Hoya davidcummingii Kloppenburg
Mindanao, Philippines
Photo by Eva-Karin Wiberg
INTERNATIONAL HOYA ASSOCIATION

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The President’s Message
By Dale Kloppenburg

Uninvited but Welcome Guests

Two years ago in April, David Bicknell was collecting plants on the coast of Cebu, Philippines. As a result he found two unidentified hoyas which he mailed samples of to me along with one flower photo. One I was able to ID as H. gigantanganensis, the other was a new species of the Acanthostemma Section. I planted both cuts but was unable to make them survive. Well, naturally I wrote back to David to try and recollect these since neither are in our collections. I wanted him to try and grow these at his home on Cebu; there they would be more available. As you may recall I had found and named H. gigantanganensis from a herbarium sheet at the UC Berkeley Herbarium. The original plant had been collected at Gigantangan on Leyte, Philippines.

A letter came back, maybe 6 months later. David had driven for 5 hours to get to the collecting area. Well, a bridge over a river had washed out and we were out of luck again. What an effort! I hope all hoya enthusiasts will appreciate the efforts and expense some go to trying to get us new material.

In late October 1998 here in my mailbox was another brown envelope with Philippine stamps on it. I could hardly wait to get it open. Inside was material for a Type sheet of the unnamed species and flower umbels. I was to press them. David again had made a long collecting trip, this time successfully. Well I pressed the umbels and a few loose leaves, scarcely enough for a type sheet. I had to make a decision, press them or pot them up. I just had to try and make these cuttings, although yellowed, root and grow. The two cuttings became my unexpected guests. As with guests they received my most attentive care.

My bathroom sink was converted to their wellbeing. Two 4” green plastic pots sit on a plastic covered heating pad, set on low heat. A goose-necked lamp with a 60-watt bulb gives them supplementary light. Well it is now mid January and they are still my guests. When the sun comes out here in this foggy laden valley, I immediately place them on the windowsill for some natural light otherwise they are under the lamp for 15 hours each day. As precious guests I must constantly make decisions about their wellbeing. Are they too warm, do they need more light; what about the watering? What a strain! I constantly check to see if the chlorophyll is fading or is it deepening.

The H. gigantanganensis has one leaf, deep glossy green. The new species has 3 leaves a little lighter green. I do believe in the last week, however the green is getting darker. Possibly they have rooted and are taking up nutrients from the potting mix. I will keep you informed. Hopefully, eventually I can distribute cuttings of these species.

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Propagation of Hoyas by Rooting Stem Cuttings

By

Vic Sencindiver, MD

Beverley Nichols, a well known English gardening writer, while enjoying a brisk walk on a late fall day, saw a rose geranium by the side of the road. The forlorn plant looked as though it would soon succumb to frost. He decided it deserved a better fate and decided to try taking a cutting from the stem. It was his first experiment in plant propagation and was indeed exciting for him. He said "It is exactly as though you were to cut off your wife's leg, stick it in the lawn, and be greeted on the following day by an entirely new woman, sprung from the leg." This is not too farfetched an idea today considering the progress in modern day cloning science!!

Using stem cuttings is but one of several approaches to vegetative propagation. Plants can also be re-created from roots, runners, bulblets, and leaves, as well as from seeds. The propagation of hoyas is best done by using the stem cutting technique. A superior plant is inevitably reproduced with no variation whatsoever from the parent, namely a clone.

There are those who want their plants ready-made and are satisfied with merely keeping alive mature plants. To others, however, the thrill and satisfaction of growing new plants and watching them develop gives a wonderful sense of achievement. As a hobby, propagating and growing your own plants can be soul satisfying and add immeasurably to the pleasure of everyday living.

Members of the plant world are endowed with a remarkable ability to reproduce themselves. This ability depends largely on several factors. Most parts of a plant contain a natural rooting hormone. This is most concentrated at leaf nodes. Secondly, the activity of the cambium, which is a very thin layer of tissue composed of young embryonic cells filled with protoplasm (the physical basis of life) from which new plant tissues are formed. The cambium heals wounds by developing over them a protective callus tissue. Plants have the capacity to send out roots from an injured surface once a callus has formed over the severed base. Cuttings exemplify this fact.

I have been most successful with the following methods of handling and rooting hoya stem cuttings

The best time to propagate is in the early spring when plants are responding to increasing sunlight. However, hoyas can easily be rooted at any time.

What is the best rooting medium? Vermiculite, perlite, sand, sphagnum moss, water and soiless mixes all work well. My favorite is commercial soiless mixes amended with horticultural charcoal and coarse perlite. This allows for good drainage and eliminates the step of transplanting the rooted cutting into its permanent growing mix; thus not disturbing the rooted cutting. I prefer using 3-4 inch clay pots that have been sterilized with a weak Clorox solution. One is less apt to over water in clay pots because they "breath" unlike plastic pots.

The ideal environmental temperature for rooting is about 70 degrees although this is not critical.

To take a stem cutting, select a healthy new green shoot 3 to 6 inches long. Make a fresh sharp clean cut just below a node, the point where two leaves are attached. Growth hormones are
concentrated at the nodes, thus cuttings will root most readily here. If the cutting has traveled from afar, soak it in tepid water containing 4 tablespoons of sugar for 3 hours. This freshens it up and aids in photosynthesis.

For small leaved plants, remove enough leaves to provide a stem of sufficient length to pot. For large leaf species, just cover the node and leaf petiole with potting mix. Dip the bottom of the cutting and the lower most node in rooting hormone (Rootone) powder prior to potting. You need only a thin coating of this material. Some feel that the cuttings should be inserted into the potting medium at an angle rather than vertically. I find this makes no difference whatsoever in rooting. Firm the soil around the cutting with your fingers and bottom water the specimen. As the water percolates up through the soil, all air spaces around the cutting are abolished.

I then totally enclose the potted cutting in a clear plastic bag. It is then placed on the bench in moderate light and not disturbed for four weeks at which time good roots and growth will have formed. The plastic bag is then loosened and gradually removed over a period of 3 - 4 days. A new wife has sprung from her rooted leg!!

And so, in many mysterious ways, nature safeguards the reproduction of its own kind. It is one of the wonderful processes with which she has endowed all plant life.

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**Hoya shepherdii** Short ex Hooker

An article from Nieuwsbrief No. 4:16-24 by Ruurd van Donkelaar, The Netherlands. Translation of the Dutch generously supplied by Albert Hofman.

**SMALL-LEAVED HOYAS FROM INDIA.**

One of the most common hoyas in our collections is *Hoya shepherdii*. The many years in cultivation made this remarkable hoya a popular plant. It is seldom accompanied by the right name. In most cases one sees the name *Hoya angustifolia*, sometimes *Hoya longifolia*. Both names however belong to other hoyas.

*Hoya shepherdii* belongs to a group of related species, which only appear in northeast India in the mountain-woods of Khasia and Sikkim. Also to this group belongs the real *Hoya longifolia* and *Hoya oblaneolata*. All have slender long narrow fleshy leaves on climbing stems and flowers in globular umbels on short spurs.

About the taxonomy of these species we have to consult several floras of India and some general botanical books. In September 1861, *Hoya shepherdii* Short ex Hook. has been described in Curtis Botanical Magazine accompanied by a beautiful picture, which is completely identical to our plant. This first-description leaves little doubt about the correctness of the name of our plant.
Hoya shepherdii Short ex Hooker in Curtis Botanical Magazine Tab. 5269, 1861.

This species is seldom mentioned in the various Indian floras. Much more often is Hoya longifolia Wall. mentioned in these floras. Also Hoya ob lanceolata Hooker f. has been mentioned several times. I do not want to talk extensively about the literature here, just some remarks about the material of these species in the Rijksherbarium at Leiden. I could not find Hoya shepherdii there. Four species of Hoya longifolia are at the herbarium, only two of those with flowers. One of these had been collected by Hooker and Thomson in the Khasia-hills and has rather large flowers of 2.5 cm. Broad oval to oblong leaves and pointed top. The other one with flowers has longer and narrower leaves and much smaller flowers, 1.3 cm. This one had been collected by Garrett in 1939. This plant resembles much more the plants in our collection. Of Hoya ob lanceolata there is only a small stalk with a few leaves without flowers, also collected by Hooker and Thomson. They do not seem much different than Hoya longifolia. According to the Flora of Assam that is only caused by the flower size and form of the corona. We continue with a description of the species we have in culture.
Hoya shepherdii Short ex Hooker

The String Bean Hoya (IPPS 76)
Photo be Ruurd van Donkelaar

Hoya shepherdii (IPPS nrs.: 76, 131, 161) A plant with climbing, winding stems. Rooting along the whole stem. Long succulent leaves 5-12 cm., until 1.5 cm. broad, dark-green, edge 'curling up', which creates a gutter-like shape. Petioles (leaf stalks) short and nodding. That's why the leaves hang down. That gave the plant the nickname "String-bean" hoya. The flowers sit in small globular umbels, 3-10 together, on very short spursp in the leaf node. The peduncles (flower stalks) themselves are also short. They are 1-1.5 cm. in diameter, rose-white, with often not completely unfolded strongly pubescent petals. The small corona has white outer-lobes and red inner-lobes. The center is again white. The plant is easy to flower. The growth is successful provided the soil is loose and there is enough light. It is one of the few hoyas, that can stand a bit lower temperature. 10-12 degrees Celsius with a low humidity does not hurt it much, it even could increase flowering.
Hoya longifolia Miquel (IPPS 132)
Photo by Ruurd van Donkelaar

Hoya longifolia (IPPS nrs: 132, 143). Because we have incomplete material in Leiden, further research in the Kew Herbarium in London should clear up whether this plant should have this name or should have the name H. oblaneolata. They are rather similar with the Garrett material, but not with the Hooker material. So in the meantime it is H. longifolia. The plants have broader and a bit shorter leaves than H. shepherdii without the nodded leave-stalk. The edge of the leaf does not curl-up so strong, so it is not really gutter-like. The color is lighter green. The flowers are in umbels of 5-15 together on a few centimeters long spurs. The flowers themselves have longer peduncles (flower stalks) also. The flower color is pure white. The whole corolla is covered with hair. The corolla is much more robust and different shaped than with H. shepherdii. The orange pollinia color striking in the center of the flower. This species grows slower than H. shepherdii and is much more sensitive to much humidity and cold.

In our collection there is another plant (IPPS 204) from this group. This was found in the Western Ghats, a mountain ridge in west India. It clearly distinguished as a distinct plant. The leaves are even shorter and broader than our H. longifolia's and stalks and leaves are pubescent (haired). The buds keep falling off, so we were not able to study the flowers yet. The different habitat would make it more interesting.
It is clear that the last word has not been said in this "nieuwsbrief" about this interesting group of hoyas.

RVD

The literature of these species:

**Hoya shepherdii** Short ex Hooker.
Botanical Magazine (1861) 5269. Hooker (Curtis's).

**Hoya longifolia** Wallich.
Contributions to the Botany of India (1834) 36. R. Wight & Wallich.
General System of Gardening and Botany 23 (1837) 125. G. Don.
Synopsis Plantarum 6 (1840) 891. Dietrich.
Prodromus Sys. Veg. 8 (1844) 637. (DeCandolle’s) Decaisne.
Annales Botanices Systematicae 3 (1852-53) 64. W. G. Walpers
Flora of British India 4 (1883) 56-57. J. D. Hooker.
Indian Botanical Survey Record 4 (1904) 222. 596.
A Forest Flora for Kumaon (1927) 357 (1885); reprint 1978. A. W. Osmastam.
Flora of Langtang India (1976) 159. V. Vibhaga Nepal.
“The Genus Hoya in Thailand” O. Thaithong.

**Hoya oblaneolata** Hooker f.
Flora of British India 4 (1883) 57. J. D. Hooker.
Prodromus Syst. Veg. 8 (1844) 635. DeCandolle’s (Decaisne).
Hoya shepherdii Short ex Hooker
Photo by Ruurd van Donkelaar

Hoya longifolia Decaisne
Photo by Ruurd van Donkelaar

Above Photos sponsored by: Ben Franklin
Hoya blushernaezii Kloppenburg

Hoya blushernaezii Kloppenburg sp. nov. Typus # 97093 BISH (Bishop Herbarium, Honolulu, Hawaii U. S. A.). Type material from a cutting of the original plant, subsequently grown and flowered by Ted Green, Green Plant Research, Kaaawa, Hawaii. Exterior lobiiis coronae similis Hoya bordenii Schlechter a qua foliiis floribiscue minoribus, corolla campanulati rotata differt.

This is a graceful climbing and dangling plant with narrowly lanceolate leaves and small clusters of white flowers that turn yellowish with age. It is similar to other campanulate hoya species except most of those species have elevated blunt outer coronal lobes whereas in this new species the coronal lobes although raised are very narrow and the outer apex tapers into an acute end. In this latter respect the lobes are similar to those of Hoya palawanica Kloppenburg except there the outer coronal lobes are flat or even tapering downward. The sap is milky white.

**Stem:** terete, glabrous, ca. .05 ± cm. in diameter, heavily lenticelled becoming scuffy and bark-like with age also turning rusty brown, at first grey green; rooting easily on the underside.

**Leaf:** petiole terete curved .7 - 1.2 cm. long 2.0 - 2.5 cm. At the widest, blade elongate elliptic- lanceolate with a slight curve inward apex tapering to a very acute apex, base cuneate or occasionally slightly rounded; venation prominently triplinerved; deep green and glossy above, dull and lighter green below, midrib obscure.

**Peduncle:** 12 cm. long x 1.5 mm. wide. Glabrous, terete.

**Pedicels:** 2-2.5 cm. long, filiform, glabrous, terete, pale yellow. Umbel of 24 flowers, open only one day. In this respect it is similar to H. camphorifolia Warburg, also a Philippine hoya species.

**Calyx:** elongate triangular 0.15 cm. long, widest 0.10 cm., thin membranous, when dry yellowish in color, ligules present at the base, glabrous, shiny inside.

**Ovaries:** 0.10 cm. tall base 0.08 cm wide, glossy yellow, glabrous.

**Corolla:** campanulate, inside puberulous outside glabrous punctate, color white aging to yellow; thickened somewhat around the collar, lobes broadly triangular apex acute widest at sinus or slightly beyond. Sinus to sinus 0.42 cm, sinus to apex 0.40 cm., center to sinus 0.58 cm., center to apex 0.80 cm. making the diameter flattened 1.60 cm.

**Corona:** on column 0.05 cm tall and base 0.13 cm. wide. The outer coronal lobes are very elevated, tapering to an acute apex and keeled down the center above. Below grooved and the inner lobes short and dentate with the anthers exceeding; apex to base
0.32 cm., anther wing to anther wing 0.20 cm.; widest inward from the middle 0.14 cm. Center to outer apex 0.37 cm.

**Pollinarium:** short and dumpy like *Hoya cagayanensis* Burton. Pollinia 0.041 cm. long both ends obtuse, pellucid edge long, from the top to the base very prominent and with a distinct adjacent vacuole. Widest 0.021 cm; translator and caudicle very short, length 0.011 cm.; retinaculum with a broad head 0.014 cm. wide and distinct waste 0.007 cm. hip area 0.009 cm.
This new species is named for the collector Blas Hernaez who has done extensive collecting of this and other Philippine species over a wide area and many years. Blas has worked for the Botanical Department at the University of the Philippines, Los Banos, Laguna for many years. He collected this new species of hoya on the Island of Catanduanes, Philippines.
**Hoya blushernaezii** Kloppenburg
Photo by Ted Green

### HOYA BLASHERNAEZII IN HAWAII

By Ted Green

*Hoya blushernaezii*, under my conditions here in Kaaawa, is a medium, loose vine that reminds me of *Hoya bordenii* or maybe half way between *H. bordenii* and *Hoya scortechinii* but without the occasional red venation that scortechinii gets when in full sun.

This species is an easy one to grow. The cuttings strike roots easily and are quite foolproof. This seems to be true of all those with hard and firm leaves.

I have my plant in a 4” plastic pot, hanging and growing in half shade (under fiberglass, to keep off the rain). It is watered about every two weeks. I fertilize every six months with Osmocote 14-14-14, a slow release fertilizer. About every two weeks I use a solution of 30-10-10
fertilizer. Actually, this is the same treatment that all my plants get, hoyas, orchids and whatever. Some special plant that I want to force into bloom, gets a small portion of MgAmp 7-40-6.

_Hoya blashernaezii_ is a handsome plant and one that would make a good addition to any hoya collection. Still, this plant looks nothing like the Blas I know. For, Blas is a Filipino, about 5’ 6” tall and a wiry guy who is hard to keep up with when following up a forest trail. He has been the field collector for the botany department of the University of the Philippines at Los Banos, Laguna for over 20 years. I have been lucky to have him as a guide on four or five trips, for he really knows Philippine plants and where and how they grow. One trip was to the top of Mt. Maquiling, the botanical garden of UPLB. David Fairchild noted this mountain, 60 years ago, as having more different plant species on it than in all of North America.

Unfortunately, Blas is now sick and we wish him well.

Ted Green
Green: Plant Research
Kaaawa, Hawaii

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**Plant Of Hoya blashernaezii Kloppenburg**

Photo by Ted Green
Grown and flowered in Kaaawa, Hawaii
Our Cover Picture

Hoya davidcummingii Kloppenburg

This Philippine hoya species was published in Fraterna 2nd, Quarter 1995:10-11. It was discovered by David Cumming in the Bulusan Area. Mt. Bulusan is a large sprawling volcanic mountain at the southern end of the large Philippine Island of Luzon. It has a large lake on its southern flank and there are numerous hot springs oozing from its slopes. Just to the south is the San Bernardino Strait where a large naval battle was fought in World War II separating the Island of Samar from Luzon. The coastal areas here are narrow due to the mountains being so close to the coast (there is little coastal plane). The coastal city on Luzon is Bulusan. From here a road leads along the foothills of Mt. Bulusan to the Northwest and the city of Irosine. Halfway there a road that takes off and winds its way up the mountain to Lake Bulusan. It was near this road junction that David found this hoya. The forest here is open with scattered settlements and some small farms. Hoyas love this type of forest edge environment. All along the road one can find small leaved hoya species, mostly Hoya panchoi.

Hoya davidcummingii is a very distinctive free flowering species. It has beautiful, rather small deep green foliage with a contrasting dull light green underside. The plant is a dangling forest vine of semi-compact form. This species could easily be grown in a 6" hanging basket or pot. The new growth has the beautiful purplish-toned stems and leaf petiole. Since this species has the adventitious rootlets, it is easy to determine which end of a cutting goes into the potting mix.

Corrections

Corrections: Fraterna Vol. 11 #2 1998, page 13. Hoya campanulata Warburg should read Hoya campanulata Blume; Hoya imperialis Hooker should be Hoya imperialis Lindley.

Fraterna Vol. 11#1 1998, page 14. The picture here is not Hoya leucorhoda Schlechter as labeled. This plant was obtained from Michael Myashiro, mislabeled. I do not know what species it is.

2nd Quarter 1994, page 9. The picture here is labeled H. scortechinii King & Gamble. Incorrect, but do not know the species.

Fraterna Vol. 11#2 April-June 1998. Page 11, Paragraph 4. As it was published: The rest of the hoyas usually get a couple of tablespoons of pulverized chicken manure about every 3 months. You must remember that my plants are in the open, but even then I have complaints about the small cuttings.

As it should have been published: The rest of the hoyas usually get a couple of tablespoons of pulverized chicken manure about every 3 months. You must remember that my plants are in the open, but even then I have complaints about the smell—even the threat of divorce from my wife.
Attention all IHA members! How many of you are on the internet? Do you have E-mail? If so get in touch with Harriette Schapiro and join in some interesting discussions. It is a great way for newcomers to learn a lot of the basics of hoya culture. Give a membership of IHA to a friend, a plant enthusiast, or a family member. Christmas can last all year long.

Robin #3 JP (PR). Outside one bedroom is a unfinished dug out area. It is 5’ high mostly rocks and soil topped by a huge rock I planted Hoyas into the crevices of this wall hoping that they will take hold and create a wall of hoyas. I am trying hoyas on each side of the house to experiment with sun locations.

Robin #3 D (NV). My H. pauciflora has sent out a new shoot and is looking pretty good for now. H. polyneura was also looking ghostly for many months, but now seems to have recovered. I have a question about light green pubescent leaf plants like: USDA 354241, H. calycina, H. rubida & H. ciliata. My #354241 grows like a weed, but never blooms. I have added limestone to the mix as recommended by Ted Green. Anyone have suggestions? My seedlings are still coming along. One has just taken off and is 20 times the size of the others. I have taken a cutting to force it to branch. The other seedlings are still small.

Robin #5 CF (Finland). 10/98. My cuttings arrived from Australia quite late, in Sept., but they are all alive and some are growing. I got a cutting of H. imbricata from Sweden, but it rotted. H. schneei, H. burtoniae, H. leucorhoda, H. dennisii, H. phyllura are all doing fine. H. phyllura is really a beautiful hoya, I love it very much. It has big leaves with decorative wining and is a good grower. I have a lecture 18 Nov. in Helsinki with my friend and hoya collector Marju. I have many good color slides to show there. My H. cumingiana has a spur on it, so hope it will bloom next year. H. chuniana (chunii) has also a small spur and small buds, hope it will bloom soon, it will be the first time. I have buds on H. imperialis, H. linearis, H. campanulata, H. caudata, H. gracilis, H. picta, H. nummularioides and H. australis too. My older H. australis bloomed last week with 50 white balls. The fragrance in my kitchen was very heavy! I have a temperature change from day to night in my verandah, but it is not fairly large in my opinion. In the winter it is bigger, between +18-23 degrees Celcius. In summer temperature rises sometimes to +25-27 degrees C. on hot days. To +20-22 degrees C. in the evenings. Some hoyas, like H. serpens and H. polyneura are blooming very well and easily in Sweden, if these hoyas are out in the summer or in the colder room (+18 Degrees C.) when the buds are forming. So it is certain that temp. change between days and nights or longer “colder” periods gets some “difficult” hoyas to make buds.

Letter: SG (Switzerland). About the cuttings you sent me: Most of them are doing very well! Your technique of wrapping the cuttings in Aluminum foil Inside box (lined with foil) is the best I’ve ever seen! It keeps them moist and warm, some of them are even growing new roots during transport.

E-mail JS (CA). 2 Aug. 1998. In response to the mealybug problems this might be of some use! I spray them full strength rubbing alcohol. I have heard also confirmed for myself that using Malathion in prescribed dilutions slows down blooming growth. I have also found that using refined oil sprays for scale (both hard and soft shell) works as expected (well) and also keeps down the mealie development. For some infestations of things I use a Q-tip with alcohol. Not as quick and easy as a spray but it sure works.
Q. and A. for Fraterna

Answers by Ted Green

Q. I have a healthy hoya that is 12 years old. Is this some sort of a record?

A. You have been done something right for 12 years but it is not a record. I have several plants that are 22 years old and one that is 30 - with a 1" stem at the base.

Q. Is there any truth to the idea that tri-colored-leaves (as in H. carnosa) are an indication of virus in the plant? And, is the whole plant infected?

A. In my opinion, this is quite true so be careful in handling them and especially with your pruning shears - flame them after cutting a tricolor, for the sap can spread the disease to healthy plants. Viruses are systemic so the whole plant is infected.

Q. I have always heard that hoyas are tropical plants. Are there any really cool growers?

A. Tropical just means that they can't stand freezing but there are some that grow at high elevations where it is always very cool (40-60°F), like at the top of Doi Intanag in Thailand, at nearly 8,000 ft, where I froze, but H. fusca, engleriana, thomsoni and siamica grow very well.

Q. As a tropical plant do all hoyas come from tropical rainforests?

A. Absolutely not. Most come from open areas at the edge of forests or scrambling over rocks where there is light and air. Many of those in the deep forests seldom or very rarely, if ever, flower.

Q. I received some healthy cuttings but I can't tell which end is up- so that I can plant them properly. Got any suggestions?

A. Look closely where the pedicel (stem of the leaf) is attached to the stem and you will find an undeveloped bud on the top (correct) side. If you still can't figure it out, place the stem on its side, stapled down, on a pot of moss and when it sprouts, the new growth will orient itself.
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Hoya imperialis Lindley
Photo by Ted Green
INTernational HOYA
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The President’s Message

By Dale Kloppenburg

The Future

The future of any society depends on members, “new members”. Above all I feel it is healthy for our hoya society to make an effort to interest younger people in hoyas and hoya culture, yes even school children. After all, they are the future. I would suggest that if you have the opportunity to go to school class rooms, science classes local educational fairs, by all means do so and present hoyas. Show your plants, make some cuttings, show some of the societies slides, get involved with hoya education. Interest younger people in this fascinating and educational hobby.

Now for some interesting news. Retired Professor Juan Pancho of the University of the Philippines (UPLB) at Los Banos, has E-mailed me that my friend Prof. Ely Bardenas is going (by now went, in April) to the Horticulture show in Kunming, China. He will show endemic Philippine plants including hoyas. He will also bring along the book “Philippine Hoya Species” and show some of our society’s slides. Next there is a man at the UPLB Institute Plant Breeding who has been hybridizing Hibiscus. Rey Pimentel has also been accumulating hoya species and will undertake their hybridization. I understand Rey is not a sit in the office scientists, but gets out in the wild to collect and study things first hand. We wish him luck.

My next bit of information is the result of our (botanical) botanizing expedition in 1994. While there we took boats to a National Preserve, Morawali. On the trek to the native village, David Kleijn discovered a hoya in a damp depression in the jungle trail. He felt it was a H. incurvula Schlechter which is prevalent in Sulawesi. This proved to be a new hoya species and will be named and described in the near future by David Kleijn and Ruurd van Donkelaar, both of the Netherlands.

Back to the future, all the above seems exciting and interesting to me. The future is ripe for surprises. Have you been keeping up with recent plant manipulation techniques. Scientists have discovered genetic factors that control plant tolerance to cold conditions. Have you ever wondered why some plants freeze every winter and others seem to thrive and even enjoy the cold weather? Well think of the day when these factors will be inserted into hoya species so we can lower our heating bills, or maybe even grow hoyas outdoors all year long, even in Sweden. One more reason to involve our youngsters, we may not see it happen but possibly they will.

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Diversity in the genus *Hoya*  
(Asclepiadaceae - Marsdenieae)

Paul I. Forster, David J. Liddle & Iris M. Liddle

Abstract

The genus *Hoya* R.Br. (Asclepiadaceae - Marsdenieae) has in excess of three hundred species and is in urgent need of a modern monograph. Species of *Hoya* are found in Asia, Malesia, Melanesia and Australia with major centers of species diversity in Malaysia (ca. 25 species), New Guinea (ca. 74 species) and the Philippines (> 30 species). Hoyas are generally found as epiphytes in rainforests although some species may occur as lithophytes on rock outcrops. Plant habit varies from twiners and lianes to erect, non-twining herbs and foliage varies from nonsucculent mesophytic to succulent xerophytic. Species of *Hoya* have been mainly defined by differences in floral and leaf morphology with great variation in characters. The genus is popular in cultivation with about 200 species available, of which about 40 are commonly cultivated, primarily for their attractive foliage and flowers.

*Hoya australis* subsp. *australis* IML599. Photo D. J. Liddle. (Fig. 1)
Introduction

The genus *Hoya* R.Br. belongs to the tribe Marsdenieae of the family Asclepiadaceae and comprises in excess of three hundred species. While a combination of characters go together to define the genus, the single best defining character is the presence of five staminal coronal lobes attached to the staminal column between the anthers and that appear to be inrolled on the outer edge. Closely allied genera to *Hoya* include *Dischidia* R.Br., *Madangia* P. I. Forster, D. J. Liddle & I. M. Liddle, *Marsdenia* R.Br., and *Sarcolobus* R.Br.; however, elucidation of these relationships remains to be studied.

Altogether there are over three hundred and ninety names published in the genus *Hoya* with nearly two hundred and eighty currently recognized as valid species (Forster, unpubl.). About 200 species are now in cultivation, with about 40 relatively common in gardens and collections with several species such as *H. australis* R.Br. ex Traill subsp. *australis* (Fig. 1) and *H. carnosa* (L.f.) R.Br. widespread in general horticulture. Nevertheless most species are poorly known, only a proportion of the overall total are in cultivation, and most cultivated material lacks locality details.

Taxonomic history in brief

The genus *Hoya* was named by Robert Brown in his 'Prodromus Novae Hollandiae' in 1810, and not, as commonly thought, in his classic work on the Asclepiadaceae published a little later in the same year in a preprint of the paper in the 'Memoirs of the Wernerner Natural History Society' (Forster, 1991a). The generic name honors Thomas Hoy (1788-1809), gardener for the Duke of Northumberland in England. Brown included the single species *H. carnosa* (based on *Asclepias carnosa* L.f. from China), but noted that the Australian specimens that he cited therein could be different. The Australian species were eventually named by Traill (1827) as *H. australis* (Fig. 1). The first and last all encompassing account of the genus is that of Decaisne (1844) in the asclepiad account of De Candolle's 'Prodromus'. Decaisne enumerated some 40 species and arranged the genus into a number of groups. Decaisne also recognized the genera *Physostelma* Wight (1 species), *Pterostelma* Wight (1 species) and *Centrostemma* Decne. (2 species). These other genera, as well as *Sperlingia* Vahl., *Schollia* J.E Jacq., *Cyrtoceras* Bennett, *Cystidianthus* Hassk., *Plocostemma* Blume, *Acanthostemma* Blume, *Cathestostema* Blume and *Ototestema* Blume, are now considered synonyms of *Hoya* s.l.

The other major taxonomic account for the genus in the 19th century is Hooker's account of 40 species in the 'Flora of British India' (Hooker, 1885). As 'British India' covered the British Empire in Asia, this account covered species from mainland Asia in the Indian subcontinent right through to Borneo.

Although Hooker was an Asclepiad taxonomist, he was not really a specialist in the group, and the first of these was the remarkable Rudolf Schlechter who published some 65 names in the genus (Nicholas, 1992). Schlechter traveled widely in Malesia, especially in New Guinea, and described many new species based on his own collections (e.g. Schlechter 1905,1913). He also made the first serious contribution to an infrageneric classification of the genus with a system of sections (Schlechter, 1913), although this is now outdated and requires rigorous revision much beyond that attempted by Kloppenburg (1993). After Schlechter there was very little activity for many years apart from the occasional new species description, although one must mention the detailed account of King & Gamble (1907) where twenty-three species were described in some detail.
It is probably safe to say that interest, both taxonomic and horticultural, in the genus was somewhat moribund until the late 1970's. This changed drastically with the appearance of the regional revision of Malay Peninsula species by Rintz (1978), that was reasonably detailed and very well illustrated. Around this time, the 'Hoya Society International' was launched by Christine Burton in the U.S.A., and the journal 'The Hoyan' began to be published four times a year. As a result many people became interested in growing plants and world-wide horticultural interest in the genus escalated (e.g. Kloppenburg & Wayman, 1992). Our own interest in the group also commenced in the late 1970's, and we have revised the Australian species (Forster & Liddle 1990, 1991, 1992a, 1996) and are slowly revising the Papuasian (Irian Jaya, Papua New Guinea, Solomon Islands) taxa (Forster & Liddle, 1992a, 1993b; Forster et al., 1995, 1997) as well as providing occasional notes on taxa from elsewhere (Forster & Liddle, 1992b, 1993a).

Hoya guppyi Oliver : Photo by C. H. Everson (Fig. 2)

At present there are two hobbyist journals devoted to the genus, the original 'The Hoyan' published by Hoya Society International and the more recent 'Fraterna' published by the International Hoya Association. Revisionary work is also underway in the Philippines (e.g. Kloppenburg, 1991), though there is still much to do (cf. Forster, 1991). There appears to be no concerted effort at this stage to revise the rich diversity of species in mainland Asia and parts of Malesia west of Papuasia, although preliminary fieldwork and literature survey has been undertaken by Ruurd van Donkelaar of the Netherlands.
Given the widespread and continuing rate of rainforest destruction in Malesia and mainland Asia, there is an urgent need to document the remaining *Hoya* flora, both with herbarium specimens and the collection of living material with accurate locality data for cultivation in reserve collections.

**Distribution**

Species of *Hoya* are found in peninsular India; mainland Asia including Thailand, Vietnam, China; Japan; Malesia - Philippines, Sumatra, Borneo, Java, etc; New Guinea; Solomon Islands; Melanesia - Fiji, Samoa, New Caledonia etc. and Australia. Great concentrations of species are found in New Guinea (ca. 74 species) (Forster, 1996), Philippines (> 30 species) (Kloppenburg, 1991) and the Malay Peninsula (ca. 25 species) (Rintz, 1978), with lesser numbers elsewhere, although diversity on an island such as Borneo is really unknown.

**Systematics**

At present the systematics of the genus *Hoya* is in a state of flux. It is likely to remain so until a full monograph of the genus can be achieved. This monograph is unlikely to be achieved by any of the current workers in the foreseeable future. Although several hundred species have been already named there are likely to be many more, of which most are likely to represent new and valid species. While there is largely regional endemism of taxa, some are conversely wide ranging and variable, and it is likely that the current regional approach to the systematics of the genus will result in some problems in the elucidation of relationships within some of the species complexes.

What is a species in *Hoya*? To date, they have been largely defined on perceived discontinuities in morphological variation, largely of the foliage and the flowers. In the vast majority of cases, definition of patterns of morphological variation have been based on herbarium specimens or very few live collections. There have been virtually no attempts to really understand or describe the pattern of variation within a single species or complex of species. We attempted to do this with *H. australis* wherein five subspecies were recouped on the basis of vegetative habit (Foster & Liddle, 1991), distribution and habitat type after a long and protracted study of many clones in the habitats and within cultivation. These five subspecies have the same type of floral morphology, but whether or not they are reproductively isolated still requires study. In asclepiad taxonomy, the recognition of species is largely based on discontinuities in floral morphology with intraspecific taxa differing in vegetative morphology (e.g. Bruyns, 1988), although the rank and recognition of taxa differs markedly between authors (cf. Meve, 1988).

**Ecology and habitats**

Plants of the different species of *Hoya* grow in a great variety of habitats throughout the range of the genus. The vast majority of species occur in rainforest or related forest types, where they occur as canopy vines or epiphytes. Some species are relatively robust canopy vines, e.g. *H. australis*, whereas others are wiry, ± mesophytic twig epiphytes.

The term 'rainforests' covers many and varied habitat types, from evergreen forests to those that are seasonally dry or even deciduous; and Hoyas grow in all of them. In Australia and New Guinea, greatest local diversity of species is to be found in lowland notophyll rainforest with some degree of seasonality due to water shortage. By contrast, whilst the higher altitude and con-
stantly moist, microphyll mossforests of New Guinea have interesting Hoyas in them, the species diversity is relatively low.

Other areas where Hoyas may be very common include the foreshore and associated mangrove communities. In some habitats, where large rock outcrops predominate, especially limestone, species diversity is also quite high. An extreme of habitat may be found in the areas where *H. australis* subsp. *rupicola* grows (Fig. 5), viz. on sandstone escarpment that is dry for c. 6 months of the year.

![Hoya magnifica IML 136 Photo by D. J. Liddle (Fig 3)](image)

This species may be pollinated by nocturnal insects.

**Plant morphology**

**Habit**

The majority of species are vines, examples of exceptions may be found in the sprawling, non-twining subshrub *H. australis* subsp. *rupicola* (K. D. Hill) R I. Forster & D. J. Liddle (Fig. 5) (Foster & Liddle, 1991); the non-twining *H. multiflora* Blume and *H. cumingiana* (Fig. 2) Decne. (Forster & Liddle, 1993a) that are both small epiphytic subshrubs or the pendulous and non-twining *H. Della* Hook. or *H. linearis* Wallich ex D. Don.
Vegetative

Indumentum

While most species are glabrous, many have an indumentum composed of simple, multicellular trichomes that are usually uncolored. This indumentum may be well developed on the foliage of some species resulting in a velutinous feel to the leaf (e.g. *H. guppy* Oliver, *H. australis* subsp. *australis*, *H. calyclina* Schlechter subsp. *calycin*).

Stems

These vary from thin and wiry (e.g. *H. solaniflora* Schlechter., *H. venusta* Schlechter., *H. dennisii* P. I. Foster & D. J. Liddle) to relatively thick and succulent (e.g. *H. australis*, *H. obovata* Decne.) Many species have adventitious roots between the nodes, especially in those specify that are epiphytic and that root into bark or shallow soil substrates.

Leaves

All species of *Hoya* have leaves. These vary from small microphyll ones (<5 cm long) (e.g. *H. venusta*, *H. microphylla*, *H. pulchella* Schlechter.) to large notophyll ones (>5 cm long) (e.g. *H. pottsii* Traill, *H. meredithii* T. Green). Many species have mesophytic leaves (e.g. *H. microphylla*, *H. dennisii*), many have fleshy leaves (e.g. *H. macgillivrayi* F. M. Bailey, *H. carnosa*, *H. bella*) and some have true succulent leaves with well-developed water storage tissue (e.g. *H. australis* subsp. *sanae*, *H. australis* subsp. *rupicola* (Fig. 5), *H. obovata*). The increase in water storage tissue from mesophytic to succulent results from an increase in size of the parenchyma tissue of the leaf (Forster, 1990).

Most species have discolorous foliage, with a well-defined upper and lower leaf surface, although this is rather weakly discernible in the rock outcrop succulent *H. australis* subsp. *rupicola* (Fig. 5). Venation patterns in the leaves are often strongly diagnostic for the different species, although to date these patterns have been little used in the classification of the different species.

Leaf shape is often diagnostic, but is also immensely variable. This variation is both phonic, depending on the conditions where the leaf has matured, or genetic and often unique to a single clone (cf. Forster & Liddle, 1991). Some species consistently have very small leaves, particularly the mossforest species from higher altitudes in New Guinea (e.g. *H. microphylla*, *H. pulchella*), whereas others usually have very large leaves (e.g. *H. macgillivrayi*, *H. pottsii*). Unusual foliage may be found in the crinkled leaves of *H. compacta* Burton or the substrate clasping *H. imbricata* Callery ex Decne.

Floral

Inflorescence

The *Hoya* inflorescence comprises a short or long-lived cyme that may be umbelliform or markedly racemiform. Some species always have short-lived cymes that are shed every season, e.g. many of the species of the section *Eriostemma* Schltr., although we have seen exceptions to this in *H. guppy*). Others have long-lived cymes that progressively get longer and longer in successive seasons, regularly producing flowers every year. As noted and illustrated by Rintz (1978),
inflorescences may be (1) a positively geotropic, concave umber; (2) a positively geotropic, convex umber; (3) a negatively geotropic, convex umber.

Pedicels

There is little variation in these, apart from size and length; most are filiform in shape. Some have indumentum.

Calyx

The calyx is deeply divided and comprises 5 lobes that are variously shaped from lanceolate to ovate or obovate. These lobes may have indumentum of varying amounts and may lack or have colleters (glands) as defined by Kunze (1990) of varying number and shape at the sinus bases.

Corolla

The corolla is one of the most variable and hence diagnostically important morphological feature of the genus *Hoya*. It is also the most striking feature of many species and the different shapes and bright colours are largely responsible for the horticultural interest in the genus. Most species have rotate, flattened-campanulate or campanulate corollas; however, an interesting extreme of variation may be found in the globose-urceolate flowers of *H. heuschkeliana* Kloppenburg.

The corolla comprises 5 lobes of varying shapes, many are ovate, lanceolate or obovate. These lobes are fused for differing degrees, and may be reflexed, inflexed, either as a regular feature or depending on flower age and conditions. The corolla may be glabrous but is usually notable for the presence of indumentum. This indumentum may be quite spectacular and some species are renowned for the shaggy and brightly coloured trichomes of the corolla (e.g. *H. caudata* Hook.f.). These trichomes may be uniformly distributed on the inner corolla surface or may form dense bands under the gynostegium or near the corolla edge. In many species, the trichomes are very short and impart a papillate appearance to the corolla surface (e.g. *H. serpens* Hook.f.).

Staminal corona

The staminal corona comprises five separate lobes that are fused to the side of the stamin! column on the backs of each anther. There is seemingly endless variation in the size, shape and colouration of these lobes, and they are one of the most important morphological features in the delimitation of species in the genus.

Gynostegium

The gynostegium in asclepiads comprises the five fused anthers, the ovaries, and the style-head. The anthers collectively comprise the staminal column, anther appendages and alar fissures. Some species of *Hoya* have very long and extended staminal columns where the anthers and staminal corona are held well above the surface of the corolla (e.g. *H. curtisi* King & Gamble), whereas in others, the column is very short with the gynostegium held ± flush to the corolla surface (e.g. *H. dennisii*).
Pollinaria

A pollinarian comprises three major components, viz. the two pollinia, the corpusculum and the two caudicles. In species of *Hoya* s.l. the pollinia are held ± erect, and pellucid germination mouths (when present) occur on the outer edge. These are the major reasons why the genus *Hoya* is included in the tribe Masdenieae (Bryns & Forster, 1991).

There is great variation in pollinarian form within the species currently included in *Hoya*. Four types were featured by Rintz (1978), although there are probably more variations to be found in the genus. The most disparate form of pollinarian is that found in species of the section *Eriostemma* Schltr., where there is no discernible pellucid germination mouth on the outer edge of the pollinium. It is likely that pollinarian morphology will play a significant role in any proposed infrageneric reclassification of *Hoya*.

Pollination biology

Little is known about the pollination biology of Hoyas. Fruit set would appear to be largely a result of insect-mediated cross-pollination of flowers involving the transfer of pollinaria between or within flowers. It is likely that this process of cross-pollination is effected by a wide range of insects that visit the flowers seeking nectar that accumulates at the base of the corolla. Pollinaria are dislodged by parts of the bodies of these insects, and eventually the edge of an individual pollinum is reinserted into one of the five alar fissures of a flower.

The broad range of floral morphologies in different species of Hoyas indicates an equivalent broad range of individual or suites of pollinators. The most likely pollinators are species of *Diptera*, *Hymenoptera* and *Lepidoptera*, the primary pollinators of other asclepiads.

Many species of *Hoya* show a marked increase in perfume production in the evening, and this has been found to be based on a circadian rhythm (Altenberger & Matile, 1988). This regular emission of perfume at night would indicate that these particular species, often those with pale coloured or white flowers, may be visited by nocturnal pollinators in the natural habitat. The white-flowered *H. australis* subsp. *australis* (Fig. 1) is pollinated by a small day flying butterfly *Ocybadistes walker* (Sothis) that is capable of a pollination efficiency (pollinaria inserted/pollinaria removed) of c. 70% (Foster, 1992); however, it is probably also pollinated by night flying insects. The smaller flowered species or those with relatively cryptic, yet brightly coloured flowers, e.g. *H. heuschkelliana* Kloppenburg, are probably mainly pollinated by *Diptera*, whereas the larger flowered species (e.g. *H. magnifica*, Fig. 3) are probably mainly pollinated by *Lepidoptera* or perhaps *Hymenoptera*.

*H. macgillivrayi* and *H. archboldiana* (Fig. 4) are regularly visited by honey-eaters at Emerald Creek in north Queensland, and it is quite feasible that these small birds may cross-pollinate flowers. Certainly the large red flowers of these species fulfill most of the morphological requirements of a bird-pollinated flower (cf. Faegri & van der Pill, 1979).

Acknowledgements

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the award of a Christensen Research Institute Fellowship and Or M. Jebb, then Director of C.R.I. cheerfully assisted with our visit in numerous ways.

*Hoya archboldiana* IML 414. Photo by D. J. Liddle. (Fig. 4)
This species may be pollinated by birds.

**References**


**Hoya australis** ssp. **rupicola** Photo by P. I. Forster (Fig. 5)
On sandstone escarpment in the Northern Territory, Australia.
This habitat bakes 5-6 months of the year.


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**OUR COVER STORY**

*By Ted Green—Green: Plant Research, Kaaawa, Hawaii*

**A WHITE HOYA IMPERIALIS**

In 1993 David* and Odette Cumming asked me to go collecting with them - to the Southern Philippine islands of Mindanao and Palawan. I jumped at the chance for I wanted to collect plants close to the famous Wallace Line**. I had met David in Australia but didn't know how he would be to travel with but what the hell!

Of course the best part of the trip was on Palawan for there were tons of Hoyas - with *H. imbricata* being the commonest one there. Before, I had looked everywhere on other islands for *H. imbricata* and hadn't found it. There it was all over the mango and monkey-pod trees - by the bushel basket.

As I had hoped, we did find 2 hoyas that were from the South (Borneo) side of the Wallace Line and had never been reported from the Philippines before. These were *H. coriacea* and *H. imperialis*. I was overjoyed for I recognized both plants even without any flowers. We found the coriacea far down the South West coast and imperialis on both the middle-west and middle-east sides of the island. The coriacea was scrambling over a large rock and both of the *H. imperialis* were from the inland edge of a Mangrove swamps.

Usually, when I collect I get several cuttings from a vine and leave the roots and major part of the plant in place - to grow on. On the East Coast at the 42k north marker, we got some cuttings of imperialis and when they flowered proved to be an unusual yellow to pink form but at the same location I got a small, 4 inch seedling. It was growing in debris that had lodged in the fork of an old Mangrove and was about 5 feet above the ground and in about 75% shade. Well, I took it -roots and all. Later, I made a mistake in my field book and listed it as coming from Sabang, on the West Coast.

Five years later, that small seedling has grown into a large 6 ft vine with several stems and is scrambling up, and sharing a clumping palm tree with *H. Kerrii* and *H. ciliata*, in my yard. In October '98 I got the shock of my life for it bloomed with 10 – 3", handsome WHITE flowers. I say white but it does have a bit of a greenish cast. Still, it is the alba form of *Hoya imperialis*
If I were to make a guess I think that this albino is probably a one in ten thousand happening.

That trip was very successful - an unusual Yellow-pink imperialis and a White Imperialis - both handsome things that would make fine additions to any collection.

* David Cumming, who has been a friend for about 10 years, was a Medical Technician at a hospital in Brisbane, Australia, and an avid succulent collector. About 3 years ago, he and Odette (whom he met in the Philippines and subsequently married) gave up Australia and moved to Bathurst, South Africa and set up farming (which hasn't proved to be that profitable). Of course, he still collects succulents, in that succulent-shopping-market of the world! Still, no Hoyas in South Africa.

** Alfred Wallace, the English botanist-naturalist, was a contemporary of Charles Darwin and lived in Borneo for some years. During that time, he noticed and postulated about natural selection (just as Darwin did) but more important to me was that he observed that most of the plants north of a certain line resembled northern species and south, southern species.

That area is most pronounced is a line that passes between Borneo and the Philippines and has been dubbed the Wallace Line. This is a line of cross-over of species. Even a side loop was created to separate out Palawan from the rest of the islands to the east.

See: The following page taken from the local newspaper. I thought some of you might be interested in how you could construct an inexpensive greenhouse, with controls etc. The Newspaper columnist is James Dulley who has a “do-it-guide” available.
Questions and Answers

Greenhouses need not be expensive or fancy!

By James Dulley

Q. I always have wanted a small greenhouse to grow veggies and have flowers year round. Our budget is tight, so we need an inexpensive kit and one that does not need a lot of heat. What low-cost kits are best?

A. There are do-it-yourself greenhouse kits designed to meet nearly every budget and style preference. Some simple greenhouse kits cost only several hundred dollars. They are not fancy, but they work great. There are also smaller, collapsible models that you can quickly store away in the summer.

If you plan to attempt to grow vegetables and flowers year-round in a cold climate, you will need to heat the greenhouse. To minimize heating costs, select one with double glazing or a lean-to model attached to your house. During milder weather, it also can help heat your house for free.

There are many unique and decorative greenhouse styles available that can make an attractive and functional addition to your landscaping. New circular, gazebo-style greenhouses are ideal for starting flowers in flats and for hanging plants. Other designs have a tall, arch-style roof

Most greenhouse-kit suppliers offer special slat (for flats) and soil benches (for propagation). To maintain an even year-round temperature, screens, automatic vents, heaters and fans are available.

When selecting a do-it-yourself greenhouse kit, the most important factors for cost considerations are the framing design and glazing material. Aluminum is probably the most common, reasonably priced framing material. Redwood and cedar are more attractive but require some maintenance.

For your low budget, consider a kit that uses a PVC pipe frame. The connectors are metal reinforced, and you glue the pieces together like plastic drain pipe.

The primary glazing options are glass, rigid plastic and plastic film. Single-pane glass or clear acrylic plastic are good reasonably priced options. Rigid flat fiberglass is somewhat more expensive, but it is very strong. Clear film is inexpensive and simple to install. The PVC frame design uses clear film. ~

Write for (or download www.dulley.com) Update Bulletin No. 911, a buyer's guide of 15 do-it-yourself greenhouse kits, designs, frame/glazing materials and features. Please include $3 and a business-sized self addressed stamped envelope to the address at the end of this column.

· Write James Dulley at 6906 Royalgreen Drive, Cincinnati, OH 45244.

Have a happy and enjoyable New Year. Happy Hoya!
BIRD TRACKS

From: Robin Director
Harriette Schapiro
5217 Cassandra Lane
San Diego, CA 92109
(619) 273-4267

Attention all IHA members! How many of you are on the internet? Do you have E-mail? If so get in touch with Harriette Schapiro and join in some interesting discussions. It is a great way for newcomers to learn a lot of the basics of hoya culture! Give a membership of IHA to a friend, a plant enthusiast, or a family member. Recruit some young members!

Robin #3. Feb. 99. (CA). My Hoya bella seems to do better in water with a little vermiculite vs. soil. I have tried planting it in soil like my other hoyas, but it does poorly. The leaves get very pale and sickly. Are we not watering enough? I have ruled out overwatering, as the species is doing well in the water and vermiculite.

Robin #5. Oct. 98. (Finland). My cuttings from Australia arrived quite late, in September, but they are all alive and some are even growing. I got a cutting of H. imbricata from a friend in Sweden, but yesterday I realized it was rotting. H. schneei, H. burtoniae, H. leucorhoda, H. latifolia, H. dennisii, H. sp. Phyllura are all doing fine. H. sp. Phyllura is really a beautiful hoya, I love it very much. It has big leaves with decorative vining, and is a good grower. I have a lecture about hoyas in Nov. in Helsinki with a friend and hoya collector.

Robin #1. Oct. 98. I still have 20-30 big hoyas out side plus a few seedlings. I've been trimming and washing or debugging them as I bring them in. Some have lots of new growth, some with bud spikes. H. fungii has the most new spikes, plus I think there are 5 or more with buds coming now. This will be the third or fourth time it has bloomed this year.

Robin #1. Nov. 98. (OK). I have four bloom spurs on the H. obovata. I thought I had more than that but most of the “spurs” developed into tiny new leaves and all appeared on the long tendril growths, including the true spurs. The spurs show up better and I’m glad I haven’t tried to prune the sucker back. The H. obovata is really pot bound so maybe that’s why it put on all those bloom spurs.

Robin #5. Dec. 98. I put my hoyas outside on the porch last spring and they are still out there. The mealy bugs don’t seem to be handling it well and the plants are much healthier looking than they are in the house in winter. I think I’ll only drag them in when it freezes out. In the house the fan dries them out. The outside air and dampness seems to keep them in much better shape.

Robin #5. Dec. 98. (So. CA). The plants outside are just sitting there, even H. cumingiana has stopped blooming. In the house, H. lacunosa over the sink just about floored me with the scent the other night, it is in bloom. I have a friend who is fairly sure that for her, H. serpens only blooms when it is in a reasonable air current. That is hanging below the level of the pot. Mine in the sewing room seems to love the good difference between day and night. It is near a big window and while the room is heated in the winter, it is never “hot”.

Robin #3. Feb. 99. (So. CA.) Nothing new on the hoya front. Although I did send the flower that has been at the end of the seed pod on H. serpens to Dale. He soaked it and tried to analyze it, but it was too old and dried up. Next time I will slide it off as soon as the pod develops and maybe then there will be something to find out about its fertilization.

Robin #5. Jan. 99. (Helsinki). Some of my hoyas still have buds. H. lacunosa, H. picta, H. gracilis, H. nummularioides, H. multijfiora have buds, and H. imperialis bloomed at Christmas with 4 big red flowers. I hope this will be another good year for hoyas.
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How do you like the photos that are put into
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We now have the thirteen original issues of the
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surface overseas. Due to the extra pages and
pictures in our new publication "Fraterna", we
must, out of necessity, increase our prices for
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The IHA office does not have dealer catalogs available. Please address your catalog requests to the individual
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Please send a self addressed, stamped envelope (overseas request, please send one International Postal
Reply Coupon). John's address is 651 Aram Ave. San Jose, CA 95128 U.S.A. In some instances there may be
a charge for these catalogs.
Hoya species from Palawan

Photo by: Eva-Karin Wiberg // Photo sponsored by: Frances Wilkes
1999 rates for a 1 year membership (USA), which includes our quarterly publication are $18.00 per year. Outside the United States: U.S. $25.00 per year, sent via airmail.

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Fraterna

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THE PRESIDENT’S MESSAGE

By Dale Kloppenburg

The Present

It has come to my attention that a number of people worldwide are having problems with mealybugs on their hoyas. Some have indicated they are about to quit growing hoyas for this reason alone. Maybe some have already given up. All because of mealybugs.

This should not be an overwhelming problem. Let me make a few suggestions. First, if the infestation on your plants is really severe, take the plants outside (if they are grown in the house). Spray them with Malathion. If you are allergic to sprays, you might want to wear rubber gloves and a long sleeved garment, possibly even a breathing mask. Most of you will not have any trouble, but wash your hands and arms afterwards. Drench the plants. This spray will kill over a long period, so it is really effective. When you have killed the majority of the mealybugs the next step is continued control.

Keeping the population in check and very low in numbers is easy with an alcohol spray. Buy some 70% Isopropyl Rubbing Alcohol. It is usually available in pint sized plastic containers, and also quarts or larger. The pint bottle makes an ideal size on which to fit an atomizer spray. Use a mister similar to those on the bottles of window cleaners or bathroom sprayers. I used to dilute the alcohol with water, but for the past three years, I have just used it straight from the bottle. Go over each plant and look for the insects on any tender new growth, in the axils of leaves and on the undersides of leaves hidden in the pot or under other leaves. Lift up the growth from the edge of the pot and spray if they are there. Alcohol is a contact killer and evaporates fast. I have never had any damage to my hoyas—even on tender new growth. Look for the mealybugs also on the peduncles where new flower clusters are developing and on flower umbels. Ants love to farm these insects and alcohol spray will kill them on contact too if you wish.

I do the inspection of my plants nearly every day. This provides a good time to observe new growth and the development of flower peduncles. It also provides a means to see that all plants are watered properly, including a time to see any interesting changes in the plants. Alcohol sprays will also kill aphids, mites, scale and other insects. With scale, don’t just pick off the dried crust but spray under it with the alcohol mist to kill all the eggs sheltered by the scale.

Let’s not let these small pests get the better of a wonderful hobby! Fight back, be a winner. It is not hard. You can keep your hoyas exceptionally clean with just a little persistant effort.

Dale Kloppenburg, President I.H.A.
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INTERNATIONAL HOYA ASSOCIATION HAS A NEW LOGO!

After many years of searching for a logo for the I.H.A., the Board of Directors has finally approved this new logo. It's kind of a combination of what we're all about. The figure in the middle depicts a hoya flower, with the business aspect of our fraternal organization at both ends. This logo was designed by our editor's son, Michael Kloppenburg. We hope you like it.

COMING UP IN THE NEXT ISSUE OF FRATERNA

In our next publication of Fraterna (last issue for 1999), we're putting together quite a blockbuster! First off, Ted Green has written an article discussing all the species with similar leaves, from Borneo, with accompanying photos. Also an interesting article from one of our Canadian members about making wreaths out of hoyas. There will also be a write-up of a new species---a yellow flowered hoya from Cebu, Philippines. Chuck Everson will be writing an article on the I.H.A. life member awards given jointly to Ted Green and Dale Kloppenburg in 1999 (with accompanying photo). Plus one or two more exciting articles. Don't miss out. If your membership is about to expire, or will be expiring in the next three months (check your mailing label), renew NOW! Don't wait.
A VIEW OF KEW

By Margie Stone

On October 1st, 1998, my husband and I found ourselves in London, England with three days for sightseeing. Kew Gardens was at the top of our list.

The train TUBE looked like the easiest and least expensive way to get to the gardens. The Kew Gardens Station is a short walking distance from the actual gardens. Located along the River Thames, the gardens covers about 300 acres. The centerpiece of the gardens is a large greenhouse (glasshouse) known as the Palm House that looks like it is one greenhouse set on top of another one. Unique!

It was built between 1844 and 1848, and underwent reconstruction in 1988. Plants such as cocoa, rubber, bananas, coffee and Bird of Paradise grow almost to the top in the Palm House. It was in this glasshouse that we started, hoping to find some hoyas. No luck.

So, off we went to another glass greenhouse. This one is known as the Fern House. No hoyas in there, either. Then we came upon the Princess of Wales Conservatory which contains ten climate zones. Here, we finally found some hoyas. Planted directly in the ground we saw Hoya multiflora, Hoya lacunosa, and one blooming that we call Hoya tsangii, but they had labeled it as Hoya bibbata. As we wandered around this section we came upon an area of hoyas climbing up to the top (a good 10 to 12 ft. --or more high) of the glass ceiling. The only name we could read on this plant was Hoya carnosa “Little Leaf”. Since only one hoya plant was blooming in this house, I could only hazard a guess as to what some of the others might be. One looked like it could possibly be Hoya calycina, another Hoya australis, and some Hoya carnosa types. Since I have not seen Hoya diversifolia in bloom, I can only compare the photos we took, to photos from the hoya publications and believe that was what it was. That was the biggest accumulation of hoyas. At another location there was one named Hoya diversifolia, but not blooming. Also Hoya globosa was labeled Hoya longipedunculata and another hoya nametag read Hoya membranifolia. These all were large plants going up pipes, and wires and everywhere. Some other small, probably fairly new plants were in another section. Again, Hoya lacunosa, Hoya tsangii (again labeled bibbata), and Hoya affinis were also seen and the Hoya vitellinoides (meredithii) label was visible, but no plant resembling that hoya could be seen.

I had expected to see a lot more hoyas. Maybe there were more that were hidden, as this area is thick with plants. I didn't think the temperatures were extremely warm. Humid, yes. About every 10 minutes, misters came on for 5 to 10 seconds.

There were signs saying that only natural means were used to control insects and no chemicals were being used in the gardens.

Slimy snail/slug trails were visible, so I know they have a problem with them there also.

Any plant lover would enjoy the gardens. Not just plants, but there was a building called the Evolution House where man made plants & fossil look-alikes were displayed, along with modern plants showing how plants have evolved. There was also a new exhibit called “Plants + People”, showing how plants have been used for medicine; dyes for yarns and clothing; seasonings, and many other uses.
The day was grey and windy which made it too cool to spend much time outside on the grounds. Walking between the glasshouses was all the time one wanted to be out in garden areas. They suggest you plan at least 3 hours at the gardens. Wandering through the glasshouses, and taking photos had taken most of the day; and we didn't see all of it.

We didn't make it to the library or research section, as it was getting late in the day, and we wanted to make it back to the hotel before dark. Some of the different sections at the gardens are the Aquatic Garden; Azalea Garden; Bamboo Garden; Half-Hardy Herbaceous Garden; Lilac Garden; Rhododendron Dell; Rock Garden; Rose Garden; and Waterlily House—just to mention a few.
HOYAS GROWING INSIDE THE PALM HOUSE AT KEW GARDENS

Photo by: Margie Stone // Photo sponsored by: Jeff Staggs
THE ROYAL BOTANIC GARDENS AT KEW

By Ted Green

I was fortunate to get back to Kew at Richmond, England, in May of this year. This visit was my fifth and I wanted to go back to visit the herbarium and photograph and study the sheets of Spathoglottis (orchids) and see the sheet of *Hoya teretifolia* again. I had photographed all of the hoya sheets before but I wanted to compare the sheet of *Hoya teretifolia* Griffith ex Hooker (from India) with the plant that I have with terete leaves but comes from Borneo/Indonesia.

The herbarium at Kew is remarkable for some of its sheets are nearly 200 years old and are representative of all of the areas that were part of the old British Empire - Ceylon, India, Malaya, etc. Though I did notice some glaring voids in the Spathoglottis of Malaysia.

The herbarium is well maintained and administered and they expect all visitors to follow some strict rules - no turning over the sheets, replacement of the sheets in the proper order and in the proper folder, etc. They do ask that voucher slips (name tags) be inserted if an un-named species is recognized.

The herbarium might be first rate but the live collection of hoyas is something else!

The few plants that they have are either in the POW (Princess of Wales) house or in one of the working greenhouses. The POW, which cost about 18 million dollars to build, is open to the public and has about 6 climatic zones. The new working greenhouses, is also very expensive, and is not open to the public. Admission is by appointment only- and even then, with an escort!

It is obvious that unless a collection (as succulents, orchids or hoyas) have a "sponsor" it goes nowhere and if it goes, it is usually down hill. 15 years ago, at Kew, there was a greenhouse worker who was interested in hoyas but then the plants were all in a closed house. When the POW was built, the worker moved there and helped in the planting out of the hoyas but she had no clue as to how hoyas grow in the wild. Most of the plants, which I had given them, were planted in the ground and many times under a bush - in the deep shade.

Now most of the original "plant outs" have died. Unfortunately they did not follow my advice and save the cool-growing Indian ones by putting them in the ideal cool section. Nearly everything has gone to hoya heaven. The few plants (20 or so) that I saw in a working house were mix-labeled and new cuttings just getting started.

It broke my heart, for I remember what they had 15 years ago - even if the plants did have Mealy Bugs on them. I remember that even though the worker smoked like a fiend, she wouldn't make up some nicotine solution to kill the bugs!!!

Ted Green
Green: Plant Research

6
**Hoya pimenteliana** Kloppenburg

**Hoya pimenteliana** Kloppenburg sp. nov. Typus #96034 UC (University of California, Berkeley, USA). Type material from original collected plant. Original plant collected by Blas Hernaez at Casaguran, Quezon Province, Luzon, Philippines.


As to the pollinia of *Hoya bordenii* Schlechter, *Hoya mindorensis* Schlechter and Ramos & Edano (UC) #45730 it is near. It belongs to the *Hoya* Subsection Angusticarinatae Kloppenburg. It is similar to *Hoya anulata* Schlechter, *Hoya diptera*, *Hoya eitapensis* and other Angusticarinatae but for the pollinarium and the horizontal coronal lobes.

This new species is a vigorous fine stemmed vining much branched, plant. The foliage is opposite, linearly lanceolate with an acute apex and cuneate to slightly rounded base, where a distinct gland is present. The leaves are very distinctive, of a deep dull (flat color) iridescent green, due to an extremely fine velvety upper surface. Venation is somewhat obscure but pinnate with veins at 45° to the midrib (noted when dry). Leaf edges are entire but with slight undulations, the edges being slightly turned under. The foliage is profuse.

**Stems:** green, becoming rough with lenticels and turning a lighter color, glabrous, terete, 0.02 cm. in diameter, internodal length 8.0 cm. ± long. In general not rooting at the nodes or along the stem, however under humid conditions some stubby adventitious roots form along the internodes.

**Leaf:** 6-10 cm long; 2.5-3 cm wide near the middle, apex acute to slightly apiculate, base cuneate to slightly rounded, gland at base, pinnate venation obscure on either surface, Upper surface with fine velvety pubescence and deep green, lower surface lighter green, dull with numerous lighter punctations. Leaves rather thick, but not succulent, somewhat leathery.

**Petiole:** short, thick, glabrous, 0.08 cm. long, curved, terete, 0.05 cm. in diameter, not grooved.

**Pedicels:** filiform, glabrous, light cream-buff colored with varying amounts of purpling. 1.5 cm. long with fine lenticels, glabrous, terete, 4-18 in number.

**Calyx:** lobes narrowly triangular, sparse fine cilia, rusty colored, overlapping ¼ at base, 0.28 cm. in diameter, lobes 0.1 cm. long ca. 0.1 cm. wide, from a short thick base, lobes thick stubby, ligules not noted.

**Ovaries:** domed, 0.14 cm. tall, base pair 0.1 cm. wide, buttery yellow in color.

**Corolla:** yellow, reflexed, pubescent on both surfaces, lobes cut to below the middle. Lobes broad especially near the outer apical area, lobes broad, rounded at outer end with a acute or indented apical area with apiculate apex, not thickened noticeably around the collar. Sinus to sinus 0.30 cm., sinus to center 0.28 cm., sinus to apex 0.44 cm. apex to center 0.75 cm making the flower flattened 1.50 cm. in diameter; lobes widest near the apex, 0.04 cm.
Corona: outer apex higher than inner apex, inner apex dentate covering the anthers, outer lobe rather blunt turning downward tripartite. Scales fully and finely sulcate on all surfaces, rather narrow above, concave here and below in from outer apex, grooved below, scale sides broadening downward from top surface, anther wings prominent. Apex to apex 0.40 cm., scale top 0.10 cm. wide, base 0.20 cm. wide, apex to center 0.25 cm, anther wing to anther wing 0.22 cm., retinacula to retinacula 0.08 cm, anther wing to center 0.19 cm. anther wing to retinaculum 0.11 cm.

Pollinarium: very distinctive, retinaculum large, pollinia stubby and fat. Pollinium 0.42 mm long, widest 0.20 mm., translators wedge shaped not prominent, ca. 0.19 cm long. Caudicle bulbous, clear yellowish, 0.19 mm. in length, retinaculum head and hips 0.20 mm. Wide waste only slightly indented; inner apex to crotch 0.25 mm. Extensions 0.11 mm long.

Pollinarium approximately 165 X
Corolla inside view enlarged approx. 65 X. Note the unusual tip to the petal (corolla lobe).

Corona enlarged approx. 65 X. Note depth of each scale and the shelf like extensions on sides of scales.
Calyx & pedicel approx. 65 X

Side view of scale approx. 65 X
Note the great depth of the scale, the raised inner lobe and the rounded outer lobe; also the ridge along the lower part of the scale meeting at the outer apex.
Top view of flower showing that the coronal lobes extend beyond the sinus (the cleft in the corolla) and the unusual apex of the corolla lobe. Approx. 65 X enlarged.
**Hoya pimenteliana** Kloppenburg

Photo by: Dale Kloppenburg // Photo sponsored by: San Diego Hoya Group Member

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**OUR COVER PICTURE**

This hoya species was collected by Eva-Karin on the last day we were in Palawan, Philippines in 1995. I believe you will agree it is a beautiful species. It has very glossy green foliage with two pairs of basal veins, making it a penta-veined species. It is medium vigorous in growth habit, a true vine. It is relatively pest free, easy to grow and easy to flower. It has about 25 flowers in a compact globose cluster. The whole flower is waxy with an unusual yellowish green to greenish white corolla and a starry white corona with a bright cranberry red center and sharp pointed outer lobes.

The foliage of this species is similar to that of *Hoya merrillii* and *Hoya quinquenervia* (both from the Philippines) in that the venation is similar. The leaves here are not as broad as the latter species and more like that of *Hoya verticillata* which has only 3 primary veins, except for *Hoya verticillata var. citrina* (or *Hoya citrina*) which has 5 primary veins. This is a superb new addition to our collections. Thanks Eva-Karin for your sharp eyes when collecting. (Editor).
WINTERING HOYAS UNDER ARTIFICIAL LIGHT

by P. Victor Sencindiver, M.D.

We are blessed to be living on an earth that is energized by the sun. To my ears, the very word light is one of the most beautiful words in any language.

There is a need in all of us to touch, to smell, and to see living plants. Depending on where we live geographically, the more urgent our need to grow indoors.

Until about sixty years ago, the chief obstacle to such an accomplishment was the impossibility of producing the right kind of light at the right time and of sufficient intensity to make tropical and semitropical plants feel at home in our houses. Successful indoor gardening was limited to areas near windows, or, to the few plants that require a very low level of light to survive.

Those of you who grow hoyas and live at latitudes where you can grow them exclusively outdoors, or who have heated greenhouses are truly fortunate.

Those of us who are not blessed with having either of these available to us must bring our plants that have been happily summing outdoors into the house to winter under much less favorable conditions. Luckily we can tap into other light sources that can, in part, bring the 'SUN' indoors with our plants.

The availability of fluorescent, halogen, metal halide, and mercury vapor lamps to be used as our indoor light sources have opened up a whole new vista for plant enthusiasts. The least expensive and relatively efficient of these is the 'fluorescent way'. -- and -again the least expensive and relatively efficient of these is the use of cool white or combination of cool white and warm white tubes.

Without going into the complexities of foot candles of light, angstroms or wave length or color, what are the basic needs of this type of growing? Some suggestions from my experience follows:

I. Fixtures:

2 tube, 48 inch set ups are best and combination of cool white and warm white tubes produce satisfactory results. Gro-Lux or other growth tubes can be substituted. Dust is a thief of light - Keep your tubes dusted.

II. Distance of plants from tubes:

Six to eight inches seems to produce the best results.

III. Photoperiodism:

Hoyas seem to be ‘day-neutral’ plants. 12 - 14 hours of light a day seems to be best.
IV. Fertilization:

Since hoyas grown under lights have no dormant period, they do require more frequent fertilization. Use ¼ strength fertilizer with each watering.

These conditions do not insure good flower production but they do allow for good healthy plant growth during a period when they would otherwise languish while awaiting the next summers growing season.

"There is no season such a delight can bring, as summer, autumn, winter, and the spring." William Shakespeare.

---

Correction to Fraterna, Volume 12, #1

It has been pointed out by one of our astute members that in Vol. 12/1, the picture on page 4 is labeled *Hoya longifolia* Miquel. And the next page, references are listed for *Hoya longifolia* Wallich. The bulk of references should be of Wallich, a Himalayan species. (Ruurd’s picture is labeled incorrectly—I did not change the author’s original article). I should have made a notation of the discrepancy. The hoya published by Miquel is an Acanthostemma Section hoya from Java. We must clarify this later. Thanks for noticing! (Editor).

---

COMPUTER INTERNET HOYA COLLECTOR'S GROUP

By Dale Kloppenburg

Eva Andersson, from Sweden, informs me that there is a lively international group of hoya collectors that converse on the internet. I felt that IHA members might want to join. The group is getting larger by the day. It’s free, fun and informative. Here are the instructions from the narrator on how to sign up:

1) Ask your members to visit this page:
http://www.earoucs.com/list/hoyacollectors
There they will find my description of the list:
Do you enjoy collecting the hoya plant? Then this list really is something for you, a discussion
list for collectors of the hoya plant. Join us and get to know one another, meet some new folks and let's share information or simply have a good time with lots of laughter. All discussions in English.

Group Moderator: hoyacollectors-owner-egroups.com
To subscribe, send a message to hoyacollectors-subscribe@egroups.com or go to this e-group's home page at http://www.egroups.com/list/hoyacollectors

2) After subscribing, the member will receive a welcome-letter from me with a small description as to how the list works. By this time they can write mail to and receive mail from the group. But, to take full advantage of the lists service (read all mail from the lists beginning, visit our chat-room and so on), they have to register.

3) This is how it works to register (the members can always click on the "help" menu:

(A): If you are already registered, you'll see a simple form where you enter your e-mail address. Then click continue. IMPORTANT! At this point, we just send you an e-mail message containing a validation number. (this is how we make sure no one else registers as you).
(B): In your e-mail message from eGroups you will find a validation number. Copy it so you can use it once.
(C): Go back to the "Completing Registrations" page browser, or click on the blue highlighted URL in the e-mail. Use the validation number from the e-mail. You must choose a password. (You can always choose later if you forget it.)

That's it! Click "Done" and you have your new, free account. You can now fully participate in multiple e-mail groups.

So that is how it works. Please welcome them for me. Tell them that if they get any problems subscribing to the list they can always mail me at: eva.andersson@mbox301.swipnet.se.

AFFILIATE CORNER

Currently, the International Hoya association has two affiliates: The San Diego Hoya Group, headquartered in Vista, California, U.S. A., and the Svenska Hoya Salskapet, in Borlange, Sweden. In this issue, we will give brief news on the San Diego Hoya Group, and in our next issue, we shall spotlight the Swedish Hoya Group.

The latest new out of the San Diego Hoya Group is the election of officers. New chairperson is Dr. Harriette Schapiro, new program chairperson is Steve Frias, and the new raffle chairperson is Eleanor Hewitt. Our last meeting was held September 19, 1999. 49 members and guests were present. Speakers for the day were Sandra Fletcher, who showed us how she made her "Hoya" afghan, and did unusual needlepoint and crochet of other succulent-type plants. Sandra has won numerous awards at local and national plant shows with her unusual stitchery. The other speaker was Michael Collins, who spoke about his recent trip to Eastern Europe. Michael brought different types of memorabilia to show the club members.

Our next meeting will be our annual Holiday dinner, to be held in San Diego at the Best Western Hotel dining room on December 5, 1999. For Information, Contact Harriette at: (619) 273-4267.

Chuck Everson, Affiliate Reporter
QUESTIONS AND ANSWERS ABOUT HOYAS

Q & A

1. Q: Has anyone had luck flowering Dischidias?  A: I can only speak for myself. Most are not quick to bloom from cuttings as hoyas are. I’d say most eventually bloom and when they do start to flower seem to keep right on flowering. Some seem to be everblooming others seasonal. Maybe it takes a large plant. In the tropics some dischidias seem to almost smother the trees they grow on and are full of flowers.

2. Q: I hear you were mistaken as to where H. bandaensis came from! Well this is not a question but yes I was mistaken. What I should have said was what most of us grow as this species seems to be Hoya australis ssp. australis and said “grow it as you would H. australis” and left it at that. I hear I really got castigated over that one. So much for constructive comments!

3. Q: In "Philippine Hoya Species" under Hoya paziae, the Type sheet is listed as #5618 of Elmer D. Merrill. On the next page this # is listed as from Schlechter’s unpublished H. eugeniooides. Who’s sheet is it— Schlechter’s or Merrill’s?  A: Many of the sheets used by Dr. Schlechter as Type sheets were sent to him by collectors like Merrill, Elmer and others for classification. They were collected by one person and used as Type material by another. Many herbarium sheets may have more than one number on them. They may have a field collection number, a number given when it is finally mounted and maybe even a catalog number placed there by the Herbarium. If an author, as Schlechter, uses the sheet as a Type for a description it will appear in the Type description with credit to the collector. Who’s sheet is it?

4. Q: Where can I find employment in a nursery that grows hoyas? I am moving from the East coast and am a greenhouse person. A: Since hoyas are a specialty item in the nursery world, nurseries which distribute hoyas for the most part are small operations. Some may require part time help but none I know of would need a greenhouse supervisor. Try a big nursery and since your interest lies in hoyas, once hired maybe they can use your expertise.

5. Q: Should I cut off the pink growth from my Hoya variegata and why does it do this?  A: The plant depends upon the chlorophyll (the green in the cells) to produce food for the plant. Tissue that arises from a portion of the meristem (growing point) that is of pink (or cream etc.) cells only will produce stems and leaves of that color. Since they do not have chlorophyll they are dependent on the green tissue for food. I would say leave on a reasonable amount of this colorful growth as it certainly adds to the beauty of the plant. As long as the plant is healthy and gets enough light it should be able to support a reasonable amount of growth that is not producing nutrients, but only adding beauty.

6. Q: How many people write in questions?  A: Very few! It is like customers in a store. Many times the store is nearly empty. At other times it is swamped. Well, write anyway, as I learn from each of you.
BIRD TRACKS

From: Robin Director
Harriette Schapiro
5217 Cassandra Lane
San Diego, CA 92109
(619) 273-4267

Attention all IHA members! How many of you are on the internet? Do you have E-mail? If so get in touch with Harriette Schapiro and join in some interesting discussions. It is a great way for newcomers to learn a lot of the basics of hoya culture! Give a membership of IHA to friend, a plant enthusiast, or a family member. Recruit some young members!

Robin #1. April 99 (OR). My seedling hoyas in 5” pots have runners 3-4 feet long. In 3” pots short runners or none at all; in 2 ½” pots growing slow. The danged ants have orange aphids on all new shoots and leaves. I have some seeds of “Bright One” just coming up. I have several hoyas in bloom, Fungii, Bangkok 4, Acuta Green, Obscura and several Carnosa types are budding—probably more, but they are too crowded to find.

Robin #1. May. 99. (OK). All my hoyas are fine and some leaves have grown so fast in their 5-ounce paper cups, I’m really proud of them. Although it will be a wrench, I hope to dispose of my odd-ball plants this summer and just concentrate on hoyas. I’m threatening to dispose of my African Violets even though they bloom for me.

Robin #2. July 99 (OR). I have a hoya blooming I purchased in Washington, originally called Hoya species from Tanna. Now they just call it Hoya species. It is different than the pictures I have seen of the unidentified species from Tanna. The crown on mine has pointed lobes, not round in the other photos, otherwise it looks the same. It is larger than Hoya carnosa, somewhat fuzzy. As the flower has aged it seemed to take on a greenish tinge. Also strange as there are two branches growing up and in between these branches, straight out of the ground came this umbel!

Robin #3. April 99 (Finland). Right now a new growing season has started here in Finland again. Last time Robin number 5 was here in the middle of the darkest time of the year, and my hoyas seemed horrible - they were pale, and some younger ones had died. But now the plants which were lacking of sunshine have turned nearly red within a few weeks and I have to shadow them again. Many of my hoyas started to grow in the end of the January, and many of them have buds or they are blooming already. I have buds in H. kenejiana & H. solaniflora, H. chuniana, H. wallichii, H. caudata, H. imperialis, H. archboldiana 'Pink Form', H. pottsii, H. neo-ebudica, and H. pubicalyx, H. mindorensis, H. carnosa 'Tricolor', H. macgillivrayi, H. compacta, H. picta and H. lacunosa are blooming already. I have changed new potting medium and new pots to many, and ordered new cuttings, too. This time from Ted Green. I hope I will get those I wanted to, for example: H. blashernaezii which was photographed in last issue of Fraterna. I have moved from the “I want them all” phase to “I want specific species” phase, and those I want to get and grow now are open to those which are more expensive...so I cannot afford to buy so many. I’m also selling cuttings to other Finnish collectors (after me had come about 10 others who has started to grow hoyas here in Finland, too) to get some extra money to buy new cuttings.

Robin #3. April 99 (OR). I have one I picked up in a supermarket that had green and yellow variegated leaves. It finally bloomed this spring and looked like a carnosa type with smaller leaves. My H. pubicalyx 'Chimera' has two new mahogany leaves. It was so green I thought may be the whole thing had reverted to the ordinary. It bloomed with the powerful pubicalyx fragrance. I have an H. inconspicua which just finished blooming. It took several years to bloom and I think it does drop its peduncles. The most blossoms it had were two. A round ball, creamy colored and with a lovely smell!
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San Diego Hoya Group
Meeting dates for 1999/2000 all are invited

SEPT. 19, 1999
DEC. 5, 1999
MAR. 19, 2000
JUNE. 4, 2000
SEPT. 17, 2000

FOR MORE INFORMATION, CONTACT
HARRIETTE SCHAPIRO AT: (619) 273-4267
OR EMAIL: schapir@mail.sdsu.edu

Help Sponsor a Photo Campaign

How do you like the photos that are put into each issue of FRATERNA these days? Would you like to see more? We certainly would if we could afford it, but let's face it—-one of the most expensive things about putting out an issue of FRATERNA is having all those pictures made and pasted into each issue. To offset those costs and allow more pictures to be added, we are actively asking our members to help sponsor a photo. This was very popular a couple of years ago, but in the last 18-24 months, we've seen a lack of interest ---probably because we didn't promote it enough. Let's rectify this! Send in your non-profit donation of $25.00-$50.00 $100.00 today! Through your generous support, everyone will benefit! Thank you.

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Sample magazine $3.50
Directory of Greenhouse Manufacturers $2.50

Back Issues

We now have the thirteen original issues of the Hoya Society-West Coast bulletin bound as one publication. The price of this bound text is $39.95 for U.S. shipment and out U.S. $48.95 shipped surface overseas. Due to the extra pages and pictures in our new publication "Fraterna", we must, out of necessity, increase our prices for back issues of "Fraterna" to $7.00 per issue, U.S. $9.00 per issue shipped surface mail overseas.

Dealer Catalog Requests

The IHA office does not have dealer catalogs available. Please address your catalog requests to the individual dealers, or write to our Board Member John Scoville, who will have a listing of mail order dealers available. Please send a self addressed, stamped envelope (overseas request, please send one International Postal Reply Coupon). John's address is 651 Aram Ave. San Jose, CA 95128 U.S.A. In some instances there may be a charge for these catalogs.
Living Wreaths—Photo by Judy Beardall
INTERNATIONAL HOYA ASSOCIATION

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Errors of fact may occur from time to time in "Fraterna". It is the policy of the IHA to publish corrections of fact, but will not comment on matters of opinion expressed in other publications.

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The President’s Message

From the outgoing President - Dale Kloppenburg

The board of directors has finally selected a new president for IHA. This will be my last few words as your President. I thank you all for your interest in continuing to support our association. We have come a long way from our meager beginnings. I feel certain we will continue to lead the way in informing hoya lovers the world over, as we have done in the past. We should all be proud of the high standards we have achieved, in large part through the actions by all those who read Fraterna and support the International Hoya Association. I say “thanks” for all the help received over these many years. We have a growing vibrant organization. We are now more than ever a snapshot of the world of hoyas, and we will become even more so as we continue to attract the best and brightest hoya enthusiasts the world has to offer.

I hereby hand over the reins of IHA to my more-than-worthy successor Dr. Harriette Schapiro.............. Dale Kloppenburg, President, I.H.A.

From the incoming President - Harriette Schapiro

I have been thinking of what to say in my first President’s letter. It is still a bit astounding when I think of it. I have been growing hoyas for about 20 years--never very seriously, in the sense that many of you do. I do not have a greenhouse and therefore count on growing most of my hoyas out of doors in coastal San Diego, California. This has never bothered me as I have never felt the need to grow them all.

About eight or nine years ago, 11 hoya lovers here in our county decided to see if we could start a small group of fellow enthusiasts. Today, the San Diego Hoya Group numbers about 70 friends and is an affiliate of the IHA. I have found that I have gotten more and more active doing what I can for the IHA. Any of you with the least bit of enthusiasm for hoyas can do the same. People are always needed to join Round Robins and correspond with others. If you are having problems with your plants write to me and someone will try to help. If you grow hoyas in a different way, tell us about it in even a short article or note. It is your society--help make it get bigger and better.

It is just a few weeks before Thanksgiving as I sit here writing this. All of my hoyas are entering a winter holding pattern. May all of your hoyas continue to grow and may the mealie bugs be few.

Harriette Schapiro, President, I. H. A
5217 Cassandra Lane
San Diego CA 92109
(858)273-4267
Email: schapir@mail.sdsu.edu
LIVING WREATHS
(Our Cover Story)

By Judy Beardall

During the last decade or so, all one saw were dried flower wreaths. Now, one can create a living wreath using a variety of flowers including, ivies or sedums, or any other plant for that matter. So, the idea of using hoyas in a wreath seemed not unreasonable. Living wreaths should be placed in relatively shady places, so they seemed an ideal vehicle for hoyas. I have made three so far using *H. carnos*, *H. pubicalyx* and *H. australis variegated*. These tolerate cooler temperatures in the evening and seem very hardy and amenable to being placed outside, for instance on a porch or verandah.

TIPS AND TECHNIQUES

One should use fairly mature well rooted hoya plants or several rooted small ones. Use a concave wreath sold at craft stores; a flat one will not hold soil. Make and attach the hook for hanging before beginning. Any firm wire will do— for example, a clothes hanger. Fresh sphagnum moss is preferable. Dry moss should be soaked thoroughly before beginning. Soil should be that which is normally used for potting hoyas. When removing plants from their pots, spread out roots before placing in the soil of the wreath. When the wreath is done, fill any gaps in the moss with bits of moss secured by floral greening pins. Train the growing hoya by securing the growing tips with the floral greening pins to make a full circle. Shelter the wreath from drying winds and direct sunlight. Water when needed. Ice cubes work well and make less of a mess. One can place plastic on the backside of the wreath to protect the wall behind it from moisture damage. Using fishing line instead of wire to anchor your hoyas will help the wreath last longer and is transparent.

HOW TO MAKE THE WREATH

Collect together the concave wreath forms, floral greening pins, moss, fishing line, a moist hoya-friendly soil and plants. Lay moss inside the ring having already attached a hook for hanging. Spread the moss widely over the sides of the wire form, so that it can be folded over the soil when everything is in place. Leave the front open and pack as much soil as possible into the cavity of the moss-lined frame. Pack the soil firmly to prevent water from channeling and loosening the soil.

Place the hoya plants into the soil and spread the roots as much as possible. Cover the roots with soil and make sure the soil in the entire cavity of the frame is firmly packed. Then fold the rest of the moss over the soil securing it with greening pins. Add and fill in moss in places where there is not complete continuity, securing again with greening pins.
Hoya  and other wreaths made by Judy  
Photo Judy Beardall

The stem and leaves of the hoya can now be positioned on the moss that is covering the underlying soil and the hoya stem can now be secured with greening pins.

Wrap around the wreath with wire or fishing line tightly to secure .

Now, lay the new wreath flat on the ground and gently soak it with water. It will now be ready to hang in a favorite niche.

There is no reason why a hardy hoya such as *H. carnosa*, shouldn't last for years in the same wreath undisturbed. Whether these wreaths will bloom or not remains to be seen!!!

Judy Beardall  
Victoria, Canada
Generally: First of all, they are all tropical, moderately robust vines with husky, hard leaves; milky sap; and all come from the lower elevations of Western and Eastern Malaysia, Sumatra and Lower Indonesia. The leaf venation is pinnate, reticulate and prominent, except *Hoya vitellina*, with its more obscured nerves.

These species are easily grown and flowering can be reached in about 2 years from a 6 inch cutting (for me). The flowers are very similar but, unfortunately, do not last for more than a day or so. The fragrances are all similar—sweet, spicy and pleasant. The peduncles are persistent and flowering can be anytime of the year.

Specifically: The leaf characters are:

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>COLLECTION</th>
<th>LEAF BLADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>finlaysonii</td>
<td>multiple</td>
<td>Hard, rigid - 2.5 x 8 x .05 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flat, medium-rough edge</td>
</tr>
<tr>
<td>vitellina</td>
<td>multiple</td>
<td>Hard, flexible- 2.8 x 6.25 x .05 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Most boat shaped, smooth edge</td>
</tr>
<tr>
<td>vitellinoides</td>
<td>multiple</td>
<td>Hard, flexible-2.5 x 7.5 x .05 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flat, smooth edge</td>
</tr>
<tr>
<td>meredithii</td>
<td>single, from Bau, Sarawak, Malaysia</td>
<td>Hard, rigid - 4 x 9 x .05 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Twisted, never flat, smooth edge</td>
</tr>
<tr>
<td>phyllura</td>
<td>multiple</td>
<td>Hard, rigid-3.25 x 10x .1 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flat, rough edge</td>
</tr>
<tr>
<td>sp. 'Borneo Beauty'</td>
<td>multiple</td>
<td>Hard, rigid - 3 x 9.5x .08 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flat, rough edge</td>
</tr>
<tr>
<td>sp. 'Truncate'</td>
<td>single, from Atjeh Barat, Sumatra, Indonesia</td>
<td>Hard, rigid - 3 x 4.25 x .08 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Slightly curved, sharp edge</td>
</tr>
<tr>
<td>sp. 'Germany'</td>
<td>Native county unknown</td>
<td>Hard, rigid - 2.5 x 7 x .08 inches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V-shaped, smooth edge</td>
</tr>
</tbody>
</table>

It might be of interest, that after I photographed these leaves, the petiole of each one was dipped in Rootone, the surplus shaken off, and then all were placed in the mist house - in an attempt to root them and start new growth. Here are the leaves, in a 5 inch pot, after 2 months - they all have roots but no growth yet. I sent duplicates to Dale Kloppenburg but I don't know how his have done.

On the following page is a comparison of the average leaves of this group:
H. finlaysonii, H. sp. 'Germany', H. phyllura and H. vitellina

H. sp. 'Borneo Beauty', H. meredithii, H. sp.'Truncate' and H. vitellinoides

Photos by: Ted Green, Kaaawa, Hawaii
Pictures on this page sponsored by: A San Diego Hoya Group member
Here are pictures of the umbels of flowers of the members of this group, all quite similar, yet different.

**Hoya finlaysonii** Wight
Photo sponsored by: Lee Miller

**Hoya meredithii** Green
Photo sponsored by: Jeff Stagg
**Hoya phyllura** Schwartz
Photo sponsored by: Jeff Stagg

**Hoya vitellina** Blume
Photo sponsored by: Ed Gilding
Hoya sp. ‘Truncate’
Photo sponsored by: Michael L. Esposito

Hoya sp. ‘Borneo Beauty’
Photo sponsored by: Frances Wilkes
About herbarium sheets:

I have always joked on how to prepare a herbarium sheet: First run over the beautiful specimen with a steam-roller, dry it until brittle and then paint it brown.

Unfortunately, dried botanical specimens nearly always fail to convey nuances of 3 dimensions (as the twist of a leaf, how the leaf is held in relation to the stem, etc.) and never fragrance, longevity of flowers, vein coloration and the contrast with the blade, etc. Others have commented on the difference between the living material and the preserved and how hard it is to imagine what the live plant looked like. For instance, I have looked at quite a few un-labeled sheets of *Hoya vitellinoides* Bakh. f. (at various herbaria around the world) and thought that one or two might be *Hoya meredithii* Green for the nuance characters might have been lost in the sheet preparation.

For instance, here is a photo of a herbarium sheet of *Hoya phyllura* Schwartz (a collection by Mr. Clements and Mrs. Clements from Mt. Kinabalu, Sabah, Malaysia). The small envelope attached to the sheet contains the flowers that have fallen from the peduncle). For comparison, at the right, is a photo of the living plant - what a difference, and yet this herbarium sheet is quite good compared to some!

One other comment about herbarium sheets. The TYPE SHEET contains the holotype, the specimen (or a suitable illustration or sketch) used by the author as the nomenclature type. This is the one upon which the species (or genus or family) is based. Unfortunately, some of those sheets from live material are now 100 to over 200 years old and through time, without proper handling and care, have lost flowers or leaves or both. I have seen Type sheets that are nothing more than a stick and it is impossible to make a proper determination if the leaves or flowers are missing; i.e., *H. pruinosa* Miquel (lacking flowers).

The best Type sheets are those that have sketches of the flower parts and preferably to scale, as typically done by Schlechter. Also, a color photograph helps greatly!
I have been very interested in the collection data of _Hoya meredithii_ for, as far as I know, the only collection was made by my friend, York Meredith at Bau, Sarawak, Malaysia. York told me where he found it so I wanted to go and recollect it. I went back to the same place but could not find it, but that is not unusual, for it could have been 10 feet away on the other side of a tree. Maybe the same tree that he told that he had collected it on!

The same thing with the single collection of _H. sp. 'Truncate'_ (tentatively, _H. deykevandonkelaarii_). I did not see this species when I was in Sumatra, Indonesia but then, I was not in Atjeh Barat, the exact place of the original collection.

I hope that this discussion of the finlaysonii group will stir your interest and maybe help to clarify some of the confusion and mislabeling that is so prevalent in hoya collections around the world.

Ted Green  
Green: Plant Research  
Kaaawa, Hawaii 96730

* I am presently writing-up and naming this handsome species as _Hoya deykevandonkelaarii_, after Deyke van Donkelaar, Ruurd's wife.

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### Some Notes On Hoya

_Hoya variegata_ as the plants name implies, has variegated leaves. Here the variegation is cream and pink which lacks chlorophyll (the green tissues) near the edges of the leaves. Developing branches may arise forming solid cream or pink branches and leaves. These branches grow vigorously, supported by nutrients from the green tissue. They add to the attractiveness and beauty of this species. The question has been asked "should I cut these branches off?" The answer is, until they become the dominant portions of the plant, leave them there for their beauty. When it is necessary to control their growth cut back some of these non nutrient producing branches, just to keep them in check, and the plant in balance.

_Hoya picta_ is the plant with the variegation on the central portion of the leaves. This species tends to develop branches with all green tissue. In this case the green will outgrow the variegated portion of the plant and should all be removed entirely.

**Other variegated hoya species.** Watch your other variegated species for the above traits and act accordingly. It is also possible that a few types of variegation is due to plant viruses. In this latter case we should be aware that healthy plants can be contaminated with a virus that could be spread by non sterile techniques. Viruses are under study in connection to hoyas, so we will have more on this at a later date. If you suspect you might have a hoya with virus why not try grafting a piece of a healthy green plant to the suspect. Then observe the healthy portion to see if it develops what you suspect to be the virus. This may take some time, since the virus, if present, may only manifest itself in the newly developing tissues.
Hoya bicknelli Kloppeenburg

By: Dale Kloppeenburg

A New Philippine Hoya Species

_Hoya bicknelli_ Kloppeenburg sp. nov. Typus # 1470, UC. Collected by David Bicknell at Matutinao (Kawan) Bidan, Cebu, Philippines. Affinis _Hoya davidcummingii_, Kloppeenburg quam calycis oblongis obtusis non ovatis triangularis et quam ligulae prominens; coronae folia superne concaves non subcuneata differt. Flores dimidium stature differt.

This new species is close to _Hoya davidcummingii_ Kloppeenburg but differs with the calyx oblong-ovate not ovate triangular and with more prominent ligules. Here the leaflets of the corona are concave not somewhat wedge shaped. The flowers are smaller, leaves much larger.

This new species is in the Section Acanthostemma (B1.) Kloppeenburg subsection Externatae Kloppeenburg. The flowers are dark-yellow with purple tinge. In addition to the above there are a couple of other distinguishing features: (1) the large size of foliage, large for an Acanthostemma (2). The corolla apical lobes are tightly bent under, almost folded. This is from a seacoast habitat, found as a high climbing vine on a fig tree. The plant has a white milky sap.

**Stem:** terete, glabrous, 0.05 cm. in diameter or slightly larger, glabrous, green when young becoming woody and brown at maturity. Definitely enlarged at the nodes. Internodes ca. 15 cm. long.

**Leaf:** opposite and whorled. Petiole terete, curved, 1.5 cm. long, nearly the same diameter of the stem from which it arises, glabrous, green. Blade broadly ovate to ovate elliptic, flat to sub curved with some undulations. 9.0—12 cm. long x 0.6—0.8 cm. wide in the center. Base cuneate, edges cupped upward slightly, pinnate anastomosing veining, visible above as is the midrib but obscure below. Apex shortly apiculate to slightly acute. Glossy green above duller below, glabrous.

**Peduncle:** persistent and very long, 7.5—14.0 cm. long, terete, enlarged at both ends, green, 0.18 cm. in diameter, base of rachis is 0.04 cm. in diameter. Scars of rachis circular with raised central circle and 3 basal bracts.

**Pedicels:** terete, of equal lengths, yielding a flat umber, 1.0—1.2 cm. long, 0.1 cm. in diameter.

**Calyx:** segments, linear oblong, apex rounded, very membranous, 0.18 cm. long x 0.10 cm. wide, yellow, with prominent small triangular ligules at the base, reflexed.

**Ovaries:** long and narrow, pointed/slightly apiculate 0.12 cm. tall, base 0.04 cm. wide, white.

**Corolla:** rotate, deep yellow, inside pubescent except for apical tip, apex strongly bent under. Sinus—sinus 0.25 cm., center—sinus 0.20 cm., sinus—apex 0.30 cm., center—apex 0.50 cm., fold of apex 0.12 long and wide. From the sinus inward is a circular sunken area. Central thickened ring as in _Hoya plicata_ K & G.
or up. Whole surface finely sulcate. Outer apex reach the corolla sinus or slightly beyond. The lobes are thin as is the exposed portions of scale giving a skirt appearance from below. Column tall, 0.10 cm. or grater, opening 0.18 cm. Apex to apex 0.20 cm., apex to center 0.21 cm., center to lobe apex 0.27 cm., anther wing - anther wing 0.18 cm., anther wing apex - center 0.20., retinaculum - retinaculum 0.60 cm., retinaculum to anther wing apex 0.12 cm.

Pollinarium: somewhat narrow, long retinaculum, head 0.05 mm., waste 0.04 mm., hips 0.06 mm., length .15 mm (very long pointed ends). Translators drumstick shaped .15 mm. long 0.06 mm. at widest outer end. Caudicles clear, sticky, bulbous ca. 0.07 mm long and as wide. Pollinia long and oval tapering inward at upper apex (inner), 0.46 mm. long, rather uniform in width, widest 0.15 mm. Prominent opaque sterile edge. Most similar to the pollinium of *Hoya micrantha* Hooker f.

Corolla and Corona
Photomicrograph approx. 65 X

**Note:** The corona is sitting in a cup of the corolla.
The corolla turns under at the ends.
The bilobed apexes slightly exceed the sinus of the corolla.
The crown is raised in the center.
The bilobed extensions are rounded on the outer surface and flat on the inner surface.

Color of the natural flower is actually a pale yellow.
Pollinarium
Photomicrograph approx. 160 X

Note: The thickened wedge-shaped translator arms.
The bulbous shaped caudicles connected to the retinaculum at its waist.
The elongated pollinia, rounding outward at the inner apex, stuck to the bulbous caudicles at the inner apex.
That the sterile pellucid outer edge of the pollinia do not extend to the inner (lower) apex.
That the sterile edge extends over the outer apical area of the pollinia.

I take great pleasure in naming this species for a man who is persistent in his quest of the understanding of the world around him. He grew up in Somerset, England and was attracted to wildlife at an early age. He actually studied birds more than flowers. He spent 6 years in the army and was in the D-Day Normandy invasion. He was a lawyer for 25 years, but he says he was never a 9-5 sort of fellow. He emigrated to Australia and was successful as a beef farmer. Most exciting in my estimation is that David spent 10 years at sea on a 10 meter ketch which after 90,000 miles ended up at Cebu, Philippines, where he now lives. He spends many hours...
collecting and classifying plants. He is working with a Chinese professor on Myrsinaceae and with a Norwegian on Moraceae. David has sent many hoya cuttings, data and flowers.

Hoya bicknellii Kloppenburg
Photo by David Bicknell

The above picture is all we have available at the present time. You can see the relative size of the leaves in comparison to the single flower. The foliage is larger than any other Acanthostemma species now recorded, making this species readily distinctive and easily recognized in flower.

Have a happy and enjoyable New Year (2000). Happy Hoya!
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