so are homotypic synonyms.

Since a name has no priority until it is validly published, the name *Hoya subcalva* Burkill (1901) has priority over the name *Hoya megalaster* Schltr. (1905) which becomes a synonym of *Hoya subcalva*. *Hoya subcalva* Burkill is therefore the correct name to be used to describe the taxon that is known in cultivation as *H. megalaster*.

### Takeaway

If the name *subcalva* were put into common usage for the species currently known as *megalaster*, the species we currently know as *subcalva* would be left without an identity, and it seems probable that much unnecessary confusion would result. It is therefore this author's opinion that the status quo of the application of these two names should be maintained until such time as either: a new name and description can be published for the species now known as *H. subcalva*; or the names *megalaster* and *subcalva* are conserved, which would preserve their current usage while acknowledging that that usage is illegitimate on its own, without conservation.

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# Appendix B- Hummel's Catalog, 1962

After completion of the article *The Exotic Gardeners*, starting on page 12 of this issue, a new discovery came to us in the form of two additional catalogs from the Hummel's nursery which were made available by the USDA National Agricultural Library and hosted on Internet Archive. In one of these catalogs, we found descriptions by Hummel for two of his *Hoya carnososa* cultivars- 'Compacta' and 'Krinkle Kurl', shown here with a selection of other pages of interest. - Michael Green

<b>Hummel's Exotic Gardens</b>		
<b>SPECIAL LISTINGS NUMBER 7-Continued</b>		
<b>UNUSUAL PLANTS</b>		
	Each	Three
Hoya: Hummel's <i>carnososa compacta</i> . Very closely set leaves, hug the stem. Flower clusters also very compact.	1.00	2.00
Hoya: Hummel's 'Krinkle Kurl'. A new sport, seedlings from <i>Hoya motoskei</i> . Leaves deep green, shiny, compact and curled. Very different from the above.	2.50	6.00
<i>Jatropha podagrica</i> : Large green leaves, red flowers.	1.50	3.00
<i>Kalanchoe longiflora coccinea</i> : Colorful foliage.	1.00	2.50
<i>Monadenium greenwayi</i> : Succulent cylindrical stems, fleshy leaves. Flowers white, with odor of cinnamon.	2.00	5.00
Orchids: Button-hole types: From some of the worlds best selections. Aerial rooted offsets. \$5.00 per 10.	1.00	2.00
<i>Pachysandra terminalis variegata</i> : Low growing, small leaves.	1.00	1.50
<i>Peperomia bicolor</i> : Begonia leafed <i>Peperomia</i> . \$5.00 per 10	1.00	2.00
<i>Peperomia hederifolia variegata marginata</i> : A Hummel selection.	1.00	2.00
<i>Peperomia mummularifolia</i> : Dainty creeper, flowers violet scented.	1.00	2.00
<i>Peperomia Hummel's Sensation</i> : a beautiful hybrid variegation.	1.00	2.50
<i>Philodendron crassinervium</i> : Long leaf novelty, fine for plaques.	1.00	2.50
<i>Philodendron diversifolia</i> : Similar to <i>Rhoeo</i> in form and color.	2.50	6.00
<i>Philodendron verrucosum</i> : Heart shaped leaves of beautiful color, velvet green stems.	2.00	5.00
<i>Polypodium aureum</i> : Rabbit's Foot Fern.	1.00	2.50
<i>Rechsteineria leucotricha</i> : A tuberous plant, which produces large white velvet leaves, and shocking pink tubular flowers.	1.00	2.50
<i>Rechsteineria</i> hybrid: Very like the above parent, the flowers are a flame red.	1.00	2.50
<i>Rhoeo discolor</i> hybrid: Green leaves, pink tinged at back.	1.00	2.00
<i>Rhoeo discolor vittata</i> : A variegated form of 'Moses in the Rushes.'	1.50	3.00
<i>Sansevieria liberica variegata</i> : A tall growing beauty.	1.00	2.50
<i>Sansevieria nelsoni</i> : Birds nest type.	1.00	2.00
<i>Saxifraga sarmentosa tricolor</i> : Magic carpet.	1.00	1.50
<i>Spathiphyllum</i> sp. ( <i>cordatum</i> ): Pendulant heart shaped leaves, golden fruit.	1.50	3.00
<i>Spathiphyllum cannaefolium</i> : Leathery foliage, fragrant white flowers.	1.00	2.00
<i>Strelitzia reginae</i> : (Bird-of-Paradise) For the exotic effect in foliage as well as flower.	1.25	2.25
<i>Tavaresia grandiflora</i> : A beauty from the <i>Stapelia</i> group. Soft spiny, spotted funnel-form flowers.	1.50	3.00
<i>Trevesia</i> : Snowflake <i>Aralia</i> .	1.50	3.00
<i>Veltheimia viridiflora compacta</i> . African bulb. Leaves with wavy margins. Flowers red and green.	1.25	3.00
<b>SPECIALS AND SPECIMENS</b>		
<i>Selinicereus pteranthus</i> : 'Princess of the Night'. Gorgeous white flowers open at night, followed by large red fruit. Excellent for beauty, but choice for grafting stock for <i>Zygocactus</i> . \$5.00 per 10	1.00	2.25
<i>Arrojadoa rhodantha</i> ( <i>penicillatus</i> ): A collectors' Cactus.	2.50	
<i>Euphorbia abyssinica</i> : King of the Cactus-like succulents, R. C.	5.00	
<i>Euphorbia abyssinica</i> : 25 years of growing at \$1. per year.	25.00	
<i>Euphorbia abyssinica</i> : Exhibition size, 6 foot or over.	250.00	
<i>Euphorbia abyssinica</i> : Branched specimen. 10 foot or more.	350.00	
<i>Euphorbia ammak</i> : rare, tall growing type.	2.50	5.00
<i>Euphorbia ammak</i> : five to six foot, branched.	50.00	
<i>Euphorbia</i> , Hummel's Giant Crown of Thorns, exhibition plants, branched.	10.00	25.00
<b>BROMELIAD LINERS</b>		
Select kinds, in small sizes. Suitable for growing on, bowl work, or individual pots for resale to your Bromeliad collecting customers.		
The following are usually included:		
<i>Acanthostachys strobilaceae</i>	<i>Billbergia moreli</i> hybrids	
<i>Aechmea bracteata</i>	<i>Billbergia portiana</i>	
<i>Aechmea fasciata</i>	<i>Billbergia pyramidalis</i>	
<i>Aechmea luddemanniana</i>	<i>Neoregelia carolinae</i> (marechali)	
<i>Aechmea nudicaulis</i>	<i>Pitcairnia andreaeanum</i>	
<i>Aechmea penduliflora</i>	<i>Vriesia splendens</i> (Flaming Sword)	
<i>Aechmea mexicana</i>	<i>Cryptanthus bromelioides tricolor</i>	
<i>Aechmea tillandsioides</i>	<i>Cryptbergia meadi</i>	
\$4.50 per 10	\$40.00 per 100	\$350.00 per 1000

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## SUCCULENTS

	Three	Ten	100
Agave attenuata, soft leaved Century Plant	\$1.50	\$3.00	
Aloe aculeata, blue tinged, compact grower	.60	1.50	\$12.50
Aloe aristata, Lace Aloe	.50	1.50	
Aloe ferox variety, short leaved, choice	1.00	2.50	
Aloe humilis (Spider Aloe)	.60	1.50	
Aloe variegata (Tiger Aloe)	.75	2.00	
Chamaealoe x Aloe humilis: unique, good flowers	2.00		
Cheiridopsis candidissima (Victory Plant)	.75	1.50	12.50
Cotyledon flannigani	.75	2.00	
Crassula argentea tricolor	.45	1.00	7.50
Crassula argentea, Hummel's Sunset	.75	2.00	15.00
Echeveria, assorted Hummel Hybrids	2.00	5.00	
Euphorbia bojeri, dwarf, everblooming	.75	2.00	15.00
Euphorbia bupleurifolia	1.50	4.50	
Euphorbia grandicornis hybrid, Zig-Zag	1.50	4.50	
Euphorbia mammillaris (Corn Cactus)	.45	1.00	
Euphorbia polyacantha (Fish Bone)	.60	1.50	12.50
Euphorbia valida	1.50	4.50	
Faucaria asstd. (Tiger Jaws)	.45	1.00	7.50
Fenestraria (Baby Toes)	.60	1.50	
Haworthia chalcidini (Pagoda Plant)	.75	2.00	
Haworthia fasciata (Zebra Haworthia)	.75	2.00	15.00
Haworthia papillosa (Pearly Dot)	.60	1.50	12.50
Haworthia pilifera (Bubble Plant)	1.50	4.50	
Haworthia ramosa, miniature, clear green	1.00	2.50	
Haworthia reinwardti conspicua	.75	2.00	
Hoya carnosa variegata (Grandmother's Wax Plant)	.75	2.00	18.00
Hoya motoskei, saucer leaved, ever blooming	1.00	3.00	
Kalanchoe mangini, hanging basket plant	1.00	3.00	*
Kalanchoe fedtschenkoi marginata tricolor	.75	2.00	15.00
Kalanchoe tomentosa (Panda plant)	.45	1.00	7.50
Kalanchoe, Hummel's hybrids, flowering types	2.00	5.00	
Pleiospilos nelli (Split Rock)	.45	1.00	9.00
Portulacaria afra variegata (Rainbow Bush)	.45	1.00	7.50
Rimaria heathi (Green Grape)	.60	1.50	
Rochea falcata (Scarlet Paint Brush)	.60	1.50	10.00
Sedum multiceps (Little Joshua Tree)	.75	2.00	
Senecio pendula (Inch Worm Plant)	1.00	3.00	
Stapelia berlindensis (Black Flowered Stapelia)	1.00	3.00	
Sempervivum tectorum calcareum	.60	1.25	7.50

## CACTI

Astrophytum myriostigma (Bishop's Cap)	1.00	2.50	20.00
Astrophytum ornatum (Ornamented Bishop's Cap)	1.00	2.50	20.00
Cereus peruvianus monstrose	1.00	2.50	
Chamaecereus silvestri, Hummel's hybrid Peanuts	.45	1.00	7.50
Cleistocactus strausi hyalacantha	.60	1.50	
Echinocactus grusoni (Golden Barrel) sm. bare root	.75	2.00	15.00
Echinopsis, asstd. E. eyriesi, E. hamatacantha, E. polyancistras	.75	2.00	15.00
Espositoa lanata (Snow Ball Cactus)	.75	2.00	15.00
Gymnocalycium bruchi (Miniature Nosegay)	1.50	4.50	
Gymnocalycium mihanovichi (Plaid Cactus)	.75	2.00	
Lophocereus schottii monstrose (Totem Pole Cactus)	2.25		
Mammillaria bocasana (Powder Puff)	.60	1.50	12.50
Mammillaria campotricha, Hummel's Miniature Birds Nest	2.00	6.00	
Mammillaria decipiens	.75	2.00	
Mammillaria elongata (Lace Cactus)	.60	1.50	12.50
Mammillaria fragilis (Thimble Cactus)	.45	1.00	
Mammillaria hahniana (Old Lady Cactus)	1.00	2.50	20.00
Mammillaria rekoii, golden spined, pink flower	2.00		
Mammillaria rhodantha rubra	.75	2.00	15.00
Mammillaria zeilmanniana, violet flowers	2.25		
Notocactus leninghausi (Golden Ball)	1.00	2.50	20.00
Notocactus mammulosus	.60	1.50	
Notocactus rutilans, silver pink flowers	1.00	2.50	
Notocactus scopa rubra (Silver Ball)	1.00	2.50	
Notocactus assorted, those listed and others		2.50	20.00
Opuntia strobiliformis (Pine Cone Cactus)	.75	2.00	
Opuntia 'maverick' (Aero-pots)	1.00	3.00	
Oreocereus trolli (South American Old Man)	3.00	7.50	

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We have found it possible to give much additional value when selection of plant material is left to us. Suggestions are always appreciated and followed whenever possible. If you order from the following collections, and make suggestions not possible to follow, the order will be filled without explanation.

PLANTS LABELED ONLY WHEN INDIVIDUAL ITEMS ARE ORDERED

### "PICK AND PACK" Assortment in AERO-WONDER-POTS

100 1000

Fifty or more kinds to the hundred. Cactus, Succulents, Philodendrons, Peperomias, Bromeliads, etc. Many collectors items. Suggestions as to kinds appreciated. All plants well established in our light weight soil. The plastic growing pot keeps these plants well drained and in ideal condition, with little water, this gives the purchaser an opportunity to select his own container or, better yet, use some of the pottery around his home.

\$40.00..... \$350.00

### 1961 WONDER COLLECTION

Up to one hundred different plants. Choicest CACTUS and SUCCULENTS. Built to YOUR order. Suggestions appreciated. As a rule each plant is different but if added value can be given by a few duplications this is done. Bare root, unless a few in AERO-Wonder-POTS are sent to introduce this method of growing.

8.50..... 80.00

BEST of the WONDER with FOLIAGE. A choice all round selection of beautiful plants. One hundred all different.

15.00..... 125.00

### CACTUS AND HARD SUCCULENTS

These plants are the sturdiest we grow. Haworthias, Gasterias, Aloes, Euphorbias, Mammillarias, Espostoas, and other choice Cactus and Succulents.

8.00..... 75.00

### SUCCULENTS ONLY

The most kaleidoscopic array of colors possible. Crassulas, Kalanchoes, Portulacaria, Sedums, Aeonium, etc. Suggestions as to desired kinds always appreciated and followed if possible.

7.50..... 65.00

### BOWL FILLERS

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### FOLIAGE COLLECTION

A wide variety of kinds. Aeschynanthus, Columnea, Kohleria, Peperomia, Hovas, Philodendron and others. For immediate sale or to be used for propagating stock..... \$25.00 per 200

15.00

### CACTUS ONLY

Ten to 15 kinds of choice nursery grown Cactus.

15.00..... 125.00

### AFRICAN ROSETTE SUCCULENTS

Aloes, Haworthias, Gasterias (Lilacaea Family)

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### HUMMEL'S GIANT 'CROWN OF THORNS'

A group of outstanding flowering Euphorbias of various parentage. Everblooming in shades of pinks and reds. (Yellow on advanced orders.) From eight to twenty flowers to the cluster, handsome green foliage.

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\$3.75 per 3

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### 'CHRIST THORN' Hybrids

The introduction of several new species of the flowering Euphorbias, from Africa and Madagascar has given us new strains for hybridizing in this group. Results: Flowers ranging in color from chartreuse through shades of golds and reds — Flower bracts exceptionally large, some up to the size of a fifty-cent piece — Flower stalks non-glutinous, good for cut flowers or corsage, commonly six to eight inches long, many twelve inches or more — Trunk of plants thick and 'horny', and oddly beautiful. Combinations of these characteristics will guarantee sensational offerings for the future.

\$2.00 each, 3 for \$5.00; larger, \$3.50 each, 3 for \$9.00

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# Appendix C- A Comparison of the *Hoya subcalva* Burkill Description with Sheets K000278010 and K000216173

Mark Randal

**Note- The terminology that must be applied to the various names and taxa in play in this discussion is confusing at best and extremely convoluted at worst. For purposes of clarity and brevity, in this article this author will refer to the living examples in cultivation of the species we call *subcalva* as “our *subcalva*” and living examples in cultivation of the species we refer to as *megalaster* as “our *megalaster*”.**

It is shown in Appendix A (pp. 49-50) that whether the name *Hoya subcalva* Burkill could legitimately be attached to the taxon it is currently being used to describe hinges upon whether that taxon and sheet K000216173 are in agreement or conflict with each other and the description in the protologue of *subcalva*.

**ICN Art. 9.12. In lectotype designation, a part of the holotype (if it is taxonomically mixed) that is not in conflict with the validating description or diagnosis must be chosen if such exists, or otherwise an isotype if such exists, or otherwise a syntype or isosyntype if such exists, or otherwise a paratype if such exists. If none of the above specimens exists, the lectotype must be chosen from among the illustrations and uncited specimens that comprise the remaining original material, if such exist.**

Therefore, K000216173 and “our *subcalva*” must be compared to *H. subcalva*’s description, exactly as it was written by Burkill.

K000216173 has been determined to belong to the taxon we currently call *subcalva* at least three times- by an unknown person who determined Ted Green’s *H. sp.* BSI-1 (Burton, 1979), by David Liddle (pers. comm. 2006) and by Michele Rodda (pers. comm. 2026).

Therefore it seems we have the correct taxon assigned to that sheet. But do K00216173 and “our *subcalva*” agree with Burkill’s description? Let us compare these three things, also including K00278010 and “our *megalaster*” in the mix to see if they are in agreement with Burkill’s *subcalva* description.



The large- and small-flowered forms of "our *megalaster*."  
photo: Nattamon Karang



"Our megalaster". photo: Alex Gavrus



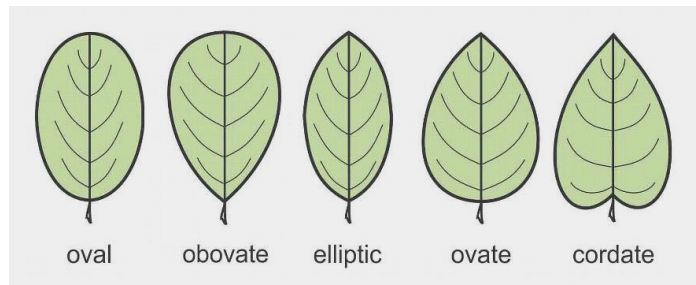
"Our subcalva". photo: Alex Gaurus

The description of *H. subcalva* Burkill translates from Latin as:

From the affinity of *H. purpureae*, Blume, and *H. Guppyi*, Oliv., differs from one crown by elongated rays, from the other by almost hairless petals, from both by thinner leaves. Leaves ovate-elliptic, very shortly acuminate, rounded at the base, 10-11.25cm long, 5-6.25cm wide, glabrous, veins quite conspicuous on both sides; petiole 12-21mm long. Inflorescence umbellate, 8-10-flowered; peduncle and pedicels to 1.5 in. long, glabrous. Sepals subtriangular, 1mm long. Corolla divided to the middle, 21- 30m wide, back glabrous, inside especially to the margins minutely pustulated but not hairy; segments narrowly triangular, acute. Crown rays 5.3-6.4mm long, at the middle scarcely 2.1mm wide, shining.

The description says “Leaves ovate-elliptic, very shortly acuminate, rounded at the base”. There are four leaves on sheet K000216173, all of which are obovate-elliptic, where the widest part of the leaf is past its midpoint, rather than before, as in ovate, and this is true also of “our *subcalva*”. There is only one leaf attached to sheet K000278010, and it is asymmetrical and folded on itself twice, so isn’t very useful for comparison. “Our *megalaster*” produces very variable leaves, from almost oval to cordate, but often has ovate-elliptic leaves (see image below).

The description says “veins quite conspicuous on both sides”, but this is hard to determine on dried material, so this is perhaps not a useful point of comparison for the herbarium sheets, though in “our *megalaster*” the veins are quite conspicuous on mature leaves while the mature leaves of “our *subcalva*” are relatively smooth with nearly obscure secondary veins.



Left 3 images: Leaves of “our *subcalva*” showing their typical obovate-elliptic shape. photos: Wenling Jia (left two) and M. Randal (third from left). Right: The leaves of “our *megalaster*” showing their variable, but generally ovate-elliptic shape. image: Nattamon Karang

The description says **“Inflorescence umbellate, 8-10-flowered”**. This may be a simplistic guess on Burkill’s part based on there being 9 flowers on K000216173. Flower number can be variable in *Hoya*. There are many images of “our *megalaster*” and “our *subcalva*” online to refer to for a broad, general sampling. Both the large and small-flowered forms of “our *megalaster*” appear to have variable flower number, with from 7-14 flowers. “Our *subcalva*” also seems to have a variable number of flowers, from 8-16 flowers.

The description says **“Sepals subtriangular, 1mm long.”** This is true of K000278010, K00216173, “our *subcalva*” and “our *megalaster*”.

The description says **“Corolla divided to the middle, 21- 30m wide; segments narrowly triangular, acute.”** Again, this is true of all the examples we are considering here, dried and alive, excluding the large-flowered form of “our *H. megalaster*”, which can have corollas of up to 45mm across.

The description for the corolla goes on to say **“inside especially to the margins minutely pustulated but not hairy”**. This is accurate of K000278010 and “our *megalaster*”, but is not in agreement with K000216173 and “our *subcalva*”, the interior of the corolla of which is covered in a velvety short pubescence, as can be seen on p. 58.

Flower size can be variable in most *Hoya*, with many species occasionally producing smaller flowers than typical. In that instance all flower parts stay in proportion. This can commonly be seen on *Hoya bella* and its close relatives. So in addition to our comparing measurements of the corona parts described in Burkill’s description, we will also compare the ratio of the length and width of the corona lobes in the description to our dried and living material.

The description says **“Crown rays 6.4- 6.8mm long, at the middle scarcely 2.25mm”** (“crown rays” meaning corona lobes or segments). This is a range of lengths, but averaging those lengths to 6.6mm and comparing that to the width given gives us a length to width (L/W) ratio of about 3/1. In the images from Alex Gavrus of “our *subcalva*” and “our *megalaster* on pp. 57-58, it is impossible to measure entirely precisely, but as there is a scale bar included in each shot it is possible to make some rough estimates of the size of the coronas, and given that the images are shot from 90° from the flower's horizontal axis, it is possible to determine fairly accurate ratios of corona lobe length to width.

The corona lobes of “our” large-flowered *megalaster* on p. 57 are about 7 x 3.5mm with a L/W ratio of 2/1, and those of our *subcalva* on p.58 are about 4.5 x 2.5mm, with a L/W ratio of about 1.8/1. We do not have any measured images of the flowers of the smaller-flowered form of “our *megalaster*”, but the image of it above on p.56 shows a corona lobe that is slightly longer and slightly narrower than that of the large-flowered form, with a L/W ratio of about 3/1. This 3/1 ratio is the same as the ratio in Burkill’s description and on sheet K000278010, while the ratio of the corona lobes in K000216173 is closer to 2/1, corresponding to living material of “our *subcalva*”. The length of the corona lobes are much smaller in K000216173 and “our *subcalva*” (4.5mm in length) than in Burkill’s description (6.4-6.8mm in length).

Given that K000278010, which corresponds to living material of “our *megalaster*”, does not demonstrably differ from Burkill’s description of *H. subcalva*, while K000216173, which corresponds to living material of “our *subcalva*”, differs from Burkill’s description in having different: leaf shape, venation prominence, interior corolla pubescence, corona size and corona lobe shape, it seems fair to say that K000278010 and “our *megalaster*” agree with the description of *H. subcalva* while K000216173 and “our *subcalva*” are in conflict with it.

