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FRATERNA

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"International Hoya Association"
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BOTANICAL GARDEN



H. polystachya Blume

INTERNATIONAL HOYA ASSOCIATION

(Formerly Hoya Society-West Coast)

P.O. Box 5130
Central Point, OR 97502
(503) 664-6808
A Non-Profit Organization
Bulletin published quarterly.

1993 rates for a 1 year membership, which includes our quarterly publication are \$14.00 per year, \$15.00 per year Canada & Mexico, Overseas \$17.00. All overseas mail is sent by airmail.

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May 15 for the June issue
August 15 for the September issue
November 15 for the December issue

We also accept advertising on a per year basis. You may deduct 10% for the same ad running consecutively in four issues. Payment in advance, Please!

Back Issues

We now have the thirteen original issues of the Hoya Society -West Coast newsletter bound as one publication. The price of this bound text is \$25.00 U.S. and \$55.00 shipped airmail 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 \$4.00 per issue, \$6.00 per issue shipped airmail overseas.

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IT'S A FACT

PATTERN FOR A PALACE

The Crystal Palace-a vast structure of glass and iron built in Hyde Park, London, to house the Great Exhibition of 1851, was inspired by the pattern of a water lily. The designer, Sir Joseph Paxton, had been head gardener to the duke of Devonshire at Chatsworth and had successfully grown, for the first time in Europe, the giant South American water lily, *Victoria amazonica*. The plant's leaves are up to 7 feet across and the arrangement of their ribs gives them such strength that they can support the weight of a child. Paxton studied the pattern of the ribs and, years later, used a similar pattern of ribs and struts to support the roof of his iron and glass palace. The building, which was moved to south London after the exhibition, was destroyed by a fire in 1936.

UNDERGROUND BLOOMS

Two Australian species of orchid spend their entire lives buried in the earth. The only part that ever emerges is a cluster of capsules, which is pushed above the surface to disperse the dustlike seeds. Both species feed on decaying plant material in the soil, breaking it down with the aid of fungi. One of the two

orchids, *Rhizanthella gardneri*, was discovered in 1928 by a J. Trott, who plowed it up by accident on a farm in Corrigin, Western Australia. The second, *Cryptanthemis slateri*, was discovered by an E. Slater in 1931 at Alum Mount in New South Wales. Very little is known about either species because very few specimens have ever been found.

CORPSE FLOWER

Rafflesia, a parasitic plant named after the founder of Singapore, Sir Stamford Raffles, grows in the forests of Southeast Asia and has the largest and perhaps the smelliest flower in the world. The bud, which looks like a wrinkled brown cabbage, opens into a huge purplish or reddish-brown flower 1 to 3 feet across. The bloom

weighs up to 15 pounds and is covered with irregular warts. Looking and smelling like a hunk of blood-encrusted and decaying carrion, the flower is visited by vast swarms of flies, which pollinate the flower while crawling over it.

Reprinted from: Readers Digest Book of Facts
The Reader's Digest Association, Inc.
Pleasantville, New York

Cover Photo

H. polystachya Blume

This plant was purchased from HILL ~ N ~ DALE Nursery in the spring of 1987. In fact I purchased five cuttings of this species over a period of two or three months because I was fascinated by the foliage. At that particular time, I also had a lot of walk-in business at my nursery, and those huge leaves were a source of immediate interest. Fortunately H. polystachya is a fast grower, and can normally be expected to bloom at around eighteen to twenty four months from a cutting. The attractively veined leaves are spectacular for their deep, jade green color, their size and heavy substance. The flowers are small, buff colored to pale pinkish brown, and have dark pinkish brown tips. The inflorescence of this species do not grow in what we normally consider as the typical hoya umbel, but are borne instead on little clumps at the ends of short stalks called panicles or racemes that lie along the elongated side branches that are connected to the main stem. The flowers often open a few at a time, with the outer flowers opening first. This is not always the case, as just as often the flowers will all open at once forming a dense mass of flowers that completely encircle the branches (as in the cover photo).

There is also a clone of this species with pure white flowers and very dark, blackish green foliage. This white flowered form is available from Rainforest Plantes et Fleurs as H. polystachya alba.

You will need a considerable amount of room to grow this species as it is one of the largest in the hoya genus. There are no special requirements for its good health other than warm temperatures, loose, fast draining potting mix, a moderate amount of light, medium amount of humidity, and regular feeding with a balanced fertilizer.

The heaviest concentration of bloom is from early spring to mid summer but it can bloom year round with good light. The worst problem this plant faces is mealy bugs on the flower buds. Since full strength alcohol seems to damage the developing flower buds, I would suggest spraying with one half strength alcohol or you may have to resort to a mild pesticide. The leaves are seldom attacked by bugs as they are extremely thick and unpalatable.

By Ann Wayman

INFO FROM IRIS

An answer to some questions posed in a letter to Iris Liddle by John Scoville, concerning where and under what circumstances certain hoyas listed in the David Liddle catalog were collected.

Dear John,

It is strange that you should have such a request, but then I suppose history has been a quest of man for a long time.

The prefix IML came about as an alternative to DL which was used for our orchid catalogue.

I was present at the collection of a number of our first IML 7 hoyas. I will list these and give some descriptions on how some of these hoyas were collected and hope that this will be enough information for you to use.

IML 1 Hoya australis ssp. tenuipes: This plant was collected during a Sunday picnic to Mungilli Falls in the

head waters of the Johnston River on the 1st of March 1978. This is a wet tropical area with an annual rainfall in excess of 300 inches. There is almost continual rainfall and mist but it is comparatively warm at an elevation of 600 ft.

IML 2 Hoya australis ssp. tenuipes: This was collected by David and I in the rain forest near our home in February 1979. It was growing on a fallen tree at Mt. Tip Tree. Mt. Tip Tree is a 4000 ft. peak covered in dense rainforest which receives about 300 inches of rain a year and can be fairly cool by our standards.

IML 3 Hoya australis ssp. tenuipes: We collected this plant in August of 1979 in a mangrove forest close to a barge that ferries vehicles across the Daintree River. This is a very warm, humid, tropical area. It rains daily in the afternoon and the mangrove forests are full of epiphytes which include some of Australia's most spectacular orchids. The mangroves in this area are actually large forest trees and can achieve a height of 80 ft. or more and are often logged for cabinet timbers.

IML 4 *Hoya australis* ssp. *tenuipes*: This plant was collected by both of us again in estuarine mangroves close to the mouth of the Daintree River in August of 1979. These are hot steamy swamps of the river estuaries of tropical Queensland whose most famous inhabitants are the crocodiles.

IML 5 *Hoya australis* ssp. *tenuipes*: This plant was found growing on a rock face in open Eucalypt forest near the Davies Creek Falls. It was growing on small trees overhanging a side creek of the main stream, and is still there today.

IML 6 *Hoya australis* ssp. *tenuipes*: This plant was given to us by a friend who lives in a small community on the western slope of the Atherton Tableland at Silver Valley. This area is given its name for the severe frosts that occur during winter.

IML 7 *Hoya australis* ssp. *tenuipes*: David collected this plant in May 1980 during one of his visits to Cape York Peninsula. It was growing in a dry monsoonal forest in trees beside a gully. This area is extremely hot and dry during the dry season with temperatures in excess of 35 ° celsius (95 ° F.) during the day and 30 ° celsius (86 ° F.) at night.

By Iris Liddle (Submitted by John Scoville)

General Care Considerations For Hoyas

Hoyas are vine-like plants whose origin can be traced to the South Pacific islands, China, India, Sikkim, Asian Nepal, Pakistan, Bangladesh, Burma, Malaysia, Indonesia, Sumatra, Andaman and Nicobar Islands, Vietnam, Laos, Celebes, New Guinea, parts of Northern and Eastern Australia and the many various islands around the Southwestern Pacific Rim. There are a hundred or so individual species of the hoya genus all of which belong to the Asclepiadaceae or "Milkweed" family. They are noted for their exotic blooms that appear as clusters of "shooting stars" with the overall aspect of an inverted parachute. The flowers have beautiful colors and an unusual "waxy" appearance. Many hoyas also have unusual and beautiful leaves. The vines can be contained by means of a trellis or just allowed to trail, if it is hanging, or go as it pleases.

The potting media is important as moisture and nutrient retention with proper drainage must be considered. A ideal mixture consists of 2 parts perlite, 1 part Canadian sphagnum peat moss with an option of up to 1 part of planting mix.

Moist soil is essential to good plant growth but holding back on excessive watering during the winter is crucial.

Careful use of plant food is important as hoyas are somewhat heavy feeders. Many enthusiasts use fertilizers with a formula such as 10-10-10 and 15-30-15 to help plants recover from winter conditions and promote blooming. If wintering over outdoors in mild climates is called for, keep the plants on the dry side but occasionally use weak solutions of fish emulsion or its equivalent. Follow directions on labels carefully.

Although some hoyas are grown outdoors in direct sunlight, various degrees of indirect sunlight should be the rule. Inside the home, south facing windows have been proven to be ideal places to grow hoyas. You may have to pull a thin curtain or set the plants back further from the glass during the heat of the day. With few exceptions, hoyas are much happier if brought inside during periods of cold weather.

Hoyas will easily win you over with their graceful and beautiful growth but some patience must be exercised as they can be tempermental at times by doing what appears to be 'nothing' only to be followed by a dazzling display of sending out new runners and leaves and often, once or more times during the year, a complete panic of blooms! Some emit wonderful fragrances like the luscious lime scent of *Hoya odorata* or the exhilarating grape-like fragrance of *Hoya* sp. BSI-#1.

A membership in the International Hoya Association includes a subscription to "Fraterna", published quarterly, and is one of the better horticulture periodicals. Some plant descriptions may be in Latin, but will always include an English translation. This publication also consists of Pictures (4 to 6 in each volume), which are actual 3" x 5" color photos taped in with double sided tape, interesting articles, growing tips, a question and answer column plus a section for "round robins" progress if space permits. Another advantage of membership is the option to participate in round robin groups and, of course, a substantial discount on books offered by advertisers. Various hoya growers put in specials once in awhile and it is a nice way to accumulate a few extra hoyo species. For additional information write to:

International Hoya Association

Ann Wayman, Secretary

P. O. BOX 5130

Central Point, OR 97502

Hoyas are more than just a conversation piece. Cuttings usuallu root very easily (follow the directions included with rooting hormones such as ("Rootone") and make excellent presents to family members and friends. Cuttins should include at least two nodes (a bulge in the stem where the leaves attach) and the lower node, or nodes or for smaller hoyas, inserted directly under the soil line, even with leaves attached!

John Scoville

A HUGE SUCCESS!!



Meeting held at Quail Gardens, Encinitas, California

Photo sponsored by San Diego Hoya Group

The March 21, 1993 San Diego Hoya Group's quarterly meeting was held at Quail Gardens, Encinitas California. This was the first time ever Hoya auction, and it turned out to be a huge success. With 51 people in attendance, over \$438.00 was raised. More than 30 plants were auctioned off, including a 5 - gallon Hoya carnososa, a large Hoya lacunosa trained on a wire ring, an 8" pot of Hoya fungii, plus many others. One of the Hoyas..H. diversifolia B, was auctioned off for \$78.00, a magnificent specimen! Hoyas were not all that were in the auction. People brought large Bromeliads, Epiphyllums, Brachychitons, Easter Cactus, African Violets + more..all large and beautiful specimens! The money has been earmarked towards subsidizing travel costs for out-of-town speakers. Along with the auction was the regular business meeting, and the introduction of our food theme for each meeting..this one being Mexican Fiesta. Main dishes of enchiladas, tamale pie, refried beans, rice, hot salsa, chips..just about everything was on the tables, including three very unique Mexican desserts! A special treat was Rainbow Gardens Bookshop with a table of books including the new HOYA HANDBOOK by Dale

Kloppenburg with Ann Wayman. They were going like hotcakes!

For those of you within driving distance (and out-of-towners who want to have a lot of fun!), try to attend the June 27th meeting at Rainbow Gardens in Vista, California. Come around noon, have something to eat and attend our 2:00 p.m. meeting. At the present, the scheduled main event will be a member discussion on bugs and pests...how to identify them, and how to prevent them. The consensus of opinion with members present was that this subject was well overdue! Also, our plant-of-the-month will be conducted by David Jones, and it will be on either H. archboldiana or H. megalaster. The international food theme will be Italian! Another huge raffle of Hoya cuttings will follow the meeting, so bring your appetite, your checkbook and have a lot of fun!

Chuck Everson

H. ischnopus Schlechter

This plant was purchased from Rainforest Plantes et Fleurs as *H. ischnopus* in the spring of 1989.

The description written by Schlechter and translated by Dale Kloppenburg in his book "Hoyas of Northeastern New Guinea" says of this species "Throughout the main portion and middle, the corolla section is bare. Moreover, the rest of the inside (surface) is broadly and thickly pubescent. The corolla appears to be surrounded by a completely pubescent rim. Similar phenomena are also known among other species; e.g., *H. marginata* Schlechter. The blooms are brown yellow, at times light flesh colored or salmon with bright rose middle and a light yellow crown." I deliberately chose this picture because it depicts so clearly what Dr. Schlechter was describing in the fuzzy or pubescent petal tips. Notice also the prominent, dark rose/red ridges on the buds.

Young leaves of this species are pinkish bronze, rather thin and slightly puckered. As the plant matures they become glossy emerald green, and the texture is stiff and brittle but still quite thin.

The flowers are approximately 1/2" across, and open a few at a time over a period of 2 or 3 days. Although a very pretty hoya, there is nothing spectacular about this species. It is easy to grow if kept warm (above 55 degrees F.). Like many of the thin leaved species, It benefits from high humidity, appears to be sensitive to chemicals and responds by developing dry, crinkled leaf edges.

Grow this plant in bright filtered light, no direct sun. It should bloom within 24 months from a cutting.

Ann Wayman

Photo sponsored by:
Various IHA Round Robin members



Questions & Answers

Question: I'm sending a picture showing damaged foliage on some of my hoyas, and another picture of tiny reddish brown spiders that I have in my greenhouse and which I feel are responsible for this damage. Can you tell from this picture what kind of spiders these are? W.W.

Answer: First, let me say...there are NO vegetarian spiders! All spiders are meat eating predators. The lesions and the dry, dusty, shriveled appearance of the foliage in your picture is indicative of severe mite damage. Your photo is a very good close-up shot and I can see that the little critters in this picture are not mites of any kind but are actual 8 legged spiders with big jaws. I can guarantee that these spiders are not your problem. I would suspect that your problem stems from a bad infestation of spider mites, or some other type of mite that is invisible to the naked eye, and too small to show up in the picture. There are many types of mites that feed on green growing things but the treatment for all are the same. Spray plants thoroughly three or four times several days apart with a miticide, or spray the entire plant (front & backs of leaves) with half & half water and alcohol. Do this several times to make sure that all adults and eggs are destroyed. A preventative measure is to keep soil moist in the summer, and mist spray the plants often to avoid dry conditions. Let the spiders live...they're probably eating a large share of the mites.

Question: Some of the cuttings I have purchased are described as having medium sized leaves, and arrive here with medium sized leaves. Within a year or so these leaves have reached very large proportions, and I'm running out of room for these oversize plants. How can I guarantee that the plants I buy will remain a manageable size? L.R.

Answer: Like most of us you're probably buying plants from a plant list or catalog that gives very little, if any information on a plants eventual size. If choosing by sight from plant sale tables, raffles etc. we all have a

tendency to pick foliage with very fancy markings, heavy prominent veins or some other feature that makes them stand out in a crowd. With few exceptions, this type of fancy foliage requires a great deal of light and can get quite large if kept in subdued light. I would suggest purchasing species that are described as semi-miniature or small growing, have thin leaves and require less light to bloom. Some of the most beautiful hoya flowers are in this category but normally have rather plain leaves. The major reason for oversize leaves on thick fleshy species is 1. potting soil kept too wet (the plant no longer has the need to store water, and so become thin) 2. not enough light (the leaves become very large in order to absorb what available light there is).

Question: I saw one of your earlier issues (5 years ago) with a membership roster. Are there any plans to print an updated membership list in *Fraterna*? J.L.

Answer: If we were to publish a membership roster, it would have to be a separate printing, and not included in *Fraterna*. The main reason being that there are now over 25 pages of names and addresses with new ones being added weekly. There would also need to be a charge for this directory, as the expense to print out this many pages plus the mailing costs would be horrendous. There is also the matter that many of our members objected to having their names and addresses on any kind of a list, claiming that all kinds of eccentrics were getting their names and addresses and contacting them for various reasons. I will take this up with the board of directors at our annual meeting to see if we can come up with a feasible solution.

Question: I'm on a fixed income and don't feel that I can afford to heat an enclosed sun porch where I grow my hoyas. Can you publish a list of all the hoyas that prefer cool temperatures? M. W.

Answer: There are no hoyas that prefer cool temperatures, but there are some species that can tolerate

cooler conditions better than others. Among these are the hoyas we think of as *H. carnosa* types, and all have *carnosa* type flowers (krinkle 8, hindu rope, snowball etc.). *H. shepherdii* and *H. serpens* can also take fairly cool temperatures. Most of these cool tolerant species evolved in cool mountainous regions where the temperature is just barely pleasantly warm in the daytime and downright chilly at night, but not freezing. If you own a copy of *The Hoya Handbook* or have access to one, all the 144 hoyas pictured have the minimum temperature requirements specified.

Question: I have several pots of *H. macgillivrayi* that just don't grow at all. I've seen other peoples plants that grow and bloom beautifully. Can you give me some hints on growing this species, or tell me what I'm doing wrong? I've had them for three years, and fertilize regularly with Peters 5-50-17 formula. E.K.W.

Answer: *H. macgillivrayi* is normally a fast and sturdy grower, and blooms at an early age. You might try repotting them in a different mix, giving them more light and make sure they are in a warm spot. Feed with a balanced fertilizer 20-20-20 or 10-10-10 and stay away from extremely high phosphorous fertilizers unless you are pushing for bloom.

Question: The leaves on some of my hoyas are suddenly turning a sickly yellow color, especially on the margins of the leaves. What's causing this? L.F.

Answer: I can think of several reasons why leaves would turn yellow. Old age, excessive heat, lack of nitrogen, and in the case of yellowing on the leaf edges...a phosphorous deficiency. The fact that you specified the term "suddenly" leads me to conclude that your plants are being affected by direct sun and/or excessive heat. You can remedy this situation by moving your plants to a shadier, cooler spot and feeding regularly with a balanced fertilizer to correct any nutrient deficiencies.

Ann Wayman

BIRD TRACKS

Round Robin # 5..October 1992..Ann Wayman..Oregon...Adult lady bugs eat very few if any mealy bugs or aphids. By the time they get to the adult stage, their only purpose left in life is to mate, lay eggs and then die. The larvae that hatch out of the eggs is the great mealy bug and aphid eater. This larvae looks like tiny, brown alligators with orange spots. They are horrible looking little critters, but can eat their weight in mealy bugs and aphids every day for about 22 days, then they go into a metamorphosis for about 5 days, then re-emerge once again as adult lady bugs, then fly away to find a mate. As with most creatures they don't stay around and inner breed.

Round Robin # 3..November 1992..Rosemary Peterson...California...Hoya growing in Long Beach is grinding to a halt, although many of them are confused about which season it really is. One question I have is about *H. serpens*. I have three seed pods (the 4th dropped) But they have been there since mid-summer. I am waiting for them to open. They are turning sort of yellow. Should I pick them before they open? How will I know if they are ready? The best thing is that one of them still has the flower on the end. The others are still in the nylon stocking I have enclosed around the pods.

Round Robin # 3..November 1992..Harriett Schapiro..San Diego, Calif....Here it is almost Thanksgiving and Southern California is already over an inch behind in rain fall. This could be a bad year for plants in San Diego. Two years ago when we first had water restrictions I decided that the Hoya and Bonsai would live, the back yard would go and if possible I would keep the front yard sort of green. The Hoyas out in the yard have started taking off up the Juniper trees. In another year I should have a dash of tropical rain forest back there. (Realizing that the word "RAIN" may be a joke!)

Round Robin # 3..December 1992..Benigne Dohms..Florida.....There was a cold spell in mid-October so I brought all my hoyas inside, then put them back out again for a about a week in early November. All growth and blooming stopped as soon as I brought them in again, but there has not been the yellowing and leaf drop that I have had in the past. It's as if they all flipped some sort of switch when they left their outdoor setting and decided to hibernate. I'm sure the shutdown mechanism was activated as the days gradually began to cool and have both less sunlight and less intense sunlight, not to mention the decrease in humidity. Of all the variables I have tried to play around with and provide for my plants during the last 4 years, sunlight seems to be the one thing that results in active growth. My problem is that most of the windows in my



house face north and in the colder time of the year the sun stays either right above the house, providing very little indirect bright light, or it comes in for a short time from the south.

Round Robin # 3..November 1992..Jackie Pendergast...I had mealybugs on the old buds this summer. I sprayed some with alcohol, some with indoor plant spray, some I scrubbed some (very gently) with a toothbrush, and poked a few with my fingernails. They look alright now but wonder if I have destroyed the next blooms? Is there another way of treating them?

Round Robin # 3..January 1993..Joyce Blumenstock..Michigan ...I have found that spraying old peduncles (bloom spurs) with alcohol has killed them (that is, killed the bloom spurs).

Round Robin # 3..February 1992..Ted Green has collected some exciting new species in N. Borneo this last year. He called to say he has acquired a number of new species from Ruurd Van Donkelaar. The Dutch are very active in tropical plant work and Ted is fortunate in having good contact with Ruurd who has access to all the material that the botanists bring back from their collecting trips. *H. halophila* is one he mentioned. My book on Philippine hoyas is being used by many of the collectors in the Philippines and as a result they have been able to collect five species that we didn't have before.

Notice

We are in need of a new round robin director. If anyone is interested please contact Ann Wayman, P.O. Box 5130, Central Point, OR 97502



H. padangensis Schlechter

This plant was added to one of my orders as a bonus plant back in the fall of 1987. I read the description, and although it didn't strike me as a plant I would ever purchase...as a bonus, and for free it was acceptable. The months went by and the plant grew. It quickly became a big stringy plant with few leaves and a wild grabbing habit. In fact, it latched on to every other plant within reaching distance. Every time I went into the greenhouse it was entwined in some other plants pot and hanger. I took to carrying the pruners with me at all times just for cutting back the runners of this plant. Several times I thought about cutting off its head completely but out of sheer stubbornness and a desire to see at least one flower, I resisted the urge. More months went by and one day in February of 1989, I noticed that my stringy, wild vine was no longer stringy, but from the heavy pruning, had become a beautiful dense leaved plant with elegant cascading branches. Not only that, but there were a dozen or more

umbels of tiny star shaped buds forming. I was excited because at last I was going to see some flowers, but still had my doubts that it was even a hoyo...It certainly didn't look like any hoyo I had ever seen. When the flowers started opening, I discovered that not only was it a hoyo, but a most unique and unusual looking hoyo. I loved it at first sight...I love it still!

Among the lessons I've learned in the course of collecting and growing many different hoyo species, is that we often come across a distinctive array of hoyos with a very different look. Like some other hoyos that don't quite seem to fit in with our notion of what hoyos should look like, H. padangensis has all the correct parts but they have been arranged in a totally different pattern than what we normally think of as being typical for a hoyo, even the unopened buds are perfectly star shaped. The crown stands tall, and the corona scales appear to slightly curve claw-like over the top of the crown. The petals stand out stiffly,

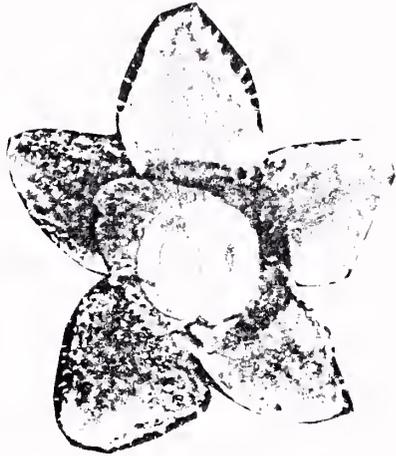
double under lengthwise, and are considerably broader at the tip than they are at the base. The flower color is white to pale pink with a pure white crown. I cannot detect any fragrance on this flower. The leaves are rather thin, deep olive green and have random flecks of white and silver throughout.

This hoyo is extremely easy to grow but should never be allowed to dry out completely. Once it has wilted, it may not survive for a second try. It is a heavy bloomer in bright filtered light and will even bloom sporadically in partial shade.

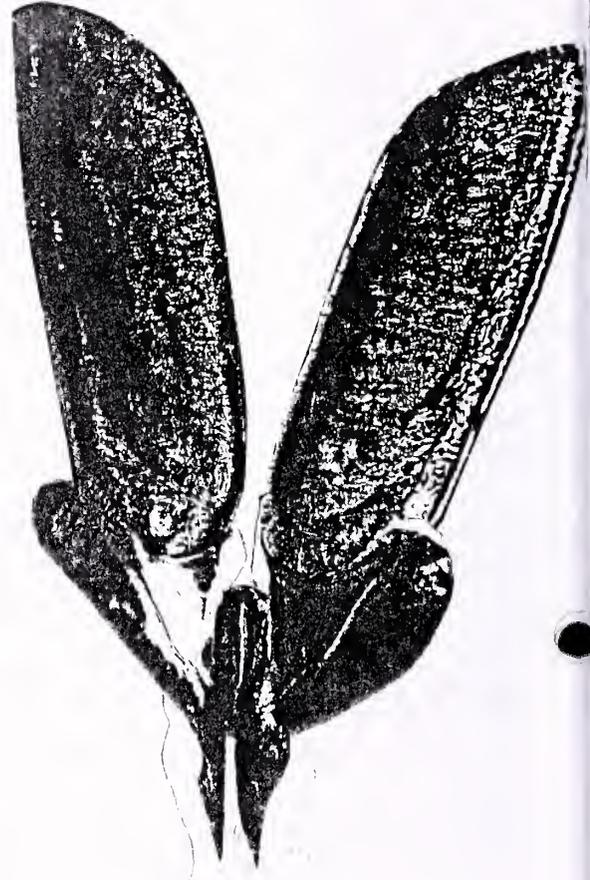
This species is from Sumatra and prefers warm temperatures. It enjoys high humidity but will adapt to a lower humidity level if carried out gradually. Packaged all purpose potting mix suits it fine, as long as it is coarse and fast draining (you may have to add some perlite or sharp sand). Keep some extra cuttings going...This is one hoyo you won't want to be without.

Ann Wayman

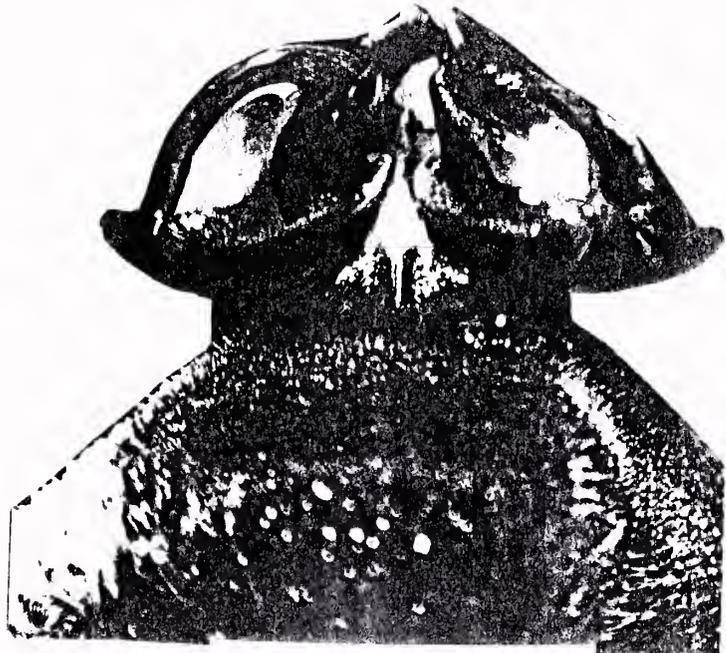
HOYA WAYETII KLOPPENBURG SP. NOV.



CALYX TOP VIEW



POLLINARIUM



CORONA SIDE VIEW



SCALE TOP VIEW



SCALE BOTTOM VIEW



SCALE SIDE VIEW

ALL PARTS APPROXIMATELY 11 TIMES NATURAL SIZE EXCEPT THE POLLINARIUM WHICH IS ABOUT 160 MAGNIFICATION.

Hoya Wayetii Kloppenburg sp. nov.

Holotype sheet Maximo K. Wayet #1989 (CHUP) from Baguio area, Benguet Province, Luzon Philippines, collected Nov. 1989. Isotype sheet Kloppenburg #90148 (UC), Section: Sperlingia (Vahl) Miquel (Acanthostemma).

Subsuffrutex vel pendulus, epiphytus, ramosus, scandens. Rami, filiformes, flexuosi, lax foliati, teretes glabri. Foliis anguste lanceolatis basi et apice attenuatis acutis utriusque glaberinis, petiolatis. Inflorescentiae umbelliformes pedunculatae, c. 12-18 florum, pedicellis gracilibus, maequilongis, glabris. Calycis segmenta ovato-triangula obtusiscula glabra, quam corolla multi breviora, margine ciliata. Corolla revoluta usque supra medium 5-fida, lobis ovatis, acuminatis, extus glabris, intus apice glabrato excepto papulis recurvis subulatis crystallinis obtectis. Coronae foliola ovala apice rostrato-acuminata, infra apicem et supra medium gibbo obscura donata supra marginata-carinato, postice obtusa subtus in ligulas 2 oblongas foliolam superantes; antheris paulo breviora. Pollinia oblique oblongoidae, translatoribus triangulis, obliquis; retinaculo anguste linearia.

This species is similar in leaf morphology to *Hoya angustifolia* Elmer (nomen nudum) and *Hoya kentiana* Burton. It is entirely glabrous except for the inner corolla surface as in the latter species. The leaves in this new species however, are, for the most part larger (wider, thicker and longer). As for the color they are generally darker green with a leaf edged in even darker green indicating the presence of more anthocyanin pigmentation in this species, recognized as non taxonomic characters. The calyx segments are larger in this species than the former species, the apex rounded, the central width greater, the margins ciliate, each overlapping, having broad flat ligules. The flower is larger. The corona is different. The corona is not sessile to the corolla but slightly raised on a short column. There is a central longitudinal ridge on the upper surface of the scales with an umbo above the middle, and a concave surface on either side leaving a rather sharp raised edge to the corona scale

especially opposite the umbo and inward from it; at this point the scale is relatively wide. The bilobed outer extensions are not markedly curved upward at the outer apex as they are in *H. kentiana* Burton. The retinaculum is different in being longer and narrower. The styler (stigma) apex is like that described by Elmer for *H. angustifolia* in being conical tapering erect with a blunt tip covered with a fuzzy pubescence. It is easy to recognize this species from *H. kentiana* Burton when the two are seen together even when not in bloom.

Internodes: 3.0-5.0 cm. long x .02 cm. in diameter, glabrous, becoming woody at the base, terete, flexible, with small, short, thickened adventitious roots just below the enlarged nodes.

Petiole: 0.5-1.5 cm long, terete, thick, glabrous. Not evidently grooved, deep green.

Leaf Blade: 5.0-14.5 cm. long x 1.5-2.7 cm. wide, thick, succulent, convex to nearly flat on the upper glabrous surface, triangular below and lighter green covered with granulate lighter colored punctations. Upper surface deep green with deeper green edging especially in younger leaves. Some rusty tones may be exhibited in newly formed leaves. Blades tapering to both ends, especially narrow toward the petiole which merges with the blade, leaf gland very small almost non-existent.

Peduncle: 7.0 cm. long terete, glabrous, deep green.

Pedicel: 1.0-2.0 cm. long. x 0.11 cm. diameter, curved variable in length, glabrous medium shiny green.

Calyx: lobes 0.17 cm. tall x 0.13 cm. at widest (at overlap), bright pale green, with ciliate margins, apex rounded, inside glabrous, outside granulate, broad flat ligule at sinus 0.03 cm. wide x 0.02 cm. long.

Corolla: revolute; outside glabrous except for apical triangle, 1.08 cm., bare, inside pubescent, with individual hair cells pointing inward toward the crown, cells long and crystalline white c. 0.05 cm. long decreasing in length as they approach the corona. Corolla color deep rose red. Sinus to sinus 0.33 cm.; Apex to sinus 0.35 cm. Center to Apex 0.80 cm. making flower diameter

flattened 1.6 cm. in diameter; widest 0.38 cm. above the sinus.

Corona: lobes 0.38 cm. long + 0.04 cm. to include bilobed extensions; overall length 0.42, 0.17 cm. at the widest, just outward from the inner lobe. Inner lobe tapers inward but is long and spatulate, meeting at raised center or nearly so. Scale very wide just back of inner lobe, at this point the central keel has a small umbo, with a sunken trough on either side leaving the edge of the scale raised. Scale thick c. 0.17 cm. at outer end. Lobes form a groove below extending from apex to 1/2 way to the center. Bilobed extensions 0.15 cm. thick. Color deep red except apical area of outer lobe yellow.

Pollinium: inwardly truncate 0.475 mm. long x 0.145 mm. wide at outer apex 0.02 cm. wide here tapering toward the caudicle. Rail along outer edges extending to caudical envelopment of inner apical area. Vacuole inward widest at inner apical area.

Translators: long narrowly scapula shaped, narrow and joining retinaculum well below the center, opaque granular. Caudicle clear, large bulbous at pollinia attachment, narrow inward and joining retinaculum just above translator.

Retinaculum: 0.16 mm. long and narrow, rounded inner apex, widening at the attachment points, bowed outward below this point, outer apex bifid, covered below with a clear membrane extending up the sides to the base of the inner translator arm.

Styler Head Referred to as the stigma head conical erect above the styler table the apical head feathery (pubescent).

Follicles: not seen.

I have named this *Hoya* in honor of its discoverer Maximo K. Wayet. Max worked for Professor Juan V. Pancho until the latter's retirement. I consider Max my good friend, a diligent self directed employee. An honest, hard worker concerned for the welfare of others. He has collected numerous Hoyas and Dischidias for me, being the first to recollect a living specimen of *H. mindorensis* Schlechter, also from the Baguio area.

Dale Kloppenburg

For A Better Understanding

The *Hoya coriacea* Bl., *H. fraterna* Bl. story

Participants:

Dr. Carl Ludwig Blume
Mr. Thomas Lobb

Dr. Blume 1796-1862 (66 years) born in Brunswick Germany. He was a Medical doctor. He went to Java in 1918 (then under Dutch administration) and became an inspector of vaccines at the Bogor Botanical Garden. In 1822 he was made director. He returned to Holland in 1826 with much Herbarium material (his own and other collectors) where he was appointed director of the Rijks Herbarium (State Herbarium at Leiden) in 1829. Note: all his collecting was done on the island of Java.

Thomas Lobb 1820-1894 (74 years) from Cornwall England was employed by the rich firm of Messrs Veitch, Exeter England from 1843-1860 to collect plants of horticulture value. In 1843 he was in Singapore visiting Java and adjacent islands. On his second expedition in 1848 he collected in Borneo, Laburn & Sarawak. He also visited the Philippines, collecting in the neighborhood of Manila. He again visited Borneo in 1854 & 1856.

To get the complete picture I have arranged chronologically the descriptive publications of the two *Hoya* species:

Hoya coriacea Blume

- 1826 Bijdragen tot de Flora von Nederlandsche Indie (Bijdr. 1825) p.1063 C.L. Blume
- 1830 Prodrum Syst. Veg. V.8 p.638 De Candolle
- 1837 General System of Gardening and Botany V.4 s.23 (A) p.127 G. Don
- 1840 Synopsis Plantarum V.6 p.892 Dietrich
- 1843 Tijdschrift von Natur. Geschieden Physiol. V.10 p.125 Hov. & De Vriese (Hassk.)
- 1848 Rumphia V.4 p.52, t.187, C.L. Blume
- 1849 Museum Botanicum Lugduna-batavorum V.1 p.44 C.L. Blume
- 1850 Botanical Magazine t..4518 (blossomed in August 1849)
- 1850 Fleur des Serres V.6 t.578 p.143 (picture from Bot. Mag.)
- 1850 Flower Garden V.1 p.77 fig.55 (1850-1851) Paxton & Lindley
- 1851 Jardin Fleur V.1 t.37 Lemaire
- 1853 Tuinbouw Flora V.1 p.68 De Vriese

- 1856 Flora von Nederlandsch Indie Bataviae V.2 p.521 Miquel & Zollinger
- 1883 Flora of British India V.4 p.61 J.D. Hooker
- 1895 Die Natürlichen Pflanzenfamilien t.4 abteil 2 p.288 (A. Engler & Prentl.) Schumann
- 1907 Journal of the Royal Asiatic Society, Bengal Branch "Flora of the Malay Peninsula" V.27 p.573 K.& G.
- 1912 Exkursionsflora, Flora von Java V.3 p.100 S.H. Koorders
- 1967 Flora of Java V.2 p.267 C.A. Backer
- 1978 Malay Nature Jour. V.30 #3/4 "The Peninsular Malaysian Species of *Hoya*" p.497-498 R.E. Rintz

Hoya fraterna Blume

- 1849 Museum Botanicum Lugduna-batavorum V.1 p.43 C.L. Blume
- 1848 Rumphia V.4 p.32 name only C.L. Blume
- 1850 Botanical Magazine t..4684 Hooker
- 1852 Fleur des Serres V.8 t.815 p.179 (picture from Bot. Mag.)
- 1853 Tuinbouw Flora V.1 p.69 W.H. De Vriese
- 1856 Flora von Nederlandsch Indie Bataviae V.2 p.522 Miquel & Zollinger
- 1858 Annales Botanisches Systematicae V.5 p.505 C.G. Walpers
- 1884 Flower Garden V.3 p.639 Paxton & Lindley
- 1912 Exkursionsflora, Flora von Java V.3 p.99 S.H. Koorders

Discussion: *H. coriacea* was found by Blume in 1822 on Mt. Salak and published it in 1826.

H. coriacea Blume was first described in "Bijdragen tot de Flora von Nederlandsch Indie" p. 1063 as follows:

H: foliis subvenosis ovalibus acutis vel acuminatis coriaceis glabris, corolla intus sericea.

Crescit: in fruticentis ad pendem montis Salak.
Floret: Octobri, etc.

Translation: *Hoya:* with leaves a little (or somewhat) nerved oval acute or acuminate coriaceous, glabris corolla inside silky (long straight closely pressed glossy hairs).

Growing: shrublike to pendulous among the Salak mountains.

Floret: Octobri, etc.

In 1844 Decaisne in De Candolle's Prodrumus V. 8 p. 638, describes this species under the key "folia trinervia coriacea v. carnosa pallide virentia".

Translated: "leaves trinerved leathery or fleshy, pale green".

In 1848, Blume in Rumphia Volume IV page 52 placed *H. coriacea* (also *H. fraterna*) in the Section *Physostemma*. (Coronae staminiae foliola subinflata, subtus marginibus revolutis fissura longitudinali hiantia.

Translation: leaflets of the staminal corona somewhat inflated, below with the margins revolute with gaping longitudinal split (fissure).

His Latin description is lengthy and full of details as follows:

H. coriacea Tab. 187: volubilis, glabra; foliis coriaceis ellipticis acutis v. acuminatis basi rotundatis v. obsolete emarginatis subvenosis supra petiolum calloso-glandulosis; umbellis longissime pedunculatis multifloris; corollae intus sericeo-velutinae laciniis triangulari-ovatus acutis; coronae stamineae foliolis supra convexis angulo exteriore obtusiusculo subreclinato Bl. Bydr. Flor. Ned. Ind. p. 1063. DeCaisne in De Cand. Prod. Syst. Veg. VIII p. 638.27 - Habit. In sylvis montanis Javae Occidentalis. Speciem huic valde affinum, *H. fraternam* MIHL, in collibus calcareis circa Kuripan indagavi, tam floribus minoribus, segmentis calycis multo longioribus, quam foliolis coronae staminiae angulo exteriore obtusis diversam. - Caulis suffruticosus, volubilis, teres, radicans, intervallo 6-8 poll. nonnunquam minori folia opposita patentissima gerens. Petioli 1/2-3/4 poll., teretiusculi, supra obsolete canaliculati. Folia 4-5 poll., 2-2 1/2 poll. lata, plana, ad basin supra glandula minuta fusca sessili praedita, coriacea, nitida supravenosa, venis in pagina aversa pallide viridi distinctioribus. Pedunculi in parte superiore caulis v. ramorum, iidem extrapetiolares, solitarii, 2-2 1/2 poll. longi, teretes, subpubescente v. glabrati, ex apice elevato-incrassato bracteolis squamaeformibus minutissimis triangulari-ovata obtusis imbricatis puberulis obsesso umbellato- multiflori. Pedicelli 1-1 1/3 poll., graciles teretiusculi, supra aliquato crassiores, patuli, pubescentes. Calyx quinquepartitus, extus puberulus, intus glabra; laciniis 2 lin., subulatis, margine tenuioribus. Corolla pollicaris, subcarnosa, quinquefidia, extus sordide pupurascens papillisque minutissimis scabrida, intus luteola et sericeo-velutina; laciniis ovatis, acutis, erecto-patentibus v. reflexis. Coronae stamineae foliola subinflata, carnosa, pallida, supra obtuse carinata, subtus excavata et marginibus utriusque revolutis quasi fissura longitudinali excisa, angulo interiore in

dentem acutum antherae incumbentem purpurescentem et angulo exteriore in acumen brevi obtusiusculum leviter reclinatum producta. Antherae sagitatae, membrana tenui margine crispata cinctae. Pollinia lineari-oblonga, recta, plana, margine exteriore pellucida, basi per crura breviter cuneata corpusculo retinaculi oblongo complicato brunneo corneo supra medium connexa. Stigma abbreviato-prismaticum.

Translation: *H. coriacea* plate 187, twining, glabrous; with the leaves leathery elliptic acute or acuminate with the base rounded or obsolete, emarginate (slightly notched) almost veined, above the petiole with a calloused gland; umbels with long multiflowered peduncles; with the inside of the corolla (silklake) sericeous-velvety, with the (lacinia) narrow lobes triangular-ovate; with the leaflets of the staminal corona convex above, with the exterior angle somewhat obtuse turned or bent downward a little. Blume in Bijdragen tot de Flora von Nederlandsch Indie (see first entry above) page 1063. Decaisne in De Candolle's Prodrumus System Veg. - Volume 3 page 638.27 - Habitat. In the forest mountains of Occidental (Western) Java. The specimen strongly points in the direction of the closely related *H. fraterna* known to me from the place in the calcareous hills about Kuripan as the flowers are smaller with the segments of the calyx much longer, with the exterior obtuse angle of the staminal corona different. Stem slightly woody twining, round rooting (putting forth aerial roots) spacing 16.2-21.6 cm. (long) somewhat round, above obsolete grooved. Leaves 10-13.5 cm. (long) 5-6.7 cm. wide, flat, at the base on the top side provided with a minute brown sessile gland, leathery, shiny, veined above, veins very distinct, on the lower surface pale green. Peduncles on the above part of the stem or branches, above the petioles, solitary 5.4-6.7 cm. long, round, somewhat pubescent or glabrous, outer tips expanded-thickened with bracteoles shaped like scales, very minute triangular ovate obtuse overlapping puberulous, occupying multiflowered umbels. Pedicels 2.7-3.6 cm. (long) very narrowly rounded above to some extent thickened outspread pubescent. Calyx 5 parted, outside puberulous, inside glabrous, flaps 4.5 mm. (long) awl shaped (tapering from the base to a very fine point), with the margins thin. Corolla 1" long (2.5 cm.) somewhat thick 5-fid, outside dull purplish with minute nipple like projections (papillate) somewhat scabrous, inside yellow and silky-velvety, lobes ovate, acute spreading erect or reflexed. Leaflets of the staminal corona somewhat inflated, thick, pale, above obtusely keeled, below hollowed out and on both sides revolute, nearly cut into a longitudinal fissure (channeled) with the purplish interior angle a pointed tooth, incumbent upon the anther and with the exterior angle acuminate briefly very obtuse slightly bent downward. Membrane of the

anthers sagitate (arrow shaped) with thin curled margins enclosed. Pollinia linearly oblong, erect, flat, with the exterior margin translucent, with the base portion narrowly cuneate, connected above the middle of the corpuscle of the brownish oblong horny (hard) folded upon itself retinacula.

Hoya fraterna Blume is described in "Museum Botanicum Lugduna- Batavorum" V.I p. 44 in 1849. (well after his return to Holland) This is 23 years after *H. coriacea* Blume was described. The species was, however, collected in 1824. The name of this species is mentioned in the above text (*Rumphia*) as noted. Blume placed this species in the Section *Physostemma* along with *H. coriacea* Blume; *H. vitellina* Blume; *H. polystachya* Blume and *H. clandestina* Blume. The text under #104 reads as follows:

104. *Hoya* (*Physostemma*) *fraterna* Bl.: volubilis, glabra; foliis coriaceis ovato-oblongis ellipticisve acuminatis basi rotundatis subvenosis supra petiolum calloso-glandulosis; umbellis longissime pedunculatis multifloris; corollae intus sericeo-velutinae laciniis triangulari- ovatis acutis; coronae stamineae foliolis supra convexis angulo exteriore obtuso recto. Bl. in *Rumphia* IV. - *H. coriacea* maxime affinis, cujus flores majores, segmenta calycis breviora et foliola coronae stamineae angulo exteriore minus obtusa atque subreclinata. In calcareis Kuripan Javae occidentalis.

Translation: 104. *Hoya* (*Physostemma*) *fraterna* Blume: twining, glabrous, leaves leathery ovate-oblong elliptical acuminate with the base rounded somewhat veined, on the upper side of the petiole a little callous glandular; with long pedunculed many flowered umbels, with the corona inside silky-velvety with lobes triangular ovate acute; with the leaflets of the staminal corona convex above, the exterior angle obtuse erect. Blume in *Rumphia* IV - very close to (related) *Hoya coriacea* whose flowers are larger, with segments of the calyx smaller and leaflets of the staminal corona outer lobe (angle) less obtuse and somewhat reclined (turned downward). In calcareous soil at Kuripan Western Java.

Now on to the plant depicted in Curtis Botanic Magazine published 1 December 1852 which was collected by Lobb and sent to the Veitch Nursery. Since it has been determined that the two species are synonymous and within the bounds of species variation what is the Curtis Drawing of? It is known that Lobb falsified the collecting localities of his plants. This was most common among collectors, especially orchid collectors, since they did not want the competition to know the source of new and rare plants. In *Hortus Veitelis* 1906 p.41 E.D. Merrill writes "Genera and species erroneously credited to Philippine Flora" in *Philip. Jour. Sci. C. Botany* V.10 1915 p.171-194 Merrill even suggests "The labels of Lobb's specimens seem to have been

purposely falsified as to localities in which they were collected".

Where did the Curtis plant originate? Where was Lobb collecting prior to the Curtis publication? Note that in 1848 on his 2nd trip he collected in N. Borneo and in the vicinity of Manila. This is very close to the probable time that the Curtis plant was received by Veitch. It is my measured guess that this species is from the Philippines and possibly also from N. Borneo and synonymous with *H. melaflua* (Blanco) Merrill or is a closely related species. I have received many clones of *H. melaflua* (a Philippine *Hoya*) from Dexter Heuschkel. One cutting, has foliage identical to the plant in commerce (a poor bloomer) known as *H. fraterna*. This cutting has been labeled 900118 DH, and I believe was collected in Sinaloa not too far from Manila. This plant has been shared with Ted Green, Ann Wayman and Chuck Everson. It is hoped that one of us will soon bloom this plant so a close comparison can be made with *H. melaflua* and (Our so called) *H. fraterna*. I believe any publications after 1852 of *H. fraterna* Bl. should be looked at skeptically and critically since they may be based on the Curtis drawing and not Blume's type sheet. They may even be a mixture of both as sometimes has occurred.

Some questions still remain. Since the Curtis publication was only 10 years prior to Dr. Blume's death, is it likely he was not aware of the colored drawing and did not see the publication? If he had I feel he would have commented on the discrepancy. Are the species *H. melaflua* (Blanco) Merrill and our *H. fraterna* identical and if not, are they within the realm of species variation? Since Dr. Blume named and described both *H. coriacea* and *H. fraterna* (and pointed out 3 differences between the species how do we now find the two type sheets to be nearly identical (and different than what we are familiar with as *H. fraterna*)? It is assured that the Type sheet of *H. Fraterna* at Leiden is not our species that we know as *H. fraterna*. I may be mistaken but it seems the original Type sheet of *H. coriacea* Blume was not present in the Leiden material, or was not presented in the previous article. In a way this is immaterial since it does not effect the *H. fraterna* validity. I am curious as to where the flower of *H. coriacea* Bl. that Ruurd boiled up came from. Is the holotype sheet of *H. coriacea* at Leiden? There is also the question of Sectional designation. Although Blume was the one who established the section *Physostelma* (calling it *Physostemma*) based on Wight's Genus, the species he placed here do not seem to fit with the genera delineations. I will leave these differences for another discussion. Like all good mysteries there seems to be more questions than answers.

Dale Kloppenburg

Food For Your Plants

Plants in the wild are ragged, mixed with yellowed, insect chewed leaves, dead and dying stems, and usually, leaves that are smaller and thicker than cultivated plants. The transformation to culture is often amazing, and proves that our cultivated plants certainly get more attention and loving care.

Every living thing on our planet requires food for energy. The essential elements for health and growth are sugar and other carbohydrates. Unlike animals, however, plants utilize the energy of the sun to manufacture their own food, through a process called photosynthesis.

In photosynthesis, light energy, carbon dioxide, and water combine with the green plant pigment, chlorophyll, to produce plant sugars and oxygen, which is released into our atmosphere.

Photosynthesis requires an environment with a sufficient amount of light, warm temperatures, and the proper amount of humidity.

So called "plant foods" can never compensate for a poor environment, since fertilizer provides only the nutritional building materials, not the plant's real food...the sugar it manufactures by photosynthesis.

The organic decomposition of peat moss, sphagnum, bark and other plant potting media will provide your plants with a lot of their nutritional "building blocks". In nature, we have decomposed bark, litter, dust, animal manure from birds, bats, ants etc. even rain water contains nitrogen the most essential in plant nutrition. These provide the necessary nutrients, but we want our home grown Hoyas to look better than plants struggling in the wild, so we protect them from the wind, the driving rains, the scorching sun...and we try to provide them with any minerals that they might be lacking. The question that arises is what is necessary and what is excess. Too much fertilizer, and we have a dead or badly burned plant. Good common sense tells us to use fertilizers judiciously, and on potted plants in weak solutions or concentrations. If the plant is continuously in growth it needs a constant source of food. The plant takes up nutrients in the form of ions and can not tell the difference between organic and inorganic sources. They also can not tell the difference between cheap and expensive substances.

Let's look at plant nutrition and nutrients closely. Of the more than 100 chemical elements known to man today, 16 are known to be essential for plant growth. Others may eventually be found to play some role in plant growth or function in very minute amounts. Many of us would mentally skip over the 3 major ones (carbon, hydrogen, and oxygen) because they are so common. In a sense they are "free" because they are taken from the air and water. The 13 other essential elements are normally absorbed from the soil by the root system, or to a lesser degree, by being absorbed through the foliage,

such as in foliar feeding. These 13 elements are divided into primary, secondary, and micro plant nutrients, and are separated into these divisions on the basis of the relative amounts required for plant growth. None is more essential than any other, regardless of the amounts required.

Briefly, carbon is a basic building block for plant life. It is taken from the air in the form of carbon dioxide. Photosynthesis combines the carbon with hydrogen and oxygen to form carbohydrates. Oxygen is required for plant respiration, and hydrogen, along with oxygen, forms water, which constitutes a large portion of the total plant weight. This water is required for the transport of minerals and plant food and the chemical reactions necessary for plant growth.

The primary plant nutrients are nitrogen, phosphorous, and potassium. Most of the nitrogen is taken up by plants in the nitrate form (negative ions or the chemical formula NO_3^-). The phosphorous is absorbed as HPO_4^- , H_2PO_4^- or PO_4^{3-} , depending on the soil pH (its acidity). Plants take up the potassium in the form of a positive ion, K^+ . In the fertilizer we purchase for our Hoya plants, the various 3 numbered formulas on the labels, e.g. 8-24-10, 12-36-14, 20-20-20 etc. stand for these 3 primary nutrients, nitrogen, phosphorous, and potassium, and, in that order as N P K represents the percent by weight.

The secondary plant nutrients are calcium, magnesium, and sulphur. The 7 micronutrient's are zinc, iron, manganese, copper, boron, molybdenum, and chlorine. Balance is important in plant nutrition, and our objective should be to supplement the capacity of our potting mix to supply nutrients for ideal growth and flower production.

there are many choices for the consumer. Keep in mind what you want, what you are getting, and what price you are paying. In most instances you need only supplement the nutrients already present. It may be well to occasionally supply micronutrients. Though the majority of the better known brands of specialty plant foods contain these micronutrients, they are usually quite expensive, as they are packaged in small quantity. On the other hand, huge bulk sacks of plant food may go to waste if it takes years to use. Foliar sprays and slow release fertilizers also have their place. The former for quick response and the latter because they need be applied so infrequently. Many growers will apply a high nitrogen fertilizer in the spring when rapid growth is desirable, then switch to high phosphorous in the fall when growth slows in order to promote bloom, and to harden off the plants for the cooler winter months.

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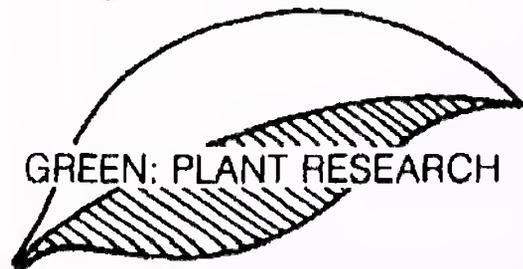


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- H. camphorifolia
- H. inconspicua
- H. caudata var. crassifolia
- H. Spec. PNG-1
- H. erythrina

Volume 6

- H. fraterna
- H. coronaria Form 1
- H. limoniaca
- H. bilobata
- H. spec. PNG-6
- H. tsangi
- H. diptera
- H. acuta (bronze)
- H. fungii
- H. diversifolia-B

Volume 7

- H. carnosa cv. "Krinkle 8"
- H. sp. Saba, Malaysia
- H. Sp. WMZ
- H. polyneura
- H. sp. WMZ (Back of flower & calyx)
- H. nummularioides (formerly called H. pubera)
- H. acuta Penang
- H. plicata
- H. carnosa cv. "Dapple Gray"
- H. sanae

Volume 8

- H. purpureo fusca
- H. odorata
- H. pottsii
- H. Sp. IML 33
- H. picta
- H. pseudo littoralis
- H. nicholsoniae (from Logee's)
- H. micrantha
- H. vitiensis
- H. curtisii (foliage)

Volume 9

- H. sp. USDA #354236 (calycina)
- H. merrilli

- H. affinis
- H. darwinii
- H. pubicalyx 'Chimera'
- H. sp. 'Gold Star'
- H. sp. # BSI-1
- H. archboldiana (Red Form)
- H. finlaysonii
- H. naumanii

Volume 10

- H. pubicalyx (Silver Pink)
- H. rupicola
- H. vitellina
- H. sp. IML # 234 (obscura)
- H. meliflua
- H. engleriana
- H. megalaster
- H. archboldiana (Pink Form)
- H. sp. Bangkok Red
- H. sp. cebu

Volume 11

- H. mitrata
- H. sp. DAV-817
- H. dimorpha
- H. multiflora
- H. sp. Sabah, Malaysia #IML 557
- H. erythrostemma
- H. sussuella (ariadna)
- H. kentiana
- H. incrassata
- H. chuniana

Volume 12

- H. eitapensis
- H. curtisii/pruinosa
- H. sp. (New Guinea White)
- H. poolei
- H. pallida
- H. sp. Kuching, Borneo # IML 232
- H. chlorantha var. tutuilensis
- H. diptera (from Fiji)
- H. cominsii
- H. vitellina



Pictures

International Hoya Association
P.O. Box 5130
Central Point, OR. 97502

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GREEN'S GAUDY GIANT

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BOTANICAL GARDEN

INTERNATIONAL HOYA ASSOCIATION

(Formerly Hoya Society-West Coast)

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(503) 664-6808
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Back Issues

We now have the thirteen original issues of the Hoya Society -West Coast newsletter bound as one publication. The price of this bound text is \$25.00 U.S. and \$35.00 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 \$4.00 per issue, \$5.00 per issue shipped surface mail overseas.

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ATTENTION

OVERSEAS MEMBERS

During the past five years, we have been able to mail our publication to all foreign countries via air-mail, even though in some instances the mailing costs, plus the price of the photos were more than we were collecting for the subscription price. This was accomplished due to surplus money that came from back issue and picture sales, photo sponsors and to some extent by being subsidized by our U.S.A. members. This has posed no problem until this past year when our foreign members increased to numbers almost equaling those of our members here at home.

This matter was discussed at the 1992 board of directors meeting, and it was decided that we had one of two options; we could either raise subscription prices again which may be a hardship on many of our overseas members, or we could change our mailing methods from air to surface mail. The option to deliver "Fraterna" via surface mail won all votes. Therefore, beginning with the 1st quarter 1994 all publications mailed overseas will be posted by surface mail.

I know from past experience that it takes anywhere from 6 to 8 weeks for mail to be delivered by surface mail, but please bear with us. The first issue will take the longest...thereafter you will be getting your publication every 3 months as usual. This decision will hopefully allow us to add a few more articles of interest, maybe even an extra picture occasionally.

Ann Wayman

San Diego Hoya Group

Talks about Pests, Pests and More Pests

Summer arrived with a blast in Southern California, but on "HOYA DAY", June 27th, at Rainbow Gardens, in Vista, the weather cooled down to a beautiful 80 degree day. A very well attended meeting (63 and still counting!), the topic for the day was PESTS...what kinds there are, how to identify them, and how to control them. A good general discussion lasting 30 minutes yielded enough information to help most people get a head start on protecting their hoyas. Local member David Jones was the Plant-Of-The-Month speaker, showing off a beautiful Hoya megalaster loaded with buds and ready to burst into bloom! His recommendations for growing this hoyo? Keep it warm, and on the dry side. A most beautiful hoyo! Michael Kartuz next displayed a fantastic

Hoya archboldiana that he had won on our raffle table two years previously. It was now in a 7 1/2" hanging basket, in FULL BLOOM! Jeanne Beck brought a one-year-old Hoya imperialis (also in full bloom), two umbels of 4 flowers per umbel...each flower 1 1/2" across!). This plant was also won on our raffle table, and was brought into bloom by Jeanne in just one year! She keeps this species growing in crushed volcanic rock, in the house, on a heat cable. Jeanne lives right along the coast in San Diego, where it never gets too warm, or too cold. These are the conditions Hoya imperialis responds



Jeanne Beck presents Hoya imperialis
Photo sponsored by San Diego Hoya Group

to the best. Rainbow Gardens Nursery and Bookshop were open for the day, and all of the attendees had a wonderful time browsing through the hoyo plants and hoyo books...taking advantage of the situation and picking out their favorite goodies.

The food theme for the day was ITALIAN, with plenty of spaghetti, pasta, manicotti, and egg plant parmesan. In fact, we had 28 feet of table space just filled! One member brought home grown plums and peaches...picked that very morning from his own trees. All in all, it was a wonderful day. The next meeting will also be held at Rainbow Gardens on Sunday, September 26th. Food theme will be GERMAN, and we'll have a traditional G e r m a n OKTOBERFEST, with plenty of German

sausage, sauerkraut, pretzels, German spirits...suspenders and liederhosen, and German music! Our round table discussion will be on how to winterize your hoyas...keeping them safe and warm during these long, cold nights in the winter. Everyone is invited; please try to attend! For more information, contact Harriette Schapiro at (619) 273-4267.

Chuck Everson

San Diego Hoya Group Reporter

Cover Photo

Green's Gaudy Giant

Photo by Ted Green..Sponsored by Richard Flowers

This plant was discovered in a steamy jungle setting in the wilds of Borneo in 1992 By Ted Green of Green: Plant Research. Ted says it was growing in a wild and untamed habitat at approximately 2,000 feet altitude. When searching for adjectives to describe this very large new hoyo, several words come to mind...enormous, immense and massive. It is also gaudy, garish and gorgeous. Ted says the flowers are pale lavender and about 1/2" across.

I received a cutting of this plant from Ted in the early spring of 1993. It was possibly the weirdest looking cutting I have ever received, as the leaves had all been cut exactly in half across the middle. It was obvious that these huge leaves had to be cut in order to fit into the box. No harm was done! The cutting rooted in about a week and had new growth within fifteen days. Unlike other hoyas in this king sized category, the young stems are quite thin and very flexible. The new leaves are pinkish bronze, and at first give no hint to their eventual size, but turn your head for a day or so, and they seem to grow overnight to a full 12 to 14 inches long by 8 to 12 inches across. As the leaves mature, they turn an almost garish blue/green in color. The leaves are set rather close together on my plant, with the internodes about 6" apart. This may not be true of all of these plants...I deliberately cut the tips from my plants as they grow to force branching, and in the process it forces the leaves to grow closer together. Time will tell whether the dense packed leaves are a characteristic trait, or a result of the pruning.

Ted said there were only a few flowers on this plant when he found it, but he was able to save some in a pickling solution for further study.

This species appears to be very easy to grow. It doesn't abort new leaves like some of the other large leaved hoyas, and is completely happy in an all purpose potting mix. Considering the warm temperatures in Borneo, it would be wise to keep it warm and in fairly high humidity.

Ann Wayman

IHA Interview

David Jones (Lakewood, California)

Conducted by Roving Reporter Helen Gushue

As it sometimes happens, we have received interviews of the same member, but from different sources. Both of these interviews are excellent, and David always has much to say concerning hoyas, so we are making space for both interviews in this issue.

Helen: The area of Southern California where David lives and grows his hoyas is noted for their normally mild winter temperatures, so the first question for David is...Do you grow your hoyas outside or just move particular ones out for the summer? Which hoyas do you feel have the best chance of surviving in an outdoor setting? How much sun, shade, wind, and weather are they exposed to?

David: I move some of my hoyas outside, mostly the thicker leaved types like *H. carnosa*, and the species that are known to come from cooler areas of the sub-tropics. I keep them under 50% shade cloth and out of the wind as much as possible.

Helen: Do you prefer plastic versus clay pots, or are there some hoyas you prefer to put in clay?

with plastic is water retention that can create root rot, so watering has to be carefully done. The watering schedule for clay requires more frequent watering as the pots are very porous but it is almost impossible to overwater in clay. For this reason I would prefer clay pots, but they are also very heavy to hang.

Helen: What kind of bug control methods do you employ?

David: Spring and summer are the worst time for bugs. I just use Malathion basically for all my hoyas. I use an attachment to the hose which measures the chemicals as I spray and water. In the winter I do more surface watering, however, I do water the roots a bit before applying any chemical to avoid root burn or damage. I have the most trouble with bugs when I leave the plants to dry out over a period of time. I alternate the chemicals that I use, but I never use Diazinon as it will kill hoyas or at least defoliate them. I have found that spider mites are the hardest pest to get rid of. You will see a faint web on the undersides of the leaves. The mites themselves are microscopic and invisible to the naked eye, so I check first to make sure it is not merely spiders that are making the webs. I use Sedaflora pesticide as an alternative to Malathion as all insects will develop a resistance to the same pesticide when used exclusively over a period of time. For spider mites I remove the leaves and hope for the best! I get Sediflora from back east (New York) as it is not sold here in California. I also use a mixture of corn oil (not Mazola) and Joy dishwashing detergent (1 pint corn oil, and 1/2 pint of Joy per gallon of water). I attach my gauge device and spray the foliage, constantly shaking the mix while spraying. After a few hours I hose everything down well with clear water to remove the soap residue.

Helen: Do you have more trouble with insects outside or inside of your greenhouse?

David: I seldom have trouble with mealybugs and aphids outside, but mostly have this kind of trouble inside the greenhouse. I think the contributing factor here might be poor circulation, soil dryness that weakens the plants, and the fact that plants are spaced very close together in the greenhouse.

Helen: Do you sell any of your plants, or have plans to do so in the future?

David: I don't sell any of my plants or cuttings, but often use them to trade for other hoyas that I want in my collection.

Helen: List your top 10 hoyas which are favorites for fragrance, foliage and/or flowers.

David: *H. longifolia*, *H. serpens*, *H. polyneura*, *H. imperialis*, *H. lacunosa*, *H. kerri*, *H. diversifolia*, *H. multiflora*, *H. pachyclada*, *H. archboldiana*

Helen: How often do you feed your hoyas, and what do you feed them? Are any of the hoyas fed differently than others? Do you have a set schedule for feeding and watering?

David: I feed all of the hoyas those inside and outside at the same time. I use a 15-30-15 formula or Liquinox 0-10-10 which is a liquid concentrate. When I pot them up, I usually mix Osmocote in with the soil mixture, so if I miss a feeding or two they always have a backup food supply. I haven't experienced any problem in feeding the hoyas when they are in bloom.

Helen: Explain and/or demonstrate your method for rooting cuttings and mention any variations you may have for some. Which ones have you found to be the most difficult and how would you classify your successes? Using your method of rooting, approximately how long does it take to get a good strong root for potting?

David: There are many that are hard to root, but I find that some gentle bottom heat will help to produce good strong roots much faster. In my greenhouse I use a flat heater from a water bed to create a nice warm surface on which to root my cuttings. I use one of two methods to root cuttings, 1) a soil mixture (2 cubic feet of Azalea mix, 4 quarts of perlite, 2 quarts of vermiculite, 2 quarts of horticultural charcoal). I make up a batch of this mix and store it in a large garbage can for use in rooting cuttings as well as transplanting plants. 2) Agri-gro granules is another method I use for rooting. I use test tubes filled with

agri-gro, when the cuttings have filled the tubes with roots, I transfer them to a pot of my transplanting mix. Agri-gro is just one of many new products used in the nursery business for retaining huge amounts of water and holding it around the roots in a gelatin like substance. I fill the test tubes half full of Agri-gro and add water to reach a 3/4 line on the tube, then stick the hoya cutting into that. I have a board set up which has slots bored out to the size of the tubes, the glass tubes allow me to see how well the roots have progressed without disturbing the cuttings. If the base of the rooting area turns pink, then I know the cutting is bad and throw it away. The greenhouse primarily faces west, and the construction material is Solar Grow with all areas whitewashed. The Whitewashing was done because the plants were burning from too much sun. Adding heat and warmth does hasten the rooting, however, getting a really good root in my greenhouse under my conditions of climate and temperature control normally takes about one year.

Helen: Do you find that certain plants are more prone to mealy bugs and aphids than others?

David: My observation has been that all hoyas are equally susceptible to mealy bugs and aphids.

Helen: What method do you use to identify the name(s) of your hoyas, and do you believe that the names of the hoyas in your collection are accurate? What would you say is your primary source for acquiring new hoyas.

David: Sometimes I know by just looking at the leaves of the hoyas. As far as all the names on my hoyas being accurate, I am not sure, I leave that question to the people I get them from. Most of the rare hoyas in my collection came from Michael Miyashiro of Rainforest Plantes et Fleurs in Hawaii and Dale Kloppenburg of Hill-N-Dale nursery in Fresno.

Helen: Do you have a problem with ants, and if so, how do you control them?

David: I have never considered ants a problem either inside or outside of my greenhouse. If I detect them, I submerge the plant in water, the ants run to the surface and crawl onto the foliage where I spray them with a pesticide.

Helen: How do you heat your greenhouse in the winter, and what is your temperature range between day and night? Do you heat the water that you use on your hoyas?

David: I keep most of my hoyas between 65 and 75 degrees during the winter with very little change between day and night. I don't heat the water that I use on my hoyas...I just use it as it comes out of the hose.

Helen: How old are some of your oldest plants? How often do you transplant, and how do you determine when it is time to move your hoyas to a bigger pot?

David: I'm not sure how old some of my plants are. I transplant from a 4" to a 6" pot after one year, then move them up as the rootball fills the pot. I prefer to transplant in the spring and summer only. This is also the time I take cuttings to root. I prefer to not take cuttings past mid to late August.

Helen: Do you lose a lot of hoyas, and what do they die from?

David: I've lost count of all the hoyas that have died over the years. Some die from the potting mix being too heavy creating a soggy, water logged condition, other times they die for no apparent reason, but can usually be traced to too much or too little water.

Helen: Are there other plants or plant families that you are interested in, what are they?

David: I am interested in many plants, different Asclepiads for instance, such as Stephanotis, Jasminoids, such as Gardenias, and many types of Orchids, Plumerias and Hibiscus.

Member Close-Up

David Jones and Stephen Gaudin

Two of our long time members who hail from Lakewood, California, are David Jones and Stephen Gaudin. Stephen is a newcomer to Hoyas, so we'll begin with David. Since David was 10 years old, he has been fascinated by plants--all kinds of plants. Born and reared in Brooklyn, New York, David started growing plants at the tender age of 10 years old, mainly on a fire escape! In 1979, David moved to San Francisco where he worked at the Sloat Garden Center on 3rd and Clement. It was during this 1 1/2-year stint that David met up with Stephen Gaudin and began their "serious" plant growing. Moving to Hawaii in 1988, they thought they had finally found the plant paradise on earth. After eight grueling months in a wilderness area twenty miles from Hilo, David and Stephen called it quits there. They were in a place where they got over 300" of rain a year, and they were losing all of their plants.

Relocating back to California, they settled in Lakewood in 1989, looked up their old friend Lina Paul (I.H.A. Board Member), who had just helped form the San Diego Hoya Group. And now, after 14 meetings of the S.D.H.G., it appears they're hooked on Hoyas! (Is this a bad thing?).

I asked David if he could tell me a little bit about his favorite Hoyas. His favorites are: *H. archboldiana*, *H.*

megalaster and *H. lacunosa*. The latter for its fragrance. He loves Hoyas for their foliage and their flowers--each one is so different. Asked what he thought about the I.H.A. and Fraterna (David is a charter member), he felt that it's extremely informative and that all of Fraterna is important--**the technical as well as the basic information. A quarterly bulletin has to appeal to all its members in order for a Society to survive. What would David and Stephen like to see in the Fraterna that's not in there at present? "A SWAP MEET--plant swap or exchange or trade. Not only would this help people increase their Hoya collections, but would also let people get to know each other better through trade and correspondence. A Society is made up of people and plants--putting them together is the #1 priority of any good Society".**

What else would David and Stephen like to see in the Fraterna? "Perhaps a series of articles of several different types of Hoyas--how to grow them, what to grow them in--requirements for temperature, light, etc."

And finally, what advice would they offer to beginners? "People who are just starting out should begin with the easy Hoyas--the ones that are hardy and not too expensive; not the exotic ones or hard to grow varieties. Experiment with the hardy ones at first, then ease on up to the more exotic varieties. By then, the knowledge and experience should be there for one to grow and enjoy these exotic plants".

By Chuck Everson



David Jones



Stephen Gaudin

Questions & Answers

Question: How can I transplant my hoyas when they are on trellises? M.K.

Answer: Without knowing what kind of trellis we are discussing, or how big your plants are, the only answer I can give to this question is to relate a few experiences I have had personally with repotting trellised plants. For rather smallish plants in 6" to 8" pots that have the trellis buried directly in the pot with them, it is a fairly easy matter to lift the plant, rootball, trellis and all and move to a bigger pot with as little disturbance as possible. When I repot or pot-up a very large plant on a stationary trellises that has been nailed to a wall or post, I leave the pot right where it is, and break it. Clay breaks easy, plastic...not quite so easy, and redwood tubs are murder! Gently remove as much of the old soil as possible, then slide the new pot under the roots and start filling in with fresh potting mix. Most of the time these plants recover without any set-back whatsoever. The most difficult plants to repot are those in wire or plastic rings that have hoops welded or molded directly on to them. You can't sit these plants on the floor or a table where it would be easier to work with, because the hoops fall over and the top of the plant with it...usually breaking numerous branches and leaves in the process. This is one case where I would strongly consider cutting the plant back very drastically to manageable size before trying to repot. It's heartbreaking to cut a whole wheelbarrow full of green growing plant, but these cut back plants will survive and grow bushier and even prettier than they were before. Don't worry about cutting off your bloom spurs, new spurs will form on the new branches and, it is a well known fact that new growth blooms better than old growth. If you can't bear the thought of throwing away all those cuttings that you just cut off, root them in small pots and take them over to the senior citizens home. Most of these older folks are thrilled with gift plants.

Question: Which hoyas are the best bloomers and have the heaviest and most pleasant fragrance? M.K.

Answer: The best bloomers don't necessarily have the best fragrance. In fact, some of the best bloomers don't appear to have any scent at all. As for heavy blooming hoyas, I would pick *H. pubicalyx* (the pink silver vine) as the longest blooming hoya. All of the many variations that I have of this plant bloom practically non-stop year round with 15 to 20 umbels open all the time. Hoyas with huge numbers of seasonal flowers are almost too many to name, but a few are *H. obovata*, species from Bangkok # 4, *H. incrassata*, *H. micrantha*, *H. tsangii* and of course the fall blooming *H. nummularioides* which can have an umbel of flowers in every single axil. I believe fragrance is a personal preference and what smells nice to one person may stink to high heaven to someone else. When asked, most people will name *H. macgillivrayi* and *H. archboldiana* as their favorite, but many others choose *H. pubicalyx*, *H. carnosa*, *H. finlaysonii* and numerous others.

Question: How can I get a leaf cutting to root? M.K.

Answer: Leaf cuttings root easily in almost any kind of medium. The trick is not with rooting them, but in getting them to put out some growth which leaf cuttings alone don't often do. The solution to this puzzle is to cut the leaf WITH THE NODE from the mother plant attached. The new growth will start from the buried node just like it does on many other cuttings.

Question: Why doesn't my Sweetheart hoya bloom from the same spur twice. M.K.

Answer: Many members have asked this same question. I honestly don't know, I've never ran across that problem in my greenhouse. Mine continue to bloom from the same spurs time after time and year after year, as well as on the new spurs. The only answer that sounds reasonable is that the older part of the plant is being shaded by the plant itself or other plants. One of our members told me that when she sprayed the spurs with full strength alcohol, her plants never bloomed again from those same spurs.

Question: My plants do well outside all summer but immediately lose their leaves when brought indoors. If I leave them out, most of them freeze. Is there a solution to this problem? M.R.

Answer: Hoyas lose their leaves because of sudden, drastic changes in growing conditions, such as temperature, humidity, and available light. I would suggest bringing them in before the temperature drops to extreme variations between inside and outside. Also, keep the leaves (but not the soil) quite moist for several weeks until they adjust to the dryer conditions in your home. This can be accomplished with a small spray bottle filled with room temperature water.

Question: I have a very large plant of *H. polystachya* that I want to start new plants from. Since it took over three years to get this original cutting to root and grow, I would like to try another method. Someone told me I should try an air layer. Can you tell me how to do this with a hoya? L.C.

Answer: Hoyas are no different than any other plant. Air layering is simply the process by which a small vee shaped notch is made in the main stem or a sturdy side branch of a growing plant, then a large wad of moist sphagnum moss is packed around the notch and covered with plastic film. This dressing is tied at both ends so the moss doesn't pull loose and fall out. New roots will form and grow profusely as long as the moss is kept moist. As soon as you have a good strong set of roots, you may cut this off below the new roots and pot it up the same as any other cutting. I might add that hoyas, as a rule are very fast to root and start new growth from cuttings (or slips) completely removed from the mother plant. A possible reason for your original cutting taking so long to start growing, is that it was an overaged, woody cutting taken from the oldest part of someone's plant. If you start with a mature but young healthy cutting, it should never take longer than about ten days to root and another two to three weeks to start growing.

Ann Wayman

Propagating Hoyas

By Leo Pickoff

Although I have propagated hoyas by various methods for several years, no records were ever kept. In an attempt to ascertain whether or not one method or one rooting mix was better than another, an experiment was tried.

Only two basic methods were used: Air-layering and cuttings. However, different rooting materials were used. Four rooting media were put into small plastic trays and tap water was poured into a 16 oz. jar. Here is what I used:

1. Our regular potting mix. We purchase a commercial planting mix. We then add one part pumice to two parts of the planting mix.
2. A product from Burpee's Seed Co. called 'Planting Formula'. To our chagrin, my wife uses it to root everything, but it is no longer available. It is a heavy mix that retains moisture for a long time. It contains perlite and must have a large proportion of peat.
3. Pumice.
4. Perlite.
5. Tap water.

On 28th of June cuttings were taken from a plant labeled USDA 354245. Most of the cuttings were taken from old growth, but some new growth was included. Some cuttings had leaves while others were bare. Many of the stems had peduncles and some were flowering when cut. All cuttings were immediately placed in a rooting medium. An effort was made to place similar cuttings in each of the containers.

The containers were placed under, but at the edge of a bench in the greenhouse. The area is well lit all day and receives sun part of the day. The greenhouse temperature does not exceed 100 degrees F. and night time temperatures dropped into the 60's. The mixes were kept damp. When drying did occur, everything was wet thoroughly. No attempt was made to keep any mix just slightly moist. No heating was used. The chart shows the results.

Date Roots Found

Rooting Medium Old Stem without Leaves Old Stem With Leaves New Stem Without Leaves New Stem With Leaves

1-----	July 9th, July 15th-----	July 15th-----	July 20th-----	-0-
2-----	Did not form roots-----	July 9th, July 23rd-----	-0- -----	July 9th
3-----	Did not form roots -----	July 23rd-----	Did not form roots-----	0-
4-----	July 23rd-----	July 9th-----	July 9th-----	July 9th
5-----	July 9th, two cuttings-----	-0- -----	July 9th-----	July 9th

It should be noted that the above dates are not the dates of root initiation, but rather the date I checked and found that roots had formed. It was impossible for me to check all of the cuttings on a daily basis, but all were examined prior to and then on July 9th, 15th, 20th and 23rd. The heaviest root formation occurred in rooting media 4 and 5. From this, it would appear that hoyas root best in a wet environment.

I do not feel that the difference in the time it took for roots to develop is significant. Besides, it should be noted that, except for pumice, all media had at least one cutting that developed roots by July 9th. Any medium with good water retention should be suitable for rooting hoyas. Be sure a node is submerged in the medium. If leaves are growing from the node, merely cut them away.

Air-Layering, the other method tried, consisted of using a material called 'Green Moss'. The moss was moistened and placed around a node. It was then wrapped with transparent household saran wrap. The ends of the saran were tied and the moss was kept moist. The epidermis was not cut as is the general practice with this method of propagation. Having made that statement, I cannot explain why it never occurred to me to try it to find out whether or not rooting would take place sooner. Someone try it. I will too, some day. Air-layering of three stems on USDA 354245 was done on June 28th. By July 19th, two had roots and the third by July 23rd. All three have been cut from the plant and potted up. There is no advantage of this method over taking cuttings.

On July 11th I took cuttings from actively growing stems of *Hoya kerri*. None of the stems had leaves, but all had peduncles. Of the three stems in water, one had started to develop roots by July 20th. Two stems in our own mix (No. 1) had roots developing by July 20th and 23rd. The two in perlite had roots by July 22nd. All had rudimentary roots between nodes which appeared to have dried at their tips and none of them developed into regular roots.

After potting-up all the rooted cuttings (we give plants to a couple of Cactus and Succulent Clubs for their plant sales), cuttings were taken from *Hoya lacunosa* on August 6th. The stems were actively growing but the cuttings were not taken from new growth. The rudimentary roots were plump. All three stems were put into No. 2 medium (Burpee's). By August 16th, two had well developed roots and the third just a start. The rudimentary roots had all developed into good roots. *Hoya keysii* cuttings had well-developed roots in our mix and just a start in water in 7 days.

One method of rooting that I have not tried in years is to anchor a stem in a nearby pot. Hairpins or wires bent into a U-shape are used to keep the stem in the soil. Once roots have formed, cut the stem loose and you have a potted plant ready for trading or to give to a friend. You can also root leaves, but I have no idea how long it takes to develop a new plant. My wife rooted a leaf about 4 or 5 months ago. It is still nothing more than a rooted leaf.

Try your hand at vegetative propagation. It can be challenging and it can be fun. Just have a means of disposing of your successes. GOOD LUCK.

Reprinted from *Asklepios* # 24, December 1981, with permission of the International Asclepiad Society, England

Message from the President

In this month of September 1993, I would like to welcome all new members of IHA, as well as express my gratitude to all of our long time members for their loyalty and continued support. Our U.S.A. membership has increased a full 60% this past year, while our overseas membership has more than doubled.

Specialist journals like "Fraterna" fill a very obvious gap between the technical literature and random articles about hoyas found in popular houseplant publications. They also bring together people with the same interests and help to acquaint them with each other. We are very proud of *Fraterna* and its content, as most people who write state that there is "something for everyone". *Fraterna* is not just a journal, but your journal...IHA is not just an organization, but your organization. It is the people...its members that make any organization a success by their participation and endorsement.

On the subject of participation, we do need more of it. If you have ideas, tips, techniques or methods, please send them in. It is not enough to merely make suggestions on what you would like to see in the publication...become part of it, get your name in print. We sincerely need your input. After all, that is what a membership organization is all about, each of us relating his or her experience in growing these fascinating plants. Many of you may feel or may have heard that hoyas are not very popular and that interest in them is a passing fancy that will fizzle out in a short time. Don't you believe it! Hoyas are becoming more popular with each passing day and the only thing that will seriously harm this popularity is lack of interest on the part of the hundreds upon hundreds of hobby growers who make up the majority of all the hoyas growers.

Dale Kloppenburg President

My discovery of *Hoya heuschkeliana* Kloppenburg

Heading south on the expressway out of Manila, Philippines far in the distance you can see Mt. Mikiling. This mountain's northern slopes come down to the large inland lake of Laguna de Bay. It is in this area that the University of the Philippines at Los Banos is situated. There are also areas of hot geo-thermal springs that have been developed into tourist attractions. The expressway from Manila ends and I turn East to the town of Calamba and proceed south-east as the road skirts the edge of the lake. I arrived at Libis on the outskirts of Los Banos in the hot spring area at the guest house of Professor Juan Pancho, where I had been invited to lodge during my stay in the Philippines. After the long overseas flight, It always gives me a restful feeling to arrive at this blue tiled cottage surrounded by the most lush, gorgeous, tropical gardens one can imagine. The yard has a gradually sloping hill that overlooks a well kept lawn. This hill is home to numerous species of cycads and topped with a mushroom shaped, thatched sitting area. The yard is filled with many palm species including the elegant Coconut Palm, and each covered with Hoyas, Dischidias, Aeschynanthus, many ferns including huge Platycerium's, birdnest and others. Here and there you can see Dendrobium and Phalaenopsis orchids with long sprays of flowers. The paths are cool and damp, winding in and out through beds of tropical plants.

Upon my arrival, Professor Pancho...always the hospitable host, told me to ask Maximo Wayet, his efficient garden caretaker to show me the new plants that had been collected since my last visit. We proceeded slowly in order to look around the trunks of every palm and observe the different Aeschynanthus, and to gape at the *Hoya imbricata* that covered a palm trunk half way to the sky. Max and I passed through the wrought Iron gate of an old stone wall into the North-East garden. Max wanted to show me the latest plant that Juan had collected, and which he (Max) had planted at the base of a small tree. Juan had collected this hoya at the northern end of Lake Bulusan in 1989. Mt. Bulusan is way down the peninsula at the lower end of the large island of Luzon. This is the same general area from which *Hoya panchoi* (*H. bulusanensis* Elmer) was discovered. It is also near where David Cuming collected the plant that David Liddle recently wrote up as *Hoya gracilis* ssp. *philippinensis*

Schlechter/Liddle. Both David Cuming and David Liddle are from Australia.

When I saw this small, cup leaved plant crawling up over a rotted basal stump, then into the high branches of the tree I suspected it was *Hoya bilobata* Schlechter. However, I soon spotted a cluster of odd shaped pinkish-rose flowers very near the ground and recognized it as something different. My suspicions immediately changed directions from *Hoya* to *Dischidia* because of the urceolate blooms and the very short, almost sessile umbels of flowers...but only momentarily. Pulling back a corolla lobe with my thumb nail, I realized that it had all the characteristics of a bilobed *Hoya*. YES! like *Hoya bilobata* Schlechter and *Hoya panchoi* Kloppenburg. Juan had very thoughtfully provided me with a microscope and a new dissecting needle to work with while I was his guest. After making the necessary measurements and drawings for this plant, I preserved some of the flowers for photographing once I got home. I continue to make photographic records of each species (all of the inner and outer flower parts) through the microscope. In this way I have a permanent data base that I can always refer to. I decided this plant was a *Hoya* with an unusual urceolate corolla. At the UPLB botanical laboratory, botanical artist Henry Medina had made a detailed drawing of this plant and Juan had prepared a specimen for the Herbaria (this became the type sheet for this species).

There has been speculation that this plant is in another unknown Genera from *Hoya* R. Brown. It has also been speculated that it is a hybrid between a *Hoya* and a *Dischidia*. I have recently published a monotypic section within the *Hoya* genus to house this species. The section name is *Skenostemma* Kloppenburg. This name implies that the crown is covered over by the urceolate corolla. This very unique, compact species with its densely leaved branches is an excellent bloomer. A mature plant has long dangling runners with clusters of small heather-like flowers at almost every node. It is a constant and heavy bloomer displaying anywhere from 3 to 12 flowers per umbel. many on the long streamers. Close examination of the flower will reveal why it does not open fully (only the corolla apexes fold back). The lobes are cut less than half way making it mechanically impossible for the lobes to

H. heuschkeliana Kloppenburg



Photo Sponsored by Frances Wilkes

become revolute or rotate without tearing. The corolla is typically Hoya being fleshy but relatively thin, not rigid and thick as in *Dischidia* or *Dischidiopsis*. In addition, *Dischidias* have directional hairs in the tube whereas this corolla inside is covered with a fine pubescence. The apical inner triangle is bare, typical of Hoyas of the bilobed section. Peel away the corolla and inside is an upright crown with each scale having bottom bilobed extensions. The pollinia is typical of the bilobed species. The translator arms are club shaped and the caudicle are bulbous and very clear. At first I overlooked the caudicles since they are very transparent. Close study will reveal they are present. The pollinia...although much smaller, are like those of David Liddle's subspecies (ssp.) i.e. they are short and wide.

This species is like a *Dischidia* in that it has almost non-existent peduncles; a very few are in pairs. It also has the short straight pedicels of a *Dischidia*. There the similarities end. The corolla texture, pubescent type, crown structure, bilobed extensions on the coronal scales and the pollinarium are all Hoya. If you want a compact, easily grown, almost everblooming Hoya, add this one to your collection.

Let's all thank Professor Juan Pancho as I do for keeping a sharp eye out for new, rare plant species and for his dedication to seeing that they end up for our enjoyment. I look forward to my next visit in Libis and to the thrill and excitement of new discoveries.

By Dale Kloppenburg

Hill-N-Dale Nursery

Photos of David Jones and Stephen Gaudin on page 6 were sponsored by Rainbow Gardens Nursery & Bookshop, 1444 E. Taylor Vista, Calif. 92084

Natural Growing Environments of Epiphytes

What is an Epiphyte?

Plants growing on other plants (ie tree trunk, branch or crevice in trunk)

Have independent root system therefore not parasites

Obtain mineral nutrients from trickling rain water containing ions from dead and dying cells of the host tree's bark

Obtain water:

- by long aerial roots absorbing water
- from rain water trickling down trunk or branch of tree
- absorbing water soaked in humus on which plant grows
- store water in fleshy leaves

Epiphytes "hitch a ride" on other plants and gain more advantageous site in tree canopy

Epiphytes are common in the Tropics and Sub-Tropics, but rare in temperate regions. They predominate in cactus, orchid, asclepiad, bromeliad and gesneroid families and also occur among ferns, aroids, peperomia and nepenthes. They usually root into accumulations of moss or debris in crotches or into rough bark and in rare cases they attach to green leaves or stems. Epiphytes do not draw nourishment directly from the host tree but may intercept light, water and nutrients that would otherwise reach the soil and nourish the host. Many Epiphytic species may be found as lithophytes (or rock perching plants).

We think of epiphytes as vascular plants, but they also include algal species, lichens (particularly in dry sub-alpine forests), mosses and liverworts.

In tropical forests the epiphyte load seems to increase with altitude with epiphytes being less abundant in lowland forest and more abundant in mountain and cloud forests. (Cloud forests have gnarled trees less than 20m high with crowns, branches, limbs and trunks heavily burdened with epiphytes).

In semi-deciduous tropical and sub-tropical forests most trees are drought resistant and shed their leaves in the dry season. The mountain and cloud forests of this type bear xerophytic epiphytes such as tillandsia usneoides that can withstand periods of drought.

Successful epiphytes must be adaptable - able to survive changes in light intensity, humidity and rainfall, cope with sudden deposition of dead leaves and debris among them, or a plunge into the forest depths when a supporting branch breaks or a tree is blown over. An ability to regenerate from a small piece, or to attach more firmly by adventitious roots when adjacent plants have fallen from the branch is clearly advantageous.

Different epiphytes live in different places on the tree - mosses may be dominant on lower trunks, some orchids may live only on twigs in the canopy. Some plants may grow epiphytically as seedlings, then grow roots down to the ground and overgrow or strangle the host tree.

The seeds of epiphytic plants vary greatly - orchids have fine seed, some epiphytes have seed with parachutes, while epiphyllums have relatively large seeds in fleshy fruits readily eaten by animals. Epiphyllum seeds stick readily to anything they touch and are therefore very easily transported to a new locality to germinate. Seeds may start to grow within the fruit while still attached to the plant almost like an orchid seed in its nutrient agar jelly. Some primitive orchids have small but relatively heavy seeds borne in a somewhat pulpy fruit. These include vanilla which is probably the longest orchid plant, being a large vine which may climb many meters up a cliff or a tree.

Most epiphytic seeds are either animal pollinated or dispersed through wind movement.

Reprinted from EPIFLORA # 6, June 1993

With permission of the Wellington Epiphyllum and Hoya Society, New Zealand

BIRD TRACKS

Round Robin # 2..8/93..Margie Stone..Oregon... Joyce; Did your Lacewings work out? We plan to do a program on alternatives to chemicals at our next Eugene hoya meeting. I picked up a pamphlet at our counter culture plant store. They lean towards organic gardening, tho they do carry some chemical products. They recommend the Green Lacewings over lady bugs, other than a black ladybug called "Mealybug Destroyer". Said they can order such for me. I don't have a problem during the winter, but when it gets warm and humid they appear. I also talked to some Master Gardeners at the fair. They are getting away from recommending chemicals and said they are recommending Safers Soap. Have any of you used it? I got a small bottle to try. Do any of you who have used it think it smells like Ivory soap? I do! It made me think about one of our members telling about her grandfather who had a nursery years ago, and that he would mix up a bucket of Ivory soap solution and dunk the infested plants in it. I would suspect at that time it would have been bat soap he used. Also have heard that Fels Naphtha is good (if you can find it). Shave thin strips into boiling water to dissolve it, then use a tablespoon of the soap solution to a gallon of water.

Round Robin # 2..8/93..Mary Jean Sargent..Oregon... As you know, I think that alcohol and Q-Tips are just a way to let the rascals fool you! They send a few individuals out where you can see them and swab them. Meanwhile, the rest can multiply ferociously on roots, peduncles, in cracks and crevices. So they sacrifice a few and gain time to multiply out of sight. So I repeat: Clean all empty pots, trays, shelves etc. with bleach. Use systemics. I use Cygon or Diazinon and spray every surface of every plant and pot, then drench the soil. Contorted plants must be dipped. Of course this can't be done in your living quarters, so they must go outside for a day or so. Repeat the spray and drench again in 7 to 10 days.

Editors Note: Round Robins # 3, 4, and 5 are misplaced, lost in the mail or otherwise hopelessly bogged down in someone's home. Would all of you robin participants please look through those stacks of magazines and papers for a large envelope that looks suspiciously like a round robin packet. Please send it on, it will save Joyce many letters and phone calls in the process of trying to track them down.

EDITORIAL POLICY

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.



ERRATA

FRATERNA 4th quarter 1992. Article: Other Asclepiads, page 6-7

The following corrections apply with corrections double underlined.

Translated: Parasitic, flexible, branched, branches fleshy, round glabrous, plus or minus, loosely leaved; leaves outspread or spreading obovate-oblong briefly acuminate, with the short petiole narrow toward the base, fleshy with both surfaces glabrous, including the petiole overall 4-6 cm. long, in the middle nearly 1.5-3 cm. wide; with the inflorescence outside the axil, almost sessile or briefly pedunculate, many flowers crowded together, petioles nearly equally long or shorter, with the flowers minute, briefly pedicellate, peduncles glabrous; segments of the calyx ovate-oblong to ovate obtuse glabrous; corolla urceolate below the middle outside inflated, glabrous, 0.4 cm. long, lobes small erect, ovate-lanceolate somewhat acute, inside fleshy thickened, with inside of the tube having long erect hairs, and the inflated part glabrous, with the apex on the inside with 5 semi-circular glabrous scales. with the anthers rhomboid, the margins thickened toward the enlarged base, appendix hyaline narrowly oblong acute; pollinia compressed narrowly oblong, toward the base a little narrowly erect, translators thick short, retinaculum shortly oblong obtuse, with the pollinia 2 times smaller.

The type specimen came from the Island of Lubang, Batangas Province. This is a smaller island off to the South West from Manila bay; North West from the larger island of Mindoro, Philippines.

It's A Small World

As a contrast to the huge, bold veined leaves of the giants among hoyas, comes the lilliputian sized hoyas at the other end of the scale. These tiny plants often have surprisingly large flowers, and normally bloom at a very early age. These species have been validly published and are here listed in alphabetical order with brief descriptions.

Hoya aeschynanthoides *Schlechter*..Borneo at Long Dett..Epiphytic, hanging down or decumbent on tree branches, densely leaved, leaves pilose (felt-like) on both sides. Flowers are white and rather small.

Hoya bilobata *Schlechter*..Philippines...Epiphytic, small, round close set leaves, leaves glabrous with leathery texture. Very tiny red/orange flowers.

Hoya bulusanensis *Elmer*..Philippines..Originally invalidly published in English by A.D.E. Elmer, this species has been renamed and validly published in Latin as *Hoya panchoi* Kloppenburg. Epiphytic, leaves very thick, glabrous; of two distinct types, some round 1.5 cm. in diameter, others obovately oblong 2 cm. wide above the middle and 4 cm. in length. Flowers are rather rigid and liver colored.

Hoya burmanica *Rolfe*..Burma, in the Chin Hills..Similar to *H. lanceolata* Wall. but has much smaller flowers that are yellow with a red-purple stain at the base of the corolla.

Hoya collina *Schlechter*..New Guinea in the Finisterre Mountains..This is a species that we have recently added to our collections. The foliage is small and very smooth and clean looking. The flowers are greenish white.

Hoya curtisii *King & Gamble*..Malaysia..Another new addition to our collections. The leaves of this species are tiny, very thick and almost perfectly round (like a pearl) on the upper side, slightly flattened on the back sides. The flowers are small and reflexed with a high crown, the color is tan or buff colored with a red center.

Hoya filiformis *Rechinger*..Samoa..Extremely thin leaved hoyas with the tips of the leaves sharp and bent under. The white flowers are very small. The entire umbel measures only 2 cm. in diameter.

Hoya halophila *Schlechter*..New Guinea on trees along the beach at Eitape. Small rounded leaves that measure 3.5 to 5 cm. in length, and 2.3 to 3.4 cm. in width. The flowers are small and red.

Hoya heuschkeliana *Kloppenburg*..Philippines..Small leaves that look very similar to *H. bilobata*. Flowers are tiny and urceolate shaped. A fantastic bloomer with a gorgeous cascading habit. Two flower colors are now in cultivation, rose-pink and yellow.

Hoya kanyakumariana *Henry & Swaminathan*..India..Emarginate leaves that look like a miniature *H. kerri*. Flowers are pinkish-white and almost 1/2 inch in diameter.

Hoya klossii *S. Moore*..New Guinea..The leaves of this species are shiny and net veined. The flowers are small and quite fuzzy, no flower color was given.

Hoya lamingtoniae *F.M. Bailey*..New Guinea..Tri-nerved leaves that are 2 to 3 inches long by 1 inch wide. Deep maroon colored flowers that are 2/3 inch in diameter.

Hoya leucantha *S. Moore*..New Guinea..Leaves of this species are 3.5 to 4.5 cm. long by 8 to 10 mm. wide. The flowers are about 6 mm. in diameter, no flower color was given.

Hoya leytensis *Elmer ex Burton*..An epiphytic densely matted climber..Philippines..Leaves are of two types (dimorphic), most are 2 to 3.5 cm. long by 0.6 to 1.0 cm. wide, the rounded leaves are 1.0 to 1.2 cm. in diameter. Flowers are dark to dull yellow.

Hoya loheri Kloppenburg..Philippines..Leaves are pale green and grow upright, 2.6 to 4.4 cm. long by 1.2 cm. wide at the middle. Flowers are dark reddish purple and about 0.70 cm. when flattened out. This is a very recent addition to our collections.

Hoya microphylla Schlechter..New Guinea..The tiny leaves measure only 1.2 to 1.7 cm. long by 0.76 to 1.2 cm. wide. The flowers are very large for such a tiny plant and measure up to 2 cm. in diameter, They are snow white with a dark purple corona.

Hoya microstemma Schlechter..New Guinea..Leaves are 2 to 3.3 cm. long by 0.8 to 1.5 cm. wide, leaf texture is glabrous on both sides. Flowers are flesh colored with a rose-red crown.

Hoya minahassae Schlechter..Celebes..Leaves are elliptic or lanceolate-elliptic and are 4 to 7 cm. long by 1.5 to 2.5 cm. wide. The flowers are 1.3 cm. in diameter, no flower color was given.

Hoya minima Costantin..Cochinchine..Leaves 4 to 5 cm. long by 7 to 10 mm. wide, and appear to be veinless except when the sunlight shows through. No flower description was given

Hoya nummularia Decaisne ex Hooker F..India..Described by Hooker as being very like *H. serpens* but having rough, shining leaves, reticulated on both surfaces. Flowers are 1/3 inch in diameter, no color was mentioned.

Hoya nummularioides Costantin..Laos..Leaves slightly larger than *nummularia*, being 12 to 25 mm. long by 9 to 16 mm. wide, and pubescent on both surfaces. The flowers are white and about 4 mm. in diameter. The description says that the corolla lobes are folded to the inside.

Hoya oblongacutifolia Costantin..Indo China..Leaves are ovate, oblong or lanceolate, with 4 to 6 pairs of prominent veins. This species has many flowers that are similar to *H. lacunosa* in that they are both in the *Otostemma* section.

Hoya obreniformis King..India..Leaves of this species are often wider than they are long. Flowers are white.

Hoya oligantha Schlechter..New Guinea..Very tiny leaves, 2.3 to 3 cm. long by 0.5 to 0.8 cm. wide. This species has only 1 or 2 flowers per umbel but the flowers are huge for such a tiny plant being 2.7 cm. in diameter, creamy yellow with a reddish brown corona.

Hoya oreogenia Kerr..Thailand..Leaves are very similar in shape to *H. poolei* but are slightly pilose (felt-like) when young. Flowers are pale rose and about 12 mm. in diameter.

Hoya oxyoccoides S. Moore..New Guinea..Leaves are 12 to 18 mm. long by 7 to 9 mm. wide, and similar in shape to the plant we know as *H. bella*, but much smaller. The flowers are 2 cm. in diameter which is very large for this tiny species. No flower color was mentioned.

Hoya pedunculata Schlechter..New Guinea..This species has leaves 3 to 5 cm. long by 1 1/2 to 2 cm. wide. Dr. Schlechter claimed that *H. Rosea* K. Schumann and *H. sororia* K. Schumann was the same identical species as this one.

Hoya papuana Schlechter..New Guinea..Leaves lanceolate-elliptic, longly acuminate, texture very thin and leathery, glabrous on both sides, 6 to 8 cm. long by 1 to 2.3 cm. wide. The flowers are cup shaped like *H. campanulata* with only a few rather large flowers per umbel, flowers being 2.2 to 2.4 cm. in diameter.

Hoya parvifolia Schlechter..Sumatra..Tiny leaves are 1.2 to 1.7 cm. long by 0.8 to 1 cm. wide. The 0.7 cm. flowers are recurved and pale brownish yellow.

Hoya parviflora Wight..Burma..Leaves 2 to 4 inches long by 1/3 to 3/4 inches wide. Little seems to be known about this species for sure. Wight says the leaves are fleshy, lanceolate. Many small flowers, corolla glabrous, corona scales obovate emarginate, obcordate. I await the first blooming of David Liddle's IML 454 which he states is this species.

Hoya picta Miquel..Java..The literature says very little about this plant except that the leaves are on short petioles, broadly ovate and with both sides purple stained. Many flowers; corolla inside spongy velvety. One of our plant growers claims he just received this species from a collector in Java.

Hoya pruinosa Miquel..New Guinea..Half inch convex, glaucous leaves. This species was placed in the *Acanthostemma* section by Blume. It has few flowers.

Hoya pulchella Schlechter..New Guinea..The stalks, branches and petiole of this species are minutely puberulous, but the leaves are glabrous on both sides. The flowers are pure white with a dark, crimson-red corona.

Hoya retusa Dalzell..India..Similar to *H. pauciflora* with the leaves arranged in groups of several nodes close together in an almost whorled pattern with long internodes between. Flowers are few with 1 to 3 per sessile umbel, the color is white with a pink corona.

Hoya revoluta Wight..Quite glabrous, leaves are ovate or ovate-lanceolate; very thick and fleshy, margins strongly recurved. The corolla is revolute and villous (shaggy, with fairly long, soft straight hairs) within, color is pink.

Hoya rubida Schlechter..New Guinea..Leaves 4 to 6 cm. long by 2 to 3 cm. wide. Flowers are dark reddish violet with a wine red corona and are about 1.7 cm. in diameter. The hoya in commerce with this name is not *H. rubida*.

Hoya stenophylla Schlechter..New Guinea..Leaves are stringbean shaped only much more narrow, 6 to 8 cm. long by 3.5 to 4.5 mm. wide. Flowers are 2.3 cm. in diameter and are light creamy yellow with pink at the base of the corolla. This species is now under cultivation and should be available soon.

Hoya trukensis Hosokawa..Island of Truk in the Pacific..Leaves 4 to 5.5 cm. long by 2 to 2.5 cm. wide, shiny above, glabrous on both sides, rounded at the base and acuminate-caudate at the tips. No mention was made of flower color.

Hoya vacciniflora Swartz..The flowers are described as being urceolate and very small.

Hoya vaccinioides Hooker F...Leaves are 1/2 inch long and elliptic. No mention was made of the flower description or color. A species was recently collected that may be this one.

Hoya varifolia Ridley..This species has dimorphic leaves (2 different types), one type is 1.5 cm. long by 5 mm. wide. The other type is 4 cm. long by 2 mm. wide. The flowers are said to be 2 mm. in diameter making them the smallest hoya flower known, color is pink or brownish pink.

Hoya venusta Schlechter..New Guinea..Leaves 3 to 5 cm. long by 0.9 to 1.7 cm. wide. Flower are white with a wine-red corona, and about 2 cm. in diameter.

Hoya wariana Schlechter..New Guinea..Leaves from 2.2 to 5.5 cm. long by 3.5 to 5.5 cm. wide. Flowers are greenish-white and about 0.8 cm. in diameter.

Now that we have reviewed the really small members of this genus, our next issue will highlight some ideas, and novel ways to display these enchanting little plants. We do not have in cultivation all of the hoyas listed here, but certainly enough to fill a small sunroom or large light garden.

By Ann Wayman



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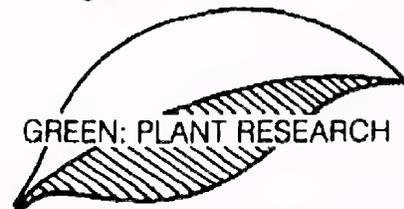
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H. cinnamomifolia
H. gracilis
H. pubicalyx (dark red seedling)
H. sp. PNG 4
H. arnottiana
H. kenejiana
H. kerrii (Fuzzy leaf)
H. acuta (Green Form)
H. pachyclada
H. obovata

Volume 4

H. fuscomarginata
H. # 454 (unidentified Hoya species)
H. polystachya
H. acuta (lemon)
H. species # CI-1244
H. species # F-484
H. species USDA #354246
H. pubicalyx Cv. Red Buttons
H. species (New Guinea Gold)
H. nicholsoniae # IML 37

Volume 5

H. diversifolia
H. nicholsoniae # IML 39
H. cumingiana
H. neo ebudica
H. padangensis
H. camphorifolia
H. inconspicua
H. caudata var. crassifolia
H. Spec. PNG-1
H. erythrina

Volume 6

H. fraterna
H. coronaria Form 1
H. limoniaca
H. bilobata
H. spec. PNG-6
H. tsangi
H. diptera
H. acuta (bronze)
H. fungii
H. diversifolia-B

Volume 7

H. carnosia cv. "Krinkle 8"
H. sp. Saba, Malaysia
H. Sp. WMZ
H. polyneura
H. sp. WMZ (Back of flower & calyx)
H. nummularioides (formerly called H. pubera)
H. acuta Penang
H. plicata
H. carnosia cv. "Dapple Gray"
H. sanae

Volume 8

H. purpureo fusca
H. odorata
H. pottsii
H. Sp. IML 33
H. picta
H. pseudo littoralis
H. nicholsoniae (from Logee's)
H. micrantha
H. vitiensis
H. curtisii (foliage)

Volume 9

H. sp. USDA #354236 (calycina)
H. merrilli
H. affinis
H. darwinii

H. pubicalyx 'Chimera'
H. sp. 'Gold Star'
H. sp. # BSI-1
H. archboldiana (Red Form)
H. finlaysonii
H. naumanii

Volume 10

H. pubicalyx (Silver Pink)
H. rupicola
H. vitellina
H. sp. IML # 234 (obscura)
H. meliflua
H. engleriana
H. megalaster
H. archboldiana (Pink Form)
H. sp. Bangkok Red
H. sp. cebu

Volume 11

H. mitrata
H. sp. DAV-817
H. dimorpha
H. multiflora
H. sp. Sabah, Malaysia #IML 557
H. erythrostemma
H. sussuella (ariadna)
H. kentiana
H. incrassata
H. chuniana

Volume 12

H. eitapensis
H. curtisii/pruinosa
H. sp. (New Guinea White)
H. poolei
H. pallida
H. sp. Kuching, Borneo # IML 232
H. chlorantha var. tutuilensis
H. diptera (from Fiji)
H. cominsii
H. vitellina



Pictures

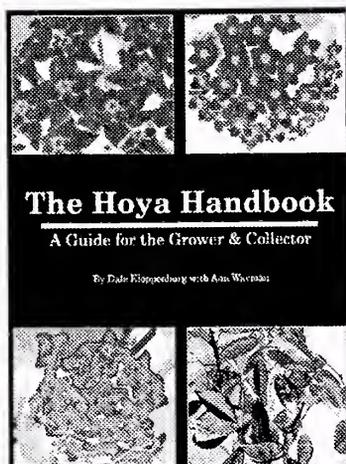
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